Based on
New Sindh Curriculum
2023-24

THE TEXTBOOK OF

MATHEMATICS

Second Edition

For Class II

Sindh Textbook Board

TEST EDITION

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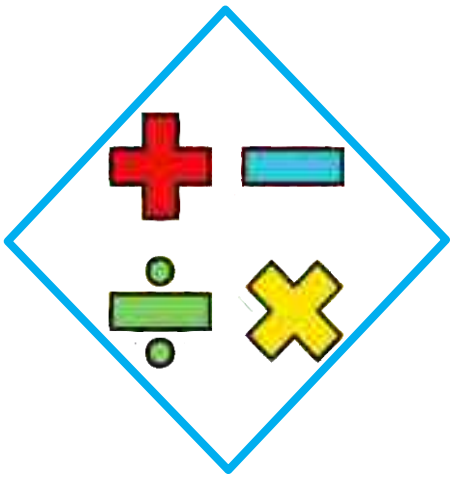

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PREFACE

The century we have stepped in, is the century of Science and technology. The modern disciplines of Mathematics are strongly influencing not only all the branches of science but each and every aspect of human life.

To keep the students abreast with the recent knowledge; it is must that the curricula at all the levels be updated. Moreover regularly by introducing the rapid and multidirectional development taking place in Mathematics .

The recent book of Mathematics for Class II has been written in this preview and in accordance with the new sindh curriculum 2023-24. Prepared by Ministry of Education, Govt of Sindh. Reviewed by independent team of Directorate of Curriculum Assessment and Research, Jamshoro Sindh. Keeping in view the importance of Mathematics , the topics have been revised and re-written according to the need of the time.

Among the new editions the introductory paragraphs and a variety of extensive exercises have been included. Which I think will not only develop the interest but also add a lot to the utility of the book.

The Sindh Textbook Board has taken great pains and incurred expenditure in publishing this book inspite to its limitations. A textbook is indeed not the last word and there is always room for improvement. While the authors have tried their level best to make the most suitable presentation, both in terms of concept and treatment. There may still have some deficiencies and omissions. Learned teachers and worthy students are therefore requested to be kind enough to point out the short comings of the text or diagrams and to communicate their suggestions and objections for the improvement of the next edition of this book.

In the end, I am thankful to our Authors, Editors and Subject specialist of Board for their relentless service rendered for the cause of education.

Chairman
Sindh Textbook Board

CONTENTS

Unit 1

NUMBERS

Student Learning Outcomes:

At the end of the chapters, Students will be able to:

- ✓ count numbers up to and across 999 (3- digit numbers) forwards and backwards, beginning from zero, one, or any given number.
- ✓ read and write numbers up to 999 in numerals and up to 50 in words.
- ✓ recognize the place value of each digit in 3-digit numbers (hundreds, tens, ones/units).
- ✓ Compare and order numbers up to 999 using appropriate language (for instance: more and less, greater, smaller, equal to, same as, increasing, decreasing, smallest to largest and vice versa etc.)
- ✓ round numbers to the nearest tens using different concrete objects and pictorial representations.
- ✓ recognize the position of objects and write it using ordinal numbers up to20.
- ✓ read and write Roman numbers up to 12.

Counting Numbers

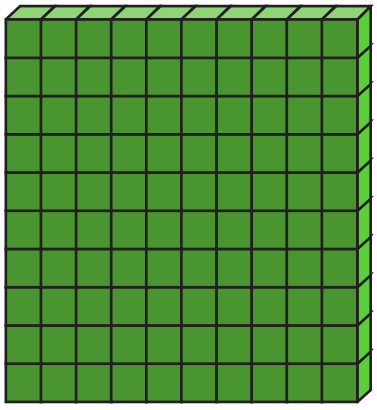
We have already learnt numbers up to and across 99 in previous class which are as follows:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	

When we add 1 more in 99, we get 100 and read it as one hundred.

10 tens make 1 hundred

i.e. 10 tens = 100

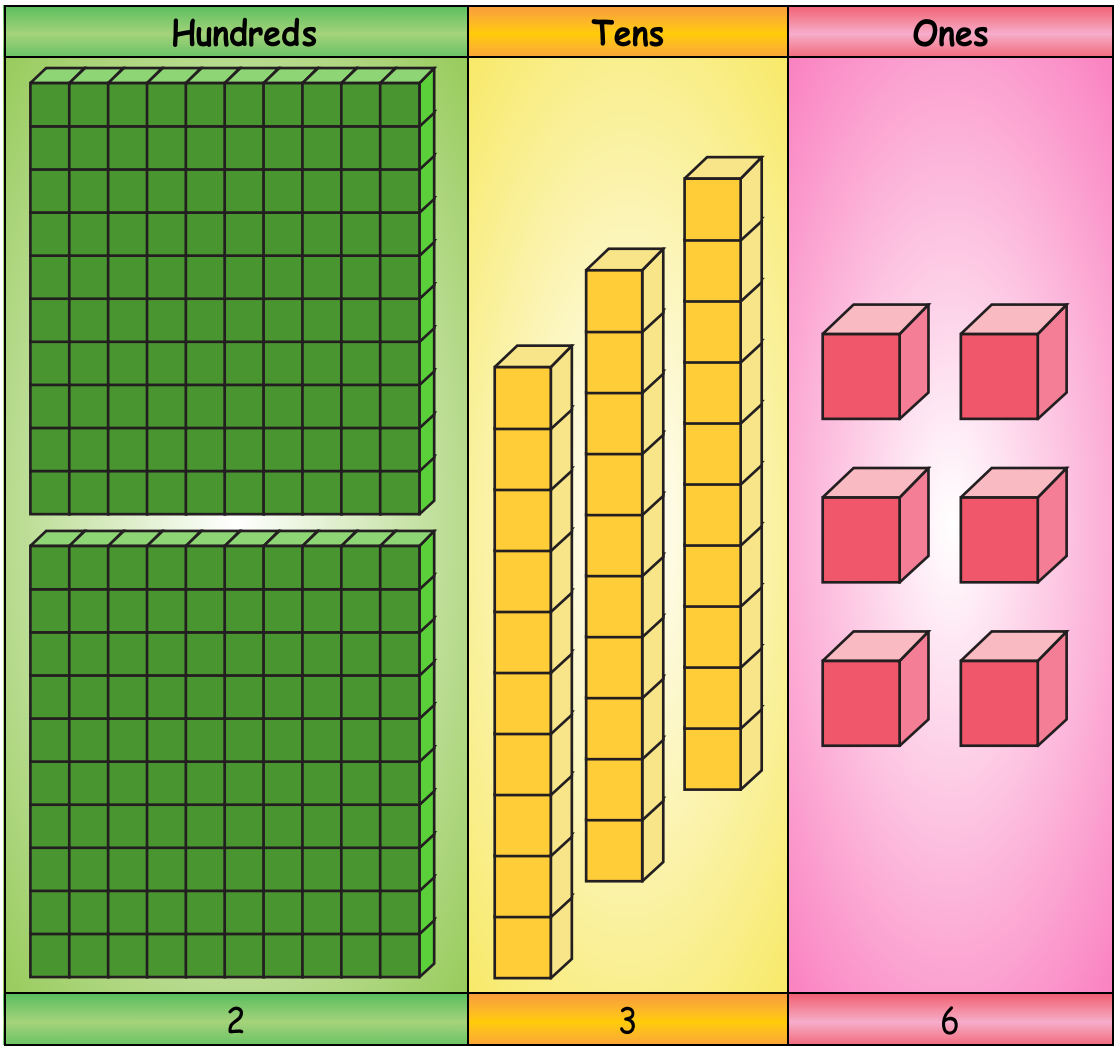


100 is a first 3-digit number.
In place value chart, we write it as:

Hundreds	Tens	Ones
1	0	0

Example 1

Count hundreds, tens and ones. Also write the number.



Number = 236

2 hundreds | 3 tens | 6 ones

Two hundred thirty six = 236

Activity Count forward and write the missing numbers

1	2	3	4	5	6	7
32	33	34			37	
16	26	36		56		76

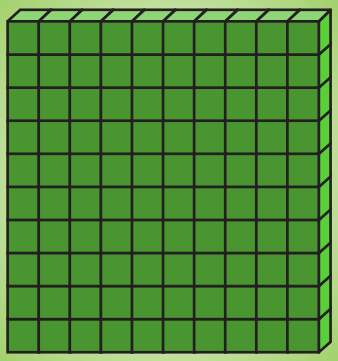
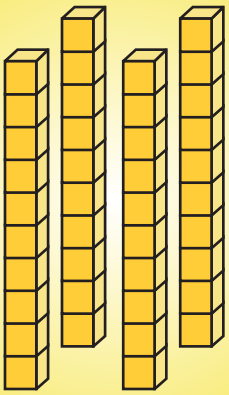
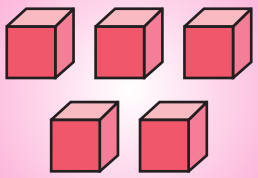
Activity Count backward and write the missing numbers.

6	5	4	3	2	1
88		86	85		83
	24		22	21	90

Exercise 1

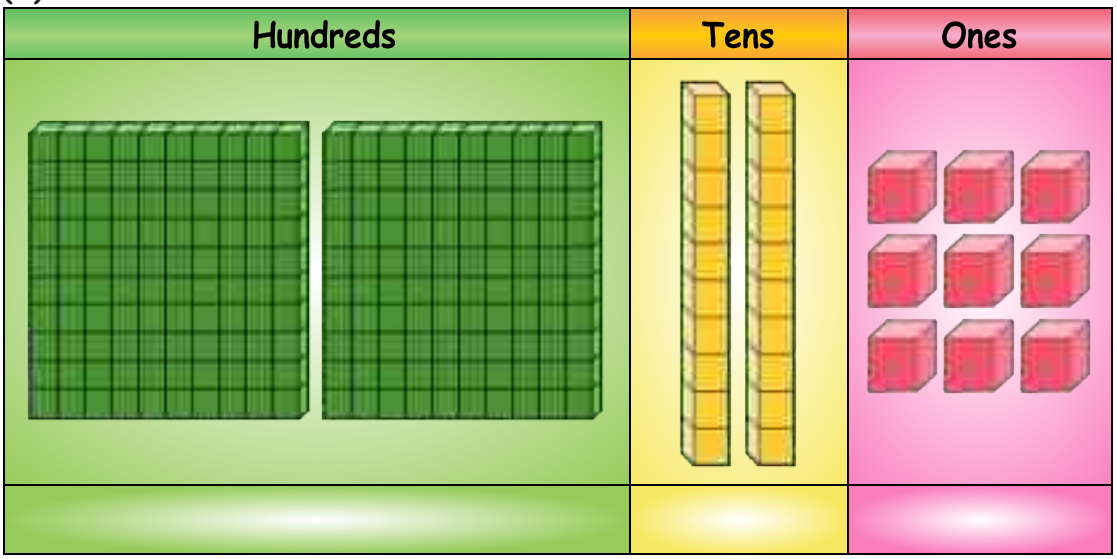
1. Count hundreds, tens and ones. Also write the numbers.

(a)

Hundreds	Tens	Ones
		

Number = ____

(b)



Number = ____

2. Count forward and write the missing numbers.

(a) 0 1 2 ____ ____ 5 ____

(b) 20 21 22 ____ 24 ____ 26

(c) 11 22 33 ____ ____ 66 ____

3. Count backward and write the missing numbers.

(a) 3 4 5 ____ 7 ____ 9

(b) 56 55 ____ ____ 52 ____ ____

(c) 85 75 ____ ____ 45 ____ ____

Reading and writing 3-digit numbers.

Read numbers from 100 to 299

100	101	102	103	104	105	106	107	108	109
110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129
130	131	132	133	134	135	136	137	138	139
140	141	142	143	144	145	146	147	148	149
150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166	167	168	169
170	171	172	173	174	175	176	177	178	179
180	181	182	183	184	185	186	187	188	189
190	191	192	193	194	195	196	197	198	199
200	201	202	203	204	205	206	207	208	209
210	211	212	213	214	215	216	217	218	219
220	221	222	223	224	225	226	227	228	229
230	231	232	233	234	235	236	237	238	239
240	241	242	243	244	245	246	247	248	249
250	251	252	253	254	255	256	257	258	259
260	261	262	263	264	265	266	267	268	269
270	271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288	289
290	291	292	293	294	295	296	297	298	299

Reading and writing 3-digit numbers.

Read numbers from 300 to 499.

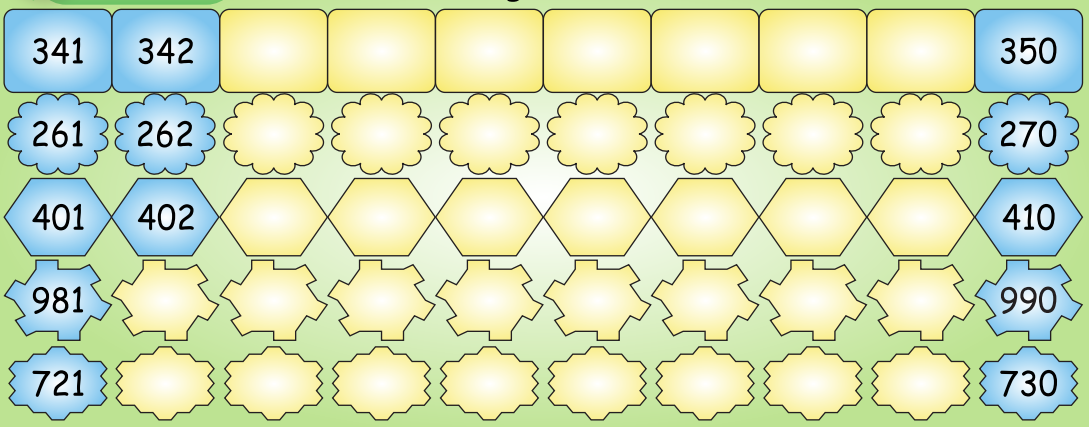
300	301	302	303	304	305	306	307	308	309
310	311	312	313	314	315	316	317	318	319
320	321	322	323	324	325	326	327	328	329
330	331	332	333	334	335	336	337	338	339
340	341	342	343	344	345	346	347	348	349
350	351	352	353	354	355	356	357	358	359
360	361	362	363	364	365	366	367	368	369
370	371	372	373	374	375	376	377	378	379
380	381	382	383	384	385	386	387	388	389
390	391	392	393	394	395	396	397	398	399
400	401	402	403	404	405	406	407	408	409
410	411	412	413	414	415	416	417	418	419
420	421	422	423	424	425	426	427	428	429
430	431	432	433	434	435	436	437	438	439
440	441	442	443	444	445	446	447	448	449
450	451	452	453	454	455	456	457	458	459
460	461	462	463	464	465	466	467	468	469
470	471	472	473	474	475	476	477	478	479
480	481	482	483	484	485	486	487	488	489
490	491	492	493	494	495	496	497	498	499

Reading and writing 3-digit numbers.

Read numbers from 800 to 999.

800	801	802	803	804	805	806	807	808	809
810	811	812	813	814	815	816	817	818	819
820	821	822	823	824	825	826	827	828	829
830	831	832	833	834	835	836	837	838	839
840	841	842	843	844	845	846	847	848	849
850	851	852	853	854	855	856	857	858	859
860	861	862	863	864	865	866	867	868	869
870	871	872	873	874	875	876	877	878	879
880	881	882	883	884	885	886	887	888	889
890	891	892	893	894	895	896	897	898	899
900	901	902	903	904	905	906	907	908	909
910	911	912	913	914	915	916	917	918	919
920	921	922	923	924	925	926	927	928	929
930	931	932	933	934	935	936	937	938	939
940	941	942	943	944	945	946	947	948	949
950	951	952	953	954	955	956	957	958	959
960	961	962	963	964	965	966	967	968	969
970	971	972	973	974	975	976	977	978	979
980	981	982	983	984	985	986	987	988	989
990	991	992	993	994	995	996	997	998	999

Activity Write the missing numbers



Activity Read and Trace the numbers from 1 to 50 in words.

In figures	In words
1	One
2	Two
3	Three
4	Four
5	Five
6	Six
7	Seven
8	Eight
9	Nine
10	Ten

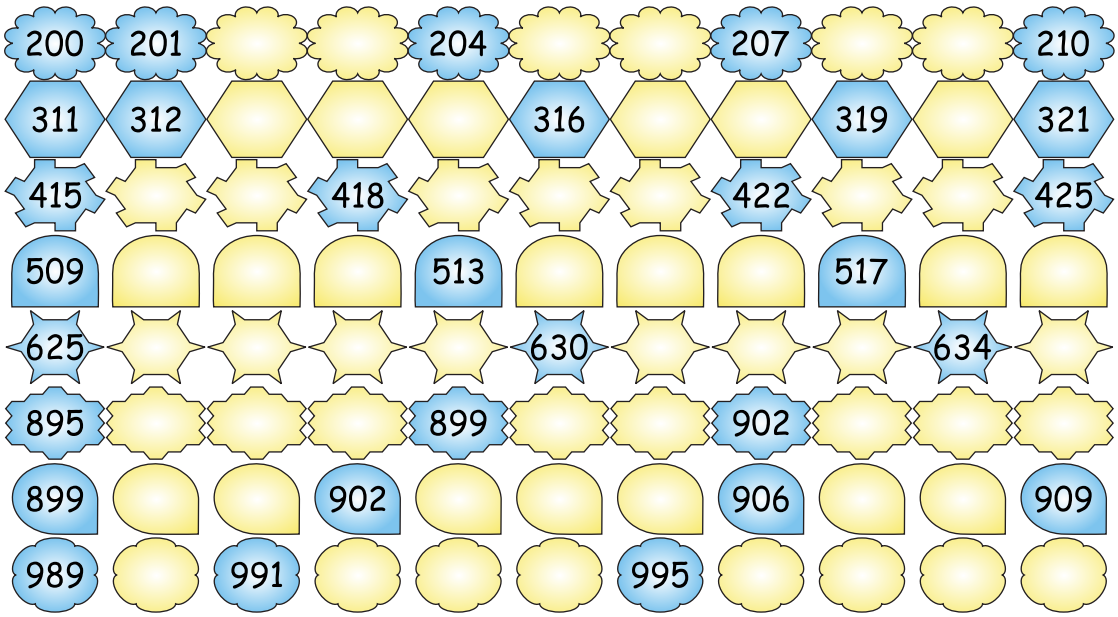
In figures	In words
11	Eleven
12	Twelve
13	Thirteen
14	Fourteen
15	Fifteen
16	Sixteen
17	Seventeen
18	Eighteen
19	Nineteen
20	Twenty

In figures	In words
21	Twenty one
22	Twenty two
23	Twenty three
24	Twenty four
25	Twenty five
26	Twenty six
27	Twenty seven
28	Twenty eight
29	Twenty nine
30	Thirty
31	Thirty one
32	Thirty two
33	Thirty three
34	Thirty four
35	Thirty five

In figures	In words
36	Thirty six
37	Thirty seven
38	Thirty eight
39	Thirty nine
40	Forty
41	Forty one
42	Forty two
43	Forty three
44	Forty four
45	Forty five
46	Forty six
47	Forty seven
48	Forty eight
49	Forty nine
50	Fifty

Exercise 2

1. **Write the missing numbers.**



2. **Match the numbers in words with numbers in figures.**

In words	In figures
Nineteen	37
Twelve	49
Twenty three	12
Twenty	27
Thirty seven	50
Forty nine	19
Twenty seven	20
Fifty	23

3. **Write the numbers in figures.**

In words	In figures
Eighteen	18
Twelve	
Twenty two	
Thirty eight	
Forty three	
Forty	
Thirty nine	
Seven	

4. **Write the numbers in words.**

In figures	In words
47	Forty seven
36	
11	
17	
26	
44	
8	
30	

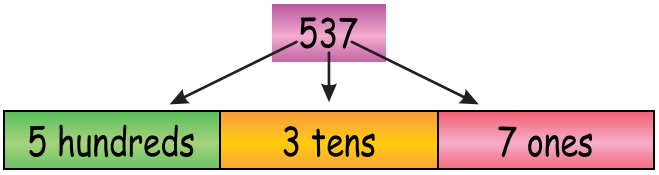
Recognizing the place value of a number

We know that 100 is a first 3-digit number. Its place value chart is

Hundreds	Tens	Ones
1	0	0

Similarly, each 3-digit number has three place values

For example, the place values of 537 are shown below



The place value of 7 is 7 ones = 7
The place value of 3 is 3 tens = 30
The place value of 5 is 5 hundreds = 500
So, 537 = 500 + 30 + 7

Example:

Identify the place value of encircled digit.

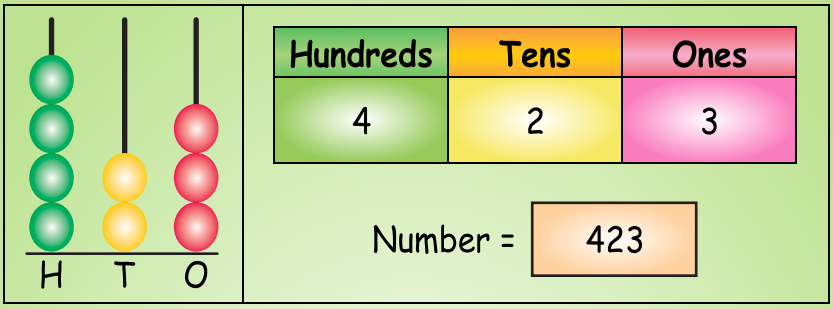
5 (6) 7 — The place value of 6 is 6 tens = 60

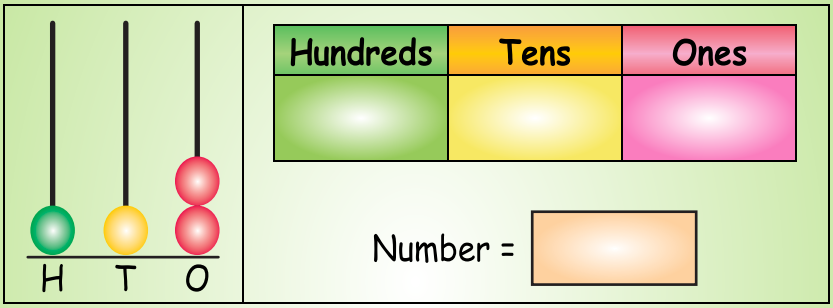
(9) 7 8 — The place value of 9 is 9 hundreds = 900

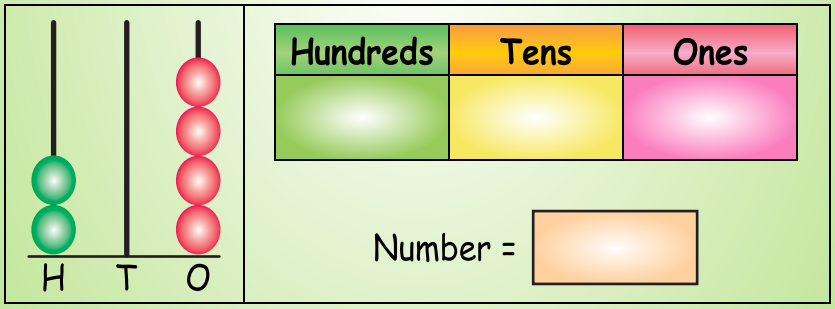
4 2 (3) — The place value of 3 is 3 ones = 3

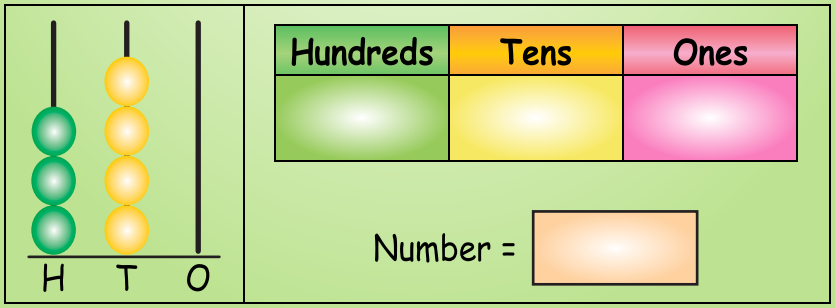
Activity

Count hundreds, tens, ones and write the numbers.









Exercise 3

1. Write the place value of encircled digit.

(a) 3 (5) 9 — 5 tens = 50

(b) 7 1 (3) —

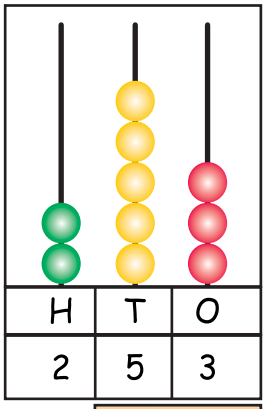
(c) (5) 9 8 —

(d) (6) 9 8 —

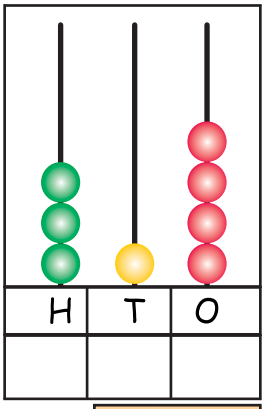
(e) 2 (4) 6 —

(f) 8 0 (1) —

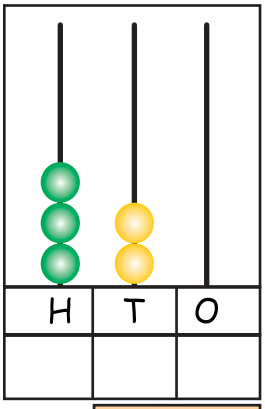
2. Count hundreds, tens, ones and write the numbers.



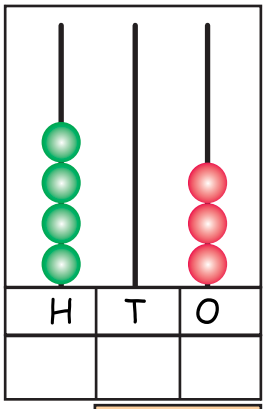
Number = ____



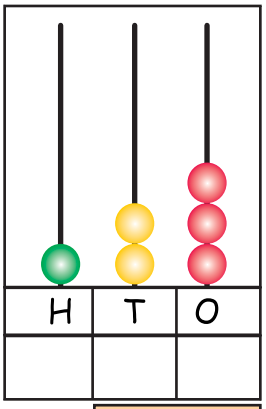
Number = ____



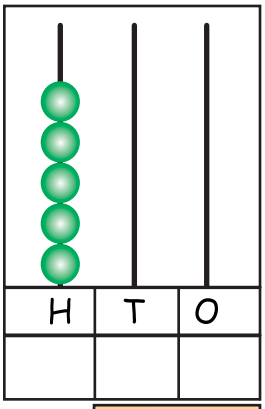
Number = ____



Number = ____



Number = ____

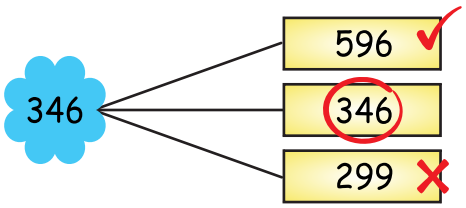


Number = ____

Comparing and ordering number

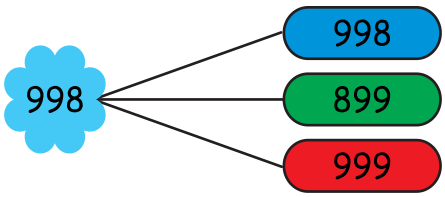
Example 1:

Tick the number which is more, cross the number which is less and encircle the number which is same as to given number.



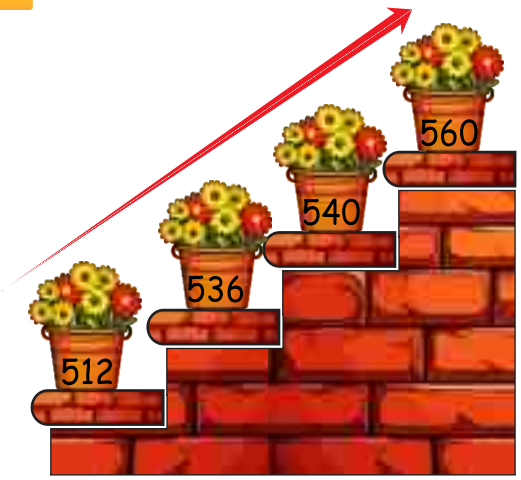
Example 2:

Colour red the greater, colour green the smaller and colour blue the number which is equal to given number.



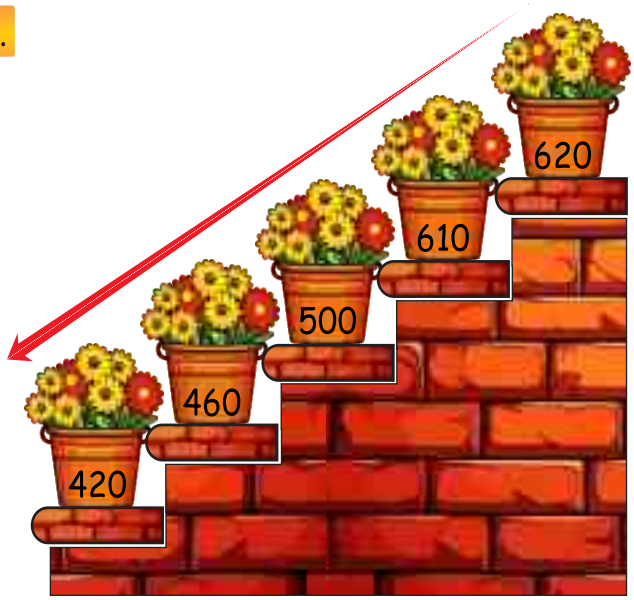
Ascending and Descending order

Ascending order means increasing order or arranging numbers from smallest to largest.



Ascending order: 512, 536, 540, 560

Descending order means decreasing order or arranging numbers from largest to smallest.



Descending order: 620, 610, 500, 460, 420

Example 1:

Write the given numbers in ascending order

526 , 176 , 985 , 645 , 396

Ascending order: 176, 396, 526, 645, 985

Example 2:

Write the given numbers in descending order

127 , 476 , 896 , 645 , 255

Descending order: 896, 645, 476, 255, 127

Exercise 4

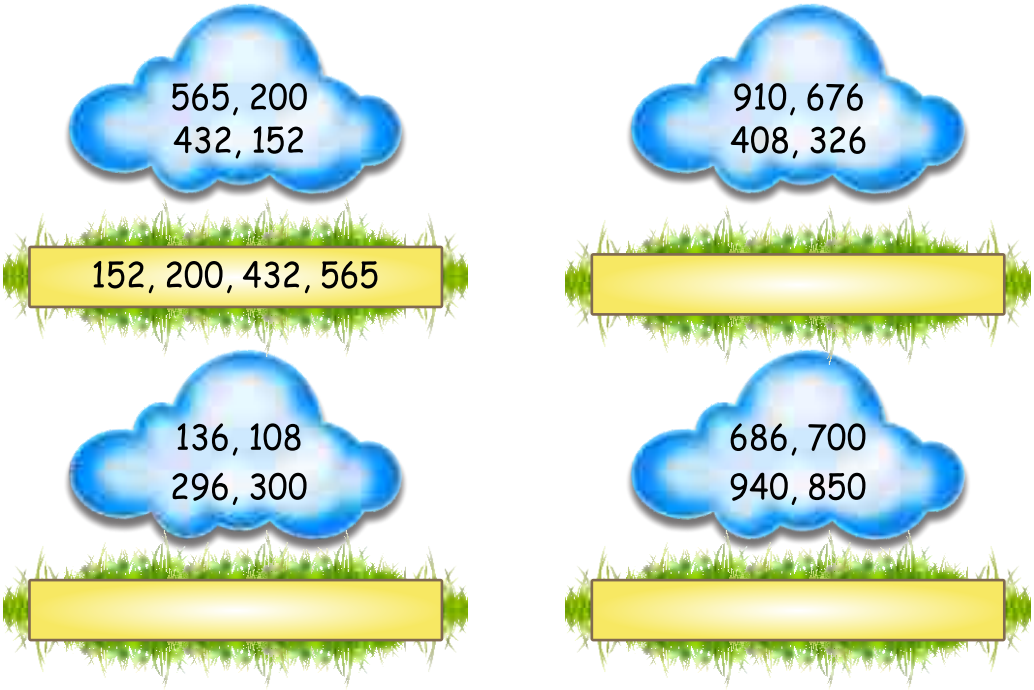
1. Tick the number which is more, cross the less number and encircle the number which is same as to given number.

(a)	236	512 ✓	236	117 ✗
(b)	525	525	496	552
(c)	815	684	920	815
(d)	305	503	305	130
(e)	114	108	141	114

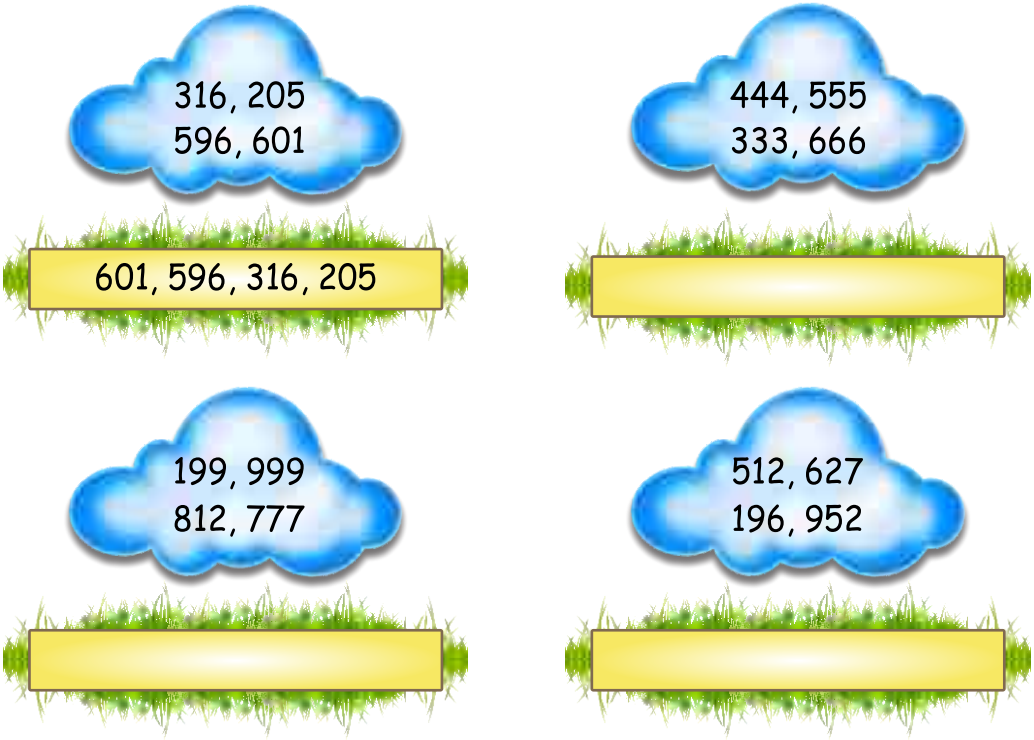
2. Colour red for greater, colour green for smaller and colour blue for equal to given number.

(a)	419	914	419	276
(b)	675	675	705	576
(c)	829	829	452	928
(d)	800	825	800	450
(e)	101	100	102	101

3. Write the numbers in ascending order.



4. Write the numbers in descending order.



Rounding numbers

Rounding a number to the nearest tens

Rounding up 5 ↑

When the digit at ones place is 5 or more

We increase one more ten and place 0 at the position of ones.

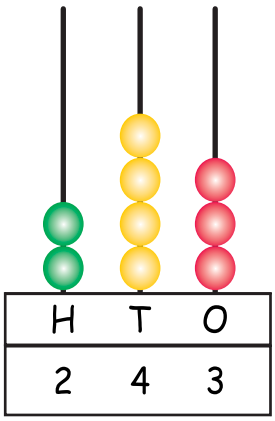
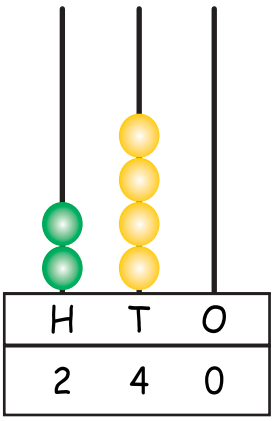
Rounding down 4 ↓

When the digit at ones place is 4 or less

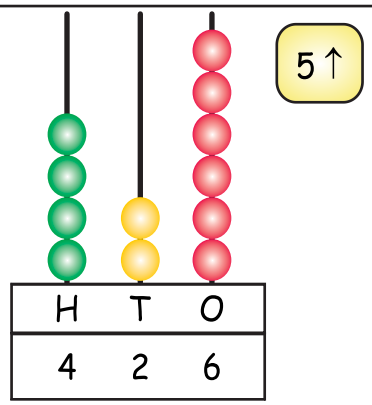
We do not increase tens and write 0 at the position of ones.

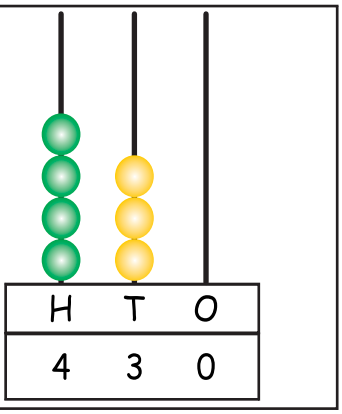
Example 1:

Round the given numbers to the nearest tens.

Given numbers	Rounded to the nearest tens
(a) 4 ↓ 	

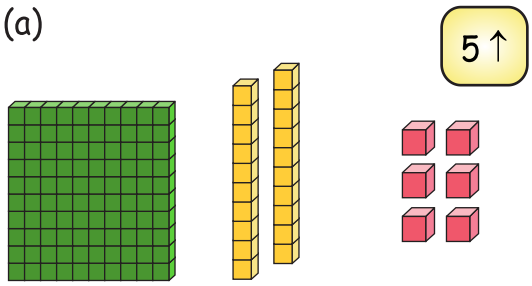
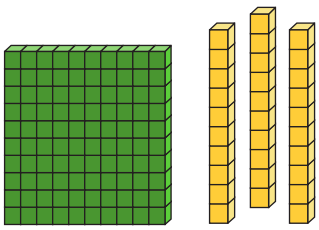
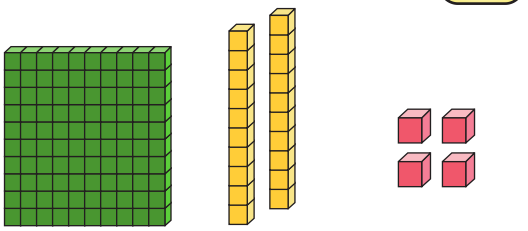
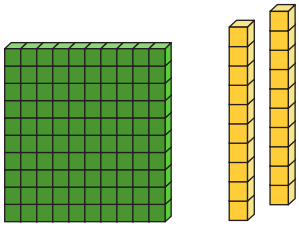
(b)





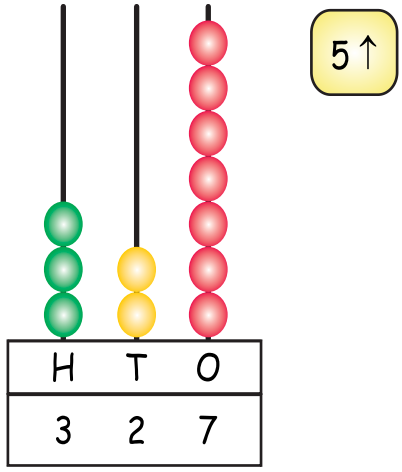
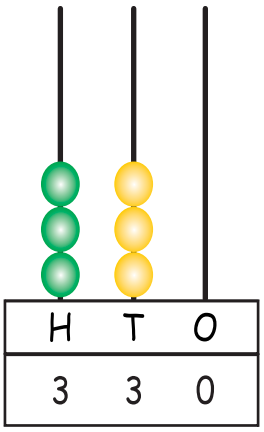
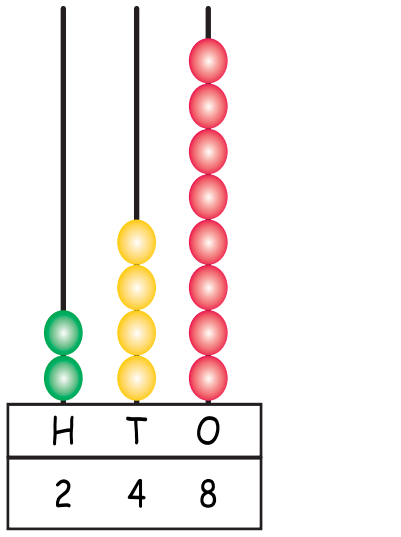
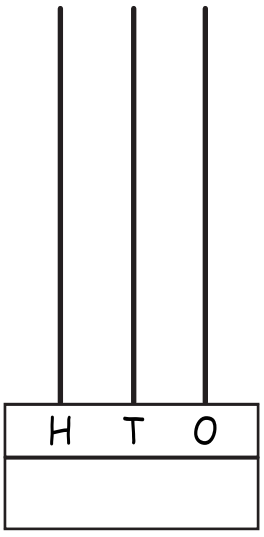
Example 2:

Round the given numbers to the nearest tens.

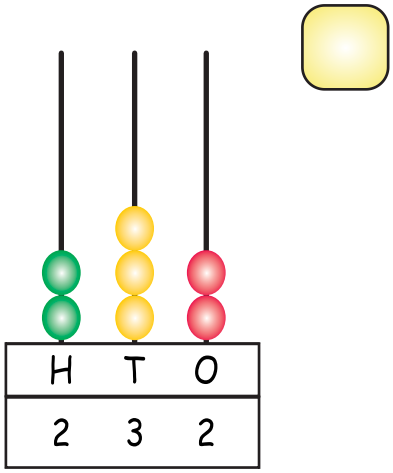
Given number	Rounded to the nearest tens
(a) 	
Hundreds: 1, Tens: 2, Ones: 6	Hundreds: 1, Tens: 3, Ones: 0
(b) 	
Hundreds: 1, Tens: 2, Ones: 4	Hundreds: 1, Tens: 2, Ones: 0

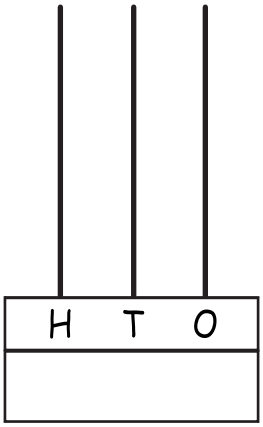
Exercise 5

1. Round the given numbers to the nearest tens.

Given number	Rounded to the nearest tens
(a) 	
(b) 	

(c)





2. Round the given numbers to the nearest tens.

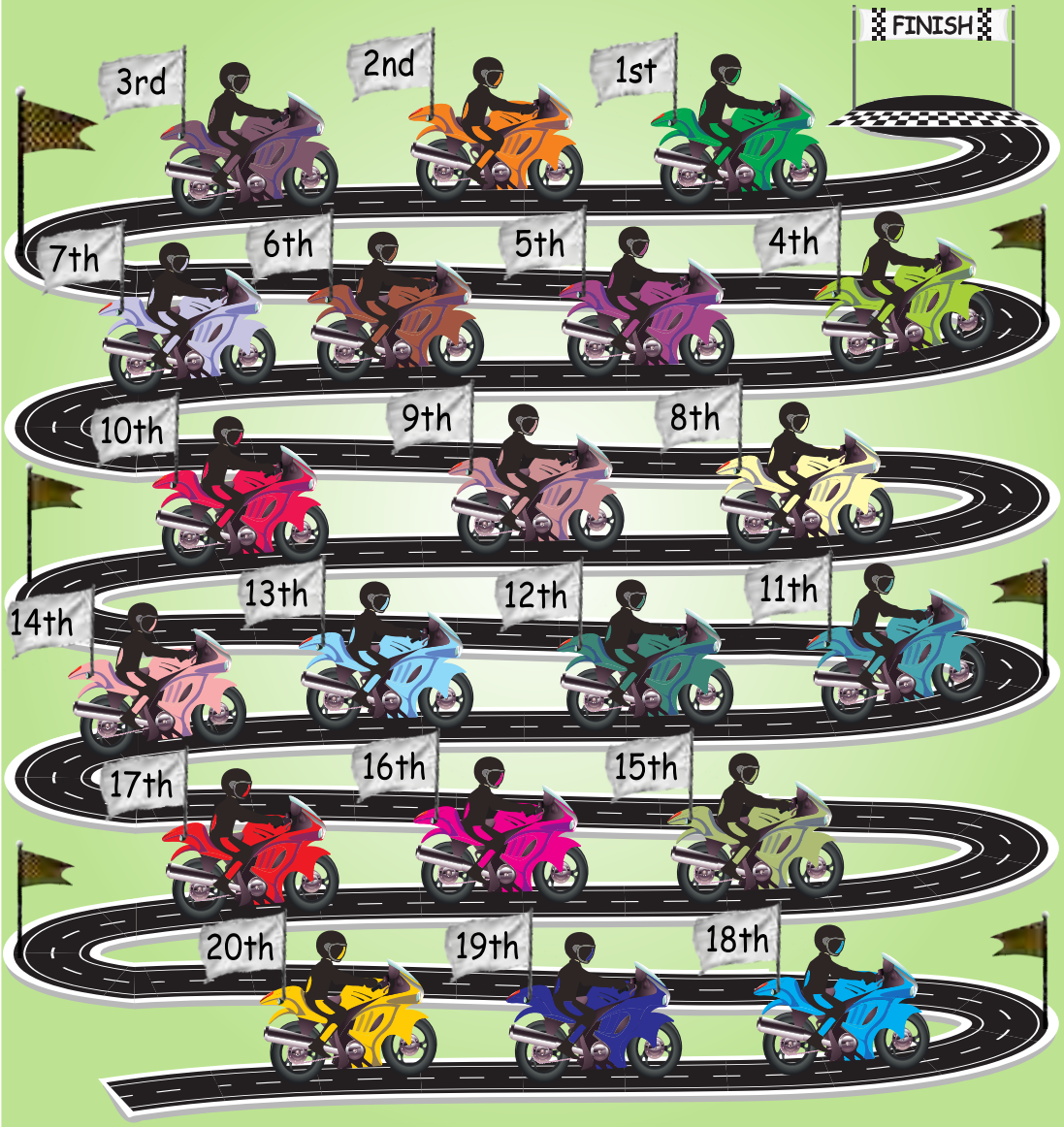
Given number	Rounded to the nearest tens
(a) 5 6 9 → 5 ↑	5 7 0
(b) 3 9 2 →	
(c) 1 0 5 →	
(d) 2 3 7 →	
(e) 6 2 1 →	

Ordinal numbers

In previous class, we learnt to recognize the position of objects, using ordinal numbers up to 10.

Now, we learn ordinal numbers up to 20.

Activity Read the positions of the bikes.



Activity Read the ordinal numbers up to 20.

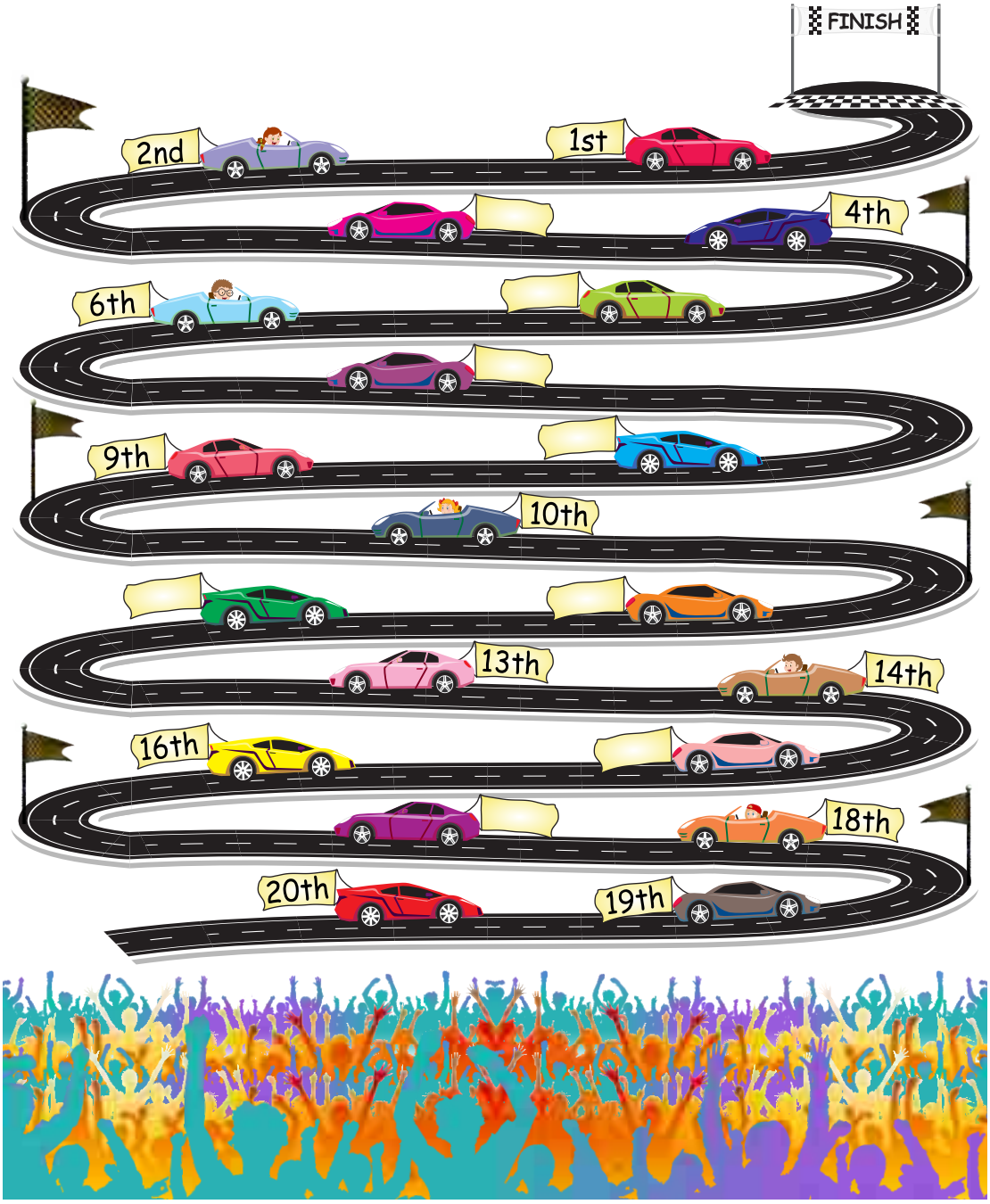
Ordinal numbers	In words	Ordinal numbers	In words
1st	First	11th	Eleventh
2nd	Second	12th	Twelfth
3rd	Third	13th	Thirteenth
4th	Fourth	14th	Fourteenth
5th	Fifth	15th	Fifteenth
6th	Sixth	16th	Sixteenth
7th	Seventh	17th	Seventeenth
8th	Eighth	18th	Eighteenth
9th	Ninth	19th	Nineteenth
10th	Tenth	20th	Twentieth

Activity Match the following.

Ordinal numbers	In words	Ordinal numbers	In words
1st	Fifth	11th	Fourteenth
2nd	Tenth	12th	Sixteenth
3rd	Sixth	13th	Seventeenth
4th	Seventh	14th	Nineteenth
5th	Eighth	15th	Eighteenth
6th	Ninth	16th	Eleventh
7th	Second	17th	Twelfth
8th	First	18th	Twentieth
9th	Third	19th	Fifteenth
10th	Fourth	20th	Thirteenth

Exercise 6

1. Look at the positions of the vehicles and write the missing position.



2. Write down the ordinal numbers for English letters (left to right)

Roman numbers

We have learnt numbers up to 999. Besides these numbers we also use Roman numbers in different ways. They were mostly used in ancient Rome.

Nowadays roman numbers are usually used in watches, wall clocks, books and examination papers etc.

Roman numbers from 1 to 12 are based on three symbols or numerals which are as under:

Numeral in small letters	Numeral in capital letters	Value
i	I	1
v	V	5
x	X	10

Read Roman numbers from 1 to 12 which are as follows:

Number	Roman Number	
	Capital	Small
1	I	i
2	II	ii
3	III	iii
4	IV	iv
5	V	v
6	VI	vi
7	VII	vii
8	VIII	viii
9	IX	ix
10	X	x
11	XI	xi
12	XII	xii

Note: There is no Roman number for zero.

Exercise 7

1. Write in Roman numbers.

Number	Roman Number
3	III
8	
12	
1	
5	
4	

2. Write in Arabic numbers.

Roman Number	Number
II	2
VI	
VII	
IX	
XI	

3. Write the missing Roman numbers

I	II				VI
VII			X		

4. Match the following.

Number	Roman Number
5	iii
9	ii
12	viii
3	v
11	ix
6	xii
2	vi
8	xi

Unit 2

NUMBER OPERATIONS

Student Learning Outcomes:

At the end of the chapters, Students will be able to:

- ✓ find, recall and use addition and subtraction facts to 100.
- ✓ add and subtract numbers mentally and in written form (with and without regrouping) including: 3-digit number and a 1- digit number. 3-digit number and tens 3-digit number and a 2-digit number. Two 3-digit numbers
- ✓ estimate the answer to an addition and subtraction question. (using various approaches)
- ✓ recognize even and odd numbers
- ✓ count and write in 3s, 4s, 5
- ✓ recognize counting in 3s, 4s as multiplication tables of three and four.
- ✓ recognize multiplication as repeated addition and develop multiplication tables (times tables) for 2, 3, 4, 5 and 10.
- ✓ write multiplication statements (i.e., sentences) using concrete and pictorial representations.
- ✓ recognize using concrete and pictorial representations that the multiplication of any two numbers can be done.
- ✓ multiply mentally and in written form using the multiplication tables that they know: 1-digit number by another 1-digit number.
- ✓ multiply mentally and in written form using the multiplication tables that they know: 2-digit number by a 1-digit number using a multiplication grid.
- ✓ multiply a number with 0 and 1.
- ✓ recognize division as repeated subtraction through concrete and pictorial representation
- ✓ write division statements (i.e., sentences) using concrete and pictorial representations
- ✓ recognize using concrete and pictorial representation that the division of one number by another cannot be done in any order
- ✓ divide mentally and in written form: I-digit number by another I-digit number (without remainder) 2-digit number by a I-digit number (without remainder)
- ✓ solve real-life word problems involving multiplication and division using any method (for instance materials, repeated addition/subtraction, groups, arrays, mental and or written methods).
- ✓ solve real-life word problems (including Pakistani currency) involving addition, subtraction, multiplication and division.

Addition and subtraction

2 + 3 = 5	7 + 4 = 11	9 + 5 = 14	11 + 7 = 18
5 + 8 = 13	15 + 4 = 19	7 + 10 = 17	7 + 2 = 9
3 - 2 = 1	15 - 4 = 11	9 - 7 = 2	5 - 2 = 3
20 - 10 = 10	18 - 8 = 10	10 - 9 = 1	13 - 7 = 6

Example 1: Find the following:

(i) 60 + 20

Solution:

$$\begin{array}{r} 60 \\ +\ 20 \\ \hline 80 \end{array}$$

or

60 + 20 = 80

(ii) 72 + 9

Solution:

$$\begin{array}{r} \overset{1}{} \\ 72 \\ +\ 9 \\ \hline 81 \end{array}$$

or

72 + 9 = 81

(iii) 39 + 11

Solution:

$$\begin{array}{r} \overset{1}{} \\ 39 \\ +\ 11 \\ \hline 50 \end{array}$$

or

39 + 11 = 50

Example 2: Find the following:

(i) 77 - 37

Solution:

$$\begin{array}{r} 77 \\ -\ 37 \\ \hline 40 \end{array}$$

or

77 - 37 = 40

(ii) 96 - 24

Solution:

$$\begin{array}{r} 96 \\ -\ 24 \\ \hline 72 \end{array}$$

or

96 - 24 = 72

(iii) 58 - 20

Solution:

$$\begin{array}{r} 58 \\ -\ 20 \\ \hline 38 \end{array}$$

or

58 - 20 = 38

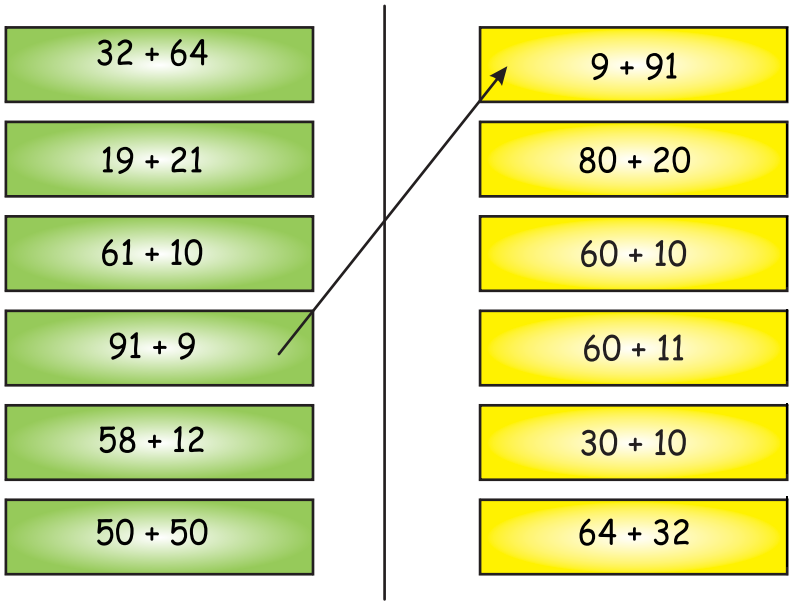
Activity

Complete the following addition and subtraction facts to 100.

50	+	32	=	82	82	−	50	=	32
32	+	50	=		82	−	32	=	
69	+	11	=		80	−	11	=	
80	+		=	100	100	−		=	80
	+	15	=	65	65	−		=	15
92	+	8	=		100	−	8	=	

Exercise 1

1. Match the following.



2. Complete the following addition and subtraction facts

72	+	8	=	80	80	−	72	=	8
63	+	7	=		70	−	63	=	
90	−		=	80	80	+		=	90
50	−	22	=		22	+	28	=	
100	+	0	=		100	−		=	100
21	+	41	=		62	−	41	=	

Add and subtract

Mental addition of 3-digit number with 1-digit number.

Without regrouping	With regrouping
Example: Add 245 with 3 **Solution:** 245 + 3 = 248	**Example:** Add 326 and 7 **Solution:** By regrouping 326 + 7 = $\boxed{326 + 4}$ + 3 = 333

Mental addition of 3-digit number with tens.

Without regrouping	With regrouping
Example: Add 534 with 20 **Solution:** 534 + 20 = 554	**Example:** Add 937 with 40 **Solution:** By regrouping 937 + 40 = $\boxed{930 + 40}$ + 7 = 977

Mental addition of 3-digit number with 2-digit number.

Without regrouping	With regrouping
Example: Add 400 with 40 **Solution:** 400 + 40 =440	**Example:** Add 564 with 17 **Solution:** By regrouping 564 + 17 = $\boxed{564 + 6}$ + 11 = 581

Mental addition of two 3-digit numbers without regrouping

Without regrouping	With regrouping
e.g. 520 + 260 **Solution:** 520 + 260 = 780	e.g. 208 + 300 **Solution:** = 8 + 200 +300 = 8 + 500 = 508

Activity

Add the following mentally

206 + 5 = 211	180 + 9 =
500 + 400 = 900	560 + 7 =
720 + 350 =	972 + 18 =
110 + 760 =	921 + 11 =
226 + 7 =	442 + 5 =
196 + 14 =	192 + 28 =
180 + 30 =	500 + 18 =

Addition of 3-digit number with 1-digit number in written form.

Without regrouping

Example: Add 523 with 5

Solution:

H	T	O
5	2	3
+		5
5	2	8

Note: We just add ones.

With regrouping

Example: Add 627 with 5

Solution:

H	T	O
	(1)	
6	2	7
+		5
6	3	2

Ones

	7
+	5
(1)	2

Steps:

(i) Add ones to get 12.
(ii) Carry 1 to ten's place.
(iii) Add tens and get 3.

Note: Regrouping refers to "carrying forward" in addition

Addition of 3-digit number with tens in written form

Without regrouping

Example: Add 523 with 60

Solution:

H	T	O
4	2	3
+	6	0
4	8	3

Note: We just add tens.

With regrouping

Example: Add 634 with 80

Solution:

H	T	O
(1)		
6	3	4
+	8	0
7	1	4

Tens

	3
+	8
(1)	1

Steps:

(i) Add tens to get 11.
(ii) Carry 1 to hundred's place.
(iii) Add hundreds to get 7.

Addition of 3-digit number with 2-digit number in written form

Without regrouping	With regrouping
Example: Add 721 with 36 **Solution:** H T O 7 2 1 + 3 6 7 5 7 Note: We just add units and tens separately.	**Example:** Add 567 with 58 **Solution:** H T O ① ① 5 6 7 + 5 8 6 2 5 **Steps:** (i) Add ones to get 15. (ii) Carry 1 to tens place. (iii) Add tens to get 12. (iv) Carry 1 to hundreds place. (v) Add hundreds to get 6.

Addition of two 3-digit numbers in written form

Without regrouping	With regrouping
Example: Add 543 with 316 **Solution:** H T O 5 4 3 + 3 1 6 8 5 9 Note: Add every place value separately.	**Example:** Add 475 with 348 **Solution:** H T O ① ① 4 7 5 + 3 4 8 8 2 3 **Steps:** (i) Add ones to get 13. (ii) Carry 1 to tens place. (iii) Add tens to get 12. (iv) Carry 1 to hundreds place. and add hundreds to get 8.

Activity Add the following

1 2 5 + 3 1 2 8	3 4 6 + 3 0 3 7 6	(1)(1) 2 9 6 + 2 5 3 2 1	(1)(1) 2 8 9 + 3 4 6 6 3 5
2 3 6 + 8 	5 2 9 + 8 0 	7 8 3 + 1 6 	5 3 7 + 1 5 2
5 6 2 + 3 9 6 	9 1 8 + 3 2 	6 3 9 + 8 0 	6 9 6 + 2 3

Exercise 2

1. Add mentally.

(i) 123 + 5 =

(ii) 634 + 8 =

(iii) 579 + 20 =

(iv) 440 + 80 =

(v) 810 + 23 =

(vi) 913 + 29 =

(vii) 638 + 151 =

(viii) 785 + 136 =

(ix) 513 + 64 =

(x) 345 + 9 =

2. Add the following.

(i) 2 3 6
+ 5 3

(ii) 9 8 6
+ 3

(iii) 5 0 8
+ 6

(iv) 5 1 8
+ 4 3

(v) 6 7 5
+ 2 0

(vi) 8 5 3
+ 7 0

(vii) 8 3 4
+ 7 6

(viii) 4 5 6
+ 1 6 8

(ix) 3 4 5
+ 6 3 2

(x) 2 7 8
+ 3 6 9

(xi) 5 0 9
+ 1 9 8

(xii) 4 6 7
+ 2 9 8

Mental subtraction of 1-digit number from 3-digit number.

Without regrouping	With regrouping
Example: Subtract 4 from 325 **Solution:** 325 – 4 = 321 Note: We just subtract ones	**Example:** Subtract 6 from 534 **Solution:** By regrouping 534 - 6 = 524 + 10 - 6 = 528

Mental subtraction of tens from 3-digit number.

Without regrouping	With regrouping
Example: Subtract 50 from 678 **Solution:** 678 – 50 = 628 Note: We only subtract tens	**Example:** Subtract 70 from 624 **Solution:** By regrouping 624 - 70 = 524 + 100 - 70 = 524 + 30 = 554

Mental subtraction of 2-digit number from 3-digit number.

Without regrouping	With regrouping
Example: Subtract 35 from 978 **Solution:** 978 – 35 = 943 Note: We only subtract ones and tens separately	**Example:** Subtract 65 from 542 **Solution:** By regrouping 542 - 65 = 442 + [100 - 65] = 442 + 35 = 477

Mental subtraction of two 3-digit numbers.

Without regrouping	With regrouping
Example: Subtract 567 from 879 mentally. **Solution:** 879 – 567 = 312 Note: We only subtract digits of respective place values in mind.	**Example:** Subtract 255 from 620 mentally. **Solution:** By regrouping in mind 620 - 255 = [520 - 200] + [100 - 55] = 320 + 45 = 365

Activity Subtract mentally.

527 - 3 = 524	478 - 50 = 428	690 - 25 = 665
500 - 130 = 370	916 - 9 =	515 - 40 =
735 - 14 =	790 - 280 =	796 - 87 =
340 - 165 =	506 - 30 =	800 - 210 =

Subtraction of 1-digit number from 3-digit number in written form.

Without regrouping

Example: Subtract 5 from 398

Solution:

H	T	O
3	9	8
-		5
3	9	3

Note: We only subtract ones.

With regrouping

Example: Subtract 8 from 275

Solution:

H	T	O
	⑥	⑮
2	~~7~~	~~5~~
	-	8
2	6	7

Ones
1 5
- 8
7

Steps:

(i) We can not subtract 8 from 5. We borrow 1 ten leaving behind 6 tens

(ii) Now, we subtract 8 from 15 to get 7 and write the remaining digits same.

Note: Regrouping refers to "Borrowing" in subtraction.

Subtraction of tens from 3-digit number in written form.

Without regrouping

Example: Subtract 20 from 694

Solution:

H	T	O
6	9	4
-	2	0
6	7	4

Note: We only subtract tens.

With regrouping

Example: Subtract 70 from 526

Solution:

H	T	O
④	⑫	
~~5~~	~~2~~	6
-	7	0
4	5	6

Tens
1 2
- 7
5

Steps:

(i) Subtract ones.

(ii) We can not subtract 7 from 2 tens. So, we borrow 1 hundred leaving behind 4 hundreds.

(iii) Now, subtract 7 tens from 12 tens to get 5.

Subtraction of 2-digit number from 3-digit number.

Without regrouping

Example: Subtract 57 from 289

Solution:

H	T	O
2	8	9
-	5	7
2	3	2

Note: We only subtract ones and tens separately.

With regrouping

Example: Subtract 64 from 532

Solution:

H	T	O
④	⑫	⑫
~~5~~	~~3~~	~~2~~
-	6	4
4	6	8

Steps:

(i) We can not subtract 4 from 2. So, we borrow 1 ten leaving behind 2 tens.

(ii) We subtract 4 from 12 to get 8.

(iii) Borrow 1 hundred leaving behind 4 hundreds.

(iv) Finally subtract 6 tens from 12 tens to get 6.

Subtraction of two 3-digit numbers.

Without regrouping

Example: Subtract 321 from 457

Solution:

	H	T	O
	4	5	7
-	3	2	1
	1	3	6

Note: We only subtract digits of respective place values.

With regrouping

Example: Subtract 425 from 613

Solution:

	H	T	O
	⑤	⑩	⑬
	6	1	3
-	4	2	5
	1	8	8

Steps:

(i) We borrow 1 ten leaving behind 0 ten to get 13 units.
(ii) We subtract 5 units from 13 units to get 8 units.
(iii) We borrow 1 hundred leaving behind 5 hundreds to get 10 tens.
(iv) We subtract 2 tens from 10 tens to get 8 tens.
(v) Finally subtract 4 hundreds from 5 hundreds to get 1 hundred.

Note: 10 tens = 1 hundred

Activity Subtract the following.

(a) 845 − 9 = 836

(b) 608 − 15 = 593

(c) 745 − 30 = 715

(d) 677 − 288 = 389

(e) 723 − 6 = ____

(f) 510 − 23 = ____

(g) 780 − 123 = ____

(h) 645 − 60 = ____

(i) 412 − 123 = ____

(j) 678 − 289 = ____

(k) 600 − 78 = ____

(l) 962 − 518 = ____

(m) 100 − 8 = ____

(n) 500 − 62 = ____

(o) 666 − 277 = ____

(p) 852 − 31 = ____

(q) 600 − 60 = ____

(r) 223 − 154 = ____

(s) 784 − 10 = ____

(t) 602 − 214 = ____

Exercise 3

1. Subtract mentally.

(i) 529 - 3 =

(ii) 643 - 30 =

(iii) 715 - 9 =

(iv) 800 - 35 =

(v) 692 - 215 =

(vi) 750 - 60 =

(vii) 752 - 121 =

(viii) 845 - 369 =

(ix) 509 - 36 =

(x) 555 - 10 =

2. Subtract the following.

(i) 235 − 2 =

(ii) 506 − 39 =

(iii) 785 − 196 =

(iv) 417 − 250 =

(v) 345 − 60 =

(vi) 715 − 8 =

(vii) 405 − 28 =

(viii) 715 − 426 =

(ix) 600 − 101 =

(x) 800 − 175 =

(xi) 200 − 99 =

(xii) 754 − 189 =

Real life word problems with addition:

Example 1:

Ayesha purchased a book for Rs.560 and a note-book for Rs.280. How much did she spend in total?

Solution:

Cost of book	=		5	6	0 rupees
Cost of note-book	=	+	2	8	0 rupees
Total	=		8	4	0 rupees

Hence total amount she spent was 840 rupees.

Example 2:

Calculate the total weight of two packets of spices when their weights are 235g and 427g.

Solution:

Weight of 1st packet	=		2	3	5 g
Weight of 2nd packet	=	+	4	2	7 g
Total	=		6	6	2 g

Hence the total weight of two packets of spices was 662g.

Real life word problems with subtraction

Example 1:

There are 567 students in a school. If 229 are girls then how many are boys ?

Solution:

				5	1
Total students	=		5	6	7
Number of Girls	=	−	2	2	9
Number of Boys	=		3	3	8

Hence there are 338 boys in the school.

Example 2:

A factory produces 562 bikes in a month. If 491 are sold, how many bikes are left ?

Solution:

$$\begin{array}{rcr} & & {\scriptstyle 4\ 1} \\ \text{Total bikes} & = & 5\ 6\ 2 \\ \text{Bikes sold} & = - & 4\ 9\ 1 \\ \hline \text{Bikes left} & = & 7\ 1 \end{array}$$

Hence 71 bikes are left.

Exercise 4

1. Bisma has two number cards having numbers 278 and 356. What is their sum?
2. Abdul Rafay purchased a pen for Rs. 135 rupees and a bag for Rs. 675 rupees. How much did he spend?
3. 236 people visited zoo on Saturday and 417 people visited on Sunday. How many people did visit the zoo altogether.
4. There were 157 balloons in the birthday party of Taha. If 129 balloons were burst by the children then how many are left?
5. Sum of two numbers is 786. If one is 345 then what is the other number?
6. Bushra and Aafia arranged a party for children. Total expenses were 950 rupees. How much did Bushra spend if Aafia spent 460 rupees?
7. A shopkeeper sold 135 liters of milk on first day and 204 liters on second day. How much milk did he sold in two days?
8. Tanveer had 875 rupees. He spent 350 rupees on ice-cream. How much amount is left with him.

Estimating the answer to an addition and subtraction

Estimation means to get close enough to exact answer

We can estimate sum or difference by rounding to the desired digit or by front-end estimation.

Example 1:

Estimate the sum: 241 + 36 by rounding to the nearest tens.

Solution:

Rounding to nearest tens

241 → 240 ↓ (round down)

36 → 40 ↑ (round up)

Addition

$$\begin{array}{r} 240 \\ +\ 40 \\ \hline 280 \end{array}$$

So, the required estimation is 280.

Example 2:

Estimate the difference 675 – 34 by rounding to the nearest tens.

Solution:

Rounding to nearest tens

675 → 680 ↑ (round up)

34 → 30 ↓ (round down)

Subtraction

$$\begin{array}{r} 680 \\ -\ 30 \\ \hline 650 \end{array}$$

So, the required estimation is 650.

(By front-end estimation)

Front-end estimation means highest place value estimation.

Example 3:

Estimate sum and difference of 583 and 216 by front-end estimation.

Solution:

Rounding to front-end

583 → 600 ↑ (round up)

216 → 200 ↓ (round down)

Addition:

$$\begin{array}{r} 600 \\ +\ 200 \\ \hline 800 \end{array}$$

Estimated sum = 800

Subtraction:

$$\begin{array}{r} 600 \\ -\ 200 \\ \hline 400 \end{array}$$

Estimated difference = 400

Exercise 5

1. Estimate the following by rounding nearest to tens.

46	+ 58	= _____		46	- 34	= _____
462	+ 34	= _____		372	- 18	= _____
421	+ 567	= _____		884	- 625	= _____
588	+ 461	= _____		965	- 486	= _____

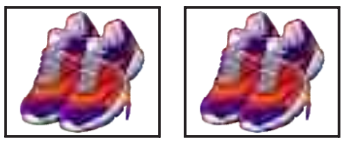
2. Estimate the following sum and difference by front-end estimation.

49	+ 38	= _____		56	- 31	= _____
32	+ 75	= _____		55	- 11	= _____
615	+ 456	= _____		708	- 178	= _____
776	+ 220	= _____		333	- 266	= _____

Even number:

The number that can produce pairs of objects with no remainder.

For example:

Even number	Objects
4	
6	

Odd number:

The number that can not produce pairs of objects with no remainder.

For example:

Odd number	Objects
5	
7	

Example 1:

Write odd numbers between 20 and 30.

Solution:

20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

Odd numbers are: 21, 23, 25, 27 and 29

Example 2:

Write even numbers from 50 to 60.

Solution:

50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60

Even numbers are: 50, 52, 54, 56, 58 and 60

Even and odd numbers up to 100.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

In the above table numbers of blue colour are odd and the numbers in orange colour are even.

Notice that:

Odd number	has	1, 3, 5, 7 or 9	at unit place
Even number	has	0, 2, 4, 6 or 8	at unit place

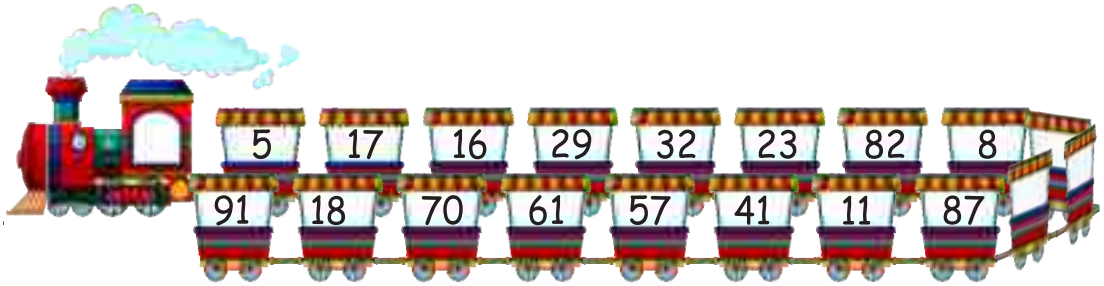
Activity

Write even or odd for the following

56	Even
39	Odd
20	
99	
64	
71	
82	
19	
24	

Exercise 6

1. **Separate even and odd numbers.**



Even numbers: 8, _____

Odd numbers : 5, _____

2. Encircle even numbers from the following.

   31, 42, 17, 27, 64, 89, 96, 18, 13, 100

3. Encircle odd numbers from the following.

   16, 91, 83, 78, 22, 41, 58, 69, 76

4. Write odd numbers between 30 and 40.

5. Write even numbers between 51 and 61.

Counting in 3s.

Activity Count and write in 3s.

3 6 9 12 15 18

30 33 36 39 42 45

Activity Count in 3s and write the missing numbers.

15	18		24			33
9	12			21	24	

Counting in 4s.

Activity Count and write in 4s.

4	8	12	16	20	24
100	104	108	112	116	120

Activity Count in 4s and write the missing numbers.

16	20		28		
28		36		44	

Counting in 5s.

Activity Count and write in 5s.

5	10	15	20	25	30	35
60	65	70	75	80	85	90

Activity Count in 5s and write the missing numbers.

40	45			60		70
105		115	120		130	

Counting in 10s.

Activity Count and write in 10s.

10	20	30	40	50	60	70
80	90	100	110	120	130	140

Activity Count in 10s and write the missing numbers.

50	60			90		
110			140			170

Counting in 100s.

Activity Count and write in 100s.

100	200	300	400	500	600
105	205	305	405	505	605

Activity Count in 100s and write the missing numbers.

500				900
200			400	

Exercise 7

1. Count in 3s and write the missing numbers.

15		21			30
30		36		42	

2. Count in 4s and write the missing numbers.

8		16		24	
0		48			60

3. Count in 5s and write the missing numbers.

15		25		35	
110		120		130	

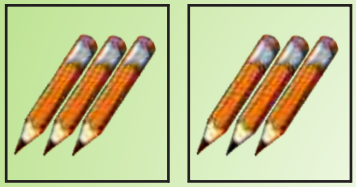
4. Count in 10s and write the missing numbers.

40		60		80	
220		240			270

5. Count in 100s and write the missing numbers.

300		500			800
220		420		620	

Activity Count in 3s (threes) and write.

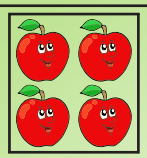
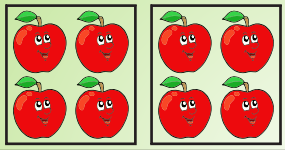
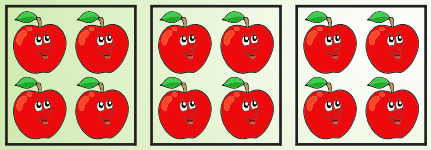
Objects	Counting
	1 three is 3
	2 threes are 6
	3 threes are 9

Similarly,
4 threes are 12
5 threes are 15
6 threes are 18
7 threes are 21
8 threes are 24
9 threes are 27
10 threes are 30

Multiplication table of 3

1	three is	3
2	threes are	6
3	threes are	9
4	threes are	12
5	threes are	15
6	threes are	18
7	threes are	21
8	threes are	24
9	threes are	27
10	threes are	30

Activity Count in 4s (fours) and write.

Objects	Counting
	1 four is 4
	2 fours are 8
	3 fours are 12

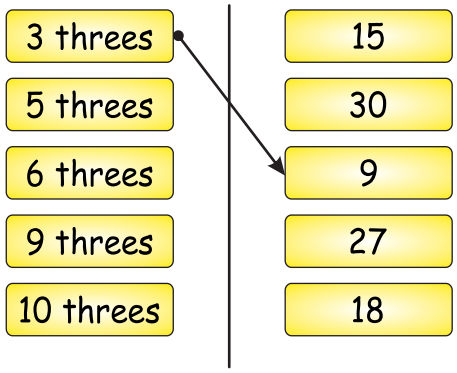
Similarly,	4	Fours are	16
	5	Fours are	20
	6	Fours are	24
	7	Fours are	28
	8	Fours are	32
	9	Fours are	36
	10	Fours are	40

Multiplication table of 4

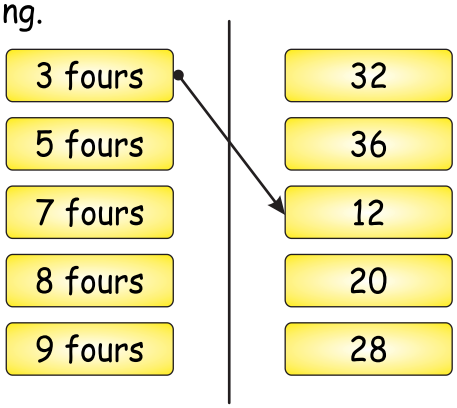
1	four is	4
2	fours are	8
3	fours are	12
4	fours are	16
5	fours are	20
6	fours are	24
7	fours are	28
8	fours are	32
9	fours are	36
10	fours are	40

Exercise 8

1. Match the following.



2. Match the following.



3. Complete the following.

3 fours are 12	5 fours are _____
6 fours are _____	8 fours are _____
5 threes are _____	2 threes are _____
9 threes are _____	

Multiplication as repeated addition

Look at these cars.

How many wheels are in total?

We just add 4 repeatedly

$$4 + 4 + 4 = 12$$

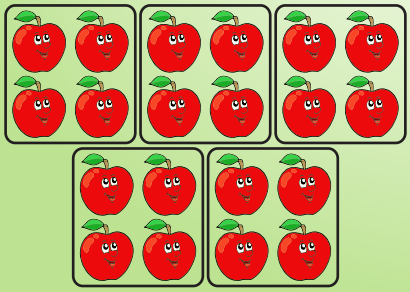
Or three times 4 is 12

We write it as $3 \times 4 = 12$

It is read as "3 multiply 4 is equal to 12"

Note: " × " is the sign of multiplication.

Activity Count the objects and write.

Objects	Counting
	$2 + 2 + 2 + 2 = 8$ or 4 times 2 = 8 or $4 \times 2 = 8$
	$3 + 3 + 3 + 3 + 3 = 15$ or 5 times 3 = 15 or $5 \times 3 = 15$
	$4 + 4 + 4 + 4 + 4 = 20$ or 5 times 4 = 20 or $5 \times 4 = 20$

Activity Match the following:

$5 + 5 + 5 + 5$	5×6
$2 + 2 + 2 + 2 + 2$	8×4
$3 + 3 + 3 + 3 + 3 + 3$	4×5
$4 + 4 + 4 + 4 + 4 + 4 + 4 + 4$	5×2
$6 + 6 + 6 + 6 + 6$	6×3

Multiplication Tables

Table of 2

Repeated addition of 2	Table of 2	Table of 2
2	1 two is 2	1 × 2 = 2
2 + 2	2 twos are 4	2 × 2 = 4
2 + 2 + 2	3 twos are 6	3 × 2 = 6
2 + 2 + 2 + 2	4 twos are 8	4 × 2 = 8
2 + 2 + 2 + 2 + 2	5 twos are 10	5 × 2 = 10
2 + 2 + 2 + 2 + 2 + 2	6 twos are 12	6 × 2 = 12
2 + 2 + 2 + 2 + 2 + 2 + 2	7 twos are 14	7 × 2 = 14
2 + 2 + 2 + 2 + 2 + 2 + 2 + 2	8 twos are 16	8 × 2 = 16
2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2	9 twos are 18	9 × 2 = 18
2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2	10 twos are 20	10 × 2 = 20

Table of 3

Repeated addition of 3	Table of 3	Table of 3
3	1 three is 3	1 × 3 = 3
3 + 3	2 threes are 6	2 × 3 = 6
3 + 3 + 3	3 threes are 9	3 × 3 = 9
3 + 3 + 3 + 3	4 threes are 12	4 × 3 = 12
3 + 3 + 3 + 3 + 3	5 threes are 15	5 × 3 = 15
3 + 3 + 3 + 3 + 3 + 3	6 threes are 18	6 × 3 = 18
3 + 3 + 3 + 3 + 3 + 3 + 3	7 threes are 21	7 × 3 = 21
3 + 3 + 3 + 3 + 3 + 3 + 3 + 3	8 threes are 24	8 × 3 = 24
3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3	9 threes are 27	9 × 3 = 27
3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3	10 threes are 30	10 × 3 = 30

Table of 4

Repeated addition of 4	Table of 4	Table of 4
4	1 four is 4	1 × 4 = 4
4 + 4	2 fours are 8	2 × 4 = 8
4 + 4 + 4	3 fours are 12	3 × 4 = 12
4 + 4 + 4 + 4	4 fours are 16	4 × 4 = 16
4 + 4 + 4 + 4 + 4	5 fours are 20	5 × 4 = 20
4 + 4 + 4 + 4 + 4 + 4	6 fours are 24	6 × 4 = 24
4 + 4 + 4 + 4 + 4 + 4 + 4	7 fours are 28	7 × 4 = 28
4 + 4 + 4 + 4 + 4 + 4 + 4 + 4	8 fours are 32	8 × 4 = 32
4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4	9 fours are 36	9 × 4 = 36
4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4	10 fours are 40	10 × 4 = 40

Table of 5

Repeated addition of 5	Table of 5	Table of 5
5	1 five is 5	1 × 5 = 5
5 + 5	2 fives are 10	2 × 5 = 10
5 + 5 + 5	3 fives are 15	3 × 5 = 15
5 + 5 + 5 + 5	4 fives are 20	4 × 5 = 20
5 + 5 + 5 + 5 + 5	5 fives are 25	5 × 5 = 25
5 + 5 + 5 + 5 + 5 + 5	6 fives are 30	6 × 5 = 30
5 + 5 + 5 + 5 + 5 + 5 + 5	7 fives are 35	7 × 5 = 35
5 + 5 + 5 + 5 + 5 + 5 + 5 + 5	8 fives are 40	8 × 5 = 40
5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5	9 fives are 45	9 × 5 = 45
5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5	10 fives are 50	10 × 5 = 50

Table of 10

Repeated addition of 10	Table of 10	Table of 10
10	1 ten is 10	1 ×10=10
10+10	2 tens are 20	2 ×10=20
10+10+10	3 tens are 30	3 ×10=30
10+10+10+10	4 tens are 40	4 ×10=40
10+10+10+10+10	5 tens are 50	5 ×10=50
10+10+10+10+10+10	6 tens are 60	6 ×10=60
10+10+10+10+10+10+10	7 tens are 70	7 ×10=70
10+10+10+10+10+10+10+10	8 tens are 80	8 ×10=80
10+10+10+10+10+10+10+10+10	9 tens are 90	9 ×10=90
10+10+10+10+10+10+10+10+10+10	10 tens are 100	10 ×10=100

Exercise 9

1. Complete the following.

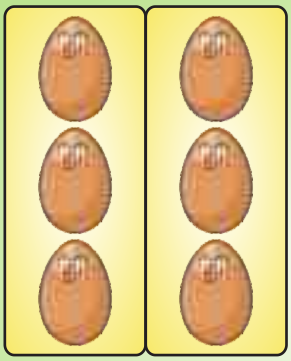
6 + 6 + 6 + 6	4 times 6	4 × 6
2 + 2 + 2 + 2 + 2	5 times 2	
3 + 3 + 3 + 3 + 3 + 3		6 × 3
	3 times 7	3 × 7
5 + 5 + 5 + 5		

2. Fill in the boxes.

2 × 5 = 10	6 × 3 = ☐
3 × 2 = ☐	7 × 3 = ☐
6 × 4 = ☐	9 × 4 = ☐
7 × ☐ = 70	3 × 5 = ☐
8 × ☐ = 32	6 × 10 = ☐
☐ × 3 = 27	7 × ☐ = 14
☐ × 5 = 30	☐ × 4 = 40

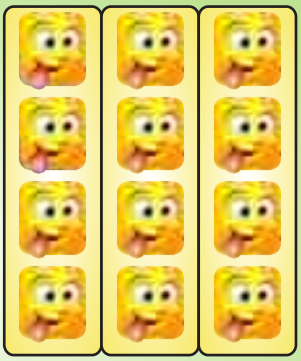
Multiplication statements make counting easy.

Activity Count and write the number of objects.



Two times three is 6

$2 \times 3 = 6$

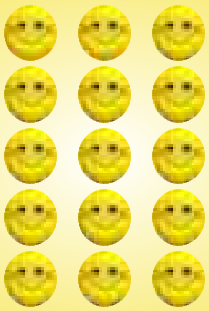


Three times four is 12

$3 \times 4 = 12$

Multiplication statements

Activity Using given figures, match the following.

Figure 1	Figure 2	Figure 3
		

3×5	Figure 1
4×3	Figure 2
5×4	Figure 3

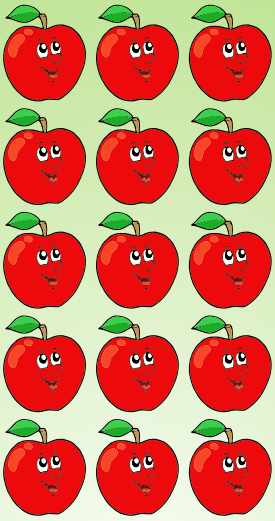
Exercise 10

Count and write multiplication statements for the following.

	Objects	Multiplication statements
1.		Four times three is 12 or $4 \times 3 = 12$

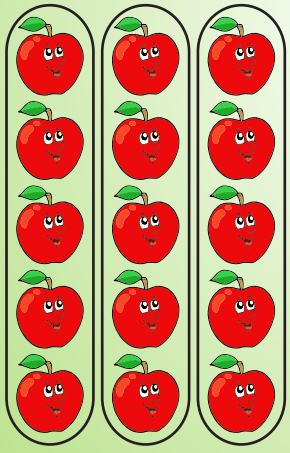
In multiplication, the result of any two numbers is always same in any order.

Activity Count the objects and write.



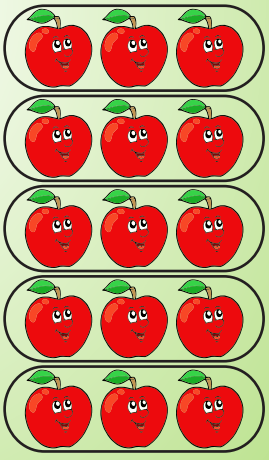
We can count in two ways

First way



$3 \times 5 = 15$

Second way



$5 \times 3 = 15$

i.e. $3 \times 5 = \boxed{15} = 5 \times 3$

Similarly, $2 \times 3 = \boxed{6} = 3 \times 2$

Exercise 11

1. Complete the following.

(i) $5 \times 3 = \square \times 5$ (3)

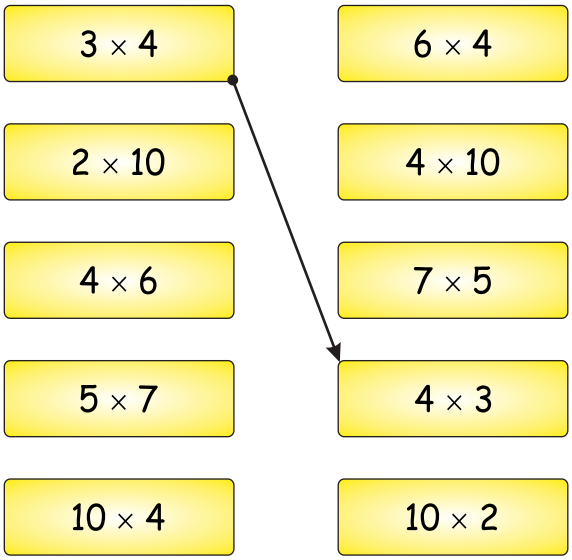
(ii) $10 \times 4 = 4 \times \square$

(iii) $3 \times 6 = \square \times 3$

(iv) $\square \times 4 = 4 \times 5$

(v) $7 \times \square = 2 \times 7$

2. Match the following



We use multiplication tables to multiply one number by another.

Example 1:

Multiply 5 by 2

Solution:

Here, we read table of 2 up to 5 and get 10.

So,

5 × 2 = 10 or

	5
×	2
1	0

Table of 2

1 × 2 = 2
2 × 2 = 4
3 × 2 = 6
4 × 2 = 8
5 × 2 = 10
6 × 2 = 12
7 × 2 = 14
8 × 2 = 16
9 × 2 = 18
10 × 2 = 20

Example 2:

Multiply 6 by 3

Solution:

Here, we read table of 3 up to 6 and get 18.

So,

6 × 3 = 18 or

	6
×	3
1	8

Table of 3

1 × 3 = 3
2 × 3 = 6
3 × 3 = 9
4 × 3 = 12
5 × 3 = 15
6 × 3 = 18
7 × 3 = 21
8 × 3 = 24
9 × 3 = 27
10 × 3 = 30

Activity Solve the following

	5
×	4
2	0

	8
×	5

	9
×	2

	7
×	3

Exercise 12

1. Multiply

(i) 6 by 3. (ii) 7 by 2.

(iii) 4 by 5. (iv) 5 by 5.

(v) 9 by 2. (vi) 8 by 4.

2. Fill in the blanks.

(i) $5 \times 3 =$ ☐ (ii) $6 \times 4 =$ ☐

(iii) $9 \times 5 =$ ☐ (iv) $7 \times 2 =$ ☐

(v) $3 \times 4 =$ ☐ (vi) $9 \times 3 =$ ☐

3. Solve

4×2 = ☐	5×3 = ☐	9×4 = ☐	8×5 = ☐
7×4 = ☐	8×2 = ☐	4×3 = ☐	9×2 = ☐
5×5 = ☐	7×5 = ☐	3×3 = ☐	4×4 = ☐

Multiplication using multiplication grid

In multiplication grid, we follow the following steps:

1. Partition a 2-digit number into tens and ones.
2. Multiply numbers in grid.
3. Add the results.

Example 1:

Multiply 25 with 3

Solution: Here, 25 = 20 + 5

Multiplication Grid

×	20	5
3	60	15

So, 25 × 3 = 60 + 15
= 75

$$\begin{array}{r} 60 \\ +\ 15 \\ \hline 75 \end{array}$$

Explanation:

- First, we partition 25 into 20 and 5.
- We write 20 and 5 in top row and 3 in the first column.
- We multiply 3 by 20 to get 60 and 3 by 5 to get 15.
- Finally, we add 60 and 15.

Example 2:

Multiply 34 by 2

Solution: Here, 34 = 30 + 4

Multiplication Grid

×	30	4
2	60	8

So, 34 × 2 = 60 + 8
= 68

$$\begin{array}{r} 60 \\ +\ 8 \\ \hline 68 \end{array}$$

Multiply of a number with 0 and 1.

Three children are asking bananas from their mother.

Ayesha has 0 banana

Taha has 0 banana

Aafia has 0 banana

Total = 0 + 0 + 0 = 0

or $3 \times 0 =$ **0**

i.e. **Zero multiplied by any number is zero.**

Now, mother has given them 1 banana to each

Ayesha has 1 banana

Taha has 1 banana

Aafia has 1 banana

Total = 1 + 1 + 1 = 3

or $3 \times 1 =$ **3**

i.e. **One multiplied by any number is that number**

Example:

i) Multiply 6 by 0

$6 \times 0 = \boxed{0}$

ii) Multiply 5 by 1

$5 \times 1 = \boxed{5}$

Exercise 13

1. Multiply the following using multiplication grid.

(i) 17 by 2 (ii) 32 by 3

(iii) 26 by 4 (iv) 12 by 5

(v) 43 by 2 (vi) 24 by 3

(vii) 27 by 2 (viii) 35 by 2

2. Multiply

(i) 6 by 0 (ii) 7 by 1

(iii) 8 by 0 (iv) 4 by 1

(v) 5 by 0 (vi) 8 by 1

3. Fill in the blanks.

(i) $5 \times 0 =$ ☐ (ii) $7 \times 0 =$ ☐

(iii) $0 \times 4 =$ ☐ (iv) $0 \times 2 =$ ☐

(v) $2 \times 1 =$ ☐ (vi) $9 \times 1 =$ ☐

(vii) $1 \times 5 =$ ☐ (viii) $1 \times 3 =$ ☐

Real life problem

Example 1:

The price of one pencil is Rs. 10. Find the price of such 6 pencils.

Price of one pencil = 10 rupees

So, Price of six pencils = 6 × 10

= 60

1	0
×	6
6	0

So, the price of 6 pencils is Rs. 60.

Example 2:

There are 4 wheels in a van. How many wheels are there in 7 vans.

Number of wheels in a van = 4

So, Number of wheels in 7 vans = 7 × 4

= 28

	7
×	4
2	8

So, there are 28 wheels in 7 cars.

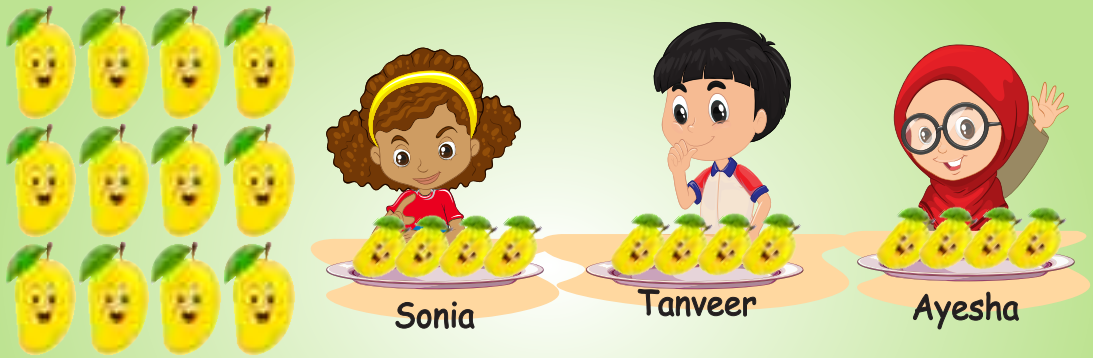
Exercise 14

1. The price of a chocolate is Rs. 5. What is the price of such 9 chocolate?
2. There are 4 fans in a room. How many fans are there in such 8 rooms?
3. The price of an egg is Rs.22. What is the price of 6 eggs?
4. Abdul Rafay spends Rs.35 in a day. How much does he spend in 7 days?
5. There are 4 persons in a car. How many persons are in 5 cars?
6. A shirt has 8 buttons. How many buttons are there in 5 shirts?
7. A dog has 4 legs. How many legs do 7 dogs have?
8. The price of a sharpener is Rs.8. What is the price of such 9 sharpeners?

Division

Activity

Distribute 12 mangoes equally among 3 children, Bushra, Tanveer and Ayesha.



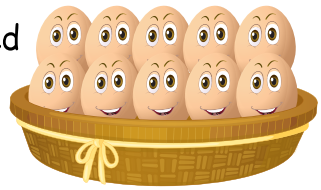
Each child gets 4 mangoes. We have infact shared 12 mangoes among 3 children.

Division is equal sharing number of objects

As multiplication is repeated addition. Similarly division is repeated subtraction. Let us see in the following example.

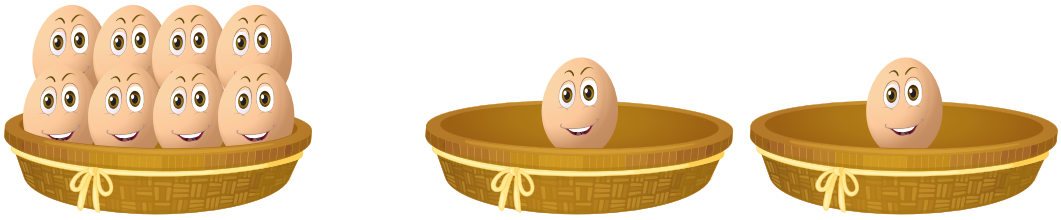
Example:

Divide 10 eggs equally in 2 baskets by repeated subtraction.

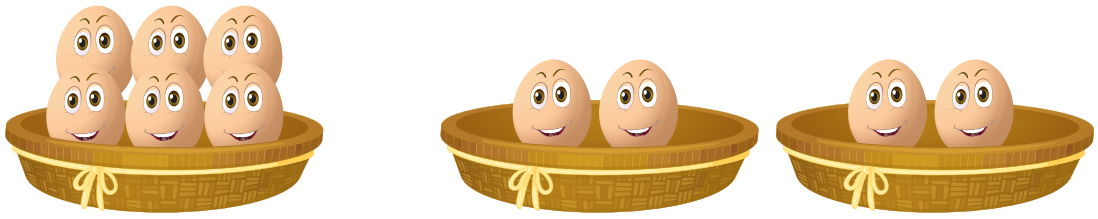


Solution:

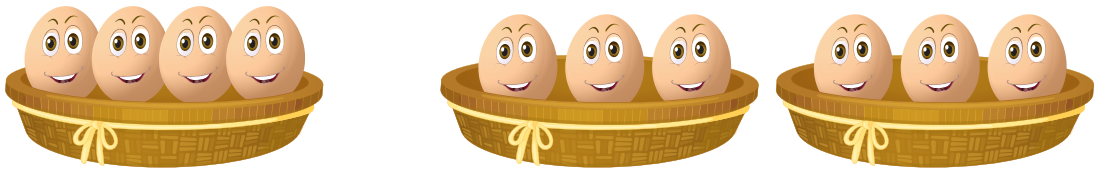
Let us subtract 2 eggs again and again.



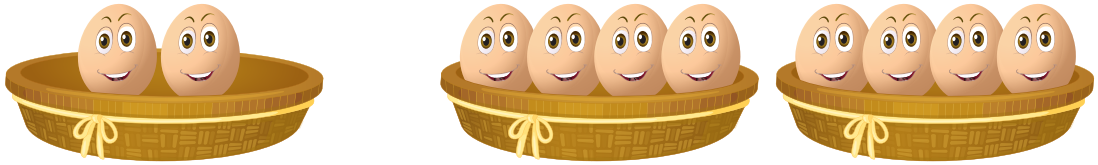
10 - 2 = 8



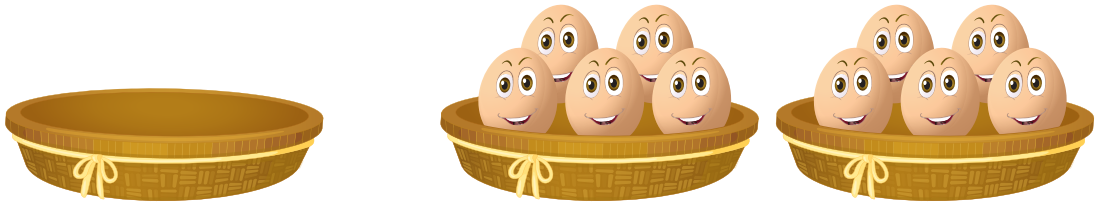
8 - 2 = 6



6 - 2 = 4



4 - 2 = 2



2 - 2 = 0

Let us count how many times we have subtracted 2.

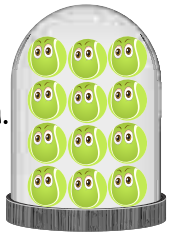
We have subtracted 5 times.

So, 10 divided by 2 is 5

i.e. $10 \div 2 = 5$

Note: Symbol of division is " ÷ "

Exercise 15



1. Divide 12 balls equally in 3 ball stands by repeated subtraction.

12 - 3 = 9

9 - 3 = 6

6 - ☐ = 3

3 - ☐ = 0

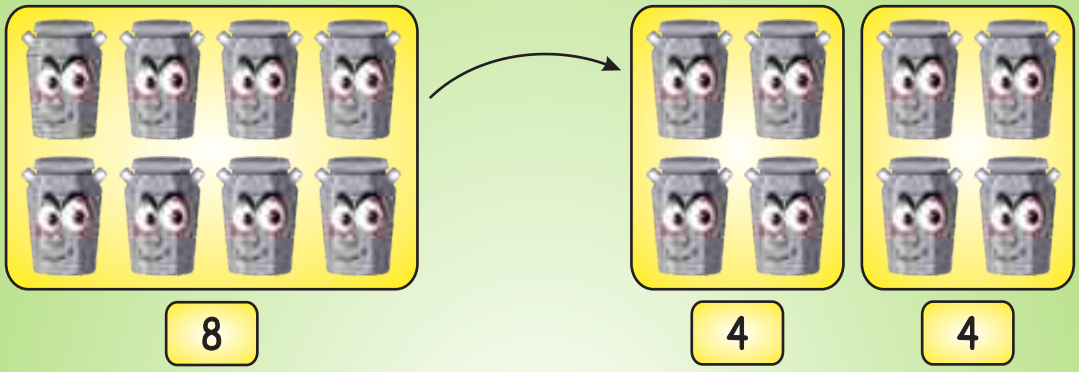
So, 12 ÷ 3 = ☐

Division statements

Activity

Write division statements for the following groupings.

1.



Here 8 objects distributed equally in 2 groups of 4 objects.

i.e. 8 divided by 2 is 4

or $8 \div 2 = 4$

2.

Here 6 objects distributed equally in 2 groups of 3 objects.

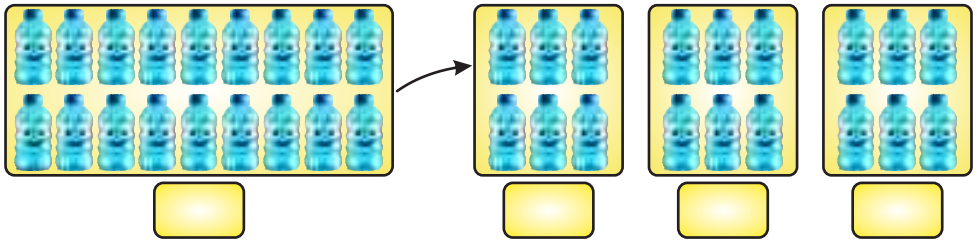
i.e. 6 divided by 2 is 3

or $6 \div 2 = 3$

Exercise 16

Write division statements for the following groupings

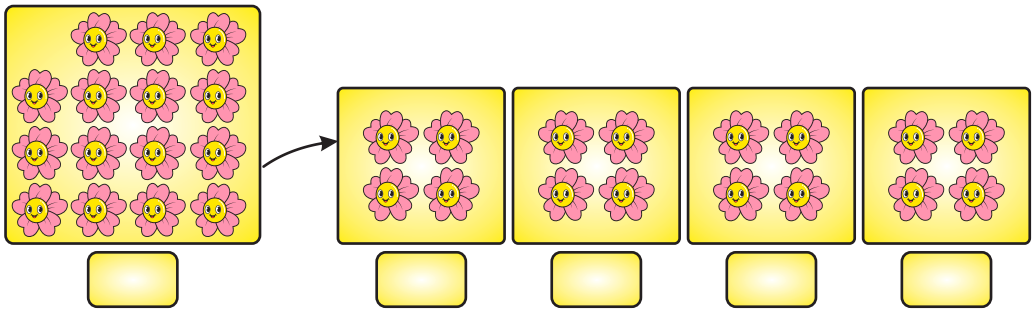
1.



18 divided by 3 is 6

i.e. 18 ÷ 3 = 6

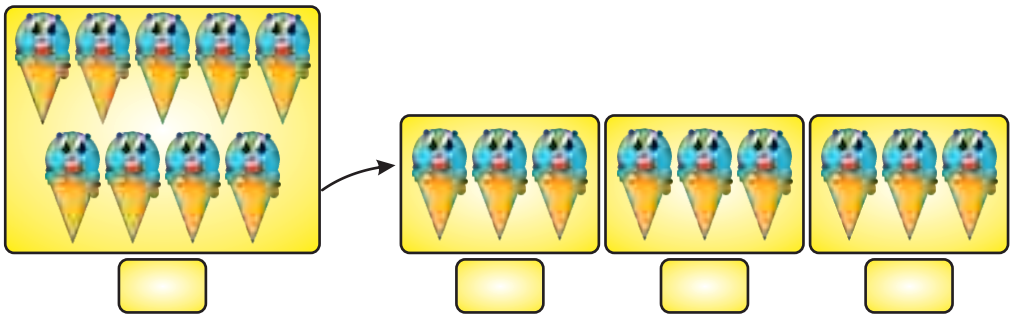
2.



16 divided by 4 is ____

i.e. ____ ÷ ____ = ____

3.



9 divided by 3 is ____

i.e. ____ ÷ ____ = ____

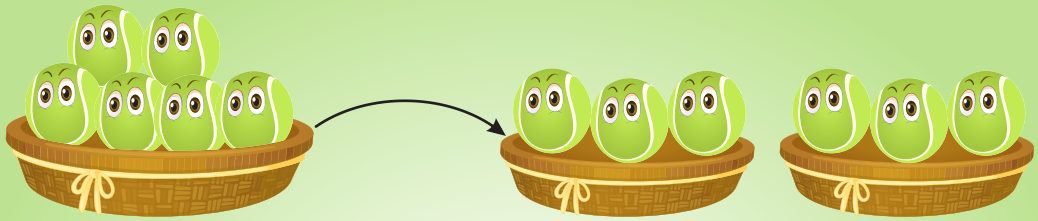
We know that multiplication can be done in any order for example:

$4 \times 2 = 8 = 2 \times 4$

But division can not be done in any order.

Let us see by the following activity.

Activity Divide 6 balls in two baskets .



6 | 3 | 3

$6 \div 2 = 3$

If we try to divide 2 balls in six baskets. Let see what happen

We can not divide 2 balls in 6 baskets because balls are less and baskets are more.

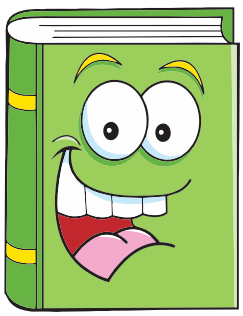
So,

Hence division can not be done in any order.

Exercise 17

1. Can we divide 8 books equally among 12 students?

Yes or No ✓

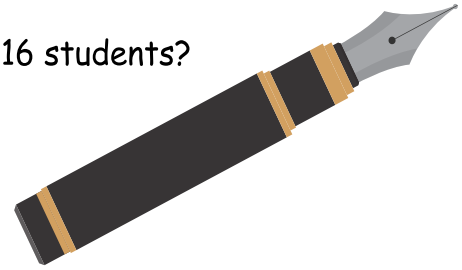


2. Can we divide 5 balls equally among 5 students?

Yes or No

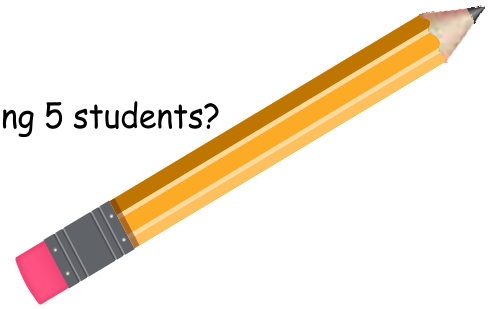
3. Can we divide 8 pens equally among 16 students?

Yes or No



4. Can we divide 15 pencils equally among 5 students?

Yes or No



5. Can we divide 12 chocolates equally among 20 students?

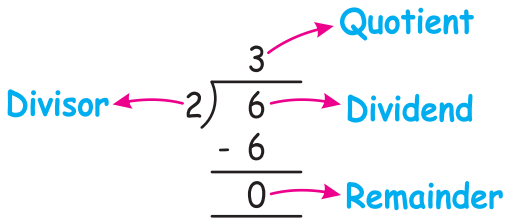
Yes or No

Division of 1-digit and 2-digit numbers by 1-digit number (without remainder)

We have already studied that division means the equal sharing of objects without remainder.

$6 \div 2 = 3$ (without remainder)

We can also write it as under:



In order to divide 6 by 2 we read table of 2 till 6 comes.

i.e. 2 × 3 = 6

So, 6 ÷ 2 = 3

Note: Division is the reverse process of multiplication.

Example Divide:

1. 8 ÷ 2 = 4 because 2 × 4 = 8
2. 9 ÷ 3 = 3 because 3 × 3 = 9
3. 15 ÷ 5 = 3 because 5 × 3 = 15
4. 20 ÷ 4 = 5 because 4 × 5 = 20

Example Divide:

1. $3\overline{)6}$, -6, 0 → 2
2. $2\overline{)4}$, -4, 0 → 2
3. $3\overline{)21}$, -21, 0 → 7
4. $4\overline{)24}$, -24, 0 → 6

Exercise 18

1. Divide:

i) $6 \div 3 = \boxed{2}$ because $2 \times 3 = 6$

ii) $8 \div 4 = \boxed{}$ because _____

iii) $24 \div 6 = \boxed{}$ because _____

iv) $28 \div 4 = \boxed{}$ because _____

v) $36 \div 6 = \boxed{}$ because _____

2. Divide:

1. $2\overline{)8}$ 2. $2\overline{)8}$ 3. $4\overline{)24}$ 4. $10\overline{)20}$

All real life word problems

Example 1:

An student gets 15 marks in each of 5 subjects. What are his total marks?

Solution:

Number of subjects = 5

Marks in each subject = 15

Required number of marks = 15×5

= 75

So, his total marks are 75 in 5 subjects.

Working

×	10	5
5	50	25

$$\begin{array}{r} 50 \\ +\ 25 \\ \hline 75 \end{array}$$

Example 2:

50 chocolates are distributed equally among 10 students. How many chocolates does each child get?

Solution:

Number of chocolates = 50

Number of students = 10

Required number of chocolates = 50 ÷ 10

= 5

So, each child gets 5 chocolates.

Exercise 19

1. 18 apples are equally distributed to 3 students. How many apples does each student get?
2. There are 12 trees. On each tree, 4 birds are sitting. How many birds are sitting on all the trees?
3. 16 books are distributed equally among 4 childrens. How many books does each child get?
4. If price of a pen is 25 rupees. What will be the price of 12such pens?
5. If shazia gets 20 rupees as her pocket money daily. How much will she get after 15 days?

Unit 3

MONEY

Student Learning Outcomes:

At the end of the chapters, Students will be able to:

- ✓ Identify international currency and denominations (for instance, dollar, yuan and riyal).
- ✓ Solve money-related problems involving the addition and subtraction of Pakistani money and a few selected international currency notes (for instance; dollar, yuan, and riyal).
- ✓ Solve real life word problems (including Pakistani currency) involving addition, subtraction, multiplication and division.

Rupee (Rs):

Rupee is the currency of Pakistan.

We have several denominations of currency, including 10 and 20 rupee notes. You may be aware that ten notes of ten rupees equal one hundred rupees.
Similarly, five twenty rupee notes equal to one hundred rupees.

Look at the table below. It shows different ways of exchanging money.

Amount	Denominations
20 Rupee	two 10 rupees
100 Rupee	Ten 10 rupees
8 Rupee	5 rupee coin + 2 rupee coin + 1 rupee coin

Dollar ($):

The dollar ($) is the currency of the United States. Ten dollars are equal to a hundred-dollar note.

Yuan (¥) and Riyal / ريال

You have to be aware that every nation has a unique currency. China uses Yuan, and Saudi Arabia uses Riyals as its currency.

Example:

Mahi lives in America. She wants change for $100.

She can get five 20-dollar notes in return. Moreover, she can get two 50-dollar notes or ten 10-dollar notes in exchange for one $100.

Look at the table below. It shows different ways of exchanging money.

Amount	Denominations	
 20 Dollar	Four Five Dollars	
 20 Yuan	Four five Yuan	

20 Riyal

Four Five Riyal

Exercise 1

1. A chair costs 50 dollars. How many 5-dollar notes will you pay for the chair?
2. The cost of a pen is 30 rupees. How many 10 rupee notes are needed to pay the cost?
3. A toy costs 10 dollars. Tick on the dollar notes that you will pay for chair?

4. Fill in the blanks.
   (i) 10 rupees = ... five-rupee coin.
   (ii) 100 dollar = ... 20 dollars.
   (iii) 10 Yuan =..... five yuan notes.
   (iv) 20 Riyal = two ..... Riyals.

Addition of Money:

Dear learners, in this section, you will solve money related problems using addition.

As you know, to find the total amount, we will add the amount written on the rupee notes. For example, if you have a 50 rupee note and a 20 rupee note, the total amount you get is Rs. 70, which is equal to Rs. 50 + Rs. 20.

Example 1

Rohan received two 20-dollar notes ($) from his father and one 10-dollar note ($)from his mother. Find the total amount he received.

20 $ + 10 $= 30 $

Example 2

Amina has 10 Riyal, a 20-Riyal and a 5 Riyal. What is total amount?

Solution:

Total amount = 10 + 20 + 5 = 35 Riyal

Subtraction of Money:

We subtract the amount spent from the total amount to find the amount returned. For example, Amna had Riyal. 50; she bought a pencil that cost 2 Riyal. How much the shopkeeper returned?

Solution:

50 - 2 = 48 Riyal

Activity

Amina has two notes of Rs. 50, and Shamsa has a note of Rs. 100. Who has got less money?

Exercise 2

1. Count the notes and write the total amount below:

Total = _____

2. Fill in the blanks:

i) Rs 50 + Rs. 20 = _____

ii) 100 yuan – 80 yuan = _____

iii) 50 Riyal = - _____ 10 Riyals

3. Musa has $40. He bought a toy for $10. What is the amount of money he has left?

4. Moona bought four pens, each costing 5 riyals. How much money did she spend?

5. A father gives 400 yuan to his children every month. He has four sons; if the money is divided equally, how much does each son get?

6. Neha wants to buy a toy costing 200 riyal. She had saved. 150 riyal. How much more money does she need to save to buy the toy?

7. Raj buys a new purse for $25. He gives the cashier a $20 note and a $10 note. How much change does he get back?

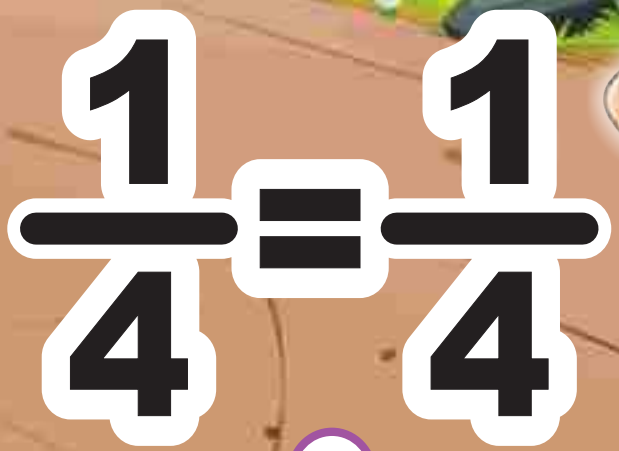
Unit 4

FRACTION

Student Learning Outcomes:

At the end of the chapters, Students will be able to:

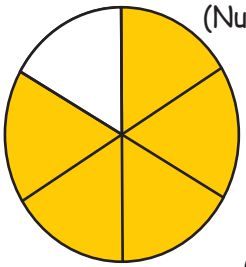
- ✓ Identify, name and write; -unit fractions -non-unit fractions -like fractions -unlike fractions of a discrete set of objects using pictorial representations.
- ✓ Compare and order unit fractions and like fractions (with denominators up to 10) using greater than, less than, and equal.
- ✓ Add and subtract like fractions within one whole (e.g. $\frac{1}{4}+\frac{1}{4}=\frac{2}{4}$)
- ✓ Know and recognize that tenths arise by dividing an object into ten equal parts and in dividing single digit numbers and quantities by ten (using concrete and pictorial representations).



Fractions:

$\frac{1}{4}$ is a fraction or a fractional number.
The number at the top is called a Numerator.
The number at the bottom is called a Denominator.

Example:



Numerator
(Numbers of parts we have)

$\frac{5}{6}$

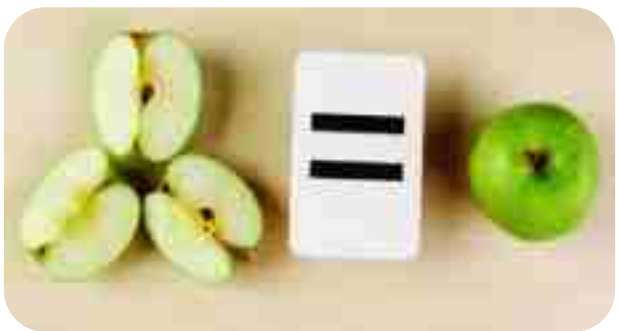
Denominator
(Total parts in whole)

Here fraction $\frac{5}{6}$ represents the shaded parts of the circle, indicating that 5 of the 6 parts are shaded. The numerator in this case is 5, while the denominator is 6.

Unit Fractions:

Fractions, where the numerator is '1', are called unit fractions.

In this example, the apple is divided into two equal parts. Each part represents $\frac{1}{2}$.
$\frac{1}{2}$ is a unit fraction.



Here $\frac{1}{3}$ represents one third part of the apple. $\frac{1}{3}$ a unit fraction, as the numerator is 1.

More examples of unit fractions are given below.

$\frac{1}{4}$

$\frac{1}{5}$

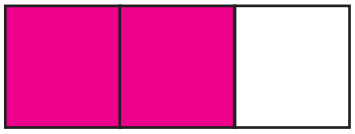
$\frac{1}{6}$

Activity

$\frac{1}{10}$ is a unit fraction. How many $\frac{1}{10}$ are in the figure show below:

Non-Unit Fractions:

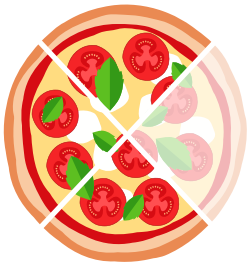
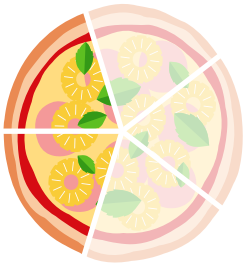
Fractions where the numerator is greater that "1" are called non-unit fractions.



$\frac{2}{3}$ are pink

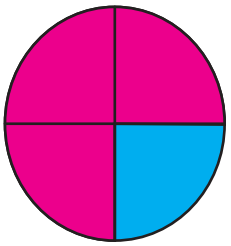
$\frac{2}{3}$ is not a unit fraction.

Other examples of non-unit fractions

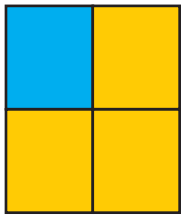
$\frac{2}{3}$  $\frac{3}{4}$  $\frac{2}{5}$ 

Exercise 1

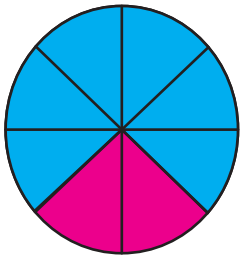
i) Which colour of this circle represents a unit fraction?



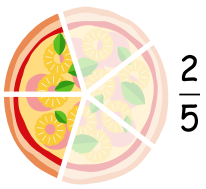
ii) Which colour of this square represents a non-unit fraction?



iii) What fraction of this circle is blue?



iv) Which fraction represents a unit fraction?

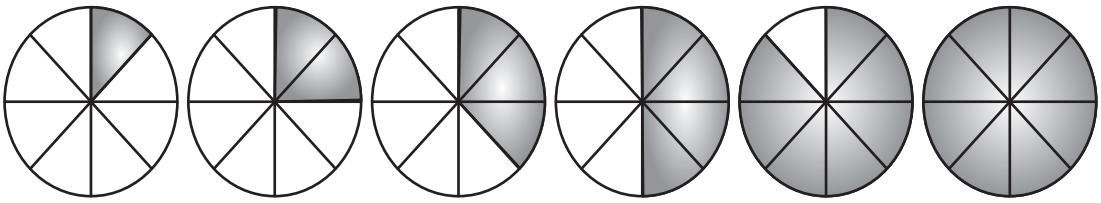
 $\frac{1}{3}$  $\frac{2}{5}$  $\frac{5}{8}$

v) Circle the non- unit fractions.

$\frac{1}{4}, \frac{2}{3}, \frac{3}{5}, \frac{1}{8}, \frac{1}{6}, \frac{1}{7}$

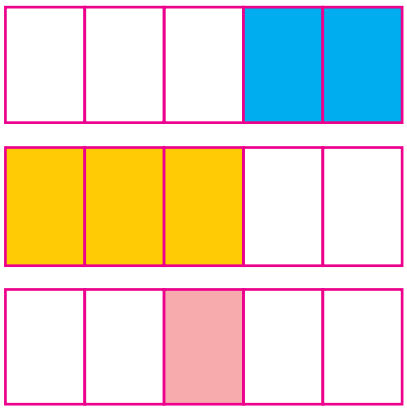
Like Fraction:

When two or more fractions have the same denominator, they are called like *fractions*. The fractions given below are examples of like fractions since the denominator in these examples is 8.



$\frac{1}{8}$ $\frac{2}{8}$ $\frac{3}{8}$ $\frac{4}{8}$ $\frac{7}{8}$ $\frac{8}{8}$

Example:



$= \frac{2}{5}$

$= \frac{3}{5}$

$= \frac{1}{5}$

The fractions $\frac{2}{5}$, $\frac{3}{5}$ and $\frac{1}{5}$ are the example of like fractions since the denominator, in these example is "5".

Activity What is the denominator in the given fractions?

$\frac{1}{5}$ $\frac{2}{5}$ $\frac{3}{5}$ $\frac{4}{5}$

Other Examples of like fractions are:

(a) $\left(\frac{2}{9}, \frac{3}{9}, \frac{5}{9}, \frac{9}{9}\right)$

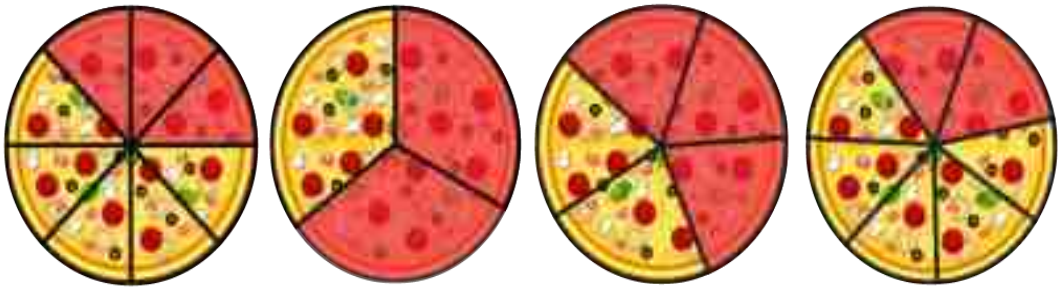
(b) $\left(\frac{1}{7}, \frac{2}{7}, \frac{4}{7}, \frac{5}{7}, \frac{7}{7}\right)$

Unlike Fractions:

Two or more fractions with different denominators are called unlike fractions.

Example:

In this example, $\frac{3}{8}, \frac{2}{3}, \frac{3}{5}$ and $\frac{2}{7}$ are unlike fractions because they do not have the same denominators.



$\frac{3}{8}$ $\frac{2}{3}$ $\frac{3}{5}$ $\frac{2}{7}$

Activity Which figure is an example of an unlike fraction?

Figure A

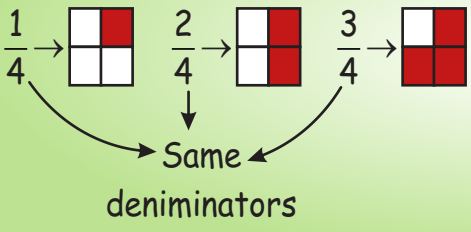
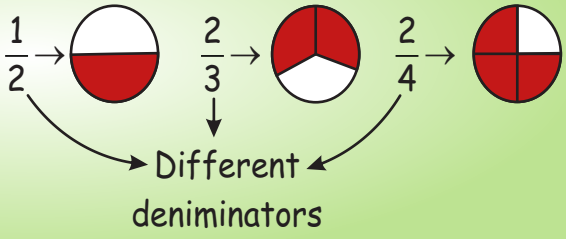


Figure B



More examples of unlike fractions are:

(a) $\left(\frac{1}{2}, \frac{1}{4}, \frac{2}{3}, \frac{5}{6}\right)$

(b) $\left(\frac{1}{9}, \frac{2}{7}, \frac{3}{4}, \frac{2}{5}\right)$

Exercise 2

1. Write whether the following sets of fractions are like or unlike.

i) $\frac{4}{7}, \frac{3}{7}$ ii) $\frac{5}{6}, \frac{13}{9}$

iii) $\frac{8}{5}, \frac{1}{2}$ iv) $\frac{4}{3}, \frac{5}{3}$

v) $\frac{1}{4}, \frac{5}{4}$ vi) $\frac{1}{12}, \frac{6}{11}$

vii) $\frac{9}{5}, \frac{7}{6}$ viii) $\frac{13}{13}, \frac{13}{13}$

2. Circle the pairs of like fractions.

i) $\frac{8}{11}, \frac{5}{11}$ ii) $\frac{7}{4}, \frac{2}{3}$

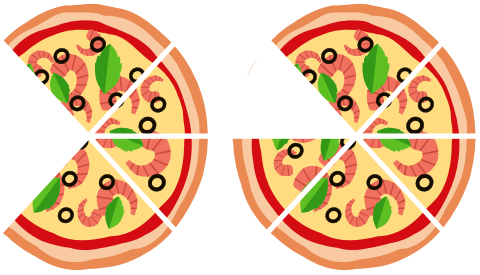
iii) $\frac{1}{6}, \frac{7}{6}$ iv) $\frac{9}{7}, \frac{9}{8}$

3. Circle the pairs of unlike fractions.

i) $\frac{6}{5}$, $\frac{8}{7}$ | ii) $\frac{1}{9}$, $\frac{3}{2}$ | iii) $\frac{10}{9}$, $\frac{2}{9}$ | iv) $\frac{3}{14}$, $\frac{7}{15}$

Comparing Fractions:

By comparing the numerators of any two like fractions, we can tell which is larger and which is smaller fraction. The greater the numerator, the larger the fraction.

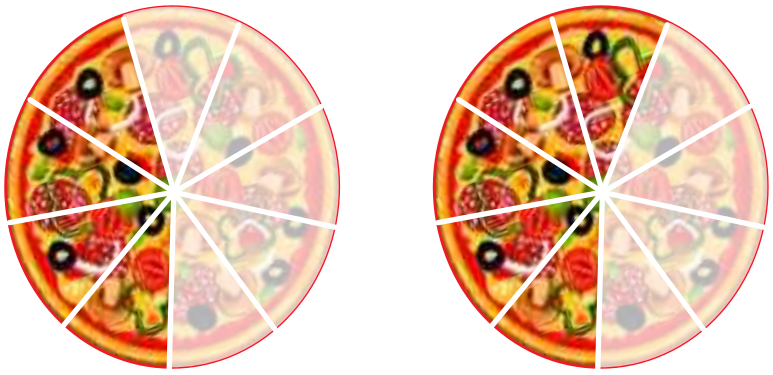


$\frac{6}{8}$ $\frac{7}{8}$

If Ali ate six parts of a pizza, which was divided equally into eight parts, and his friend ate seven parts of the same size pizza. In this case, the denominator 8 remains the same, and the numerator 7 is greater than 6, so $\frac{7}{8}$ is greater than $\frac{6}{8}$.

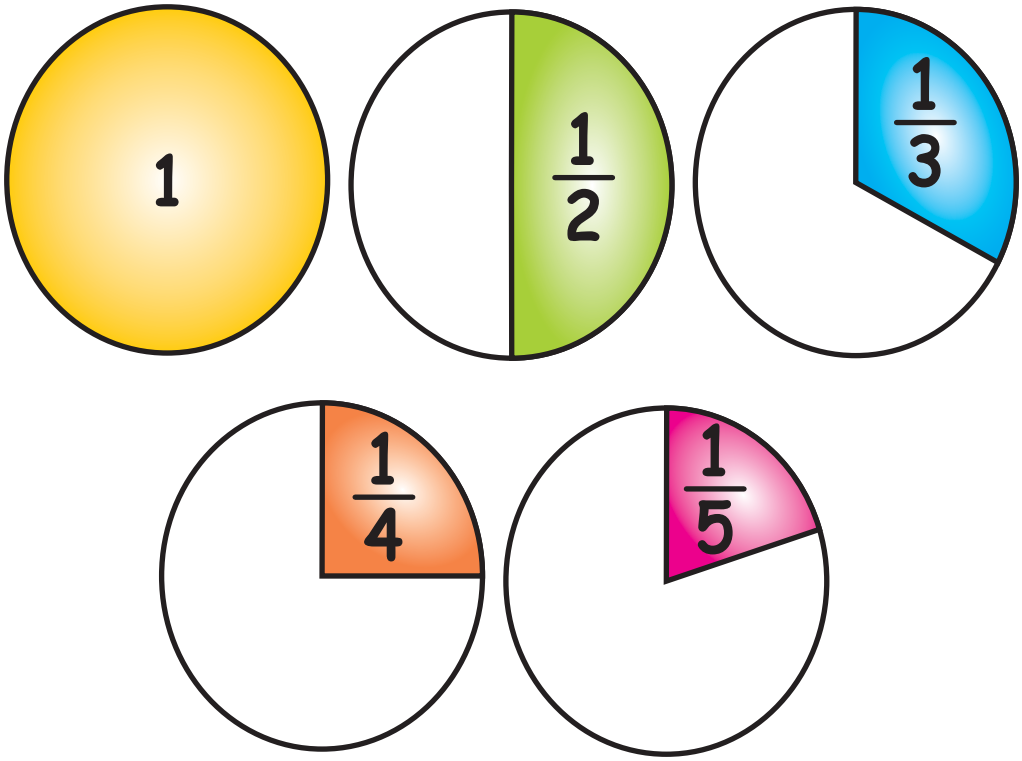
Example:

In the example below, $\frac{5}{9}$ is greater than $\frac{4}{9}$ (because 5, the numerator, is greater than 4, the numerator, while the denominator remains the same in both fractions).



Additionally, increasing denominator mean that we increase the number of parts needed to make a whole.

$\frac{1}{2}$ is greater $\frac{1}{3}$; and $\frac{1}{3}$ is greater than $\frac{1}{4}$ etc.



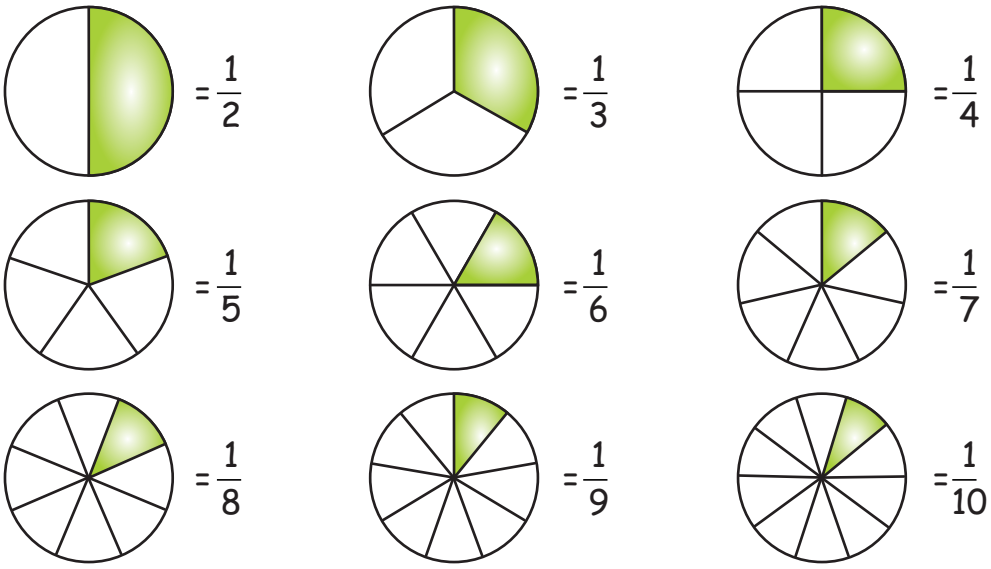
When the numerator is the same, the fraction with the greater denominator is smaller. We can say $\frac{1}{4}$ is smaller than $\frac{1}{2}$. $\frac{1}{5}$ is smaller than $\frac{1}{4}$.

Remember:

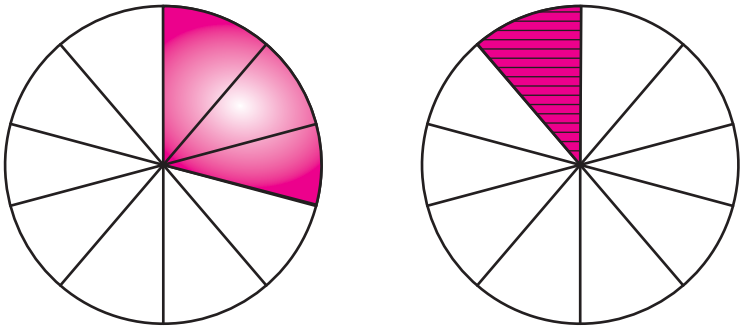
- With the same denominator, a fraction of greater numerator means a greater fraction.
- With the same numerator, a fraction of the smaller denominator means a greater fraction.
- When the fractions have the same denominator, you can write them in ascending order (from greater to smaller) or descending order (from smaller to greater).

Exercise 3

1. Choose any two fractions from the examples given below and compare which is a smaller fraction and which is a greater fraction.



2. Which one is greater $\frac{1}{10}$ or $\frac{3}{10}$



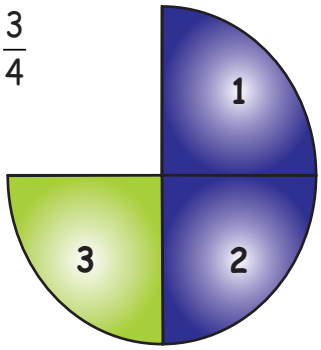
3. Tick the smaller fraction.

4. Reema ate $\frac{3}{5}$ of the pizza, and Anum ate $\frac{4}{5}$ of the pizza. Who ate more pizza?
5. Raj lives $\frac{1}{4}$ km from the school, and Pirya lives $\frac{2}{4}$ km from the school. Who lives closest to the school?
6. Danial's garden has $\frac{2}{10}$ of flowers and $\frac{5}{10}$ of vegetables. Are there more flowers or vegetables in his garden?

Addition of Like Fractions:

While adding the two or more like fractions, we add the numerators of the fractions and do not change the denominator.

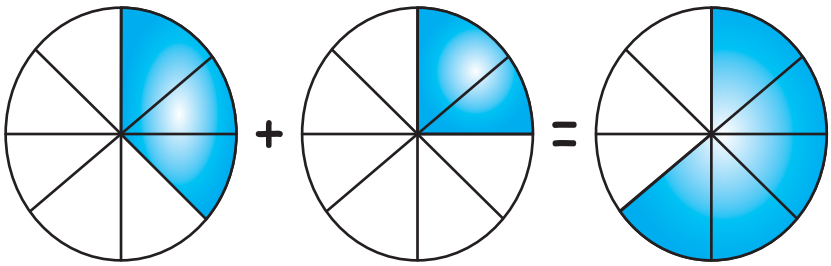
$\frac{2}{4}+\frac{1}{4}=\frac{3}{4}$



For example, Anisa ate $\frac{1}{4}$ of a loaf of bread, and her friend ate $\frac{2}{4}$ of the loaf. To find the total, we added the numerators of the two fractions, so together, they ate $\frac{3}{4}$ of the bread.

Example:

$\frac{3}{8}+\frac{2}{8}=\frac{5}{8}$



To add like fractions, we add the numerators and write the sum over the denominator.

Activity

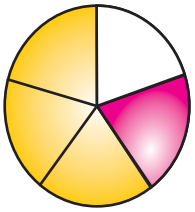
Find $\frac{4}{9}+\frac{3}{9}$

Since the denominators are the same, add the numerators.

$\frac{4}{9}+\frac{3}{9}=\frac{4+3}{9}=\frac{7}{9}$

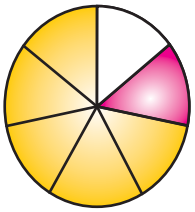
Exercise 4

1. Add the like fractions as given below:

1) 

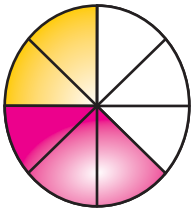
$\frac{3}{5}+\frac{1}{5}=\frac{\quad}{5}$

$\frac{1}{5}+\frac{3}{5}=\frac{\quad}{5}$

2) 

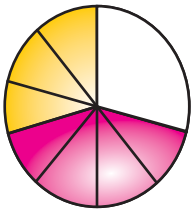
$\frac{5}{7}+\frac{1}{7}=\frac{\quad}{7}$

$\frac{1}{7}+\frac{5}{7}=\frac{\quad}{7}$

3) 

$\frac{2}{8}+\frac{3}{8}=\frac{\quad}{8}$

$\frac{3}{8}+\frac{2}{8}=\frac{\quad}{8}$

4) 

$\frac{3}{10}+\frac{4}{10}=\frac{\quad}{10}$

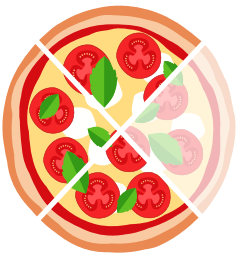
$\frac{4}{10}+\frac{3}{10}=\frac{\quad}{10}$

Subtraction of Like Fractions:

To subtract two like fractions, we subtract the numerators and do not change the denominator.

Example 5:

Alisha got $\frac{3}{4}$ of a pizza and ate $\frac{2}{4}$ of it. How much pizza is left?



To solve this problem, we subtract 2 from 3, which is 1.

$$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$$

Hence, the remaining pizza is $\frac{1}{4}$.

Activity

1) 

$\frac{3}{6} - \frac{2}{6} =$ ☐

2) 

$\frac{5}{10} - \frac{2}{10} =$ ☐

3) 

$\frac{4}{5} - \frac{1}{5} =$ ☐

4) 

$\frac{6}{8} - \frac{4}{8} =$ ☐

5) 

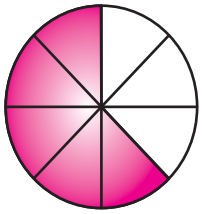
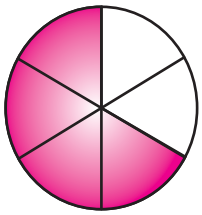
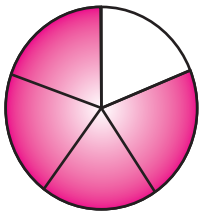
$\frac{8}{12} - \frac{5}{12} =$ ☐

6) 

$\frac{2}{4} - \frac{1}{4} =$ ☐

Exercise 5

Solve the questions given in the table.

Fraction	Problem	Subtraction of Fractions
1) 	Ali had 5/8 of pizza. He ate 2/5 of the pizza. What fraction is left?	$\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$
2) 	Amina had 4/6 of the pizza. She ate 1/6 of the pizza. What fraction is left?	$\frac{4}{6} - \frac{1}{6} = \frac{\quad}{6}$
3) 	Sapna had 4/5 of the pizza. She ate 3/5 of it. What fraction is left?	$\frac{\quad}{5} - \frac{\quad}{5} = \frac{\quad}{5}$

4. Solve the following

i) $\frac{5}{8} - \frac{3}{8}$ ii) $\frac{2}{3} - \frac{1}{3}$ iii) $\frac{6}{6} - \frac{3}{6}$

iv) $\frac{1}{2} - \frac{1}{2}$ v) $\frac{2}{10} - \frac{1}{10}$ vi) $\frac{5}{7} - \frac{4}{7}$

Unit 5

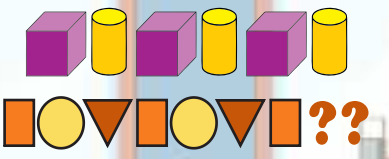
ALGEBRA (PATTERNS)

Student Learning Outcomes:

At the end of the chapters, Students will be able to:

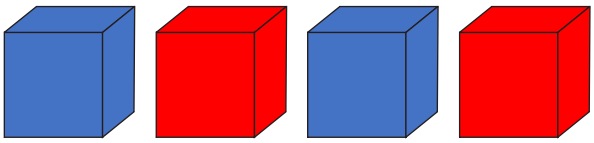
- ✓ Describe and extend a repeating non numerical pattern with two core elements through pictorial and/or visual representations.

- ✓ Extend and create patterns in a variety of ways e.g. using 2D and 3 D shapes.



Pattern:

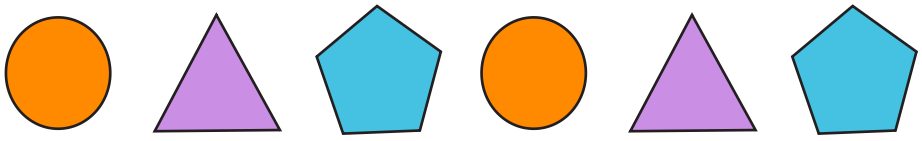
A pattern is an arrangement of repeating numbers or shapes.



The recurring characteristic in this pattern is the colour blue, red. This repeating element indicates the pattern's order.

Extended Pattern:

The pattern in this example starts with a circle, followed by a triangle, and a pentagon. As the shapes are repeating in this pattern, the next two shapes after the pentagon are the circle and the triangle.

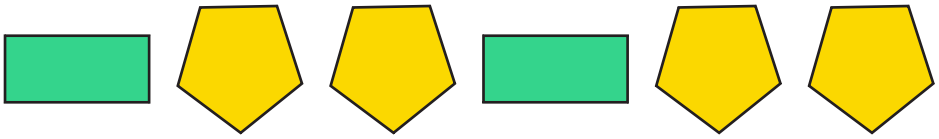


Example 1

Here is a patter made with 3 D shapes. The pattern in this example starts with a cone followed by a cube, and a cuboid.

Exercise 1

1. What shape will appear in the following pattern of shapes?



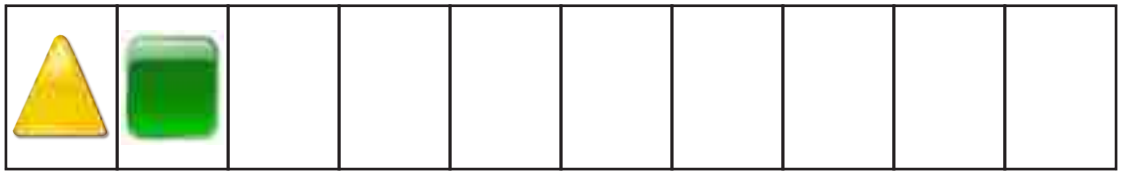
Solution:

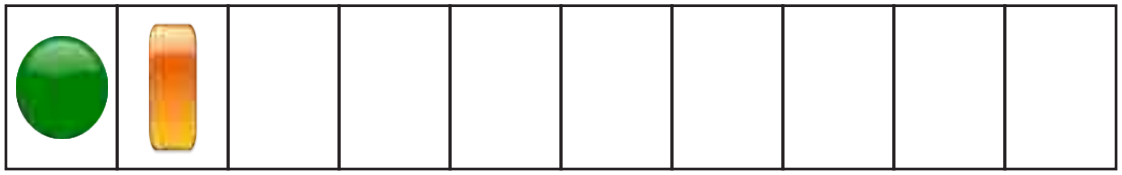
From the image, you can observe that the pattern consists of a rectangle followed by two pentagons. So in this sequence, the rectangle will be repeated, followed by two pentagons.

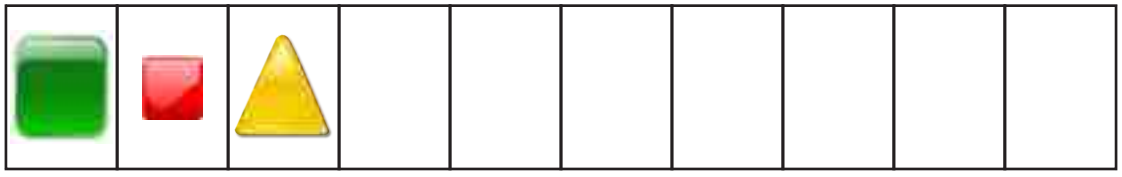
2. Find the missing emoji in the following pattern.

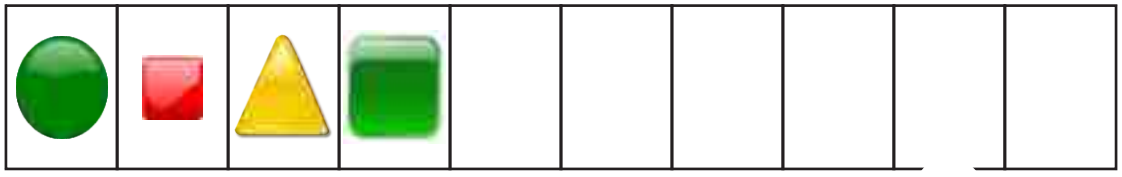
3. What follows next, the pizza or the cake?

4. Extend the patterns

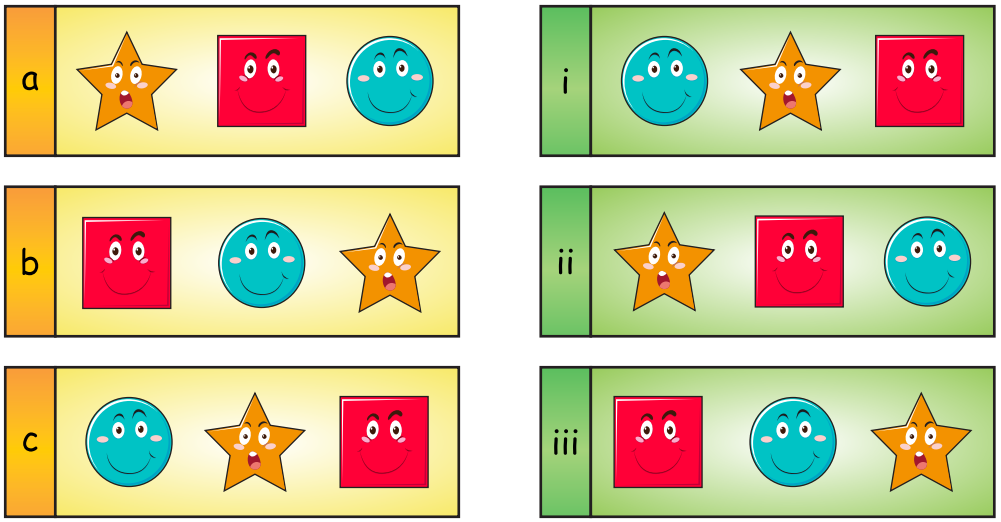




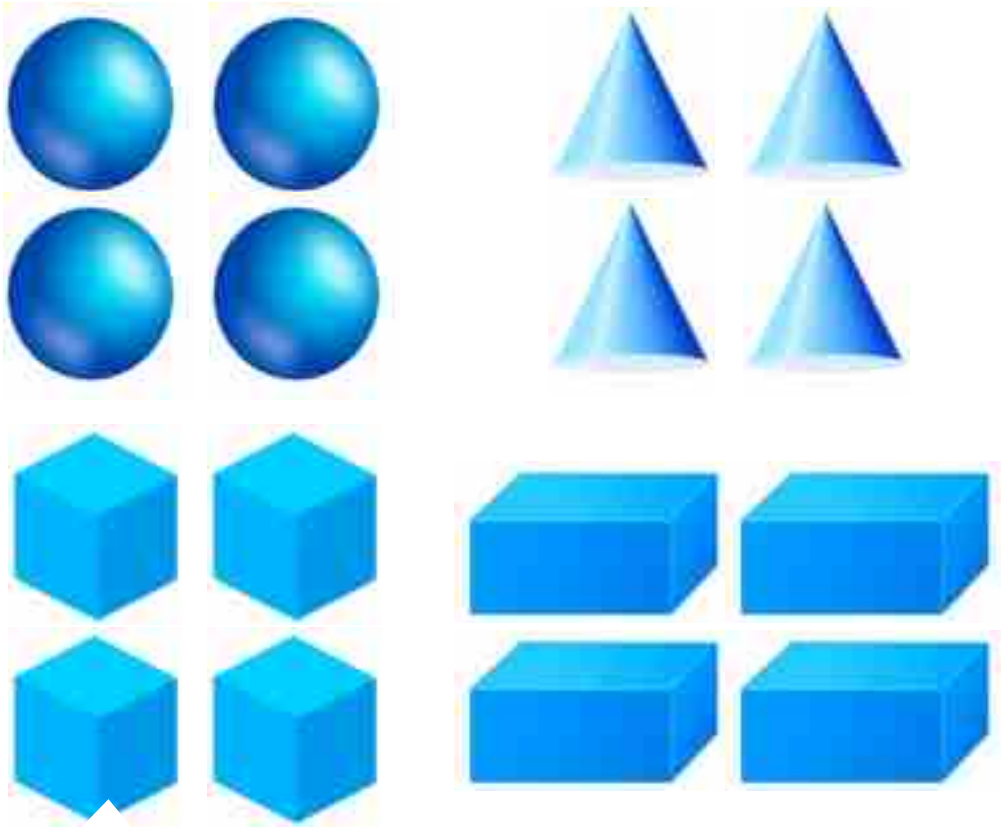




5. Match the pattern in Column A with the same pattern in Column B.



6. You have spheres, cones, cubes and cuboides, four sets of each 3D shape. What patterns could you make?



Patterns of a Hundered Chart:

Here is a 100-point chart.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

There are several techniques to locate the pattern. For instance,
For each row, left to right, the number increases by 1.
For each column, from top to bottom, the number increases by 10.

Activity

Make a pattern by adding plus two with the initial number and choosing any number as a starting point.

Example:

i) 2, 4, 6, 8,.....
ii) 23, 25, 27, 29,....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Exercise 2

1. Using hundred-point chart, make a pattern by adding plus three with the initial number.

2. Using hundred-point chart, make a pattern by adding plus four with the initial number.

3. What would be the next number in the given number sequences:
   a) 41, 45, 49,.....
   b) 34, 44, 54,.....

Unit 6

MEASUREMENT

Student Learning Outcomes:

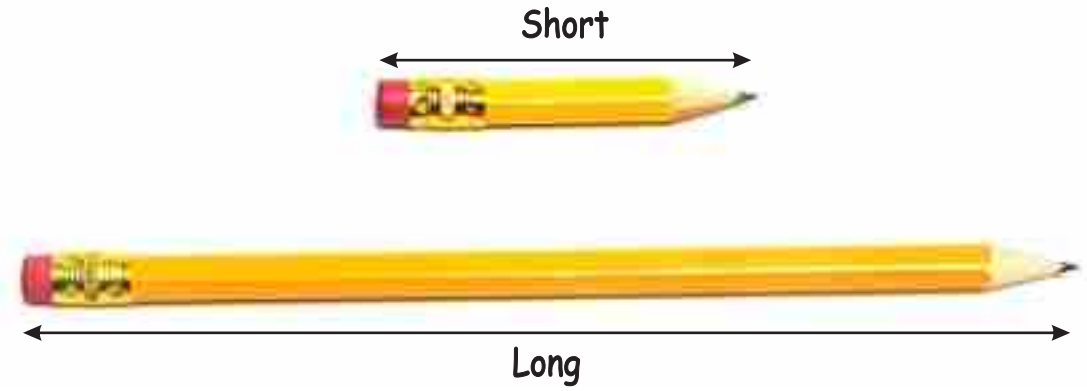
At the end of the chapters, Students will be able to:

- ✓ recognize and use the standard units of length (meter and centimeter) to measure and record the length of different objects.
- ✓ compare the length of different objects using standard units of length (meter and centimeter) using greater than, less than and equal to.
- ✓ add and subtract lengths, given in the same units to solve real-life word problems.
- ✓ recognize and use the standard units of mass (kilograms and grams) to measure and record the mass of different objects.
- ✓ compare the mass of different objects using standard units of mass (kilogram and gram) using greater than, less than and equal to.
- ✓ add and subtract mass given in the same units to solve real- life word problems.
- ✓ recognize and use the standard units of capacity (liter and milliliter) to measure and record the capacity of different objects.
- ✓ compare the capacity of different objects using standard units of capacity (liter and milliliter) using greater than, less than and equal to.
- ✓ add and subtract capacities given in the same units to solve real-life word problems.
- ✓ read and write temperature to the nearest appropriate unit i.e. (°C) using pictorial representation and relating temperature scale to number line.

In previous class, we have measured, compared and ordered the length, mass and capacity of different objects using non-standard units. Now, we will use standard units to measure, compare and order the length, mass and capacity of different objects.

Length:

Every object has its length. A length tells us that whether an object is long or short.



In the above figure, the long pencil has the larger length than the short pencil.

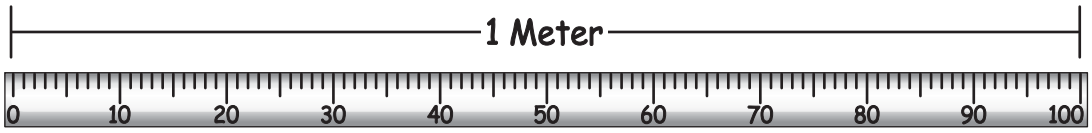
Standard units of length (meter and centimeter):

Do you know how long a pencil is? Or how long your ruler is? We use units like meters and centimeters to measure the length of things just like how we use numbers to count. We use these units to measure how long something is.

What is a Meter?

A meter (**m**) is a standard unit of length. We use meters to measure larger things like trains, streets and even jogging track.

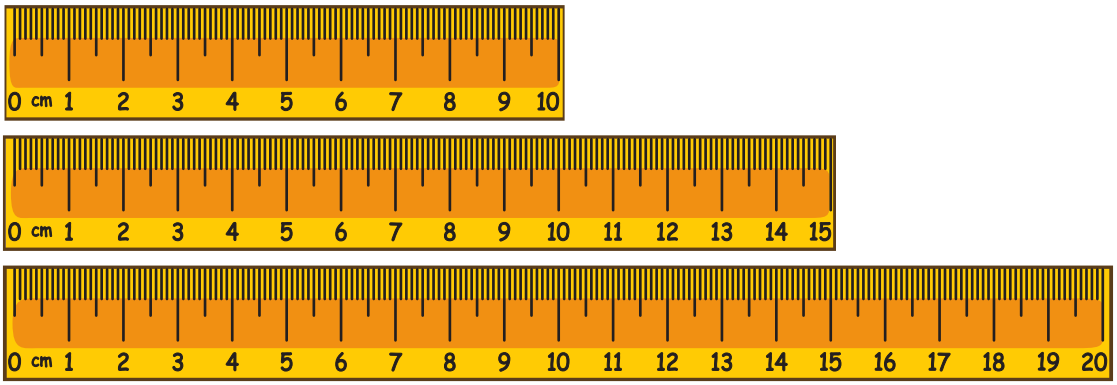
In the above figure, the meter tape which is used to measure the length of different objects.



The above figure represents the meter rode of length 1 unit.

What is a Centimeter?

A centimeter (**cm**) is a smaller unit of length. We use centimeters to measure the length of smaller things like pencils, books, and even our own height.



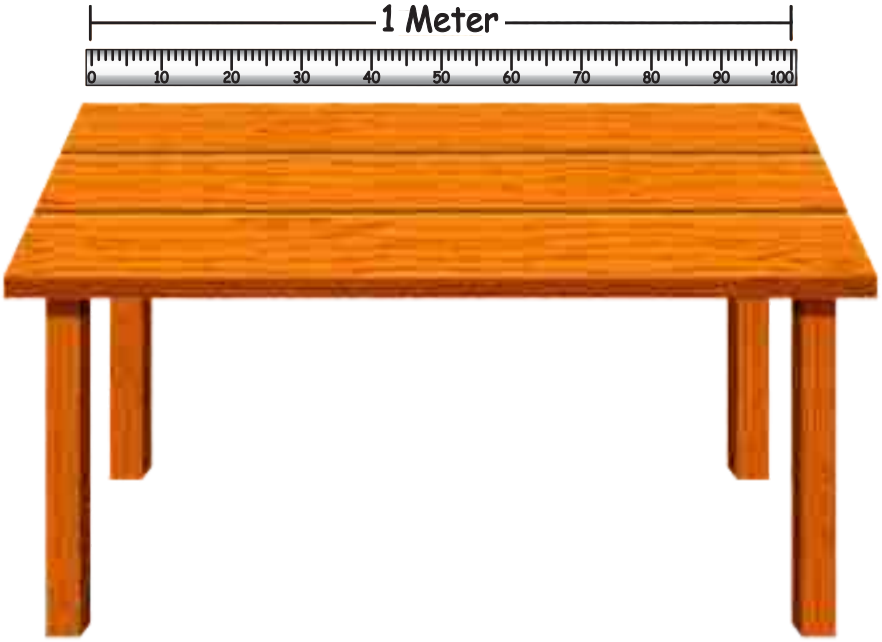
Above figures represent the ruler of length 10cm, 15cm, 20cm respectively.

Measuring with Meters and Centimeters:

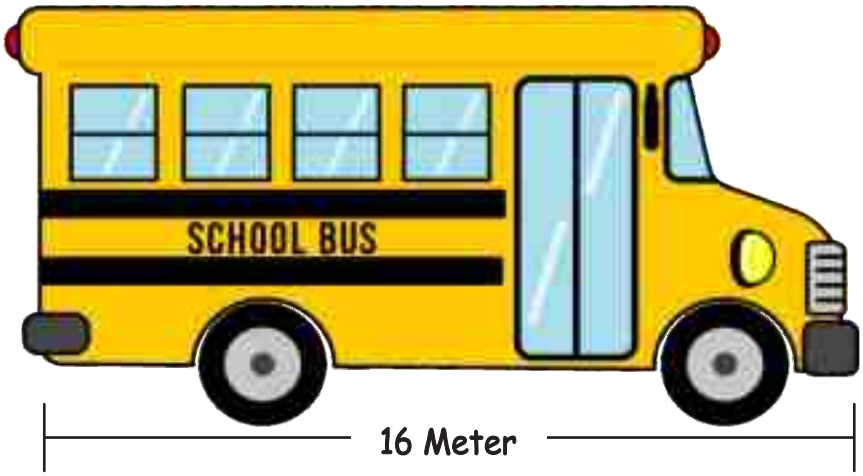
We can use meters and centimeters to measure the length of different objects. We can measure how long a book is in centimeters, or how long a bus is in meters!

Example:

- A table of length 1 meter.



- A bus is about 16 meter long.



- A pencil is about 15 centimeters long.

- A book is about 20 centimeters long.

Activity

Write the measurement of the following objects

(i) Length of a  is measured in _____

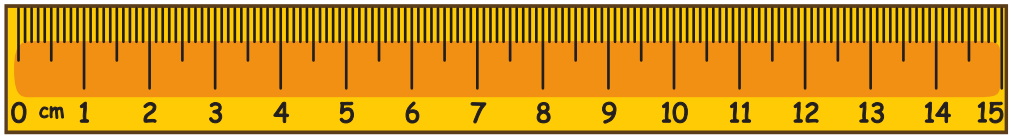
(ii) Length of a  is measured in _____

(iii) Your height  is measured in _____

(iv) Height of a  is measured in _____

Exercise 1

1. Measure the length of objects and write in centimeters:



(i) 

(ii) 

(iii) 

(iv) 

(v) 

(vi) 

(vii) 

(viii) 

2. Measure the length of objects in your classroom and write it in meters. (Rounded in units)

1. Length of Table in the classroom =----------
2. Length of door in the classroom =----------
3. Length of black board in the classroom =----------
4. Length of desk in the classroom =----------

Comparison of length of different objects:

We can compare the length of different objects using meters and centimeters. We can say if one object is longer or shorter than another object.

Example 1:

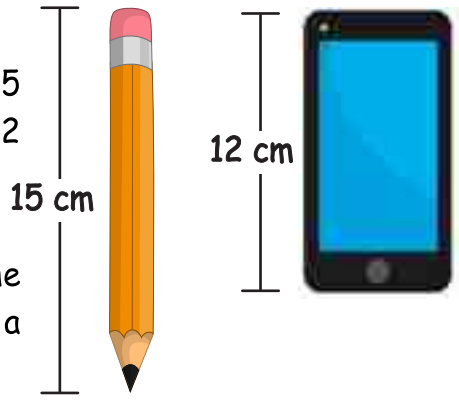
Compare the length of a car (4 meter) with that of a bike (2 meter).

As, 4 is greater than 2. So, the length of a car is **greater** than that of a bike.

Example 2:

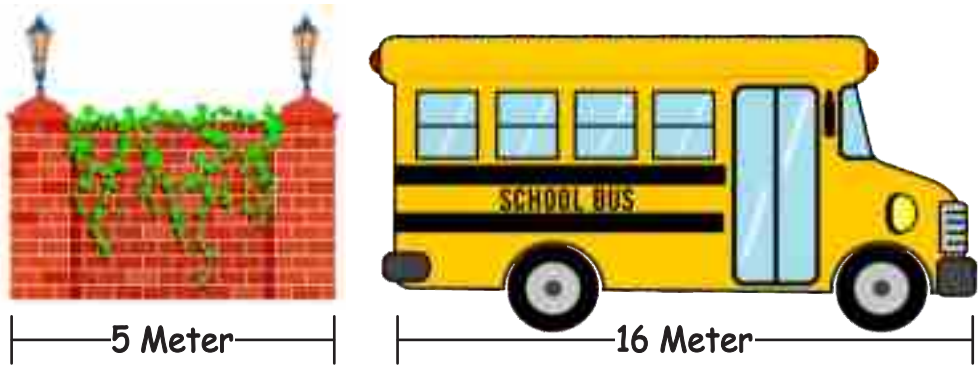
Compare the length of a pencil (15 centimeter) with that of a mobile (12 centimeter).

As, 15 is **greater** than 12. So, the length of pencil is greater than that of a mobile.



Example 3:

Compare the length of a wall (5 meter) with that of a bus (16 meter).



As, 5 is less than 16. So, the length of the wall (5 meter) is **less** than that of a bus (16 meter).

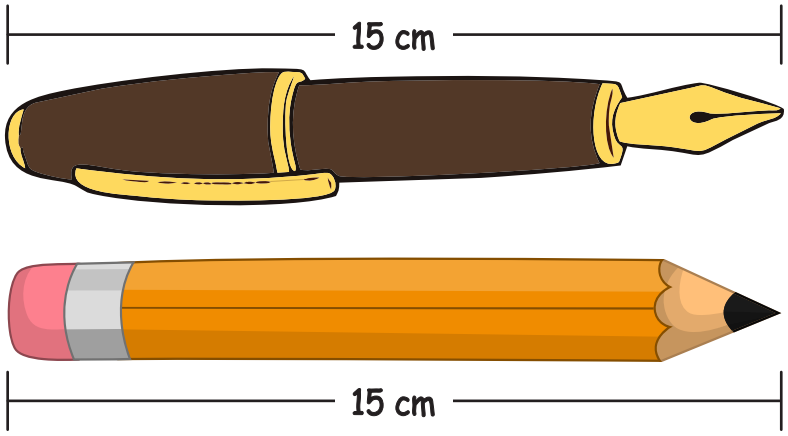
Example 4:

Compare the length of a book (20 centimeter) with that of an arm (45 centimeter) of a child.

As 20 is less than 45. So, the length of the book is **less** than that of an arm of the child.

Example 5:

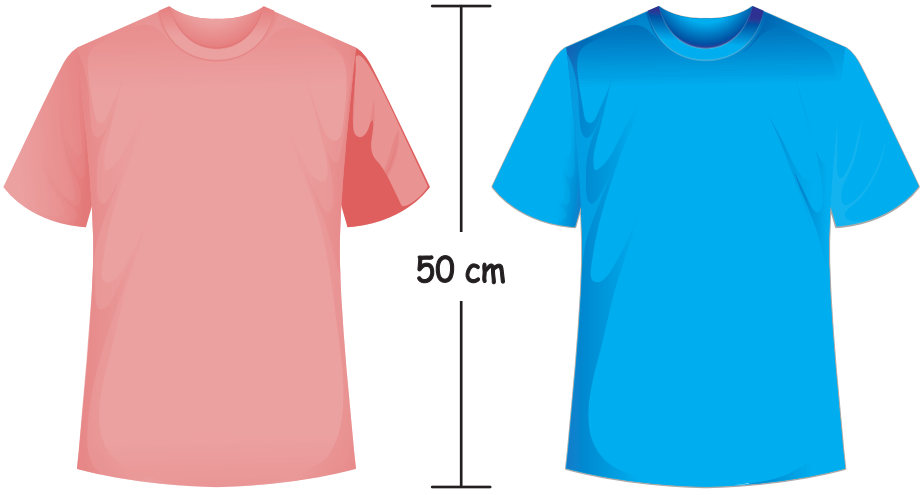
Compare the length of a pencil (15 centimeter) with that of a pen (15 centimeter) of a child.



As, 15 is equal to 15.Here, the length of the pencil is **equal** to that of a pen.

Example 6:

Compare the length of a red shirt (50 centimeter) with that of a blue shirt (50 centimeter).



As, 50 is equal to 50.So, the length of a white shirt (50 centimeter) is **equal** to that of a red shirt (50 centimeter).

Exercise 2

1. Which is longer, a pencil (15 cm) or a ruler (30 cm)?

   _____ is longer than _____

2. Is a bookshelf (2 m) longer or shorter than a bed (3 m)?

   _____ is shorter than _____

3. Compare the length of a football field (100 m) and a basketball court (28 m).

   _____ is shorter than _____

4. Which is longer, a shoe (25 cm) or a book (15 cm)

   _____ is longer than _____

5. Compare the length of a football field (100 m) and a cricket ground (100 m).

   Length of both football field and cricket ground is _____

6. Compare the length of a mobile 15cm with a pen 15cm.

   Length of both mobile phone and pen is _____

Addition and Subtraction (Real life word problems):

We can add or subtract lengths of different objects in same units. in real-life. Here, some examples are given.

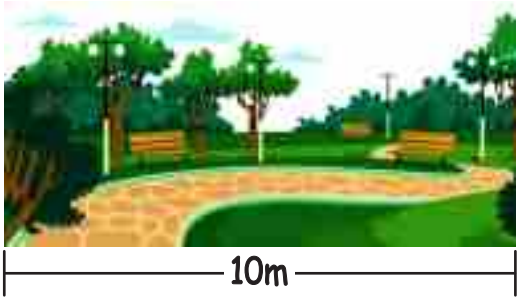
Example 1:

A path in a garden is 8 meters long. If we extend it 2 more meters, how long will it be?

Solution:

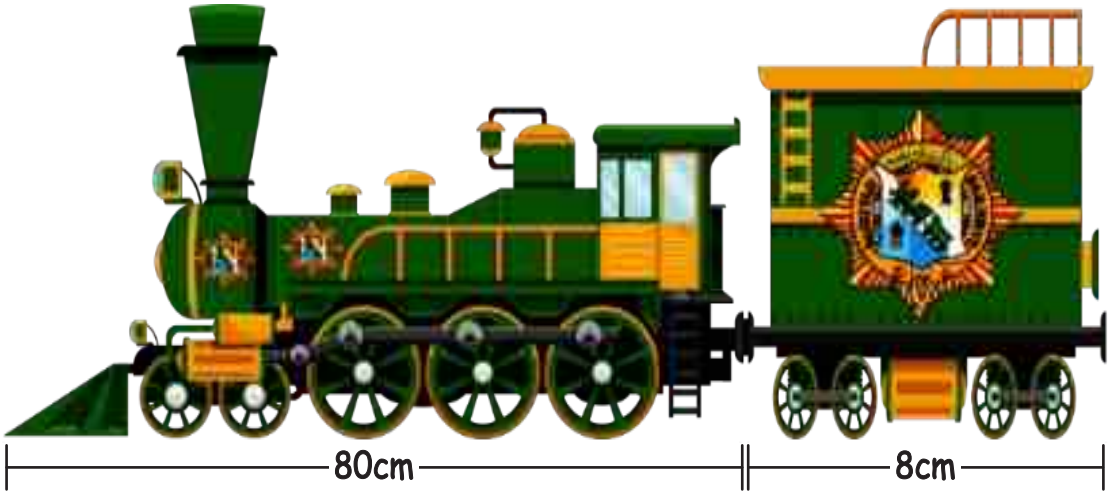
Length of path = 8 m
Extra length = + 2 m
Total length = 10m

Total length of path in a garden is 10m.



Example 2:

The length of toy train is 80cm and if one more coach of length 8cm is added into it then what will be the total length of the train?



Solution:

Length of a toy train = 80 cm
Length of a coach = + 8 cm
Total length = 88m

Example 3:

Hussain draws a line of 25cm long on a paper. Then, he removes the 10cm long part of the line of it. What is the length of remaining line?

Solution:

Length of a line = 25 cm
Length of removed part = - 10 cm
Length of remaining length = 15 cm
Thus, the length of remaining line is 15 cm.

Example 4:

A toy train track is 18 meters long. If 5 meters of the track are removed, what is the length of the track now?

Solution:

Length of toy track = 18 m
Length of removed track = - 5 m
Length of remaining track = 13 m
Thus, the length of remaining track is 13 m.

Exercise 3

(1) A pencil is 15 centimeters long, and a ruler is 20 centimeters long. What is the total length of the pencil and the ruler?

Solution:

Length of a pencil = _____

Length of a ruler = _____

Total length = _____

(2) A highway is 500 meters long, and a connector road is 250 meters long. What is the total length of the highway and the connector road?

Solution:

Length of highway = _____

Length of a connector = _____

Total length = _____

(3) Ali runs 100 meters, and his friend runs 75 meters. How much farther did the athlete run?

Solution:

Ali runs = _____

His friend runs = _____

Ali runs further = _____

(4) A dress is 90 centimeters long, and a tailor shortens it by 18 centimeters. How long is the dress now?

Solution:

Length of a dress = _____

Tailor shortens = _____

The current length of dress = _____

(5) Ayesha has a 60cm ribbon. She used 40cm from it. What is the length of remaining piece of ribbon

Solution:

Total length of ribbon = _____

Used ribbon = _____

Remaining length of piece of ribbon = _____

(6) Shahid's father is 185cm tall and Awais is 85cm shorter, than his father. What is Awais's height?

Solution:

Shahid's father height is = _____

Awais is shorter than his father = _____

Awais height is = _____

Mass:

Have you ever thought? Why does a bag of books feel heavier than an empty one?

It is because of the mass or weight that bag of books than the empty one.

We weigh or measure mass of things to find how much heavy or light a thing is.

Standard Units of Mass:

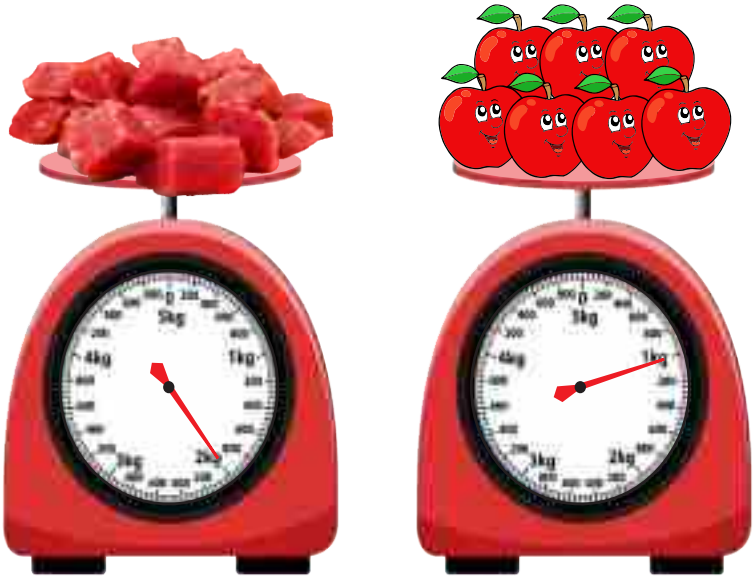
Do you know how much your favourite toy or book weighs? We can measure the mass of objects using standard units called kilograms (kg) and grams (gm).

Note: Here we use the term mass and weight interchangeably.

What is Kilogram?

Kilogram (Kg) is a standard unit of mass. We use kilograms to measure heavy things like a flour bag.

Example: The mass of apples is 1 kg.
The mass of meat is 2 kg.



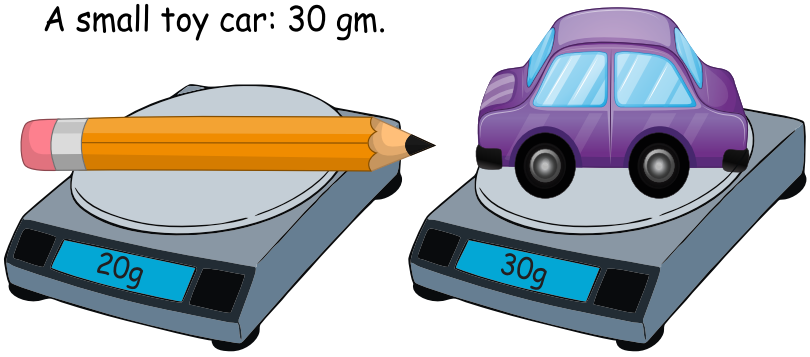
Activity

(i) Measure your weight in kilograms.
(ii) Measure the mass of your school bag in kilograms.

What is Gram?

Gram (gm) is a small unit of mass. We use grams to measure light things like a pencil or a small toy.

Example: Mass of pencil is 20 gm.
A small toy car: 30 gm.



Remember:

- Kilograms (kg) are used for heavy things.
- Grams (gm) are used for light things.

Exercise 4

1. Write suitable unit to measure the weight.

(a) An  weights in gm or kg

(b) A  weights in gm or kg

(c) A  weights in gm or kg

(d) A  weights in gm or kg

2. Measure the weight of the following:

(a) Weight of a pencil in gm is _____

(b) Weight of a sharpener in gm is _____

(c) Weight of seven years old boy in kg is about _____

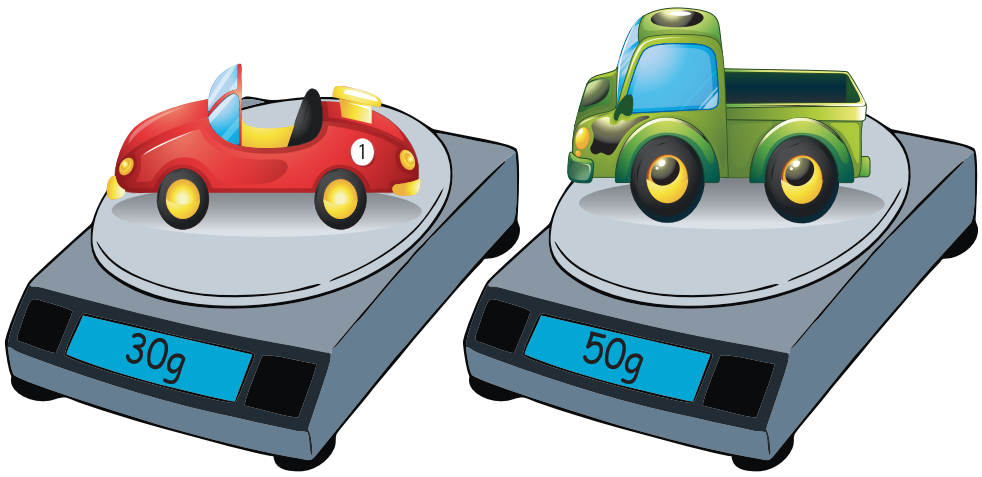
(d) Weight of a bag of tomatoes in kg is about _____

Comparison of mass of different objects:

We can compare the mass of different objects using standard units of mass (kilograms and grams). We can say if one object is heavier or lighter than another object.

Example 1:

Compare the mass of the toy truck (50gm) with that of a toy car (30gm).



As, 50 is greater than 30. So, the mass of the toy truck is greater than that of the toy car.

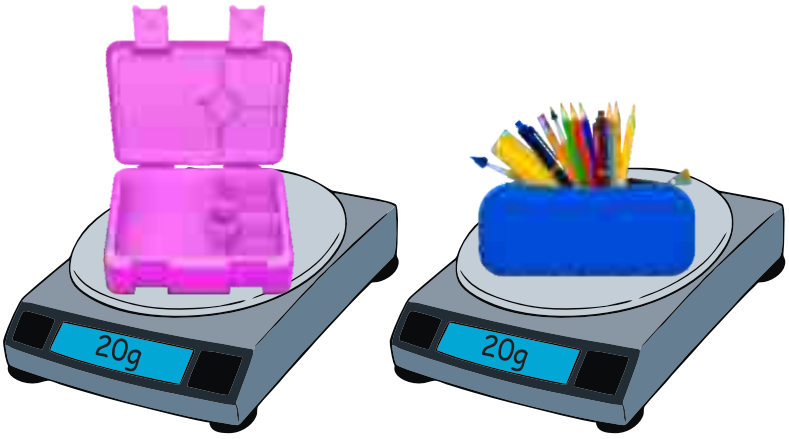
Example 2:

Compare the mass of a bottle of water (1kg) with that of a school bag (2kg).

As, 1 is less than 2. So, the mass of the bottle of water is less than that of the school bag.

Example 3:

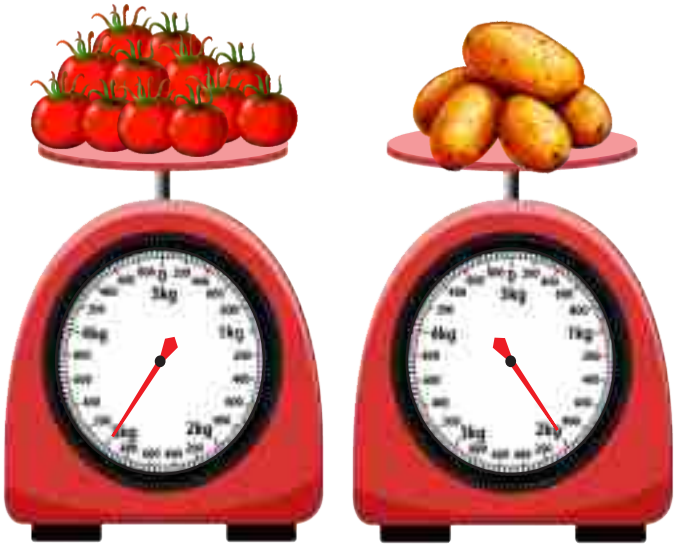
Compare the mass of a box of pencils (20gm) with that of empty lunch box (20g).



As, 20 is equal to 20. So, the mass of the box of pencils is equal to that of the empty lunch box.

Example 4:

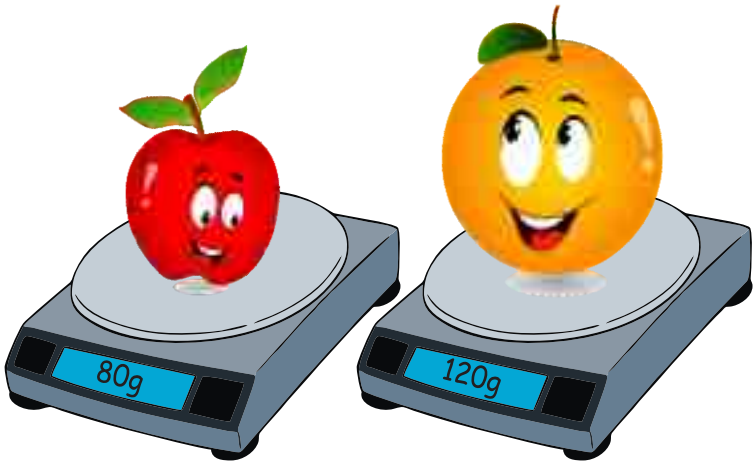
Compare the mass of the tomatoes (3kg) with that of the potatoes (2kg).



As As, 3 is greater than 2. So, the mass of the tomatoes (3kg) is greater than with that of the potatoes (2kg).

Example 5:

Compare the mass of an apple (80g) with that of an orange (120g).



As 80 is less than 120. So, the mass of an apple is less than that of an orange.

Example 6:

Compare the mass of a sugar bag (5kg) with that of flour bag (5kg).

As, 5 is equal to 5.So, the mass of a sugar bag is equal to that of flour bag.

Exercise 5

1. A bag of apples weighs 3 kilograms, while a bag of arranges weighs 1 kilograms. Which has a greater mass.
   As, 3 is greater than 1

   So, _____ has greater mass.

2. A paperclip weighs 5 grams, while a pen weighs 20 grams. Which has a greater mass?
   As, 20 is greater than 5

   So, _____ has greater mass.

3. A small toy car weighs 50 grams, while a toy truck weighs 75 grams. Which has a lesser mass?
   As, 50 is less than 75
   So, _____ has lesser mass.

4. Ali's weight is 20 kg while his friend Amjad's weight is 24 kg. Who is lighter of them?
   As, 20 is less than 24
   So, the lighter of them is _____.

5. Compare the weight of the book (500 grams) with that of the bag of sugar (500 grams).
   As, 500=500
   So, the weight of both book and sugar bag is _____.

Addition and Subtraction of Mass:

Do you know how much sugar and flour are needed to make a delicious cake? Measuring mass (or weight) is an essential skill in daily life. In this section, we will learn how to add and subtract mass given in the same units to solve real-life word problems.

Example 1:

A student packs 100g of carrots and 80g of apples in her lunch box. What is the total mass of the lunch box?

Solution:

Mass of carrots	=	100g
Mass of apples	= +	80g
Total mass of lunch box	=	180g

Thus, the total mass of the lunch box is 180grams.

Example 2:

Asma buys 40kg of flour and 20kg of rice bags. What is the total mass of the both bags?

Solution:

Mass of flour bag	=	40kg
Mass of rice bag	= +	20kg
Total mass of both bags	=	60kg

Thus, the total mass of the flour and rice bags is 60 kilograms.

Example 3:

Ali bought 250g of strawberries. He ate 50 g of strawberries. How many gram of strawberries are left?

Solution:

Mass of total strawberries	=	250g
He ate strawberries	= −	50g
Strawberries are left	=	200g

Thus, 200 grams of strawberries are left.

Example 4:

A bag of rice weighs 20kg. If 5kg of rice is taken out, what is the new mass of the bag?

Solution:

Mass of rice bag	=	20kg
Mass of rice taken	= −	5kg
Mass of the new bag of rice	=	15kg

Thus, the mass of the bag is 15 kg.

Exercise 6

1. A bag of flour weighs 50kilograms. If 20 kilograms of sugar are added, what is the total weight of the bag?

Solution:

Flour weight = _____
Sugar weight = _____
Total weight of bag = _____

2. A packet of coffee weighs 250 grams. If a packet of sugar weights sugar is 75 g, what is the total mass of the coffee and sugar together?

Solution:

Coffee weight = _____
Sugar weight = _____
Total weight = _____

3. A sack of potatoes weighs 15 kilograms. If 7 kilograms of potatoes are taken out, what is the remaining mass of the sack?

Solution:

Total weight of potatoes = _____
Taken out potatoes = _____
Wight of remaining potatoes = _____

4. A box of chocolates weighs 300 grams. If 250 grams of chocolates are eaten, what is the remaining mass of the chocolates?

Solution:

Weight of chocolate = _____
Chocolates are eaten = _____
Remaining weight of chocolate = _____

Capacity:

Capacity refers to the amount of liquid or substance that a container or object can hold.

For example, the jug can hold 8 glasses of water.

Here, the capacity of jug is 8 glasses.

Standard Units of Mass:

Standard units of capacity (liter and milliliter) are used to measure the amount of liquid or substance that a container can hold.

What is liter?

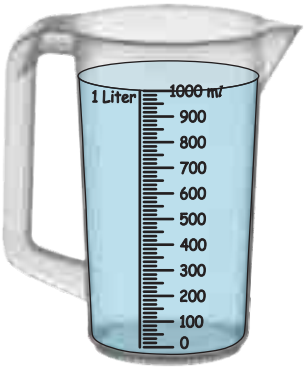
A liter (L) is a standard unit of volume or capacity, commonly used to measure the volume of liquids.

Measures used to measure the capacity of water is given as under:

Example:

Measure the capacity of given jug of water:

Now we use liter scale to measure the capacity of water in jug.



Here, the capacity of the jug of water is 1 liter.

Activity

Measure the capacity of the bottle of water you have in liter.

What is milliliter?

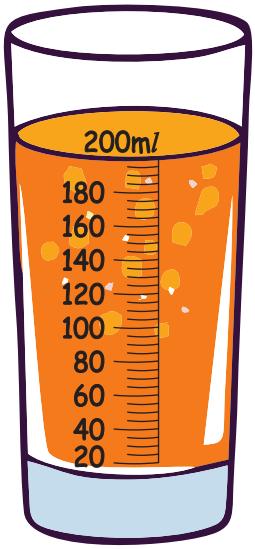
A milliliter (ml) is a tiny unit to measure liquids.

For instance, let's say you have a small water bottle that can hold 1000 tiny cups of water. Each tiny cup is like 1 milliliter (ml). So, the water bottle can hold 1000 milliliters (mL) of water.

Example:

Measure the capacity of the given glass of cold drink

Now we use milliliter scale to measure the capacity of cold water.



Here, the capacity of the glass of cold water is 200 ml.

Activity

Measure the capacity of glass of water in milliliter using syringe.

Comparison of capacity of different objects

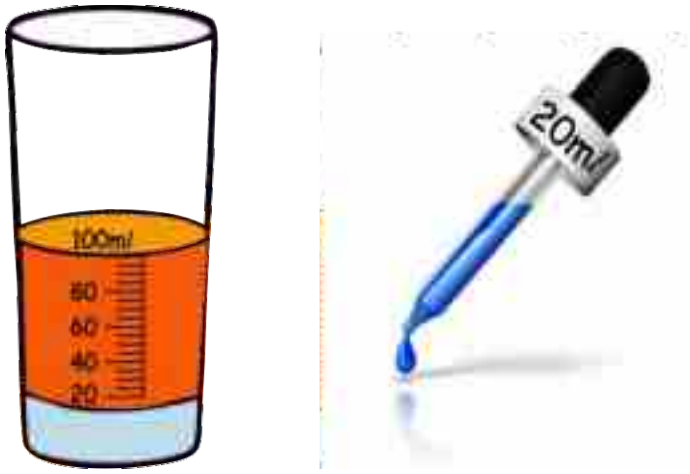
Example 1:

Compare the capacity of the jug of water (2 liter) with that of the packet of juice (1 liter).

As, 2 is greater than 1. So, the capacity of Jug of water is greater than that of the packet of juice.

Example 2:

Compare the capacity of the glass of soda (100 milliliter) with that of the medicine dropper (20 milliliter).



As, 100 is greater than 20. So, the capacity of the glass of soda is greater than that of the medicine dropper.

Example 3:

Compare the capacity of fuel tank (20 liter) with that of the another large fuel tank (50 liter).

As, 20 is less than 50.So, the capacity of fuel tank is less than that of the large fuel tank.

Example 4:

Compare the capacity of cup of tea (50 milliliters) with that of the large cup of tea (100 milliliters).

As, 50 is less than 100.So, the capacity of cup of tea is less than that of the another large cup of tea.

Example 5:

Compare the capacity of container of oil (500 liter) with that of the container of water (500 liters).

As, 500 is equal to 500.So, the capacity of container of oil is equal to that of the container of water.

Example 6:

Compare the capacity of perfume bottle (50 milliliters) with that of the perfume bottle (50 milliliters).

As, 50 is equal to 50.So, the capacity of perfume bottle is equal to that of the perfume bottle.

Exercise 7

1. A packet of juice has a capacity of 200 milliliters. A milk packet has a capacity of 250 milliliters. Which has a greater capacity?
   As, 250 is greater than 200
   So, _____ has greater capacity.

2. A fuel tank A has a capacity of 60 liters. Another fuel tank B has a capacity of 65 liters. Which has a lesser capacity?
   As, 60 is less than 65
   So, _____ has lesser capacity.

3. A hand wash bottle has a capacity of 250 milliliters. A shampoo bottle has a capacity of 500 milliliters. Which has a greater capacity?
   As, 250 is less than 500.
   So, _____has lesser capacity.

4. Compare the capacity of a water cooler 4 liter with that of the fuel gallon 4 liter.
   As, 4 is equal to 4.
   So, the capacity of water cooler and fuel gallon is _____

5. A water tank has a capacity of 700 liters. A fuel tank has a capacity of 600 liters. Which has a greater capacity?
   As, 700 is greater than 600
   So, _____ has greater capacity.

6. Compare the capacity of a bottle of soap 100 milliliter with that of the bottle of perfume 100 milliliter.
   As, 100 is equal to 100.
   So, the capacity of bottle of soap and bottle of perfume is

Addition and Subtraction:

We can add or subtract capacity of different objects in same units in real-life. Here, some examples are given.

Example 1:

A juice manufacturer has 300 liters of apple juice and 50 liters of orange juice. How much juice does the manufacturer have in total?

Solution:

Capacity of apple juice	=	300L
Capacity of orange juice	=	+ 50L
Total capacity of juices	=	350

Thus, the total capacity of juices is 350 liter.

Example 2:

A pharmacist has 250 mL of a certain medicine in a bottle. She needs to add 100 mL more of the medicine to the bottle. How much medicine will the bottle contain after the addition?

Solution:

Volume of medicine in a bottle	=	250mL
Volume of extra medicine of bottle	=	+ 100mL
Total volume of medicine of bottle	=	350mL

Thus, the total capacity of medicine of bottle is 350 milliliters.

Example 3:

A water tank can hold 500 liters of water. If 50 liters of water are poured out, how much water is left in the tank?

Solution:

Capacity of water in tanker	=	500L
Capacity of water poured out	=	− 50L
Remaining water in the tanker	=	450L

Thus, the total capacity of water is 450 liter.

Exercise 8

1. A packet of juices has a capacity of 200 milliliters. Another packet of juice is of 100 milliliters, what is the total capacity of juice and packets?

Solution:

Capacity of a juice packet = _____
Capacity of another packet = _____
Total capacity of juice = _____

2. A water tank has a capacity of 800 liters and a fuel tank has the capacity of 500 liters, what is the total capacity of both tanks

Solution:

Capacity of water tank = _____
Capacity of fuel tank = _____
Total capacity of both tanks = _____

3. A gas cylinder has a capacity of 45 liters. If 15 liters of gas are used for cooking, what is the remaining capacity?

Solution:

Total capacity of gas Cylinder = _____
Used capacity of Cylinder = _____
Remaining capacity of Cylinder = _____

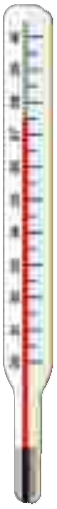
4. A perfume bottle has a capacity of 100 milliliters. If 50 milliliters of perfume bottle are used, what is the remaining capacity of perfume?

Solution:

Total capacity of perfume bottle = _____
Used capacity of Perfume bottle = _____
Remaining capacity of Perfume bottle = _____

Temperature:

Have you ever felt hot or cold before?
You definitely feel hot in summer when you go outside school or home, and similarly, you feel cold in winter when you do not wear a sweater.

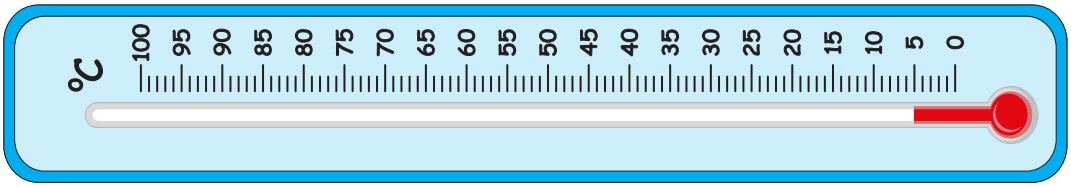


The temperature is a measure of how hot or cold something is. It is measured in unit called degree Centigrade (°C). Thermometer is used to know how much degrees Centigrade of body is.

Reading and Writing of Temperature:

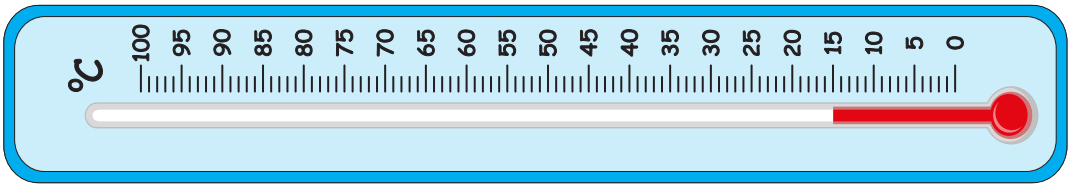
Here, we read and note the temperature on Celsius scale (°C) using thermometer.

Example 1: Read the temperature in the given thermometer



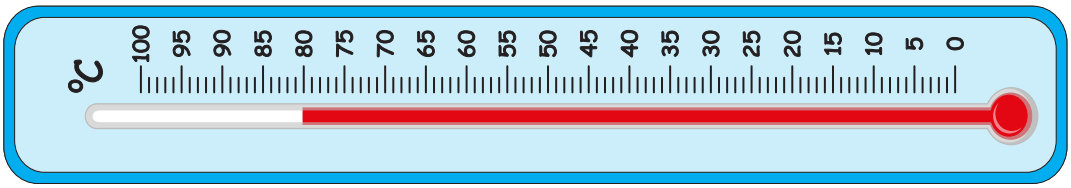
Here, in the given thermometer the nearest temperature is 5 degree Centigrade.

Example 2: Read the temperature in the given thermometer



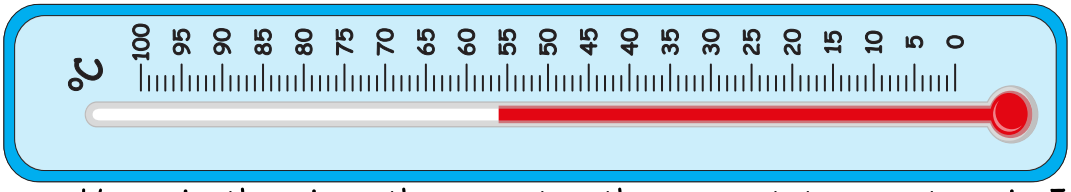
Here, in the given thermometer the nearest temperature is 15 degree Centigrade.

Example 3: Read the temperature in the given thermometer



Here, in the given thermometer the nearest temperature is 80 degree Centigrade.

Example 4: Read the temperature in the given thermometer

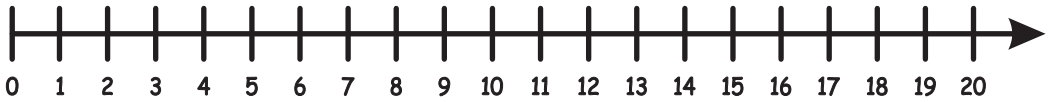


Here, in the given thermometer the nearest temperature is 56 degree Centigrade.

Relating temperature scale to number line

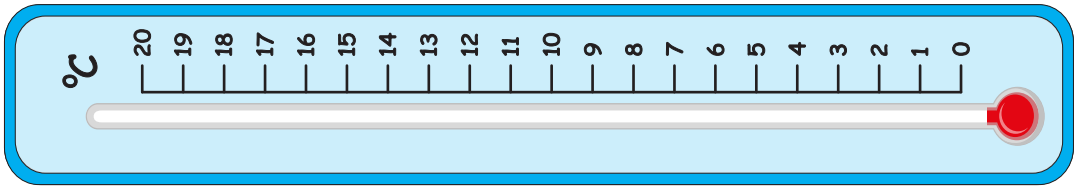
We use a number line to show numbers in order from smallest to largest. We can think of the temperature scale like a number line, too!

Number Line



The above figure represents the Number line from 0 to onward.

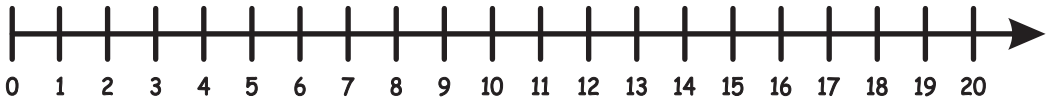
Similarly we can treat temperature scale as a number line. For example, thermometer scale can work as a number line too.



On a number line, we have numbers like 0, 5, 10,20 and so on. On the temperature scale, we have temperatures like 0°C, 5°C, 10°C, 20°C and so on.

Now the reading obtained from thermometer can be represented on Number line.

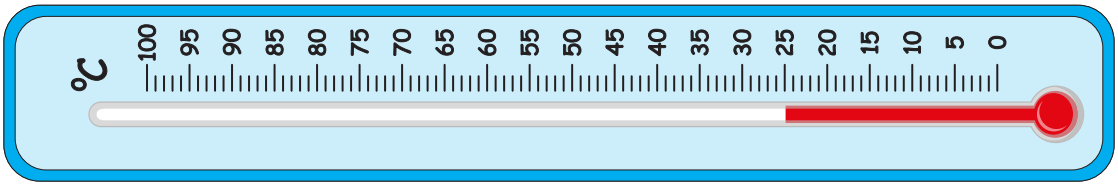
Temperature Scale into Degree Centigrade



Just like how numbers get bigger as we move to the right on a number line, temperatures increase as we move to the right on the temperature scale. And just like how numbers get smaller as we move to the left on a number line, temperatures decrease as we move to the left on the temperature scale

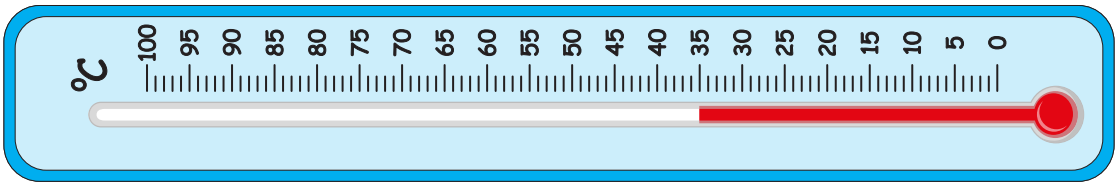
Exercise 9

1. Read the temperature in the given thermometer



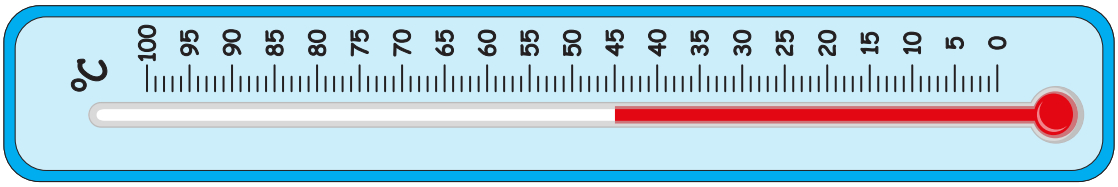
The temperature of the thermometer is _____.

2. Read the temperature in the given thermometer



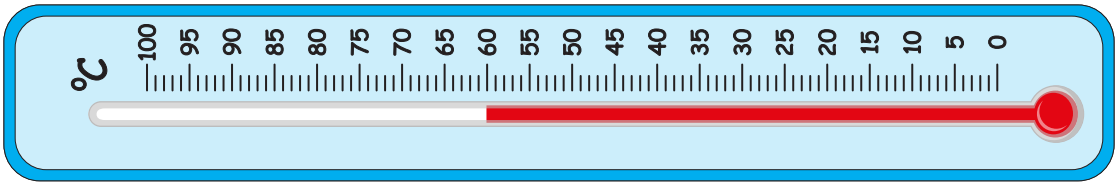
The temperature of the thermometer is _____.

3. Read the temperature in the given thermometer



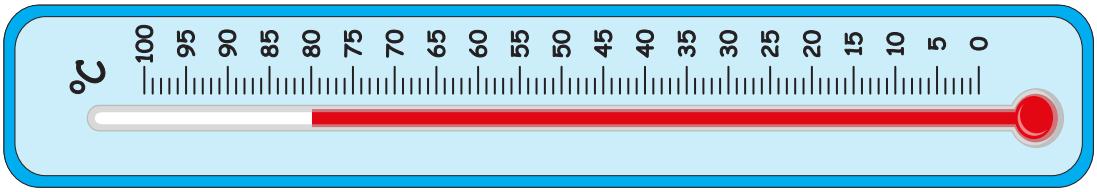
The temperature of the thermometer is _____.

4. Read the temperature in the given thermometer



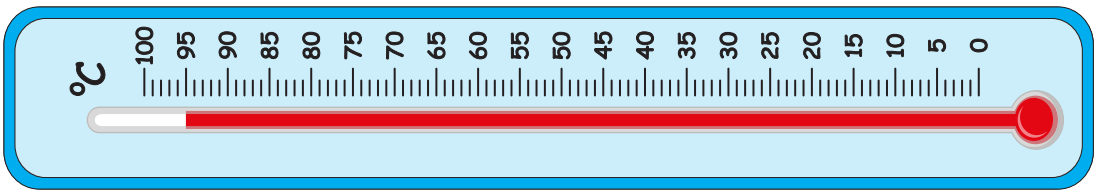
The temperature of the thermometer_____.

5. Read the temperature in the given thermometer and show it on number line.



The temperature of the thermometer_____.

6. Read the temperature in the given thermometer and show it on number line.



The temperature of the thermometer_____.

Unit 7 TIME

Student Learning Outcomes:

At the end of the chapters, Students will be able to:

- ✓ Show time in hours and minutes on an analogue clock.
- ✓ (duration) of time (for instance to estimate/give a rough calculation of the time taken by particular events or tasks)
- ✓ Use calendar to find a particular day/date (of a week/month) in real life situation.

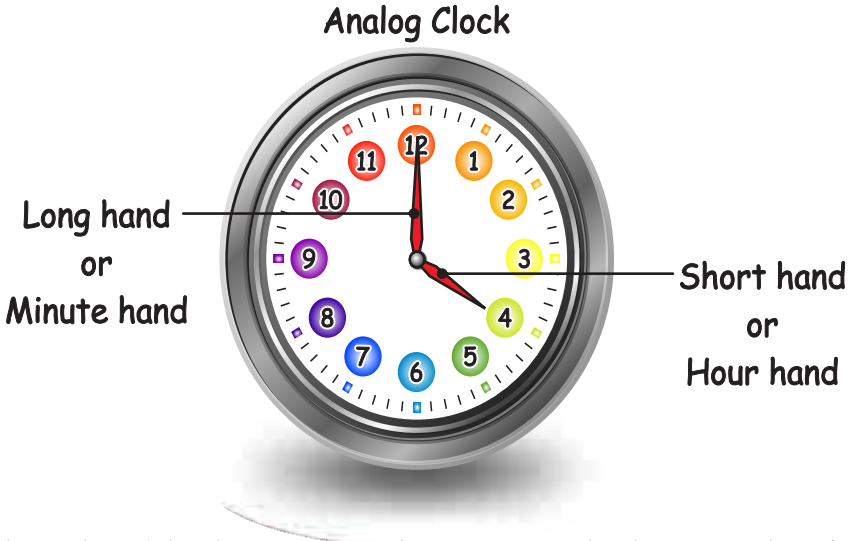
In Grade 1, we learnt to read and show time in hours (o'clock). In this unit, we will learn to read and show time in hours and minutes. Additionally, we will recognize the duration of time to estimate a rough calculation of the time taken by specific events or tasks.

Time in hours and minutes on an analogue clock

Do you know how to tell time on a clock with hands? We use analogue clocks to show time in hours and minutes. Let us first know about the analog clock.

What is analog clock?

An analog clock is a type of clock that displays time using hour and minute hands, also known as clock hands or pointers. It is a traditional clock face with a circular dial, marked with numbers from 1 to 12, and two hands:



1. Short hour hand (or hour pointer): points to the hour on the clock face.
2. Long minute hand (or minute pointer): points to the minutes on the clock face. The long hand (minute hand) tells minutes by pointing to the numbers on the clock face. Each number on the clock face represents 5 minutes, and the long hand moves in small increments (usually 1-5 minutes) around the clock face.

Example 1:

Tell the time if short hand is on 7 and long hand is on 3.

As the short hand is on the 7, it means 7 hours have passed. Meanwhile, the long hand points to the 3, which means 15 minutes (3 x 5 = 15). Thus, the clock shows 7 hours and 15 minutes and we write it as 7:15.

Example 2:

Tell the time if short hand is on 5 and long hand is on 8.

As the short hand is on the 5, it means 5 hours have passed. Meanwhile, the long hand points to the 8, which means 40 minutes (8 x 5 = 40). Thus, the clock shows 5 hours and 40 minutes and we write it as 5:40.

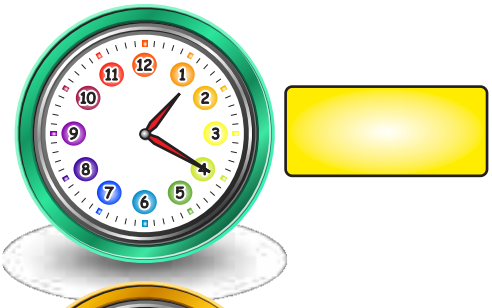
Example 3:

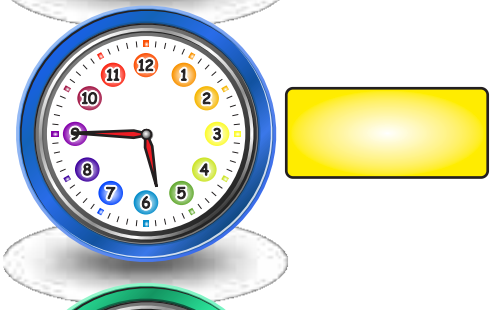
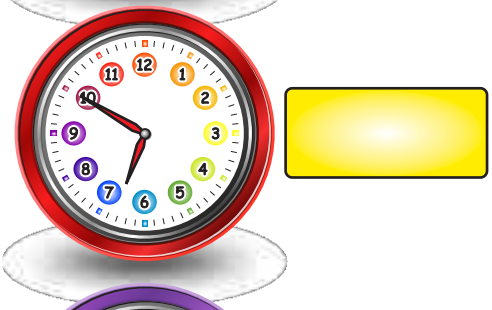
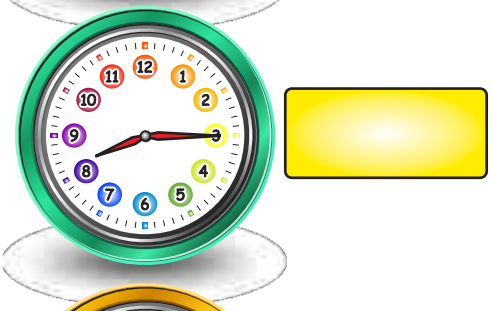
Tell the time if short hand is on 6 and long hand is on 7.

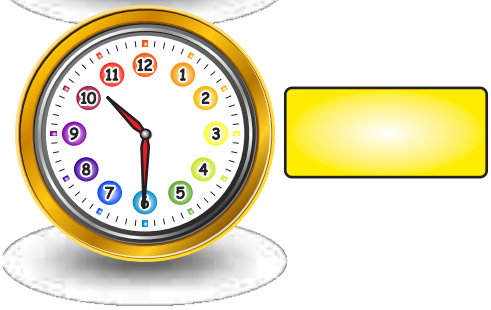
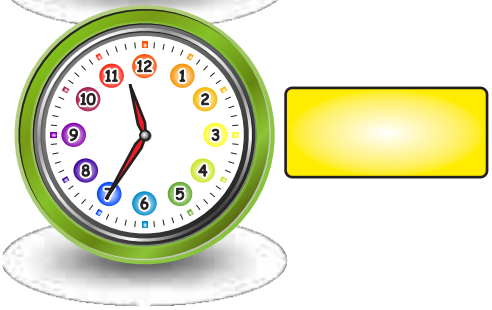
As the short hand is on the 6, it means 6 hours have passed. Meanwhile, the long hand points to the 7, which means 35 minutes (7 x 5 = 35). Thus, the clock shows 6hours and 35 minutes and we write as 6:35.

Exercise 1

Tell the time

Interval (Duration) of Time

What is a Time Interval?

- A time interval is the amount of time it takes to do something.
- It is like measuring how long something lasts.

Example 1:

A boy eats biryani at 2:00 pm and finishes it on 2:15 pm. How long does he take to finish it.

Solution:

He takes 15 minutes to finish the Biryani.

Example 2:

If boys start playing football on 5:00 pm and end the game on 7:00 pm. How long does it take to play the football match?

Solution:

Here, the boys take 2 hours to play a football match.

Example 3:

If Ali starts watching movie on 8:00 pm and it lasts till 11:00 pm.
How long does it take to watch a movie?

Solution:

Here, it takes 3 hours to watch a movie.

Activity

(i) How long do you watch a cartoon?

(ii) How long do you take sleep?

(iii) How long do you study at school?

(iv) How long do you take to visit an amusement park?

Exercise 2

(1) If Khizar starts watching cartoon on 6:00 pm and finishes it on 6:30 pm. How long does it last?

Solution:

He takes _____ minutes to watch the cartoon.

(2) If Asra goes on short trip with her parents from 10:00 am to 1:00 pm. How long has she been on short trip?

Solution:

She has been on short trip for the _____ hours.

(3) If an artist draws a picture from 3:00 pm to 5:30 pm. How long does he draw the picture.

Solution:

He takes _____ to draw a picture.

(4) If Hina leaves Karachi at 9:00 am and arrives Hyderabad at 11:00 pm. How long does she travel?

Solution:

She travels _____ from Karachi to Hyderabad.

Use of Calendar

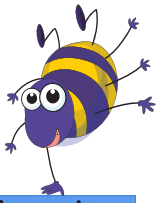
In our previous class, we learnt the names of the days of the week and months in a calendar. Now, we will use this knowledge to find a particular day or date within a week or month using the calendar.

Names of days in a week

Monday
1st day

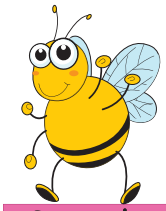
Tuesday
2nd day

Wednesday
3rd day



Thursday
4th day

Friday
5th day



Saturday
6th day

Sunday
7th day

Activity

(i) What day is today?
(ii) What day is tomorrow?
(iii) What day was yesterday?

Names of months in a year:

Activity

(i) What is the current month?
(ii)What will be the next month?
(iii) What was the previous month?

Modal Solar Calendar:

We solve following examples using above modal solar Cylinder.

Example 1:

Rida's birthday is on 13th October. Which day of the week will it be?

Solution:

We are only focusing on the month of October to find out which day Rida's birthday is.

Thus, the calendar shows that Rida's birthday is on Monday.

Example 2:

The school's annual award ceremony day is scheduled for the 2nd of April. Which day of the week will it be?

Solution:

We are only focusing on the month of April to find out on which date school's annual award ceremony day is.

Thus, the calendar shows that school's annual award ceremony day is scheduled on Wednesday.

Example 3:

Family of Sarfraz plans a picnic on the first Sunday of January. What date will their picnic be?

Solution:

We are only focusing on the month of January to find out on which day Sarfraz family goes to picnic.

Thus, Sarfraz family goes to the picnic on 5^{th} of January.

Example 4:

Grandmother is coming to visit on the 3^{rd} Thursday of July. What date will it be?

Solution:

We are only focusing on the month of July to find out on which date Grandma is coming to visit.

Thus, grandmother is coming on 17^{th} of July to visit.

Exercise 3

1. Ahmad's birthday is on 28th June. What day of the week will it be?
   Solution:
   The day of the Ahmad's birthday is _____.

2. The school holiday is on 11th November. What day of the week is it?
   Solution:
   The day of the School holiday is _____.

3. Kamran's family plans a picnic on the second Saturday of June. What date will their next picnic be?
   Solution:
   The date will be _____.

4. Sport festival of the school is conducted on third Monday of February. What date will it be?
   Solution:
   The date will be _____.

5. On what day of week, the Independence Day of our country is celebrated?
   Solution:
   The day of the independence is _____.

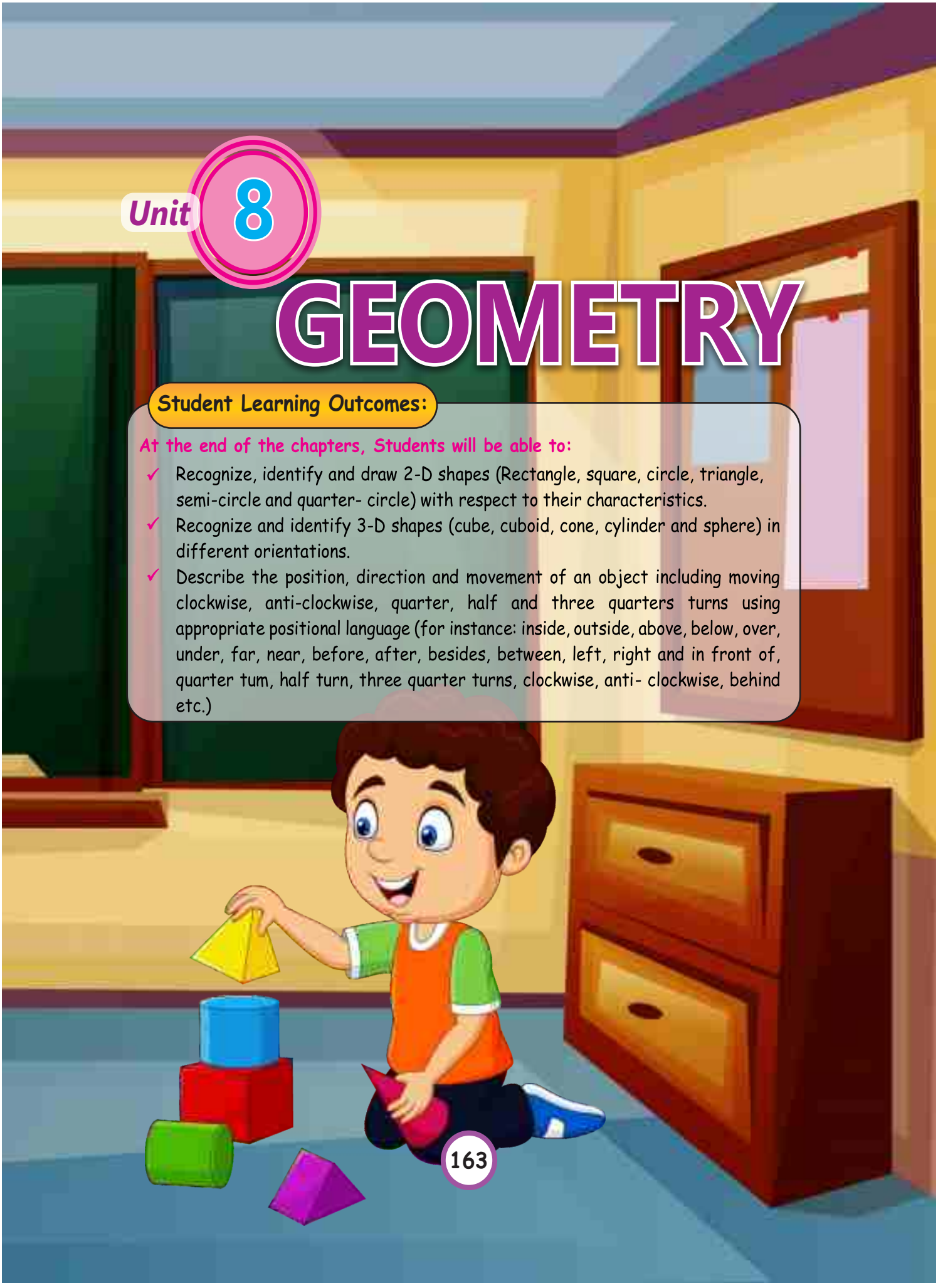
Unit 8

GEOMETRY

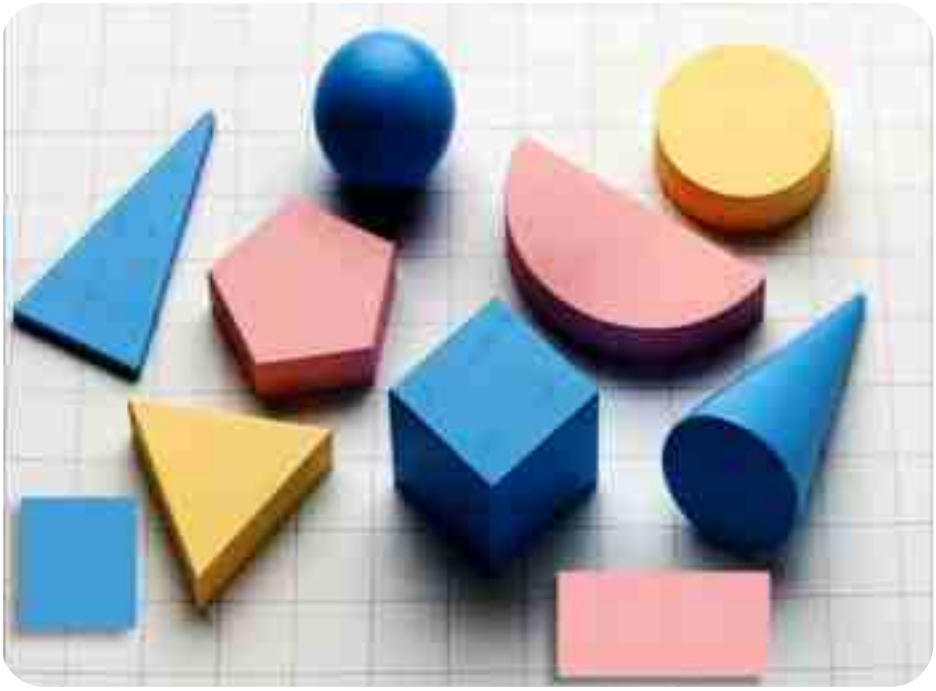
Student Learning Outcomes:

At the end of the chapters, Students will be able to:

- ✓ Recognize, identify and draw 2-D shapes (Rectangle, square, circle, triangle, semi-circle and quarter- circle) with respect to their characteristics.
- ✓ Recognize and identify 3-D shapes (cube, cuboid, cone, cylinder and sphere) in different orientations.
- ✓ Describe the position, direction and movement of an object including moving clockwise, anti-clockwise, quarter, half and three quarters turns using appropriate positional language (for instance: inside, outside, above, below, over, under, far, near, before, after, besides, between, left, right and in front of, quarter tum, half turn, three quarter turns, clockwise, anti- clockwise, behind etc.)



Geometry is all around us! Have you ever looked at a building, a toy, or even a puzzle and wondered about its shape? Geometry is the branch of mathematics that deals with shapes, sizes, and positions of objects.



Two Dimensional Shapes

What are 2-dimensional shapes?

Two-dimensional (2-D) shapes are flat shapes that have only length and width. We can find 2-D shapes all around us, from the shapes of objects to the patterns on the floor.

We learn each of them in detail.

Rectangle:

Look at these figures!

Mobile

Door

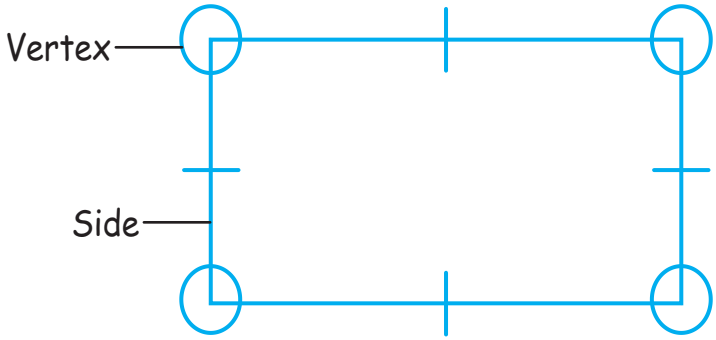
Book

Wooden block

All these figures are rectangular in shape.

Definition of Rectangle:

A rectangle is a two-dimensional shape with four corners (vertices) and four sides (edges).



- It has opposite sides of equal length, and all sides are straight.
- The longer side of the rectangle is its length, while the shorter side is its breadth or width.

To draw a rectangle, we draw four straight sides where opposite sides are equal in length.

Example:

Draw a rectangle where its length is 10 centimeter and its breadth is 4 centimeters.

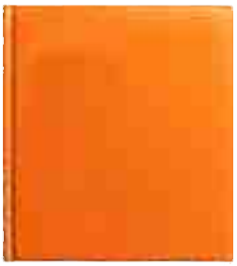
Square

Look at these figures!

Clock

LCD

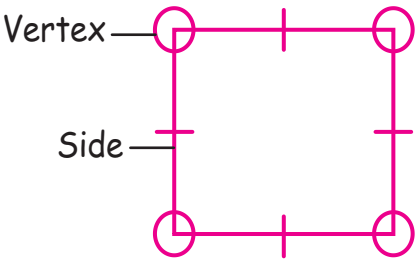
Ludo



Register

All these figures are square in shapes.

A square is a two-dimensional shape with four corners called vertices. All sides are equal in length and all sides are straight.

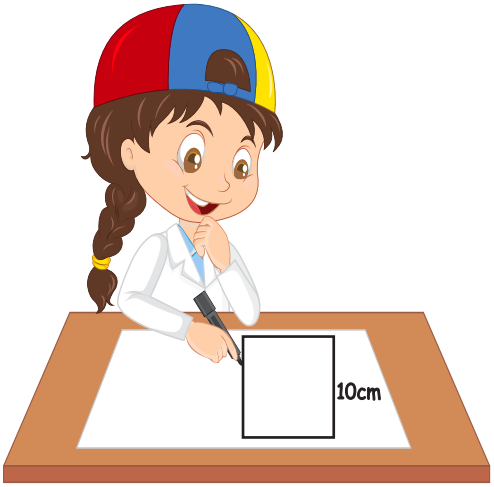


A square is a two-dimensional shape with four corners called vertices. All sides are equal in length and all sides are straight.

To draw a square, we draw four straight sides where all sides are equal in length.

Example:

Draw a square where length of each side is 10 centimeters.



Circle

Look at these figures!

Pizza

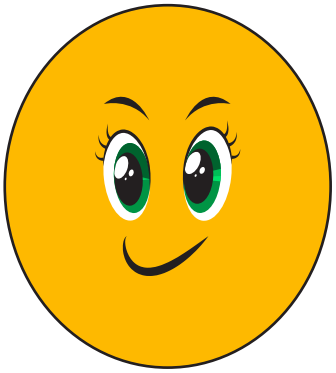
Clock

Ring

Wooden circular block

All these figures are circular in shape.

Circle



Definition of Circle:

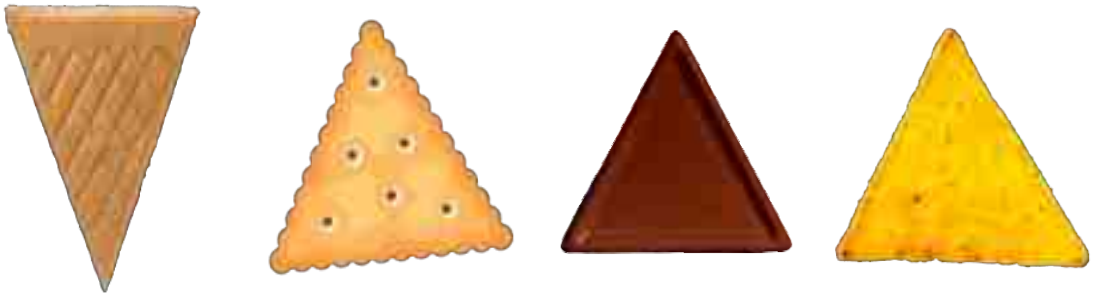
A circle is a round-shaped figure that has no corners or edges.

To draw the circle:

1. Make a small dot on your paper where you want the circle to be.
2. Place the tip of your pencil on the dot.
3. Move your pencil around the dot in a round and round motion, like you're making a big hug for the dot!

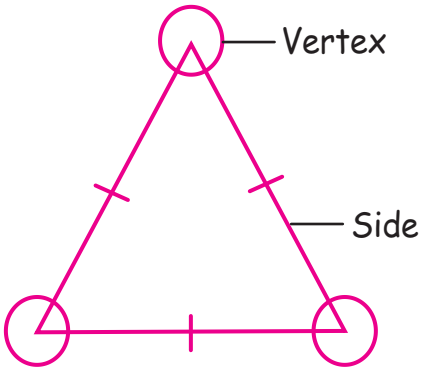
Triangle

Look at these figures!



All these figures are in triangular in shapes.

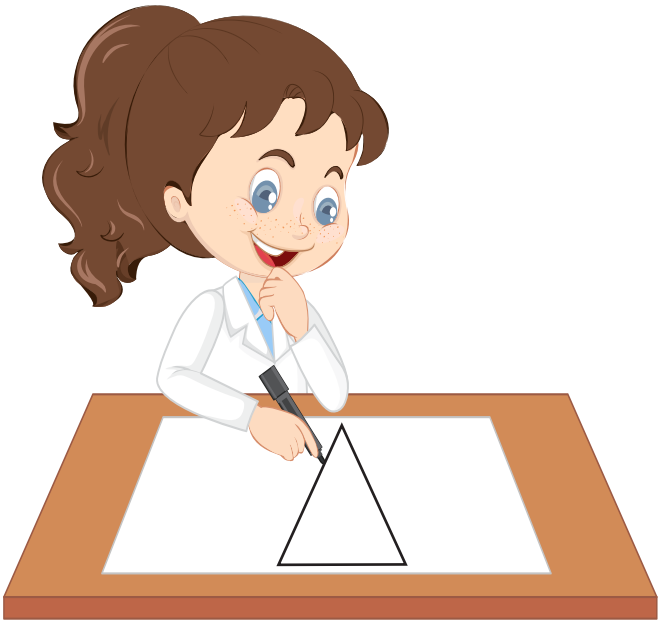
A triangle is a 2 dimensional shape with three edges (sides) having three (corners) vertices.



To draw the triangle:

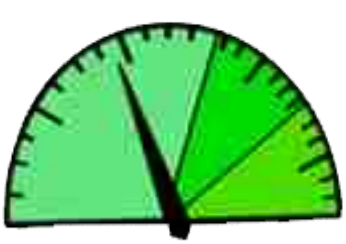
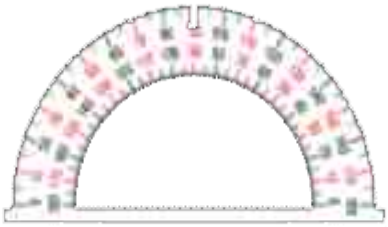
1. Start by drawing three dots on your paper, spaced evenly apart. These will be the corners of your triangle.
2. Connect the first dot to the second dot with a straight line.

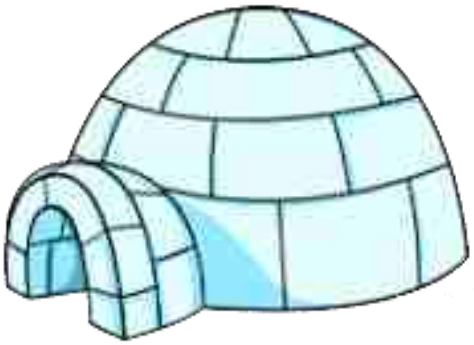
3. Connect the second dot to the third dot with a straight line.
4. Finally, connect the third dot to the first dot with a straight line.



Semi-Circle

Look at these figures!

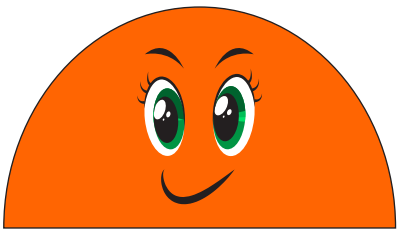



All these semicircular in shapes.

Definition of Semi-Circle

A semicircle is defined as a half circle formed by cutting the circle into two halves.

Semi - Circle

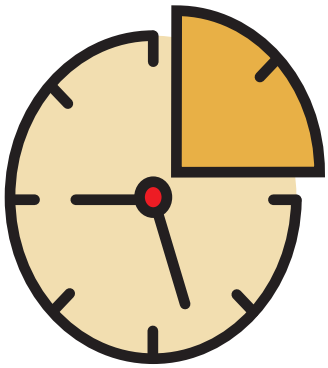


To draw the semi-circle,

1. Start by drawing a circle.
2. Draw a line through the circle, dividing it into two equal halves.

Quarter Circle

Look at these figures!

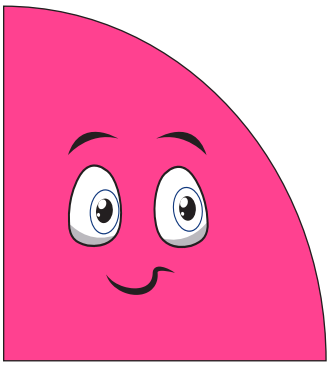


All these figures are quarter circular in shapes.

Definition of Quarter-Circle

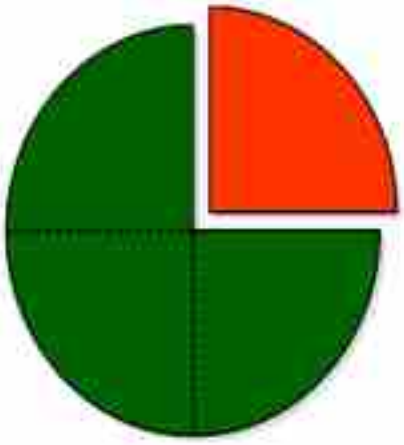
A quarter circle is a shape that is made by dividing a circle into four equal parts.

Quarter - Circle



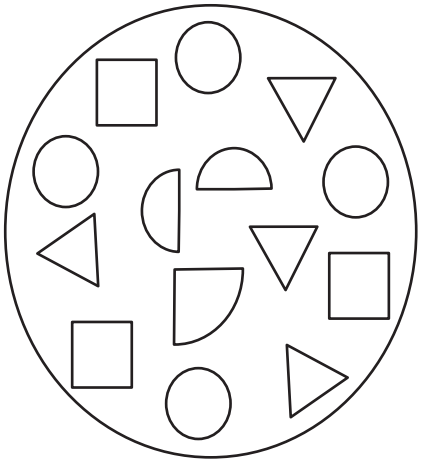
Drawing of Quarter Circle

1. Start by drawing a big circle.
2. Draw a line through the circle, dividing it into two halves.
3. Draw another line, dividing one of the halves into two quarters.



Exercise 1

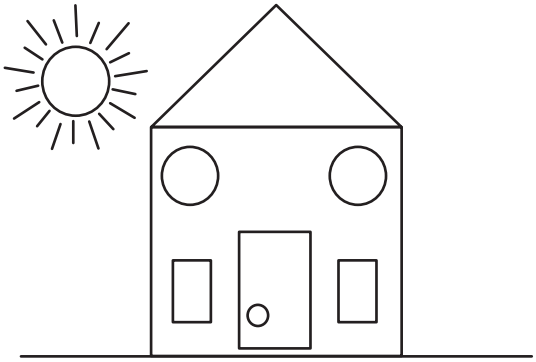
1. Colour the shapes according to the key provided.



Key:

Purple		Quarter circle
Blue		Triangle
Green		Semi-circle
Yellow		Square
Red		Circle

2. Colour the shapes according to the key provided.



Key:

	Red
	Blue
	Green
	Yellow

3. Identify and label each shape. Draw related real life objects.

Circle			

4. Draw the following 2-D shapes

3-D shapes

In our everyday life, we see many objects around us that have different shapes. Some objects have flat surfaces, while others are curved or rounded. In this section, we will learn about 3-D shapes that we see in our daily life.

Recognizing 3-D Shapes

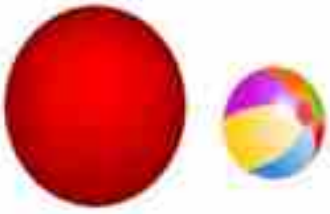
A 3-D shape is an object that has length, width, and height. We can see 3-D shapes from different angles and orientations. Let us learn about five common 3-D shapes:

Cube

Cuboid

Cone

Cylinder

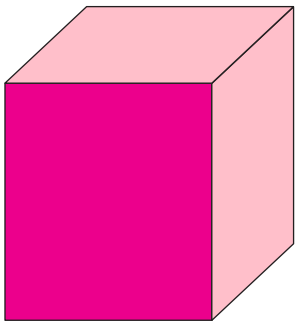


Sphere

Cube:

A cube is a shape with six square faces of equal size.

Cube

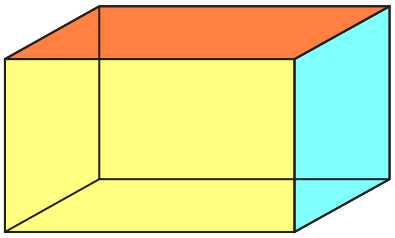


Example: A dice, a gift, a box and a dresser.

1. Cuboid:

A cuboid is a shape with six rectangular faces.

Cuboid



Example: A book, a brick and a match box.

Cone:

A cone is a shape with a circular base and a curved surface that tapers to a point.

Cone

Example: An ice cream cone, a party hat and a funnel

Cylinder:

A cylinder is a shape with two circular bases connected by a curved surface.

Cylinder

Example: A water bottle, a gas cylinder and a tin of soft drink

Sphere:

A sphere is a shape that is round and curved, like a ball.

Example: A basketball, a globe and an orange

Describing Position:

Objects can be found in different positions

Here are some examples of using these words to describe the position of objects:

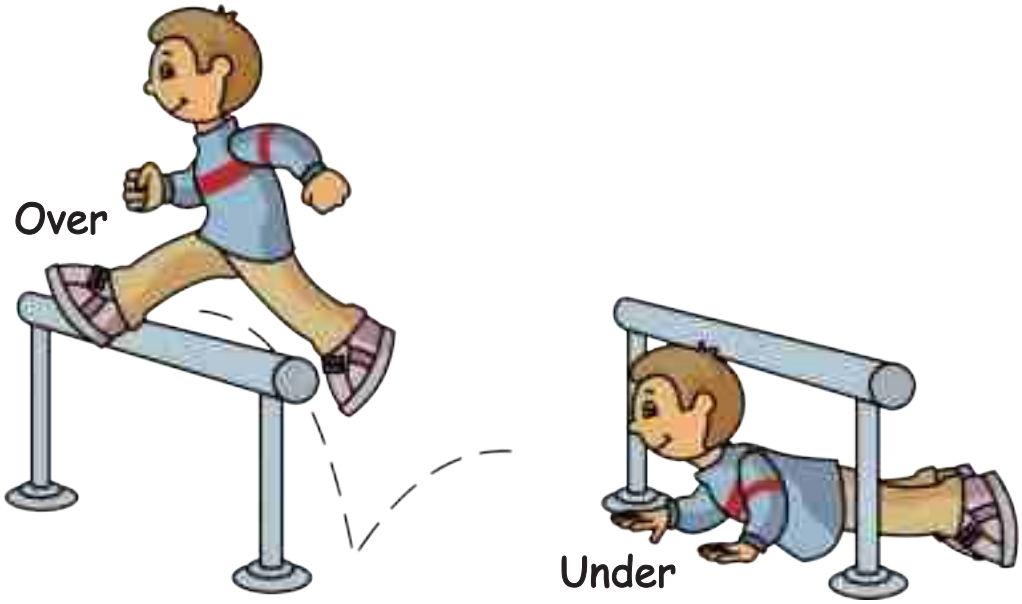
1. **Inside and Outside**

The book is inside the bag and the register is outside the bag.

2. Above and below:

The picture is above the sofa and below the clock

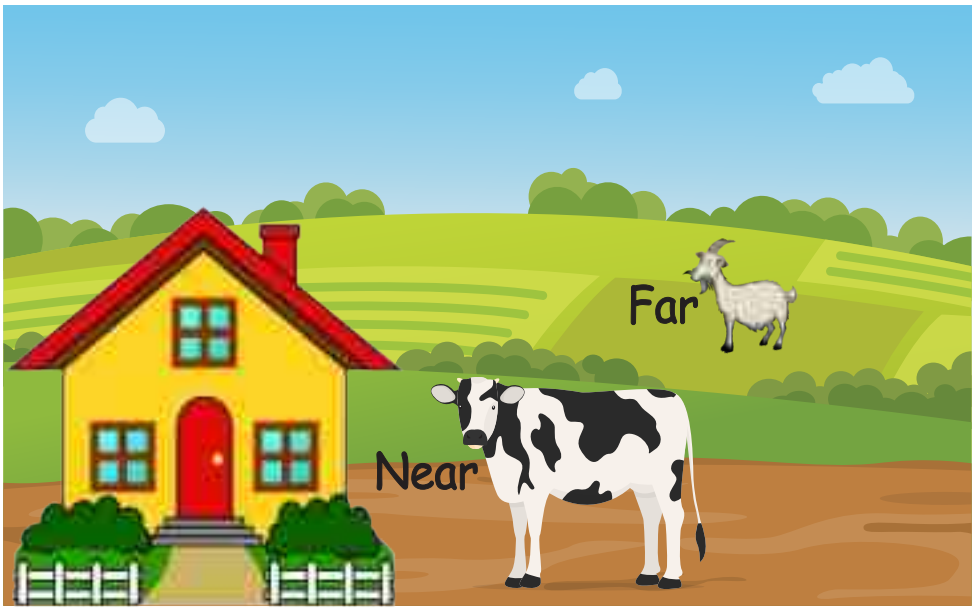
3. Over and Under:



The plane is flying over the city.

4. **Far and near:**

Cow is near the house and goat is far away from the house.



Describing Direction

When objects move, they can change their direction and orientation. We use specific words to describe these movements, including:

1. **Clockwise (turning right):**

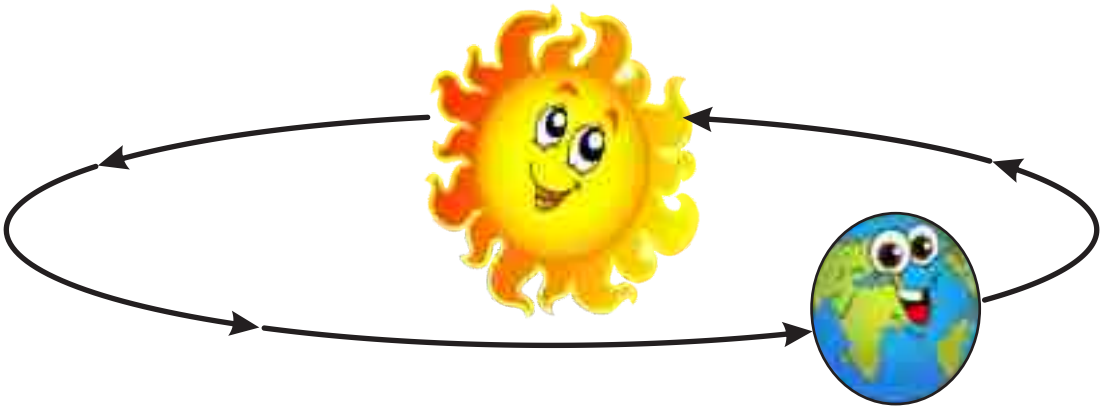
A clock's hands moving from 12 to 3. This is a clockwise direction.

Example: The wheel is turning clockwise.

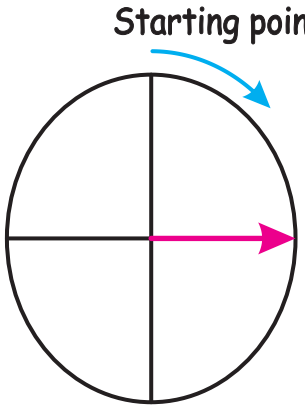
2. Anti-clockwise (turning left):

Imagine a clock's hands moving from 12 to 9. This is an anti-clockwise direction.

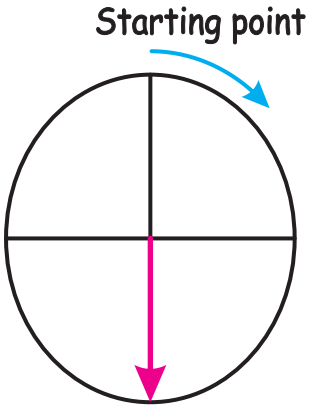
Example: The earth rotates around the Sun in anticlockwise direction.



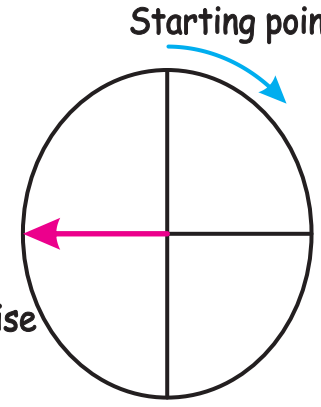
3. Quarter turn, Half turn and Three quarter turn:



A quarter turn clockwise

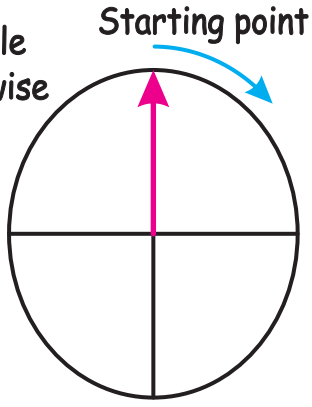


A half turn clockwise



A three quarter turn clockwise

A one whole turn clockwise



Describing Movement:

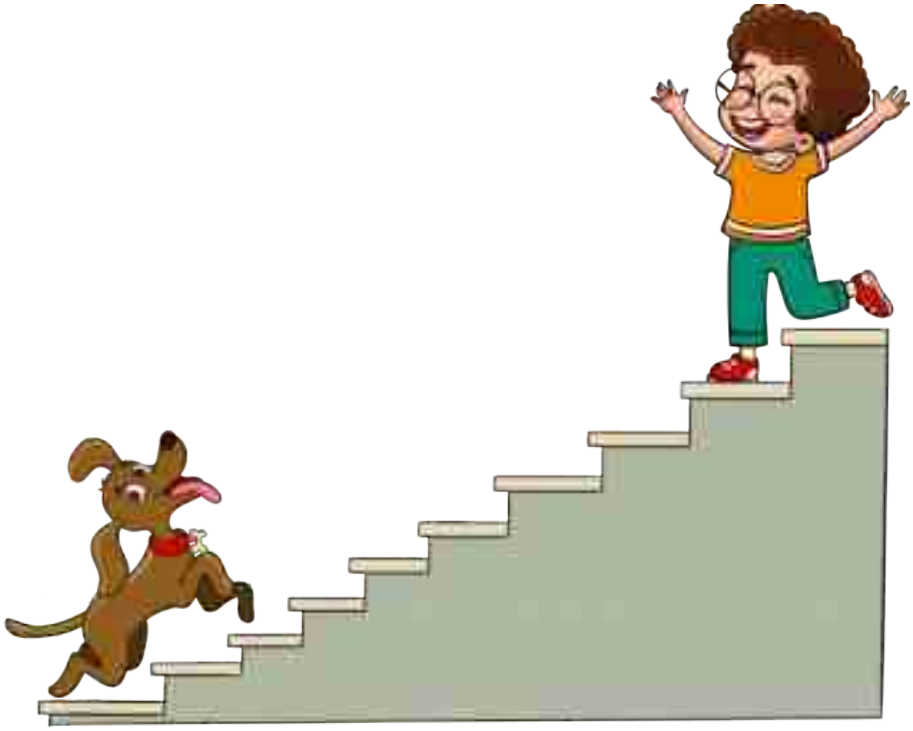
Objects can move from one place to another.

Example:

The ball rolled around the corner of the wall and into the street.

1) The bus went up the hill to the school.

2) The dog ran up the stairs to greet its owner.



3) The cyclist pedaled along the bike path to the park.

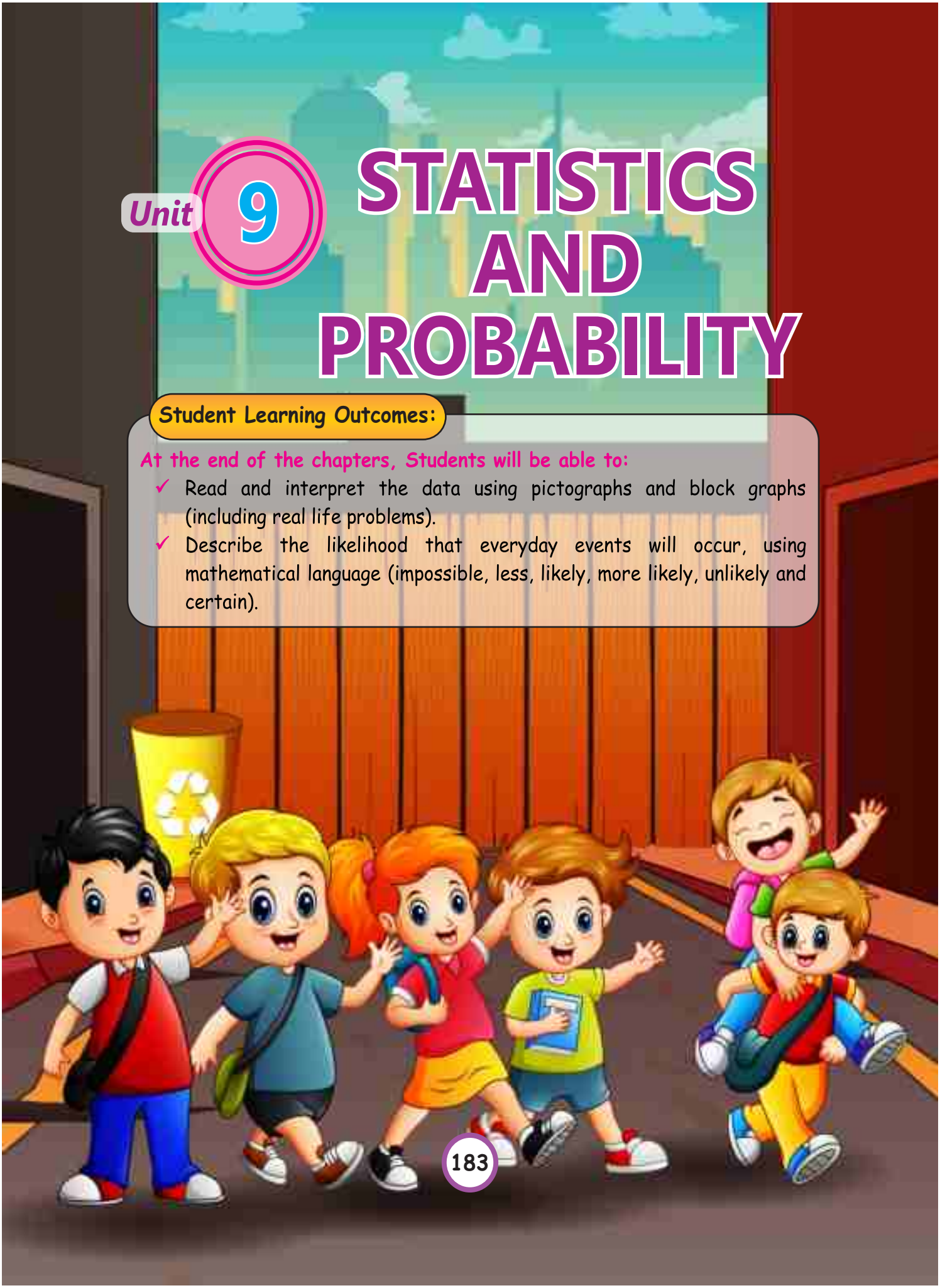
Unit 9

STATISTICS AND PROBABILITY

Student Learning Outcomes:

At the end of the chapters, Students will be able to:

- ✓ Read and interpret the data using pictographs and block graphs (including real life problems).
- ✓ Describe the likelihood that everyday events will occur, using mathematical language (impossible, less, likely, more likely, unlikely and certain).



In this chapter, we will learn how to read and interpret data using pictographs and block graphs, and even make some predictions about what might happen.

Pictographs

A pictograph is a special kind of graph that uses pictures to show information.

Example 1:

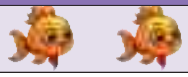
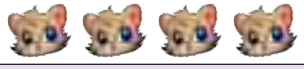
Following pictograph represents favourite sports of the students. Read and interpret the data from that pictograph.

Favourite Sport	Students
	
	
	

In this pictograph, each icon of students represents 1 favourite sport. So, if we see 2 icons for football it means 2 students like Football. Similarly, 3 students like cricket and 1 student likes tennis.

Example 2:

Following pictograph represents animals. If each pet icon represents 2 animals then read and interpret the data from that pictograph.

Names	Number of pets
Fish	
Cat	
Dog	

In this pictograph, each pet icon represents 2 animals. So, if we see 5 dog icons, it means 5 x 2 = 10 dogs are there .The same feedback can be interpreted for the Cat and Fish too.

Activity

Following pictograph represents vehicles for transportation. Read and interpret the data from that pictograph.

Names	Number of Vehicles
Bus	
Bicycle	
Car	
Each icon represents 4 vehicles	

In this pictograph, each transportation icon represents 4 vehicles. So, if we see 6 car icons, it means 6 x 4 = 24 cars! The same can be interpreted for the Bicycles and Buses too.

Block Graphs:

A block graph is a graph that uses blocks or bars to represent data. Each block or bar represents a certain number of items.

Example 1:

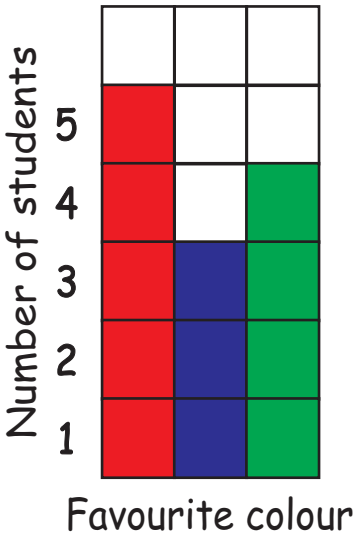
Following block graph represents sleeping hours of Nasir for three different days. Read and interpret the data from that block graph.

In this block graph, each block represents 1 hour. So, if we see 9 blocks for Sunday, it means 9 hours of sleep on Sunday! The same can be interpreted for Monday and Tuesday.

Example 2:

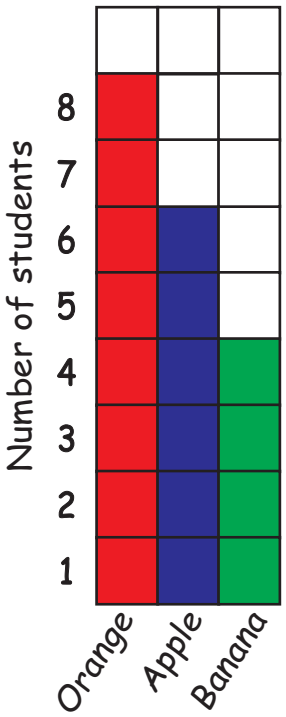
Following block graph represents favorite colors of the students. Read and interpret the data from that block graph.

In this block graph, each block represents 2 students. So, if we see 5 blocks for red, it means $2 \times 5 = 10$ students like red color. Similarly, 3 blocks for blue, it means $3 \times 2 = 6$ students like blue color and 4 blocks for Green color, it means $4 \times 2 = 8$ students like green color.



Example 3:

Following block graph represents favorite fruit of the students. Read and interpret the data from that block graph.



In this block graph, each block represents 3 students. So, if we see 8 blocks for Orange, it means 8 x 3 = 24 students like Orange. The same can be interpreted for the apple and Banana.

Possibility of Occurring of any event

Have you ever wondered how likely it is to get a sunny day or a rainy day? Or how likely it is to get a certain color of candy from a bag? We can use special words to describe how likely something is to happen. These words are: impossible, less likely, more likely, unlikely, and certain.

Impossible

Something that is impossible will never happen.

Example:

It is impossible for a horse to fly.

It is impossible for a cat to bark.

Less Likely

Something that is less likely is not very likely to happen.

Example:

It is less likely for a boy to run who has fracture in his foot.

It is less likely for a rainbow to appear in the sky on a cloudy day.

More Likely

Something that is more likely means it has more chances to happen.

Example:

It is more likely that Ali's grandmother would feel ill in cold weather.

It is more likely for a ball to bounce when dropped.

Unlikely

Something that is unlikely means it has no chance to happen.

Example:

It is unlikely for a car to fly.

It is unlikely for a flower to grow in a desert.

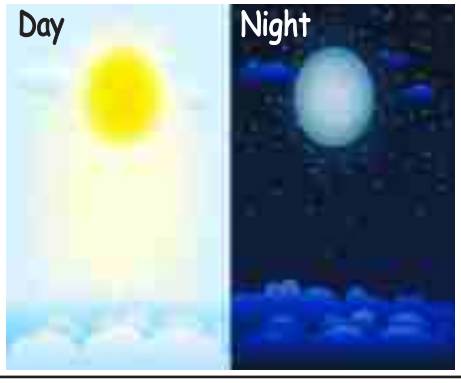
Certain

Something that is certain will always happen.

Example:

It is certain for a ball to fall when dropped.

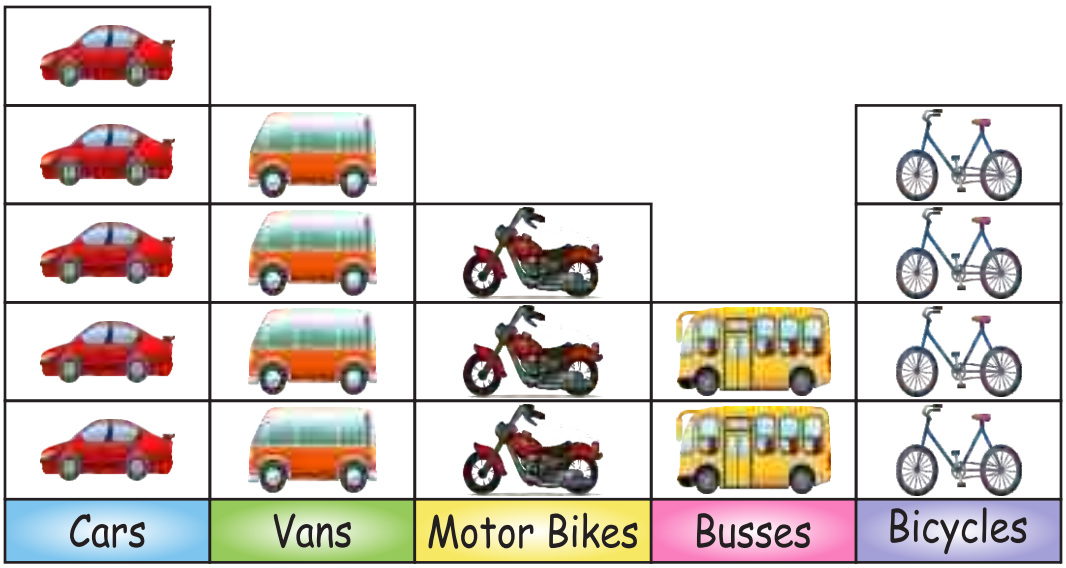
It is certain that a night comes after the day.



Exercise 1

1. The following is pictograph of the traffic passing through a signal.

One picture = 2 vehicles



Now look at the graph and answer the following questions:

(a) Which vehicles are more in numbers?

(b) Which vehicles are least in numbers?

(c) How many busses passed through the signals?

(d) How many motor bikes passed through the signals?

(e) How many vans and bicycle passed altogether?

2. The following pictograph shows the number of animals in the zoo. Here each picture represents 2 animals.

					
					
					
					
					
Lion	Deer	Monkey	Fox	Rabbit	Elephant

Now look at the pictograph and answer the following questions:

(a) How many lions are there?

(b) How many animals are there altogether?

(c) How many more foxes are there than elephants?

(d) How many different types of animals are there?

(e) Which animals are most in number?

(f) Which animals are least in number?

3. What is the possibility of getting a sunny day tomorrow?
4. What is the possibility of a cat barking?
5. What is the l possibility of getting a certain color of candy from a bag?
6. What is the possibility of a dog meowing?
7. What is the possibility of a ball bouncing when dropped?

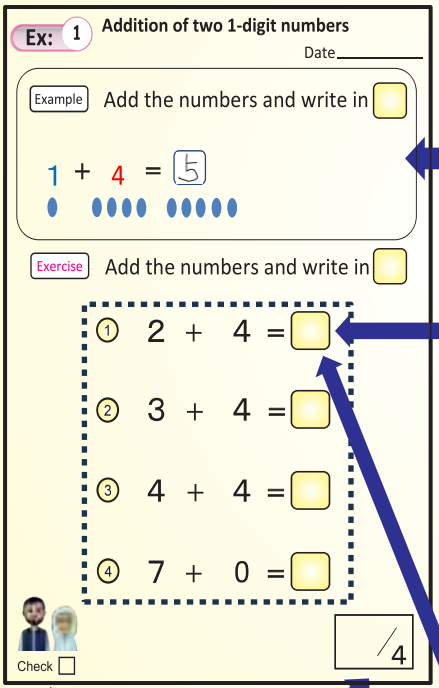
MATHEMATICS WORKBOOK

GRADE 2

About Mathematics Workbook

Mathematics workbook is designed for students to solve short exercises on daily basis for enhancing their basic mathematical skills. It is 15 minutes activity during morning assembly time. It is recommended to conduct these activities from the start of the academic year so that student can come to school regularly The students work on one page per day. If the students finish 4 days exercise, they will take 1 assessment which cycle of this activity. Teachers are recommended to give homework to the students for every exercise. It is also recommended that teachers provide additional support students who struggle to understand the solution, ensuring that all learners can acquire basic math skills. **Scan the QR code for more information..**

How to use workbook



Step 1.
Teacher need to write the example box on the board and explain how to think and solve the problem with student.

Step 2.
After the explanation, the teacher lets the students solve the exercise. The teacher instructs the students to solve it independently. The teacher needs to observe how they approach the exercise. If the students do not understand the question, the teacher provides individual support.

Step 3.
After almost all the students finish the exercise, the teacher needs to check the answer to the first question with the students. By reviewing the solution immediately, students can learn more effectively how to solve the problem.

Step 4.
The teacher marks the students' answers during the break time and writes the scores in the boxes and the summary

Step 5.
The student needs to do homework and show the book to their family and obtain their sign.

Ex: 1 Addition of two 1-digit numbers

Date _____

Example Add the numbers and write in ☐

1 + 4 = 5

Exercise Add the numbers and write in ☐

① 2 + 4 = ☐

② 3 + 4 = ☐

③ 4 + 4 = ☐

④ 7 + 0 = ☐

Check ☐

/4

Ex: 2

Date _____

Example Add the numbers and write in ☐

$$\begin{array}{r} 2 \\ +\ 5 \\ \hline 7 \end{array}$$ ✓ Good!

Exercise Add the numbers and write in ☐

① $\begin{array}{r} 3 \\ +\ 5 \\ \hline \square \end{array}$ ② $\begin{array}{r} 1 \\ +\ 8 \\ \hline \square \end{array}$

③ $\begin{array}{r} 2 \\ +\ 6 \\ \hline \square \end{array}$ ④ $\begin{array}{r} 4 \\ +\ 0 \\ \hline \square \end{array}$

Check ☐

/4

Ex: 3

Date _____

Example Add the numbers and write in ☐

9 + 2 = 11 ✓

9 + 1 + 1

Exercise Add the numbers and write in ☐

① 9 + 3 = ☐

② 8 + 3 = ☐

③ 7 + 5 = ☐

④ 6 + 5 = ☐

Check ☐

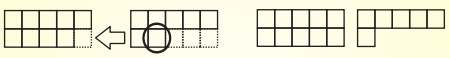
/4

Ex: 4

Date _____

Example Add the numbers and write in ☐

9 + 7 = 16 ✓



9 + 1 + 6

Exercise Add the numbers and write in ☐

① 9 + 8 = ☐

② 9 + 9 = ☐

③ 2 + 9 = ☐

④ 3 + 8 = ☐

Check ☐

Let's move on to Assessment 1

/4

Assessment 1 <Ex.1-4> ★ Date _____

① 1 + 2 = ☐ ② 6 + 4 = ☐

③ 5 + 0 = ☐ ④ 5 + 5 = ☐

⑤ 3 + 3 = ☐ ⑥ 9 + 3 = ☐

⑦ 6 + 2 = ☐ ⑧ 9 + 9 = ☐

⑨ 2 + 7 = ☐ ⑩ 3 + 9 = ☐

Check ☐

Let's move on to Ex. 5

/10

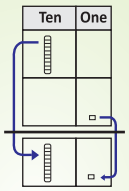
Ex: 5 Addition of 1-digit and 2-digit numbers

Date _____

Example Add the numbers and write in ☐

10 + 1 = 11 ✓Good!

Ten	One
1	0
+	1
1	1



Exercise Add the numbers and write in ☐

① 10 + 2 = ☐ ② 10 + 3 = ☐

③ 10 + 4 = ☐ ④ 10 + 5 = ☐

Check ☐

/4

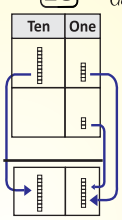
Ex: 6

Date _____

Example Add the numbers and write in ☐

15 + 3 = 18 ✓Good!

Ten	One
1	5
+	3
1	8



Exercise Add the numbers and write in ☐

① 14 + 3 = ☐ ② 13 + 4 = ☐

③ 14 + 4 = ☐ ④ 13 + 5 = ☐

Check ☐

/4

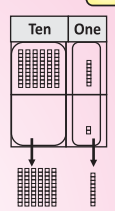
Ex: 7

Date _____

Example Add the numbers and write in ☐

67 + 2 = 69 ✓ Good!

Ten	One
6	7
+	2
6	9



Exercise Add the numbers and write in ☐

① 32 + 5 = ☐ ② 43 + 2 = ☐

③ 76 + 1 = ☐ ④ 51 + 8 = ☐

Check ☐

/4

Ex: 8 Addition of 2-digit numbers

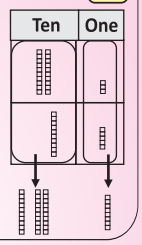
Date _____

Example Add the numbers and write in

23 + 15 = 38 ✓ Good!

Ten	One
2	3
+ 1	5
3	8

Good! ✓



Exercise Add the numbers and write in

① 24 + 13 = ☐☐

② 32 + 24 = ☐☐

③ 72 + 26 = ☐☐

④ 55 + 44 = ☐☐

Check ☐

Let's move on to Assessment 2

/4

Assessment 2 <Ex.5-8> ★

Date _____

① 10 + 7 = ☐☐

② 16 + 3 = ☐☐

③ 60 + 30 = ☐☐

④ 61 + 3 = ☐☐

⑤ 45 + 24 = ☐☐

⑥ 70 + 27 = ☐☐

⑦ 85 + 13 = ☐☐

⑧ 13 + 74 = ☐☐

Check ☐

Let's move on to Ex. 9

/8

Ex: 9

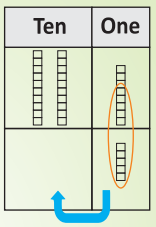
Date _____

Example Add the numbers and write in

28 + 5 = 33 ✓ Good!

Ten	One
1	
2	8
+	5
3	3

8+5=13



Exercise Add the numbers and write in

① 1+4 → 48 + 6 = ☐☐ 8+6

② 1+2 → 25 + 7 = ☐☐ 5+7

③ 48 + 3 = ☐☐

④ 58 + 3 = ☐☐

Check ☐

/4

Ex: 10

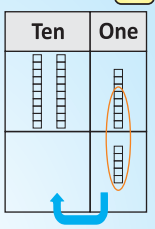
Date _____

Example Add the numbers and write in

28 + 5 = 33 ✓ Good!

Ten	One
1	
2	8
+	5
3	3

8+5=13



Exercise Add the numbers and write in

① 1+4 → 48 + 9 = ☐☐ 8+9

② 1+3 → 38 + 9 = ☐☐ 8+9

③ 45 + 5 = ☐☐

④ 84 + 9 = ☐☐

Check ☐

/4

Ex: 11

Date _____

Example Add the numbers and write in

28 + 35 = 63 ✓ Good!

	Ten	One
	2	8
+	3	5
	6	3

1+2+3=6 ; 8+5=13 ; Good! ✓

Exercise Add the numbers and write in

① 1+3+2 → 39 + 26 (9+6) = ☐

② 1+4+4 → 45 + 47 (5+7) = ☐

③ 45 + 35 = ☐

④ 39 + 53 = ☐

Check ☐

/4

Ex: 12

Date _____

Example Add the numbers and write in

28 + 35 = 63 ✓ Good!

	Ten	One
	2	8
+	3	5 ✓
	6	3

Exercise Add the numbers and write in

① 48 + 17 = ☐

② 26 + 49 = ☐

③ 59 + 36 = ☐

④ 62 + 29 = ☐

Check ☐

Let's move on to Assessment 3

/4

Assessment 3 <Ex.9-12>

Date _____

① 1+2 → 28 + 5 (8+5) = ☐

② 48 + 8 = ☐

③ 1+4+3 → 46 + 36 (6+6) = ☐

④ 1+6+2 → 69 + 21 (9+1) = ☐

⑤ 25 + 37 = ☐

⑥ 67 + 27 = ☐

Check ☐

Let's move on to Ex. 13

/6

Ex: 13 Subtraction of two 1-digit numbers

Date _____

Example Subtract the numbers and write in the

8 − 3 = 5 ✓ Good!

Exercise Subtract the numbers and write in the

① 7 − 4 = ☐

② 8 − 6 = ☐

③ 9 − 8 = ☐

④ 7 − 0 = ☐

Check ☐

/4

Ex: 14

Date _____

Example Subtract the numbers and write in the ☐

$$\begin{array}{r} 5 \\ -\ 2 \\ \hline 3 \end{array}$$ ✓ Good!

Exercise Subtract the numbers and write in the ☐

① $\begin{array}{r} 5 \\ -\ 3 \\ \hline \square \end{array}$ ② $\begin{array}{r} 8 \\ -\ 1 \\ \hline \square \end{array}$

③ $\begin{array}{r} 6 \\ -\ 2 \\ \hline \square \end{array}$ ④ $\begin{array}{r} 4 \\ -\ 4 \\ \hline \square \end{array}$

Check ☐

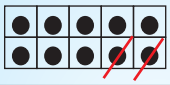
/4

Ex: 15 Subtraction of 1-digit and 2-digit numbers

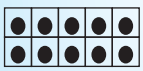
Date _____

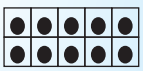
Example Subtract the numbers and write in the ☐

10 − 2 = 8 ✓ Good!



Exercise Subtract the numbers and write in the ☐

① 10 − 1 = ☐ 

② 10 − 3 = ☐ 

③ 10 − 4 = ☐

④ 10 − 5 = ☐

Check ☐

/4

Ex: 16

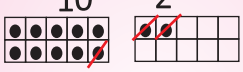
Date _____

Example Subtract the numbers and write in the ☐

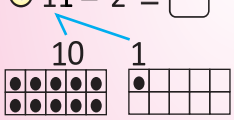
12 − 3 = 9 ✓ Good!

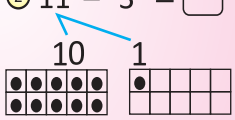
12 − 3

10 2



Exercise Subtract the numbers and write in the ☐

① 11 − 2 = ☐ 

② 11 − 3 = ☐ 

③ 12 − 4 = ☐

④ 13 − 4 = ☐

Check ☐

Let's move on to Assessment 4

/4

Assessment 4 <Ex. 13-16>

Date _____

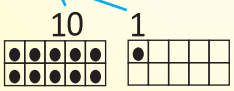
① 5 − 1 = ☐ ② 6 − 5 = ☐

③ 2 − 0 = ☐

④ $\begin{array}{r} 9 \\ -\ 9 \\ \hline \square \end{array}$

⑤ $\begin{array}{r} 8 \\ -\ 1 \\ \hline \square \end{array}$

⑥ 10 − 5 = ☐

⑦ 11 − 6 = ☐ 

⑧ 15 − 8 = ☐

Check ☐

Let's move on to Ex. 17

/8

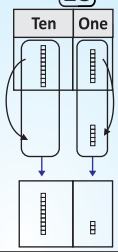
Ex: 17

Date _____

Example Subtract the numbers and write in the ☐

18 − 5 = 13 ✓ Good!

Ten	One
1	8
−	5
1	3



Exercise Subtract the numbers and write in the ☐

① 18 − 2 = ☐

② 14 − 1 = ☐

③ 12 − 2 = ☐

④ 15 − 4 = ☐

Check ☐

/4

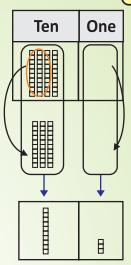
Ex: 18

Date _____

Example Subtract the numbers and write in the ☐

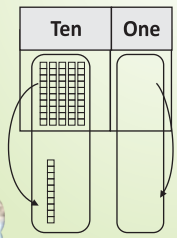
40 − 30 = 10 ✓ Good!

Subtract



Exercise Subtract the numbers and write in the ☐

① 50 − 10 = ☐ ② 60 − 50 = ☐



Check ☐

/2

Ex: 19

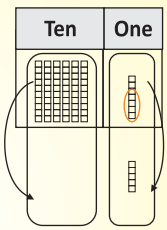
Date _____

Grade _____ Name _____ Number _____

Example Subtract the numbers and write in the ☐

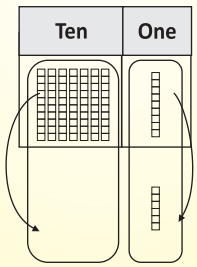
67 − 5 = 62 ✓ Good!

Ten	One
6	7
−	5
6	2



Exercise Subtract the numbers and write in the ☐

① 79 − 6 = ☐



② 58 − 2 = ☐

Check ☐

/2

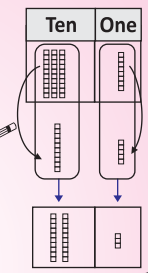
Ex: 20 Subtraction of 2-digit numbers

Date _____

Example Subtract the numbers and write in the ☐

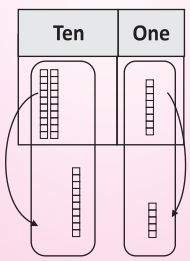
38 − 15 = 23 ✓ Good!

Ten	One
3	8
−	1	5
2	3



Exercise Subtract the numbers and write in the ☐

① 28 − 15 = ☐



② 34 − 21 = ☐

Check ☐

/2

Assessment 5 <Ex.17-20> ★ Date _____

① 19 − 6 = □

② 68 − 5 = □

③ 60 − 20 = □

④ 45 − 32 = □

⑤ 75 − 22 = □

Check ☐

Let's move on to Ex. 21

/5

Ex: 21 Date _____

Example Subtract the numbers and write in the □

34 − 8 = 26 ✓ Good!

Ten	One
2	14
3	4
−	8
2	6

14 − 8 = ⑥

Exercise Subtract the numbers and write in the □

① 42 − 9 = □

② 63 − 7 = □

Check ☐

/2

Ex: 22 Date _____

Example Subtract the numbers and write in the □

34 − 8 = 26 ✓ Good!

Ten	One
2	14
~~3~~	~~4~~
−	8
2	6

14 − 8 = ⑥

Exercise Subtract the numbers and write in the □

① 22 − 6 = □

② 71 − 3 = □

③ 45 − 7 = □

④ 57 − 9 = □

Check ☐

/4

Ex: 23 Date _____

Example Subtract the numbers and write in the □

34 − 18 = 16 ✓ Good!

	2	14
	~~3~~	~~4~~
−	1	8
	1	6

Exercise Subtract the numbers and write in the □

① 54 − 17 = □

② 45 − 16 = □

③ 36 − 19 = □

④ 42 − 13 = □

Check ☐

Let's move on to Assessment 5

/4

Ex: 24

Date _____

Example Subtract the numbers and write in the ☐

34 − 18 = 16 ✓ Good!

$$\begin{array}{r} 2\ 14 \\ \cancel{3}\ \cancel{4} \\ -\ 1\ 8 \\ \hline 1\ 6 \end{array}$$

Exercise Subtract the numbers and write in the ☐

① $\begin{array}{r} 4\ 3 \\ -\ 2\ 5 \\ \hline \square\ \square \end{array}$ ② $\begin{array}{r} 7\ 1 \\ -\ 4\ 6 \\ \hline \square\ \square \end{array}$

③ $\begin{array}{r} 6\ 5 \\ -\ 5\ 6 \\ \hline \square\ \square \end{array}$ ④ $\begin{array}{r} 5\ 3 \\ -\ 4\ 9 \\ \hline \square\ \square \end{array}$

Check ☐ Let's move on to Assessment 6 /4

Assessment 6 <Ex.21-24> ★

Date _____

① $\begin{array}{r} 6\ 2 \\ -\ 1\ 5 \\ \hline \square \end{array}$ ② $\begin{array}{r} 8\ 1 \\ -\ 1\ 6 \\ \hline \square \end{array}$

③ $\begin{array}{r} 5\ 6 \\ -\ 2\ 8 \\ \hline \square \end{array}$ ④ $\begin{array}{r} 4\ 4 \\ -\ 3\ 9 \\ \hline \square \end{array}$

⑤ 61 − 18 = ☐

Check ☐ Let's move on to Ex. 25 /5

Ex: 25 Multiplication within 100

Date _____

Example What is the total number of bananas?

2 + 2 + 2

2 X 3 = 6

Exercise What is the total number of bananas?

①

+ + +

② X = ☐

Check ☐ /2

Ex: 26

Date _____

Example Multiply.

2 x 3 = 6

2+2+2

Exercise Multiply.

① 2 × 1 = ☐
② 2 × 2 = ☐
③ 2 × 3 = ☐
④ 2 × 4 = ☐
⑤ 2 × 5 = ☐
⑥ 2 × 6 = ☐
⑦ 2 × 7 = ☐
⑧ 2 × 8 = ☐
⑨ 2 × 9 = ☐
⑩ 2 × 10 = ☐

Check ☐ /10

Ex: 27

Date _____

Example Multiply.

5 x 4 = 20

5+5+5+5

Exercise Multiply.

① 5 × 1 = ☐
② 5 × 2 = ☐
③ 5 × 3 = ☐
④ 5 × 4 = ☐
⑤ 5 × 5 = ☐
⑥ 5 × 6 = ☐
⑦ 5 × 7 = ☐
⑧ 5 × 8 = ☐
⑨ 5 × 9 = ☐
⑩ 5 × 10 = ☐

Check ☐ /10

Ex: 28

Date _____

Example Multiply.

3 x 4 = 12 ✓ Good

3+3+3+3

Exercise Multiply.

① 3 x 1 = ☐

3

② 3 x 2 = ☐

3 + 3

③ 3 x 3 = ☐

3 + 3 + 3

④ 3 x 4 = ☐

3 + 3 + 3 + 3

⑤ 3 x 5 = ☐

3 + 3 + 3 + 3 + 3

⑥ 3 x 6 = ☐

⑦ 3 x 7 = ☐

⑧ 3 x 8 = ☐

⑨ 3 x 9 = ☐

⑩ 3 x 10 = ☐

Check ☐

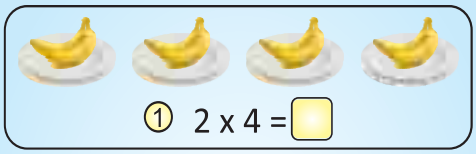
Let's move on to Assessment 7

/10

Assessment 7 <Ex.25-28> ★

Date _____

Multiply.



① 2 x 4 = ☐

② 2 x 7 = ☐

③ 5 x 5 = ☐

④ 3 x 10 = ☐

⑤ 2 x 6 = ☐

⑥ 5 x 6 = ☐

⑦ 5 x 4 = ☐

⑧ 2 x 8 = ☐

⑨ 5 x 9 = ☐

⑩ 3 x 7 = ☐

Check ☐

Let's move on to Ex. 29

/10

Ex: 29

Date _____

Example Multiply.

4 x 4 = 16 ✓ Good

4+4+4+4

Exercise Multiply.

① 4 x 1 = ☐

4

② 4 x 2 = ☐

4 + 4

③ 4 x 3 = ☐

4 + 4 + 4

④ 4 x 4 = ☐

4 + 4 + 4 + 4

⑤ 4 x 5 = ☐

4 + 4 + 4 + 4 + 4

⑥ 4 x 6 = ☐

⑦ 4 x 7 = ☐

⑧ 4 x 8 = ☐

⑨ 4 x 9 = ☐

⑩ 4 x 10 = ☐

Check ☐

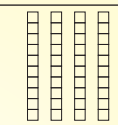
/10

Ex: 30

Date _____

Example Multiply.

10 x 4 = 40 ✓ Good



10+10+10+10

Exercise Multiply.

① 10 x 1 = ☐

10

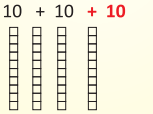
② 10 x 2 = ☐

10 + 10

③ 10 x 3 = ☐

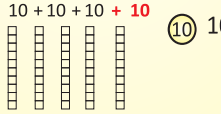
10 + 10 + 10

④ 10 x 4 = ☐



10 + 10 + 10 + 10

⑤ 10 x 5 = ☐



10 + 10 + 10 + 10 + 10

⑥ 10 x 6 = ☐

⑦ 10 x 7 = ☐

⑧ 10 x 8 = ☐

⑨ 10 x 9 = ☐

⑩ 10x10 = ☐

Check ☐

/10

Ex: 31

Date _____

Example Multiply.

4 X 3

	Ten	One
		4
X		3
	1	2

Exercise Multiply.

① 4 X 4

	Ten	One
		4
X		4

② 5 X 3

	Ten	One
		5
X		3

Check ☐ /2

Ex: 32

Date _____

Example Write the answer in the box ☐

10 = 2 X 5 = 5 X 2

Exercise Write the answer in the box ☐

① 15 = ☐ X ☐ = ☐ X ☐

② 12 = ☐ X ☐ = ☐ X ☐

Check ☐ Let's move on to Assessment 8 /2

Assessment 8 <Ex.29-32>

Date _____

Multiply.

① 4 x 7 = ☐ ② 10 x 9 = ☐

③ 4 x 6 = ☐ ④ 4 X 5

	Ten	One
		4
X		5

⑤ 6 = ☐ X ☐ = ☐ X ☐

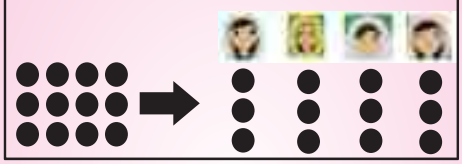
Check ☐ Let's move on to Ex. 33 /5

Ex: 33 Division without remainder within 100

Date _____

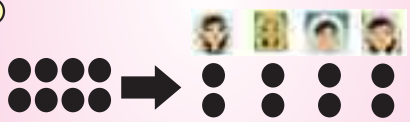
Example 4 girls share 12 balls equally.

12 ÷ 4 = 3



Exercise 4 girls share 8 balls equally.

①



☐ ÷ ☐ = ☐

Check ☐ /3

Ex: 34

Date _____

Example Write the answer in the box

$12 \div 4 = 3$

$4 \times 3 = 12$

4	×	1	=	4
4	×	2	=	8
4	**×**	**3**	**=**	**12**

Exercise Write the answer in the box

① $8 \div 4 = \square$

$4 \times \square = 8$

4	x	1	=	4
4	x	2	=	8

Check ☐

/1

Ex: 35

Date _____

Example Divide.

$12 \div 4 = \square$ ➡ $12 \div 4 = 3$

Good!

Exercise Divide.

① $20 \div 4 = \square$ ② $10 \div 2 = \square$

③ $9 \div 3 = \square$ ④ $16 \div 4 = \square$

Check ☐

/4

Ex: 36

Date _____

Example Divide.

$15 \div 5 = 3$

	Ten	One
		3
5)	1	5
−	1	5
		0

$15 \div 5 = \square$

$5 \times 3 = 15$

Exercise Divide.

① 3) 1 2 (−)

② 4) 1 6 (−)

Check ☐

Let's move on to Assessment 9

/2

Assessment 9 <Ex.33-36>

Date _____

Multiply.

① $4 \times 3 = 3 \times \square$

② Divide. $20 \div 5 = \square$

$5 \times \square = 20$

③ $25 \div 5 = \square$

④ $12 \div 4 = \square$

⑤ 4) 1 6 (−)

Check ☐

/5

Assessment Addition

Date _____

① 6 + 2 = ☐ ② 9 + 8 = ☐

③ 62 + 4 = ☐ ④ 78 + 7 = ☐

⑤ 48 + 21 = ☐ ⑥ 57 + 26 = ☐

Check ☐

/6

Assessment Addition 2

Date _____

① 37 + 8 = ☐ ② 45 + 7 = ☐

③ 48 + 12 (1+4+1 > 8+2) ④ 15 + 45 (1+4+1 > 5+5)

⑥ 59 + 36 = ☐ ⑦ 62 + 29 = ☐

Check ☐

/6

Assessment Subtraction

Date _____

① 4 − 2 = ☐ ② 14 − 8 = ☐

③ 87 − 6 = ☐ ④ 54 − 9 = ☐

⑤ 86 − 23 = ☐ ⑥ 71 − 17 = ☐

Check ☐

/6

Assessment Subtraction 2

Date _____

① 80 − 20 = ☐ ② 66 − 8 = ☐

③ 52 − 9 = ☐ ④ 81 − 45 = ☐

⑤ 94 − 85 = ☐ ⑥ 51 − 44 = ☐

Check ☐

/6

Assessment Multiplication

Date _____

Multiply.

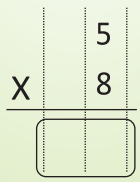
① 4 x 4 = ☐

② 5 x 10 = ☐

③ 3 x 9 = ☐

④ 18 = ☐ x ☐ = ☐ x ☐

⑤ 5 X 8



Check ☐

/5

Assessment Division

Date _____

Divide.

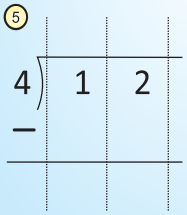
① 20 ÷ 4 = ☐

② 4 x ☐ = 20

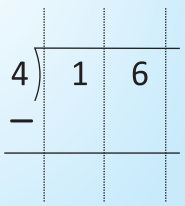
③ 10 ÷ 2 = ☐

④ 25 ÷ 5 = ☐

⑤



⑥



Check ☐

/6

Level Assessment

Date _____

Calculate.

6 − 2 = 4 6 ÷ 2 = 3

6 × 2 = 12 6 + 2 = 8

Calculate.

① 6 × 3 = ☐ ⑤ 8 × 2 = ☐

② 6 − 3 = ☐ ⑥ 8 − 2 = ☐

③ 6 + 3 = ☐ ⑦ 8 + 2 = ☐

④ 6 ÷ 3 = ☐ ⑧ 8 ÷ 2 = ☐

⑨ 9 − 3 = ☐

⑩ 9 + 3 = ☐

⑪ 9 ÷ 3 = ☐

⑫ 9 × 3 = ☐

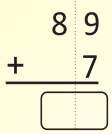
Check ☐

/12

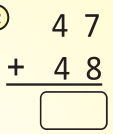
Level Assessment 2

Date _____

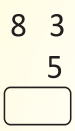
①



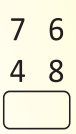
②



③



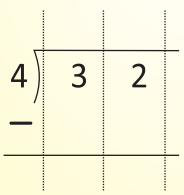
④



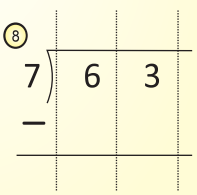
⑤ 7 x 7 = ☐

⑥ 8 x 9 = ☐

⑦



⑧



Check ☐

/8

Morning Math exercise answers

Addition of two 1-digit numbers
Ex1: (1)6, (2)7, (3)8, (4)7
Ex2: (1)8, (2)9, (3)8, (4)4
Ex3: (1)12, (2)11, (3)12, (4)11
Ex4: (1)17, (2)18, (3)11, (4)11
Assessment 1:
(1) 3, (2)10, (3) 5, (4)10, (5)6,
(6) 12, (7) 8, (8)18, (9) 9, (10)12

Addition of 1-digit and 2-digit numbers
Ex5: (1) 12, (2) 13, (3) 14, (4) 15
Ex6: (1) 17, (2) 17, (3) 18, (4) 18
Ex7: (1) 37, (2) 45, (3) 77, (4) 59
Addition of 2-digit numbers
Ex8: (1) 37, (2) 56, (3) 98, (4) 99
Assessment 2:
(1) 17, (2) 19, (3)90, (4)64,
(5)69, (6) 97, (7)98, (8)87

Ex9: (1) 54, (2) 32, (3) 51, (4) 61
Ex10: (1) 57, (2) 47, (3) 50, (4) 93
Ex: 11 (1) 65, (2) 92, (3) 80, (4) 92
Ex: 12 (1) 65, (2) 75, (3) 95, (4) 91
Assessment 3:
(1)33, (2)56, (3)82, (4)90, (5) 62, (6)94

Substruction of two 1-digit numbers
Ex13: (1) 3, (2) 2, (3) 1, (4)7
Ex14: (1) 2, (2) 7, (3) 4, (4) 0
Substruction of 1-digit and 2-digit numbers
Ex15: (1) 9, (2) 7, (3) 6, (4) 5
Ex16: (1) 9, (2) 8, (3) 8, (4) 9
Assessment 4:
(1)4, (2)1, (3)2, (4)0,
(5)7, (6) 5, (7)5, (8)7

Ex17: (1) 16, (2) 13, (3) 10, (4) 11
Ex18: (1) 40, (2) 10
Ex19: (1) 73, (2) 56
Ex.20: (1) 13, (2) 13
Assessment 5:
(1) 13, (2)63, (3)40, (4)13, (5)53

Ex.21: (1) 33, (2) 56
Ex.22: (1) 16, (2) 68, (3)38, (4)48
Ex.23 (1) 37, (2) 29, (3)17, (4)29
Ex.24: (1) 18, (2) 25, (3)9, (4)4
Assessment 6:
(1) 47, (2)65, (3)28, (4)5, (5)43

Multiplication within 100
Ex25: (1) 2, 2, 2, 2 (2) 2, 4, 8
Ex26: (1)2, (2)4, (3)6, (4)8, (5)10
(6)12, (7)14, (8)16, (9)18, (10)20
Ex27: (1)5, (2)10, (3)15, (4)20, (5)25, (6)30,
(2)35, (3)40, (4)45, (5)50
Ex28: (1)3, (2)6, (3)9, (4)12, (5)15,
(6)18, (7)21, (8)24, (9)27, (10)30
Assessment 7:
(1)8, (2)14, (3)25, (4)30, (5)12,
(6)30, (7)20, (8)16, (9)45, (10)21

Ex29: (1) 4, (2)8, (3)12, (4)16, (5)20
(6)24, (7)28, (8)32, (9)36, (10)40
Ex30: (1)10, (2)20, (3)30, (4)40, (5)50,
(6)60, (7)70, (8)80, (9)90, (10)100
Ex31: (1) 16, (2)15
Ex32: (1) 3, 5, 5, 3, (2)3, 4, 4, 3
Assessment 8:
(1)28, (2)90, (3)24, (4)20,
(5) 2, 3, 3, 2

Division without reminder within 100
Ex33: (1)8, (2)4, (3)2
Ex34: (1)2, 2
Ex35: (1)5, (2)5, (3)3, (4)4
Ex36: (1)4, (2)4
Assessment 9:
(1)4, (2) 4, 4, (3)5, (4)3, (5)4

Assessment Addition:
(1)8, (2)17, (3)66, (4)85, (5) 69 (6)83
Assessment Addition2:
(1)45, (2)52, (3)60, (4)60, (5)95 (6)91
Assessment Substruction:
(1)2, (2)6, (3)81, (4)45, (5) 63 (6)54
Assessment Substruction2:
(1)60, (2)58, (3)43, (4)36, (5)9 (6)7
Assessment Multiplication:
(1)16, (2)50, (3)27, (4)3,6,6,3 (9,2,2,9) (5)
40
Assessment Division:
(1) 5, (2)5, (3) 5, (4)5, (5) 3 (6) 4
Level Assessment:
(1)18, (2)3, (3)9, (4)2, (5)16, (6)6, (7)10,
(8)4, (9)6, (10)12, (11)3, (12)27
Level Assessment2:
(1)96, (2)95, (3)78, (4)28, (5)49, (6)72, (7)8,
(8)9

Ass1	Ass2	Ass3	Ass4	Ass5	Ass6	Ass7	Ass8	AssAd	AssAd2	AssSb	AssSb2	AssMl	AssDv	LvAss	LvAss

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