Mathematics

Grade 3

Based on Single National Curriculum 2020

One Nation, One Curriculum

Punjab Curriculum and Textbook Board, Lahore

بِسۡمِ اللّٰہِ الرَّحۡمٰنِ الرَّحِیۡمِ

(In the Name of Allah, the Most Compassionate, the Most Merciful)

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TEXTBOOK BOARD, LAHORE

This book is based on Single National Curriculum 2020
and has been approved by the National Review Committee

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Experimental Edition

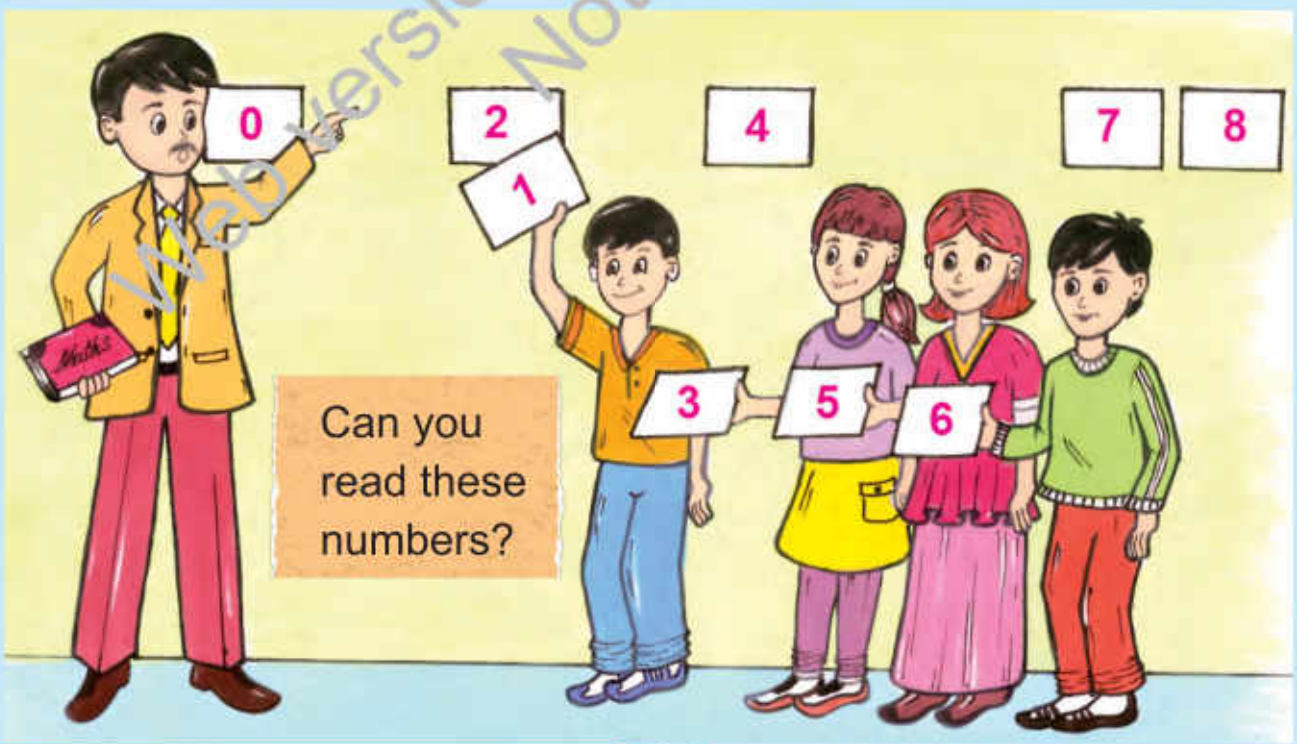
Unit 1

Whole Numbers

Learning Outcomes

After completing this unit, you will be able to:

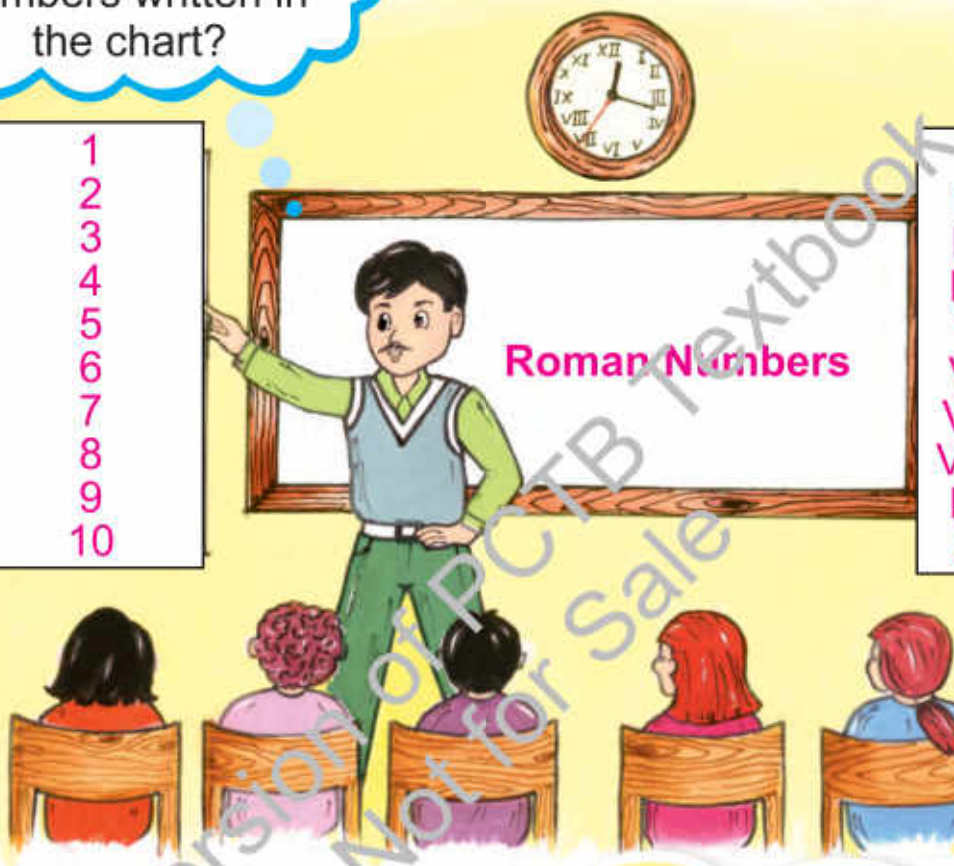
- Read Roman numbers up to 20.
- Write Roman numbers up to 20.
- Recognize even and odd numbers up to 99 within a given sequence.
- Differentiate between even and odd numbers within a given sequence.
- Identify the place value of digits in numbers up to 3-digit.
- Read and write given numbers up to 100 000 in numerals and words.
- Represent a given number on number line up to 2-digit numbers.
- Identify the value of a number from number line up to 2-digit numbers.
- Compare two numbers up to 3-digit using symbols "<", ">", or "=".
- Write the given set of numbers in ascending and descending order (numbers up to 3-digit).
- Round off a whole number to the nearest 10 and 100.



Roman Numbers

Who can read the numbers written in the chart?

1
2
3
4
5
6
7
8
9
10



I	=	1
II	=	2
III	=	3
IV	=	4
V	=	5
VI	=	6
VII	=	7
VIII	=	8
IX	=	9
X	=	10

We have never read these numbers on the clock before this.

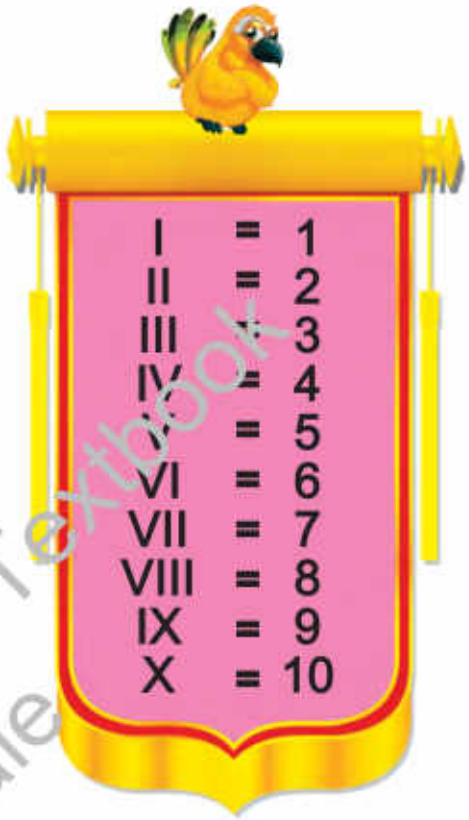
I can read the numbers written in the chart 1, 2, 3, 4, 5, 6, 7,8, 9,10

The numbers given on the clock are called Roman Numbers.

Roman Numbers can be read as.

Read the Roman numbers V, VII, IX and X

V is called 5
VII is called 7
IX is called 9
X is called 10



Count sharpeners and write in Roman numbers.

Try Yourself

Can you write the following Roman numbers in numeral form?
IIV, IIX, IX and VII.

Teaching Point Show/give different objects to the children on which Roman numbers are written and practice them reading of Roman numbers.

Roman Numbers up to 20

Numbers	Roman Numbers	Numbers	Roman Numbers
1	I	11	XI
2	II	12	XII
3	III	13	XIII
4	IV	14	XIV
5	V	15	XV
6	VI	16	XVI
7	VII	17	XVII
8	VIII	18	XVIII
9	IX	19	XIX
10	X	20	XX

Write the time by looking at the clocks.

Write the missing Roman numbers in blank boxes.

I		III			VI				X
XI				XV					XX

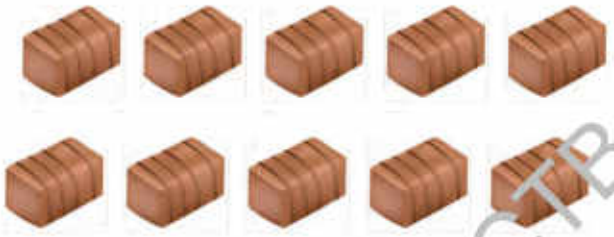
Exercise 1

1 Write in the Roman Numbers.

2 = ⬡ 5 = ⬡ 12 = ⬡ 16 = ⬡

7 = ⬡ 9 = ⬡ 19 = ⬡ 20 = ⬡

2 Count the chocolates and write in Roman numbers.



3 Count the given dice and write in Roman numbers.

4 Write the missing numbers.

Teaching Point Give different cards to the children on which numerals and Roman numbers are written. Then ask the children to recognize Roman numbers from them.

Even and Odd Numbers

To understand even and odd numbers, count the sharpeners in pair of 2.

What are the even and odd numbers?

Count the sharpeners in pairs.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

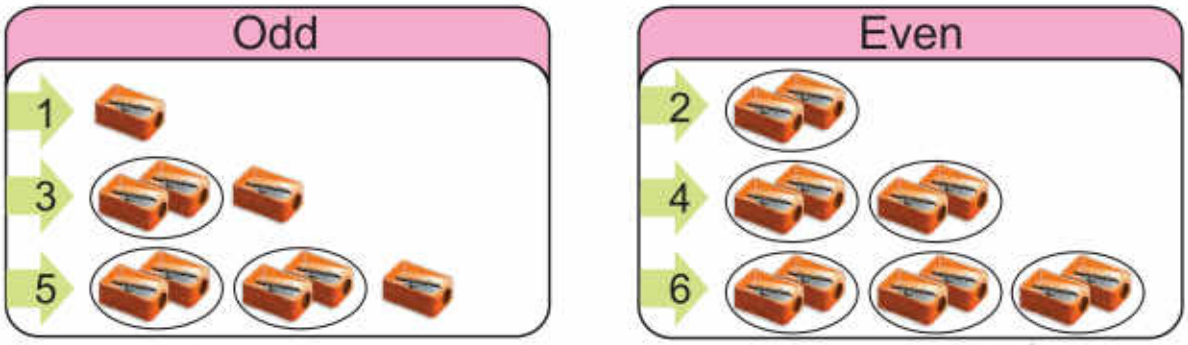
Key Fact

The numbers which are completely divisible by 2 are called even numbers. A number is even if it can be shown in pairs. Even numbers end with 2, 4, 6, 8 or 0.

Key Fact

The numbers which are not completely divisible by 2 are called odd numbers.
A number is odd if it cannot be shown in pairs. Odd numbers end with 1, 3, 5, 7 or 9.

The number of sharpeners which are in pairs are called even numbers, and the sharpeners which are not in pairs are called odd numbers.



Count the following objects and write even / odd in the given box.

Teaching Point Help the students to divide them into pairs. If the students are divided into pairs then they are even otherwise odd.

Write even or odd in front of the given numbers.

2	Even	15	Odd
9		23	
16		64	
42		79	

Separate the even and odd numbers from the given numbers.

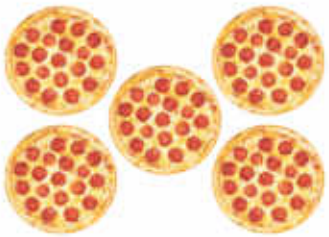
8	12	25	31	40	54	67
41	76	53	82	71	90	95

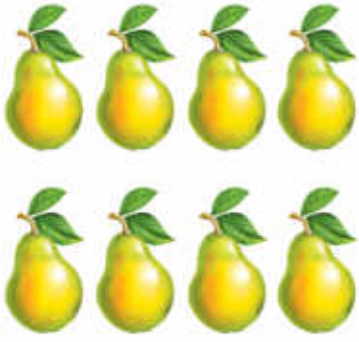
Even	Odd
8	25

Exercise 2

1 Write the number of the following objects and identify whether they are even or odd numbers.

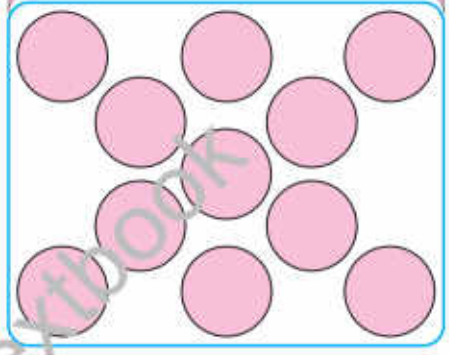
3	Odd





2 Identify even and odd from the given numbers and write them separately.

Numbers	Even	Odd
1 8 7 10 23 14 15 30 35 42 55 65 68 72 79 82 83 91 96 99		



3 Write the odd numbers between the given numbers.

(i) 4 and 16 _____ (ii) 20 and 34 _____

4 Write the even numbers between the given numbers.

(i) 1 and 10 _____ (ii) 21 and 35 _____

5 Separate the even and odd numbers from the given numbers.

2 5 9 18 21 28 35 56 67 73

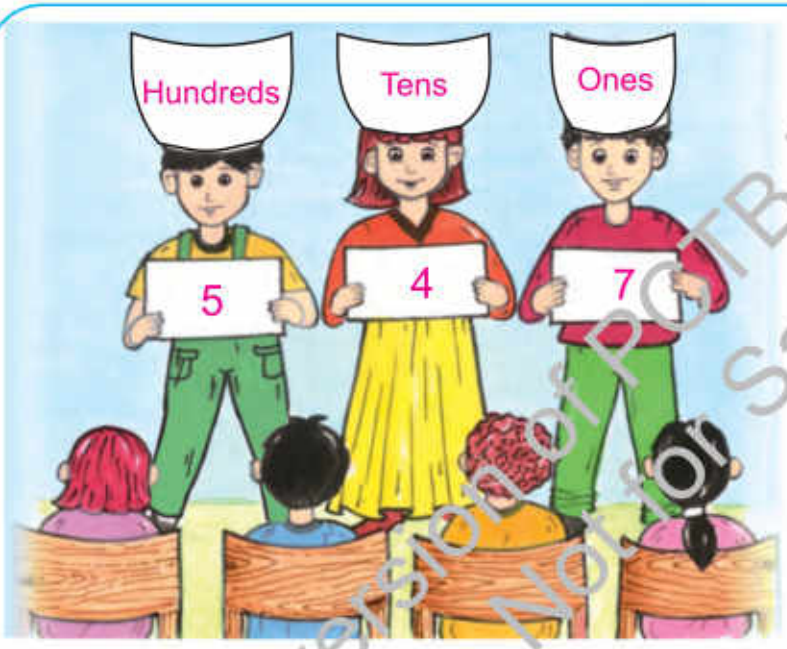
79 80 84 87 90 93 94 95 97 99

Even: _____

Odd: _____

Place Value of Digits in Numbers up to 5 digits

Yesterday, my elder brother asked me about the place values of digits in a number, how can we find place value?



Give number cards to 3 students on which digits are written. Ask the students to make a number and find out the place of each digit. Then ask them to change the place of these cards to make a new number, find its place and then change cards with other group of students.

The teacher called 4 students and gave them hats on which ones, tens, hundreds and thousands are written and also gave them cards. Find out the value of each digit.

Second Period	First Period		
Thousands	Ones		
Thousands	Hundreds	Tens	Ones
8	3	1	3

- 8 is at thousands place, so the value of 8 = 8 x 1 000 = 8 000
- 3 is at hundreds place, so the value of 3 = 3 x 100 = 300
- 1 is at tens place, so the value of 1 = 1 x 10 = 10
- 3 is at ones place, so the value of 3 = 3 x 1 = 3

The number is:

8 000 + 300 + 10 + 3 = 8 313

The place value of a digit is based on the place of the digit in that number.

Key Fact

10 = 1 tens = 10 ones
100 = 1 hundreds = 10 tens
1 000 = 1 thousands = 10 hundreds

Numbers up to 100 000

The number which is greater than 3 digits, we leave space after every 3-digits from the right side of that number.

Which is the greatest 3-digit number?

The greatest 3-digit number is 999.

9 9 9	
+	1
1 0 0 0	

By adding 1 more to 999, we get 1 000 (one thousand). It is read as "one thousand". It can be written in the place value chart as under:

Second Period	First Period		
Thousands	Ones		
Thousands	Hundreds	Tens	Ones
1	0	0	0

The greatest 4-digit number is 9 999.

By adding 1 more to 9 999 we get 10 000 (ten thousand). It is the first 5-digit number. It can be written in place value chart as:

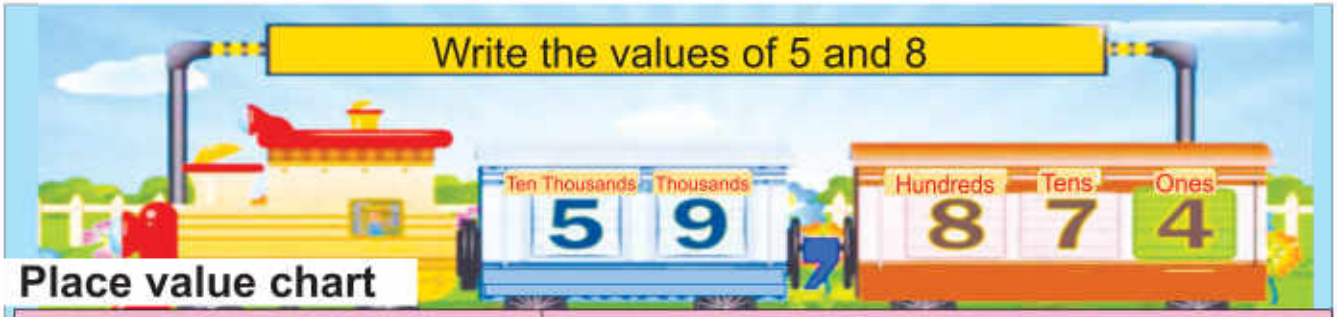
9 9 9 9	
+	1
1 0 0 0 0	

Place value chart

Second Period		First Period		
Thousands		Ones		
Ten Thousands	Thousands	Hundreds	Tens	Ones
1	0	0	0	0

It is read as "ten thousand".

Teaching Point The teacher should give number cards of different numbers up to 4 digits to the students and ask them about the place value and value of the given numbers.

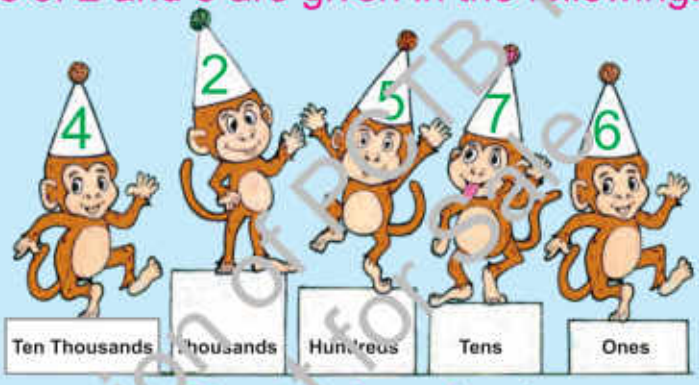


Place value chart

Second Period		First Period		
Thousands		Ones		
Ten Thousands	Thousands	Hundreds	Tens	Ones
5	9	8	7	4
50 000	9 000	800	70	4

Value of 5 = 50 000 **Value of 8 = 800**

The place values of 2 and 5 are given in the following. Find the values of these digits.



Place value chart

Second Period		First Period		
Thousands		Ones		
Ten Thousands	Thousands	Hundreds	Tens	Ones
4	2	5	7	6
40 000	2 000	500	70	6

value of 2 = 2 000 value of 5 = 500

Read and write 9 231 in words.

Place value chart

Second Period	First Period		
Thousands	Ones		
Thousands	Hundreds	Tens	Ones
9	2	3	1

Nine thousand two hundred thirty one.

Read and write 27 616 in words.

Place value chart

Second Period		First Period		
Thousands		Ones		
Ten Thousands	Thousands	Hundreds	Tens	Ones
2	7	6	1	6

Twenty seven thousand six hundred sixteen.

Read and write 85 405 in words.

Place value chart

Second Period		First Period		
Thousands		Ones		
Ten Thousands	Thousands	Hundreds	Tens	Ones
8	5	4	0	5

Eighty five thousand four hundred five.

Write four thousand seven hundred nineteen in numerals.

4 719

Write forty two thousand eight hundred sixty eight in numerals.

42 868

Exercise 3

1 Write the following numbers in words:

(a) 5 342

(b) 7 123

(c) 5 321

(d) 8 035

(e) 9 899

(f) 8 0321

2 Write the following numbers in numerals:

(a) Five thousand eight hundred forty
(b) Six thousand three hundred sixty three
(c) Thirty two thousand three hundred eight
(d) Eighty thousand five hundred eighty seven
(e) Sixty four thousand thirty three
(f) Forty one thousand nine hundred ninety nine

3 Fill in the blanks.

(a) 2 347 = ☐ Thousands + ☐ Hundreds + ☐ Tens + ☐ Ones

(b) 6 780 = ☐ Thousands + ☐ Hundreds + ☐ Tens + ☐ Ones

(c) 34 560 = ☐ Ten Thousands + ☐ Thousands + ☐ Hundreds + ☐ Tens + ☐ Ones

(d) 53 406 = ☐ Ten Thousands + ☐ Thousands + ☐ Hundreds + ☐ Tens + ☐ Ones

(e) 92 341 = ☐ Ten Thousands + ☐ Thousands + ☐ Hundreds + ☐ Tens + ☐ One

4 Match with correct number

Seven thousand eight hundred	384
Eighty two thousand six hundred fifty one	2 357
Fifteen thousand seven hundred sixty three	5 326
Fifty three thousand one hundred two	7 800
Two thousand three hundred fifty seven	15 763
Five thousand three hundred twenty six	53 102
Three hundred eighty four	82 651

5 Write the values of 4 and 6.

Second Period	First Period		
Thousands	Ones		
Thousands	Hundreds	Tens	Ones
4	8	6	9

6 Write the place value of each digit of the numbers given below:

	Ten Thousands T. Th	Thousands Th	Hundreds H	Tens T	Ones O
2 357					
67 815					
82 301					
75 389					

7 Write the values of the encircled digits.

(i) 45(6)7 _____

(ii) 5(3)27 _____

(iii) 8(5)761 _____

(iv) 7043(1) _____

(v) (6)7431 _____

(vi) 39(7)61 _____

(vii) 932(6)7 _____

(viii) (6)8037 _____

(ix) 5(4)136 _____

(x) 8(9)791 _____

8 Write the value of all digits.

(i)

(ii)

Make three smaller numbers by replacing the place of digits in the given number.

Can you make some other smaller numbers?

Teaching Point

Give different number cards to the students and ask them to make smaller or greater numbers.

Find the given numbers in crossword puzzle. It may be horizontal or vertical. The first one is done for you.

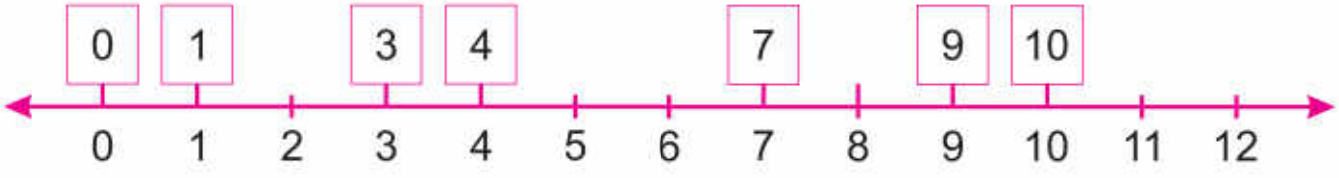
6	9	2	6	5	7	4	9	0	1
4	1	5	8	7	6	2	0	1	4
5	9	7	3	2	3	7	7	2	9
9	0	3	5	2	7	6	4	5	9
8	6	4	9	7	1	1	0	5	3
4	2	3	8	1	6	7	3	5	8

(i) Seven thousand three hundred forty three
(ii) Thirty seven thousand seven hundred twenty nine
(iii) Six thousand three hundred seventy one
(iv) 4 Thousands + 5 Hundreds + 9 Tens + 8 Ones
(v) 7 Ten thousands + 2 thousands + 2 hundreds + 7 tens + 1 one
(vi) 3 Ten thousands + 5 thousands + 2 hundreds + 7 tens + 6 ones

Number Line

Place the given numbers on a number line.

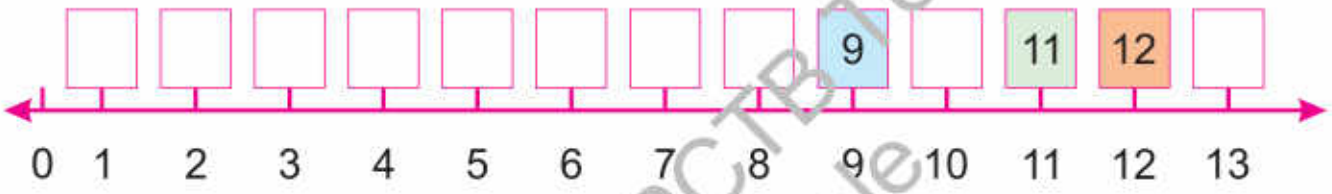
A straight line on which numbers are represented at equal intervals is called number line.



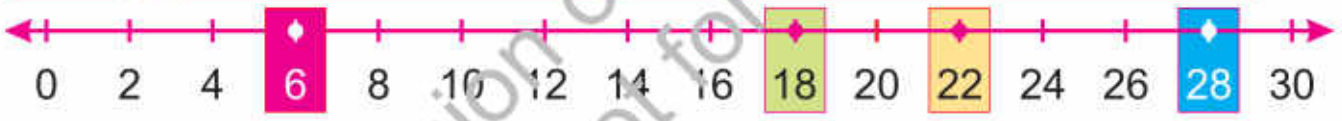
Teaching Point Explain the concept of number line to the students, give example of students standing in school assembly or sitting in a classroom.

Represent 15 on the number line.

Represent 9, 11 and 12 on the number line.

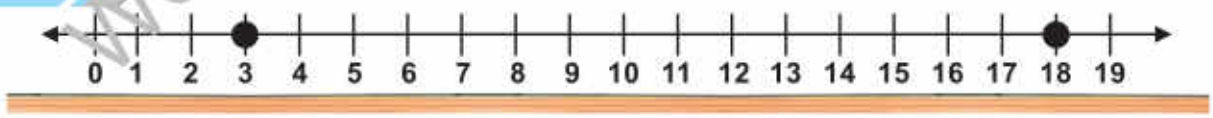


Represent 6 , 13 , 22 and 28 on the number line.



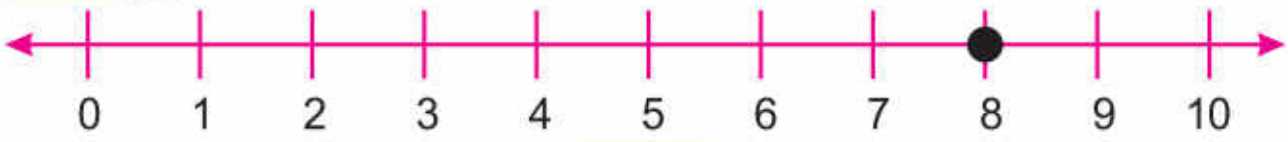
Identify the value of a number from the number line

Identify the marked numbers given on the number line.



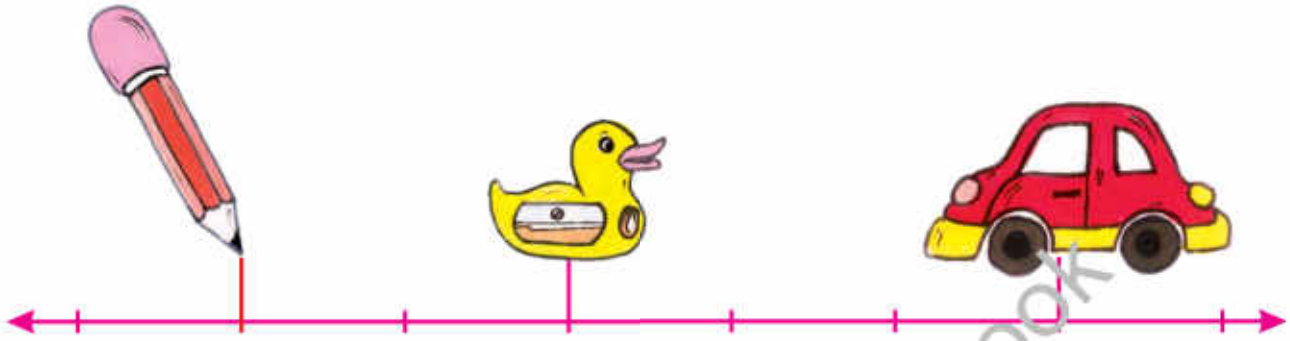
3 and 18

Identify the number which is between 7 and 9.



8

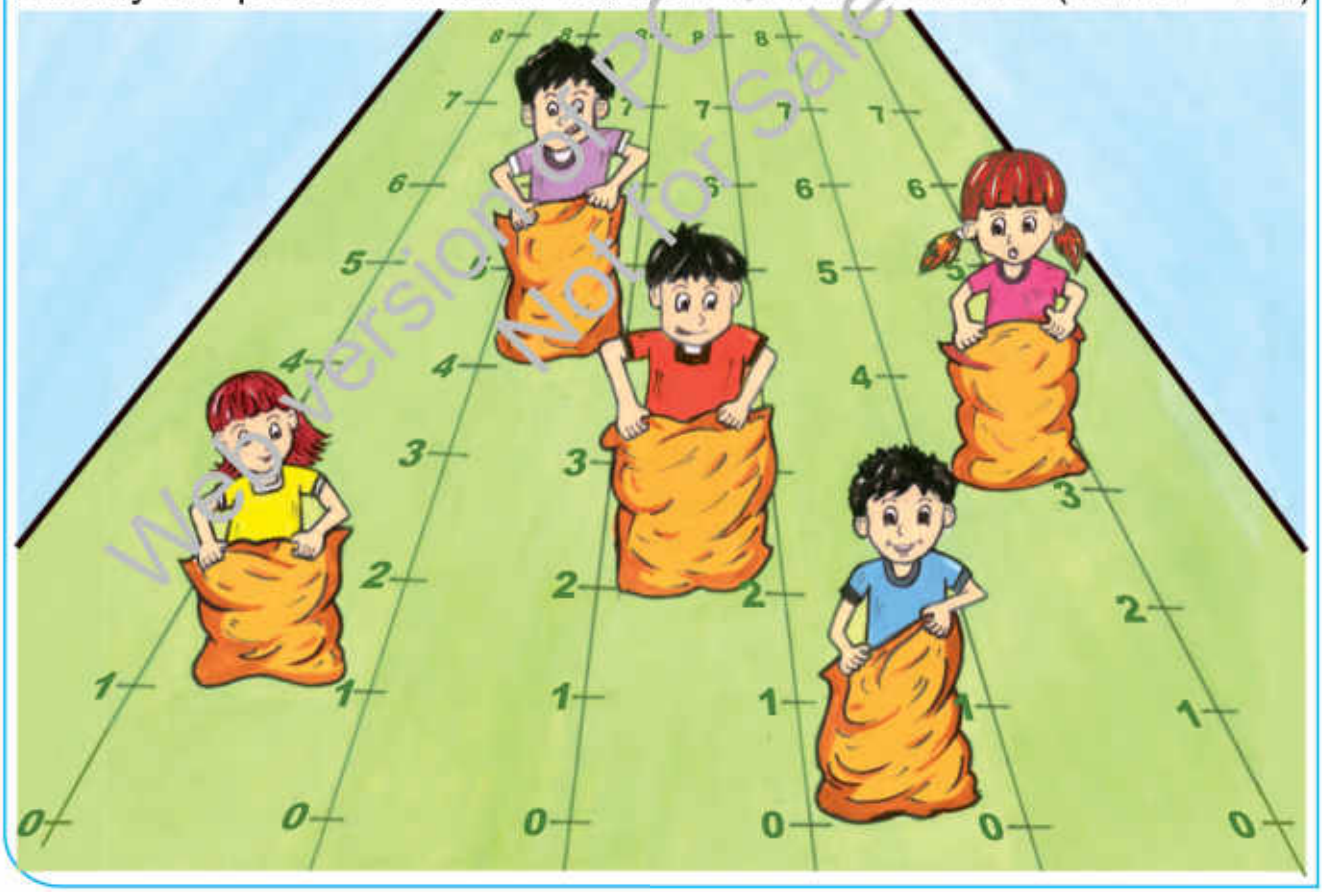
Identify the values of objects on the given number line.



10, 30 and 60

Activity

Identify the position of each child on the number lines (1 unit = 1 m)



Teaching Point Explain the concept of number line to the students with the help of different games.

Exercise 4

1 Represent the following numbers on the number line:

(i) 9, 4

(ii) 5, 15, 25

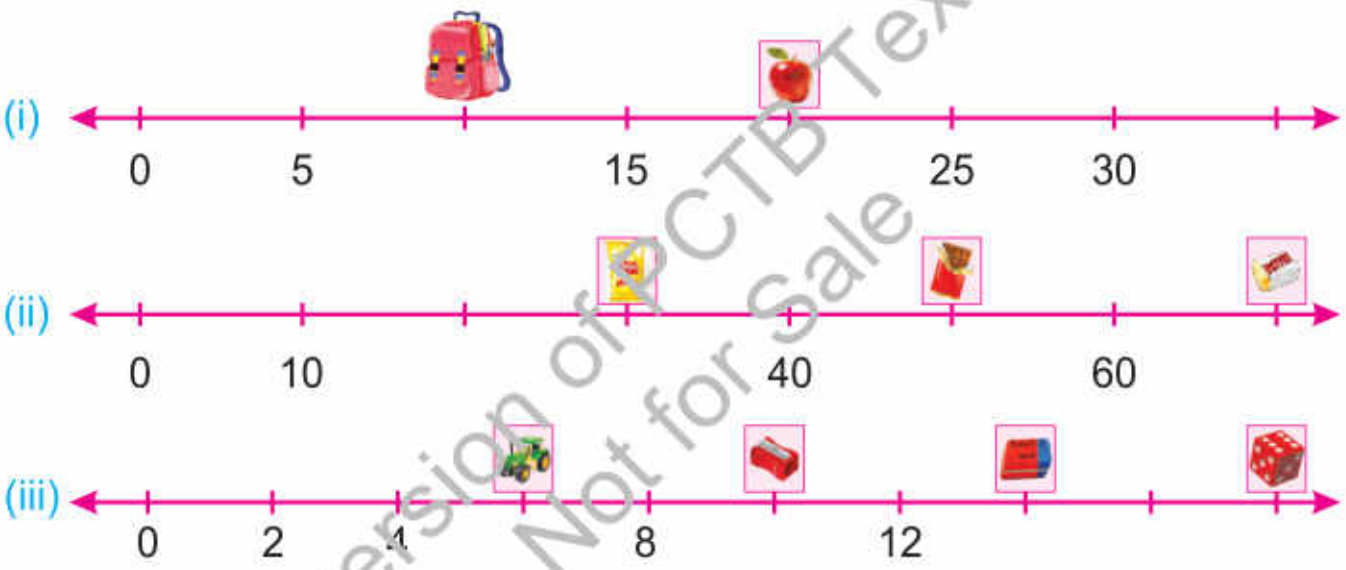
(iii) 6, 12, 24, 36

(iv) 4, 12, 20, 28

(v) 0, 15, 30, 60

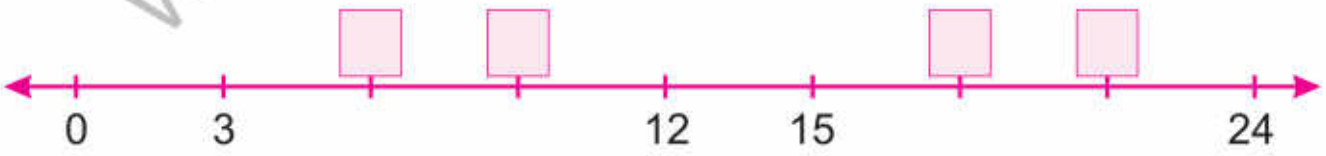
(vi) 3, 6, 9, 12, 15

2 Write the values of objects on the given number line.

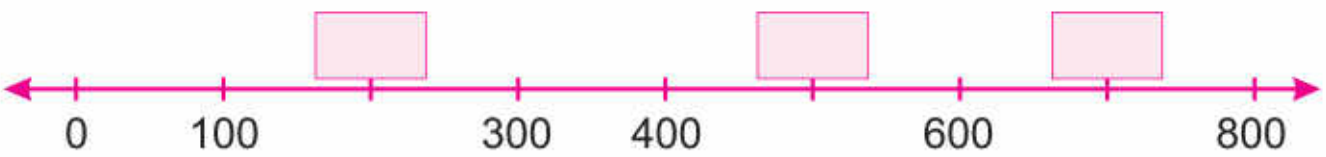


3 Place the correct number card on the number line.

21, 18, 9 and 6

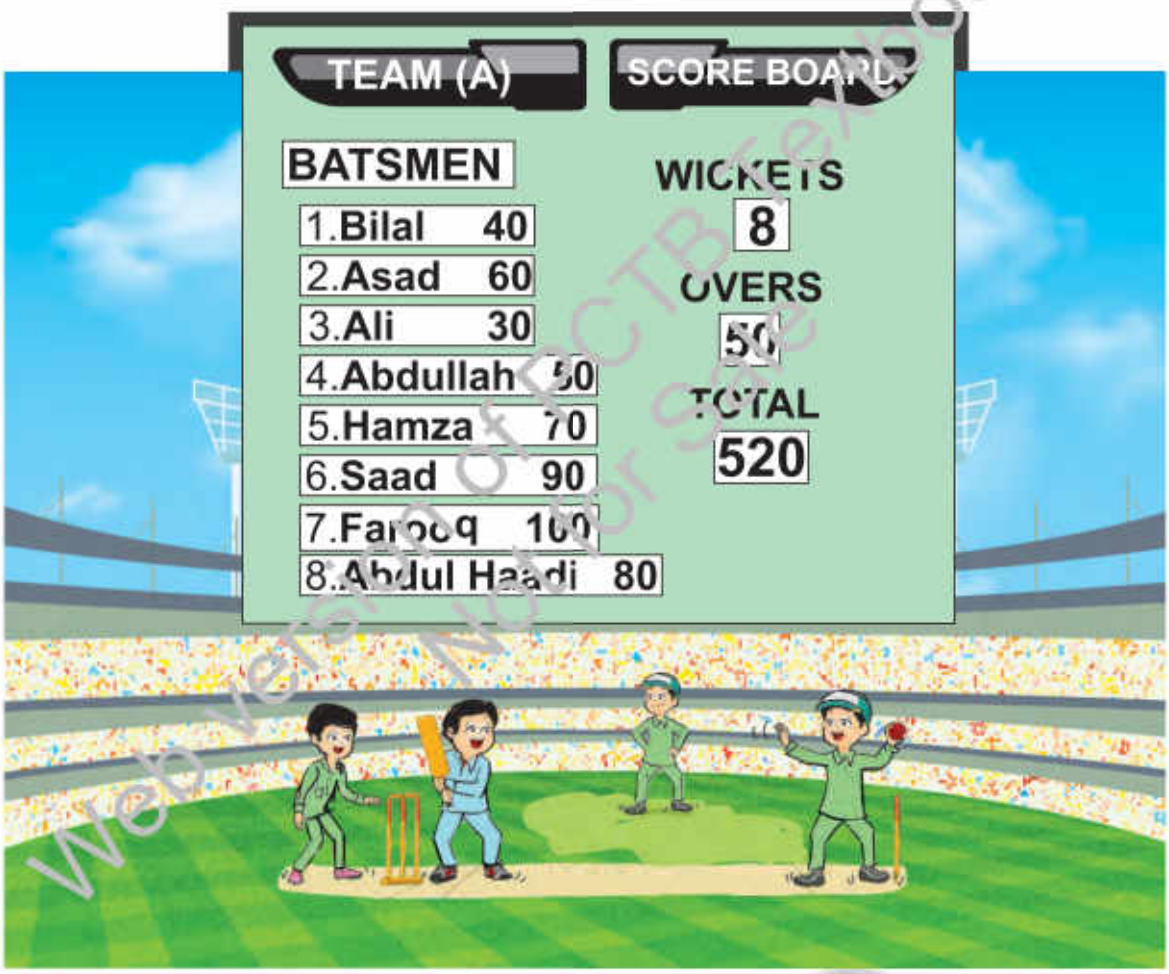


200, 700 and 500



Comparing and Ordering Numbers

In a cricket match, different players score different runs as shown. What is the highest score?

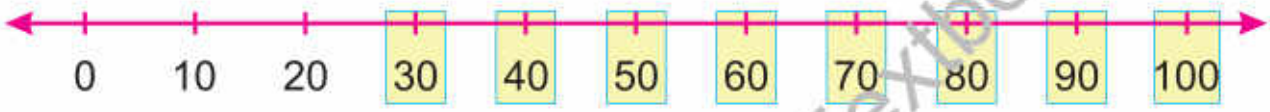


How would we find the highest and the lowest score?

On a number line:

- numbers increase as we move from left to right.
- each number is greater than the number on the left.
- it is easy to know which number is greater or smaller.

Put the card of runs on the number line and identify the highest and the lowest score.



According to above number line: The highest score = 100
The lowest score = 30

Key Fact

Use these symbols while comparing numbers:

= Equal to
> Greater than
< Less than

So, 100 > 80 100 is greater than 80

80 = 80 80 is equal to 80

and 80 > 30 80 is greater than 30

30 < 40 30 is less than 40

Rs 350

I have two toy cars, which costs more?

Rs 245

The cost can be compared easily with the help of place value chart.

First Period		
Ones		
Hundreds	Tens	Ones
2	4	5
3	5	0

First compare the digits at hundreds place. The digit 3 at hundreds place is greater than 2 at hundreds place.

Therefore, 350 is greater than 245. It can be written as:

$350 > 245$

A toy worth Rs 350 is more expensive.

Compare 567 and 582.

First Period		
Ones		
Hundreds	Tens	Ones
5	6	7
5	8	2

First compare the digits at hundreds place:

- the digit 5 at the hundreds place is same for both numbers.

Compare the digits at tens place:

- the digit 8 at the tens place is greater than digit 6 at the tens place.

Therefore, 582 is greater than 567. It can be written as:

$582 > 567$

Teaching Point Give number cards of different values to the students and ask them to compare numbers.

Compare 892 and 895

Key Fact

Two numbers will be equal when the place values of all their digits are same.

- the digit 8 at hundreds place in both numbers is same.
- the digit 9 at tens place in both numbers is same.
- the digit 5 at ones place is greater than digit 2 at ones place.

Therefore,

895 > 892

Ordering Numbres

Build towers from number blocks keeping in mind the order of the numbers.

Arrangement of numbers from the smallest to the greatest is called ascending order. The blocks in this tower are arranged in ascending order.

Arrangement of numbers from the greatest to the smallest is called descending order. The blocks are arranged in descending order.

Teaching Point Explain the concept of ascending and descending order by giving examples from real life (e.g) use of stairs.

Write 25, 45, 10 and 32 in ascending order.

Arrange these numbers from the smallest value to the greatest value.

10, 25, 32, 45 is an ascending order.

Try Yourself

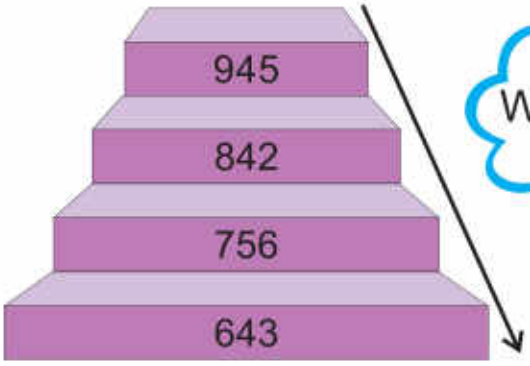
Which picture represents ascending or descending order?

Write the numbers 325, 532 and 470 in
(i) Ascending order (ii) Descending order

Ascending order:	325	470	532
Descending order:	532	470	325

Write 279 281 265 273 in ascending and descending order.

Ascending order	Descending order
281	281
279	279
273	273
265	265



Write 643, 842, 756 and 945 in descending order.

Exercise 5

1 Use symbols "<", ">" and "=" in the given boxes.

(i) 873 ☐ 426 (ii) 694 ☐ 706

(iii) 857 ☐ 857 (iv) 973 ☐ 824

(v) 574 ☐ 574 (vi) 819 ☐ 817

2 Encircle the greater number.

(i) 671 , 546 (ii) 248 , 249

(iii) 374 , 347 (iv) 738 , 659

(v) 937 , 936 (vi) 875 , 877

3 Write the given numbers in ascending and descending orders.

(i) 71 , 51 , 91 , 61

Ascending order: ☐ ☐ ☐ ☐

Descending order: ☐ ☐ ☐ ☐

(ii) 85 , 52 , 73 , 41 , 67

Ascending order:

Descending order:

(iii) 346 , 451 , 321 , 536

Ascending order:

Descending order:

(iv) 698 , 278 , 543 , 231 , 731

Ascending order:

Descending order:

(v) 476 , 471 , 472 , 335, 345

Ascending order:

Descending order:

4 Make five numbers less than 321 and write them in ascending and descending order.

Ascending order:

Descending order:

Estimation

Round off the whole number to the nearest 10 and 100.

My father paid Rs 1 209 for buying fuel. How can we round off this amount to the nearest 10.

Key Fact

Use symbol "≈" for rounding off.

Rounding off to the nearest 10. It becomes Rs 1 210. It has following rule.

While Rounding off to the nearest 10,

- If the digit at ones place is between 0 to 4 or less than 5 then the digit at ones place is replaced by 0.

24 is 20 when rounded to the nearest 10.

24 is rounded off to 20.

- If the digit at ones place is 5 or greater than 5 then the digit at ones place is replaced by '0' and the digit at tens place is increased by "1".

36 is rounded off to 40

Rounding off to the nearest 100

While rounding off to the nearest 100, if the digit at the tens place is between 0 to 4 or less than 5 then put zeros at the ones and tens

place. If the digit at the tens place is equal to 5 or greater than 5 then put zeros at the ones and tens place and the digit at hundreds place is increased by "1".

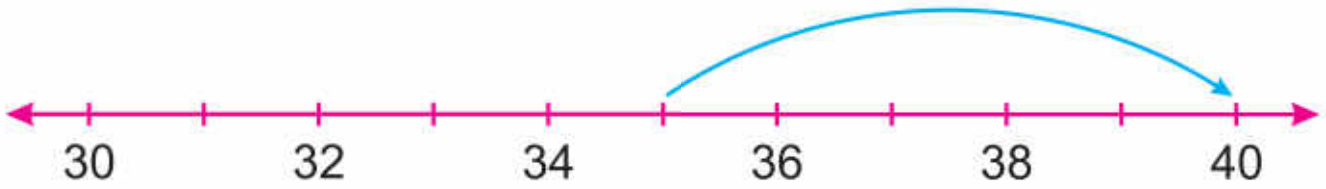
It can be written as:

$666 \approx 700$

Round off the following number to the nearest 10 and 100:

Numbers	To the nearest 10	To the nearest 100
37	40	0
82	80	100
187	190	200
345	350	300
653	650	700

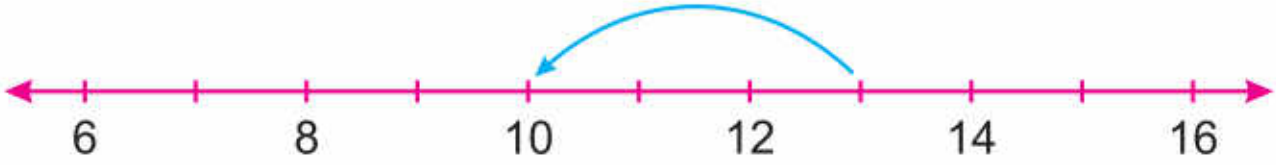
Round off 35 to the nearest 10 on number line.



So, 35 is rounded off to 40.

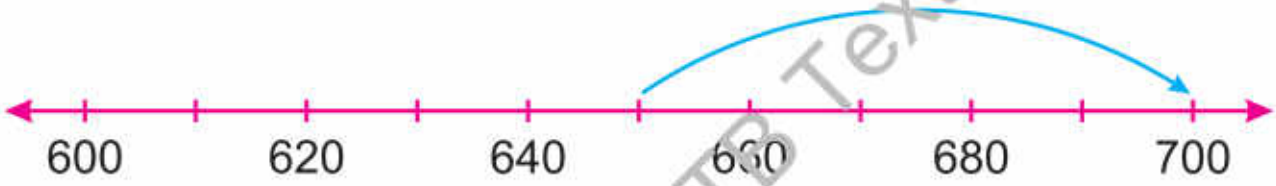
Teaching Point Give cards of different numbers to the students and ask them to round off these given numbers to the nearest 10 or 100.

Round off 13 to the nearest 10 on the number line.



Therefore, 13 is rounded off to 10.

Round off 650 to the nearest 100 on the number line.



Therefore, 650 is rounded off to 700.

Exercise 6

1 Round off the following numbers to the nearest 10 and 100:

Numbers	To the nearest 10	To the nearest 100
26		
52		
327		
385		
750		

2 Match the following numbers with correct value after rounding off:

(i) To the nearest 10

19	40
32	50
41	80
52	100
61	20
76	30
95	60

(ii) To the nearest 100

101	400
256	800
384	100
517	900
649	300
739	500
850	600

3 Round off 26 to the nearest 10 on the number line.

4 Round off 735 to the nearest 100 on the number line.

I have learnt to:

- read Roman numbers up to 20.
- write Roman numbers up to 20.
- recognize even and odd numbers up to 99 within a given sequence. Differentiate between even and odd numbers within a given sequence.
- identify the place values of numbers up to 5-digit.
- read and write given numbers up to 100 000 in numerals and words.
- represent a given number on number line up to 2-digit numbers.

Vocabulary

- Even
- Odd
- Place value
- Number line
- Comparing
- Ordering
- Estimation
- Descending Order
- Ascending Order
- Rounding off

Review Exercise

1 Choose the correct options.

(i) Roman number XIX is equal to:

(a) 10 (b) 11 (c) 19 (d) 20

(ii) Place value of the digit 2 in 2 750 is:

(a) tens (b) ten thousands (c) thousands (d) hundreds

(iii) Eight thousand seven hundred twenty is:

(a) 8 720 (b) 8 702 (c) 8 072 (d) 87 020

(iv) 23, 25, 21 and 27 can be written in descending order as:

(a) 21, 23, 25, 27 (b) 23, 25, 27

(c) 27, 23, 21 (d) 27, 25, 23, 21

(v) 16 can be rounded off to the nearest 10 as:

(a) 10 (b) 15 (c) 20 (d) 16

2 Choose the correct options and fill in the blanks.

(i) 25 can be rounded off as _____ to the nearest 10.
(20 or 30)

(ii) In ascending order, numbers are written from _____.
(lowest to highest or highest to lowest)

(iii) Number of wheels in a car are _____.
(even or odd)

(iv) Number of sides of a triangle are _____.
(even or odd)

(v) In an odd number, the digits at ones place are __ __ __ __ __.
(1,3,5,7,9) or (0,2,4,6,8)

3 Write the following digits in Roman numbers:

2	5	8	11	15

4 Write the place values of encircled digits in the following numbers:

$5\textcircled{3}42$	$7\textcircled{0}63$	$1286\textcircled{5}$	$8\textcircled{0}064$	$965\textcircled{6}3$

5 Write the following numbers in words:

647 _____

7 265 _____

9 999 _____

9 765 _____

8 701 _____

6 Write the following numbers in ascending and descending order:

(i) 27, 21, 3, 45

Ascending order: ☐ ☐ ☐ ☐

Descending order: ☐ ☐ ☐ ☐

(ii) 512, 321, 445, 241, 114

Ascending order: ☐ ☐ ☐ ☐ ☐

Descending order: ☐ ☐ ☐ ☐ ☐

7 Write the even and odd numbers separately.

15	34	45	64	71	77	84	88

8 Write the missing numbers on the number line.

9 Compare 928 and 985 by using "<" or ">".

10 Round off the following numbers to the nearest 10 and 100:

Numbers	To the nearest 10	To the nearest 100
46		
83		
765		
847		
956		

Activity

Suleman called his friends on his birthday party. There were _____ girls and _____ boys. Which group has even number of people?

Hint:
Count the number of boys and girls in the picture.

Unit 2

Number Operations

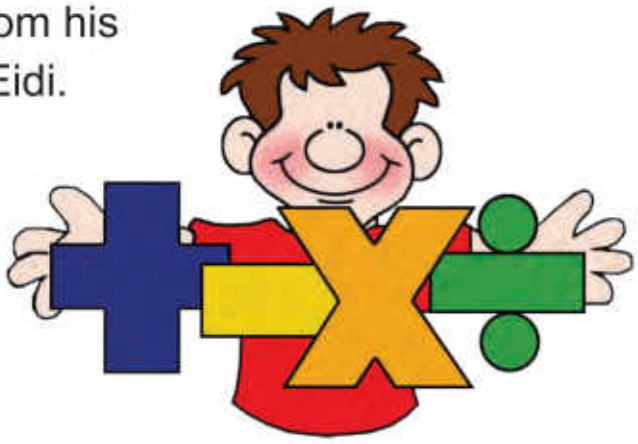
Learning Outcomes

After completing this unit, you will be able to:

- Add numbers up to 4-digit with and without carrying.
- Add numbers up to 100 using mental strategies.
- Solve real life number stories up to 4-digit with and without carrying involving addition.
- Subtract numbers up to 4-digit with and without borrowing.
- Subtract numbers up to 100 using mental strategies.
- Solve real life number stories up to 4-digit with and without borrowing involving subtraction.
- Develop multiplication tables for 6, 7, 8 and 9.
- Multiply 2-digit number by 1-digit number.
- Multiply a number by 0 and 1.
- Apply mental strategies to multiply 1-digit number to 1-digit number.
- Solve real life situations involving multiplication of 2-digit number by 1-digit number.
- Divide 2-digit number by a 1-digit number (with zero remainder).
- Apply mental strategies to divide 1-digit number by a 1-digit number.
- Solve real life situations involving division of 2-digit number by a 1-digit number.

On Eid day Irfan received Rs 50 from his uncle and Rs 20 from his aunt as Eidi. How much Eidi did he receive?

How can you find out the amount of Eidi?



Addition up to 4-digit number without carrying

There are 3 516 mango trees and 2 322 guava trees in an orchard. What is the total number of trees?

To find the total number of trees, we add them

	Th	H	T	O
Number of mango trees =	3	5	1	6
Number of guava trees =	2	3	2	2
Total number of trees =	5	8	3	8

Step 1

Add ones.

6 ones + 2 ones = 8 ones

Step 2

Add tens.

1 tens + 2 tens = 3 tens

Step 4

Add hundreds.

5 hundreds + 3 hundreds = 8 hundreds

Add thousands.

3 thousands + 2 thousands = 5 thousands

So, total number of trees is 5 838.

Teaching Point Teacher should guide the students to write numbers in respective places according to place value of the digits.

A grocer sold vegetables for Rs 2 546 on Tuesday and Rs 3 443 on Wednesday. How much is the total sale of vegetables?

	Th	H	T	O
Sale of Vegetables on Tuesday =	2	5	4	6
Sale of Vegetables on Wednesday = +	3	4	4	3
Total sale =	5	9	8	9

So, total sale of vegetables is Rs 5 989

Addition of numbers up to 4-digit with carrying

Addition

Areeba has Rs 6 388 while Affan has Rs 2 424. What is the total amount they have altogether?

	Th	H	T	O
Areeba has amount =	6	3 (1)	8 (1)	8
Affan has amount = +	2	4	2	4
Total amount =	8	8	1	2

Step 1

Add ones.

8 ones + 4 ones = 12 ones = 1 tens and 2 ones

Write 2 at ones column and carry 1 tens to the tens column.

Step 2

Now, add tens.

8 tens + 2 tens + 1 tens = 11 tens = 1 hundreds and 1 tens

Write 1 at tens column and carry 1 hundreds to the hundreds column.

Step 4

Now, hundreds.

3 hundreds + 4 hundreds + 1 hundreds = 8 hundreds

Step 3

Now, add thousands.

6 thousands + 2 thousands = 8 thousands

Write 8 at thousands column.

Thus, Areeba and Affan have total amount of Rs 8 812.

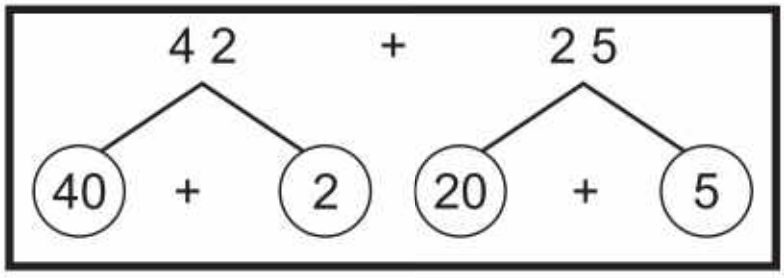
There are 2 685 number of boys and 1 520 number of girls in a school. What is the total number of students in the school?

		Th	H	T	O
Number of boys	=	2	6	8	5
Number of girls	= +	1	5	2	0
Total number of students	=	4	2	0	5

So, the total number of students in the school is 4 205.

Add numbers up to 100 using mental strategies

Ahmad has 42 toffees and 25 biscuits. How can he find out the sum of these items?



$$\begin{array}{r} 40 + 20 = 60 \\ 2 + 5 = + 7 \\ \hline 67 \end{array}$$

Exercise 1

1 Solve the following:

(i)
$$\begin{array}{r} 6643 \\ +\ 3215 \\ \hline \end{array}$$

(ii)
$$\begin{array}{r} 5137 \\ +\ 3542 \\ \hline \end{array}$$

(iii)
$$\begin{array}{r} 7256 \\ +\ 1423 \\ \hline \end{array}$$

(iv)
$$\begin{array}{r} 6795 \\ +\ 2104 \\ \hline \end{array}$$

(v)
$$\begin{array}{r} 7000 \\ +\ 2137 \\ \hline \end{array}$$

(vi)
$$\begin{array}{r} 4000 \\ +\ 3154 \\ \hline \end{array}$$

2 Add the following numbers:

(i) 5794 , 3825

(ii) 4752 , 3596

(iii) 5496 , 2179

(iv) 6243 , 5727

(v) 6495 , 2156

(vi) 5676 , 3864

3 There are 3 454 orange trees and 2 345 guava trees in an orchard. Find the total number of trees.

4 Zubair paid Rs 6 758 and Rs 3 441 in March and April respectively, as gas charges. Find the total amount paid by him for gas.

5 Population of the village 'A' is 4 536 and population of the village 'B' is 3 253. Find the total population of both the villages.

6 There are 6 540 male and 2 120 female employees in an organization. Find the total number of employees.

7 Ali and Shahnawaz save Rs 4 056 and Rs 5 430 respectively. Find out their total saving.

8 Solve mentally.

(i) 15 + 16 = ☐

(ii) 52 + 18 = ☐

(iii) 59 + 10 = ☐

(iv) 47 + 32 = ☐

(v) 35 + 55 = ☐

(vi) 46 + 24 = ☐

(vii) 37 + 23 = ☐ (viii) 36 + 54 = ☐

(ix) 27 + 43 = ☐ (x) 56 + 24 = ☐

(xi) 42 + 15 = ☐ (xii) 32 + 28 = ☐

Subtraction of numbers up to 4-digits without borrowing

Zubair had Rs 9 899. He purchased house hold things for Rs 7 545. How much amount was left with him?

		Th	H	T	O
Total amount	=	9	8	9	9
Amount paid	= −	7	5	4	5
Amount left	=	2	3	5	4

Step 1

Subtract ones from ones.

9 ones – 5 ones = 4 ones

Write 4 at ones column.

Step 2

Subtract tens from tens.

9 tens – 4 tens = 5 tens

Write 5 at tens column.

Step 3

Subtract hundreds from hundreds.

8 hundreds – 5 hundreds = 3 hundreds

Write 3 at hundreds column.

Key Fact

Always subtract a smaller number from a greater number.

Step 4

Subtract thousands from thousands.

9 thousands – 7 thousands = 2 thousands

Write 2 at thousands column.

Thus, Rs 2 354 was left with Zubair.

Find the difference between 4 342 and 8 984.

	Th	H	T	O
	8	9	8	4
–	4	3	4	2
	4	6	4	2

Difference = 4 642.

1 982 people offered their Eid namaz in a Masjid. 1 670 of the total were men. Find out the number of children.

		Th	H	T	O
Number of people	=	1	9	8	2
Number of men	= –	1	6	7	0
Number of children	=	0	3	1	2

Thus, the number of children were 312

Teaching Point

Teacher should explain all steps regarding subtraction to the students and give them assignment for practice.

Subtraction with borrowing

Ali has 2 354 coins and Wali has 1 260 coins. How much more coins Ali has than Wali?

	Th	H	T	O
Number of coins Ali has =	2	❷ 3	❿ 5	4
Number of coins Wali has = −	1	2	6	0
Difference =	1	0	9	4

Thus, Ali has 1 094 more coins than Wali.

Step 1

Subtracts ones from ones.

4 ones – 0 ones = 4 ones

Write 4 at ones column.

Key Fact

1 hundreds = 10 tens

Step 2

Subtract tens from tens

We cannot subtract 6 tens from 5 tens.

Therefore, we will borrow 1 hundreds from hundreds.

Then, 1 hundreds + 5 tens = 10 tens + 5 tens = 15 tens

Now, 15 tens – 6 tens = 9 tens

Write 9 at tens column.

Step 3

Subtract hundreds from hundreds.

After giving 1 hundreds to tens. 2 hundreds are left

Therefore, 2 hundreds – 2 hundreds = 0 hundreds

Write 0 at hundreds column.

Teaching Point Teacher should guide the students about all steps for subtraction and give some questions for practice.

Step 4

Subtract thousands from thousands.
2 thousands – 1 thousands = 1 thousands
Write 1 at thousands column.
Thus, Ali has 1 094 more coins than Wali.

Key Fact

If 0 is subtracted from any number, we get the same number.

Try Yourself

What is the difference between the largest and the smallest 4-digit number?

Find the difference between 7 650 and 2 586.

Th	H	T	O
7	5 6	10 4 5	10 0
– 2	5	3	6
5	0	6	4

Difference = 5 064.

There were 5 434 bags of wheat in a godown. 2 956 bags were sold. How many bags of wheat are left in godown?

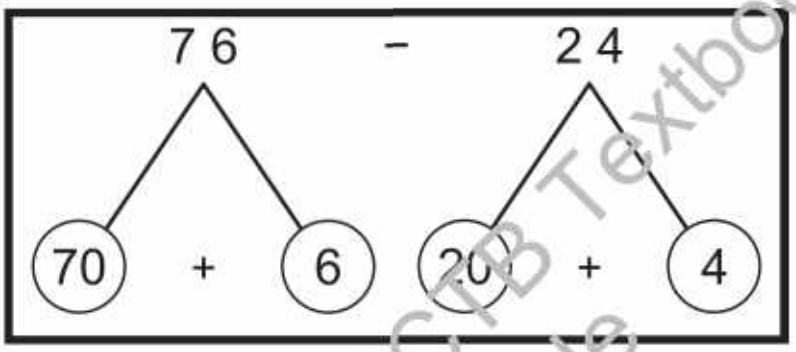
	Th	H	T	O
Total number of bags =	4 5	10 3 4	10 2 3	10 4
Bags sold = –	2	9	5	6
Remaining bags of wheat =	2	4	7	8

Thus, remaining bags of wheat in godown were 2 478.

Subtraction of numbers up to 100 using mental strategies

Bilal has Rs 76. He spends Rs 24 from them. How much money is left with him?

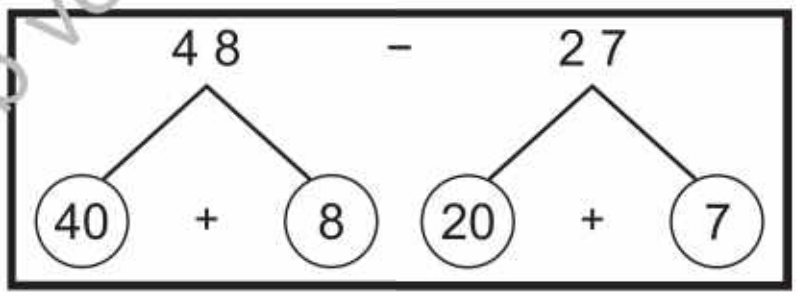
We solve it by mental strategies as follows:



$$\begin{array}{rcl} 70 - 20 & = & 50 \\ 6 - 4 & = & +\ 2 \\ & & \hline \\ & & 52 \end{array}$$

Thus, Bilal has Rs 52.

Find the difference between 48 and 27?



$$\begin{array}{rcl} 40 - 20 & = & 20 \\ 8 - 7 & = & +\ 1 \\ & & \hline \\ & & 21 \end{array}$$

Teaching Point Teacher should explain the concept of mental subtraction to students and give some questions for practicing.

Exercise 2

1 Solve the following:

(i) $3546 - 2324$

(ii) $5796 - 3453$

(iii) $6354 - 4041$

(iv) $8764 - 3653$

(v) $4754 - 3532$

(vi) $9876 - 6754$

(vii) $9765 - 8974$

(viii) $8754 - 3974$

(ix) $6495 - 3546$

(x) $7965 - 6876$

(xi) $8678 - 7896$

(xii) $8543 - 7654$

2 Solve mentally.

(i) 80 − 24 = ☐

(ii) 65 − 41 = ☐

(iii) 67 − 25 = ☐

(iv) 76 − 35 = ☐

(v) 87 − 36 = ☐

(vi) 57 − 21 = ☐

3 A book has 1 535 pages in all. Zarina has read 424 pages. How many pages are left to read?

4 Aamir and Gulraiz are cloth merchants. If Aamir's sale of one day is Rs 6 456 and Gulraiz's sale of one day is Rs 4 340. Then find how much more money Aamir has than Gulraiz?

5 Total number of men and women in a village is 6 753. If the number of women is 3 985 then find the number of men.

6 In a cattle farm, number of goats and sheep is 7 516. If number of sheep is 5 728 then find the number of goats.

Multiplication

Table of 6

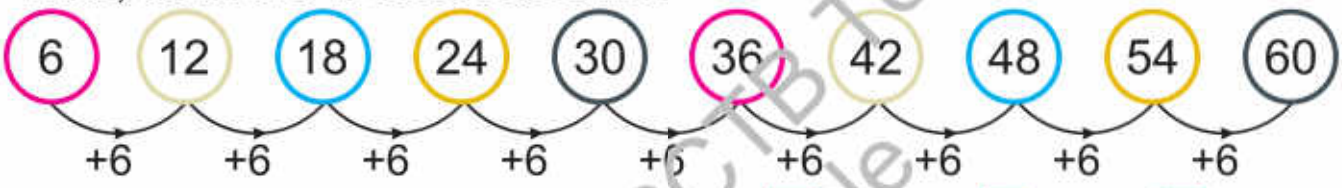
Faheem has 3 chocolate boxes. There are 6 chocolates in each box. What is the total number of chocolates?

Chocolates in 1 box = 6

Chocolates in 3 boxes = 6 + 6 + 6 = 18

Chocolates in 3 boxes = 3 × 6 = 18

Thus, there are 18 chocolates in 3 boxes.



Key Fact

When an even number is multiplied by 6 then we get the same even number at ones place.

2 x 6 = 12
4 x 6 = 24
6 x 6 = 36
8 x 6 = 48

1 × 6 = 6
2 × 6 = 12
3 × 6 = 18
4 × 6 = 24
5 × 6 = 30
6 × 6 = 36
7 × 6 = 42
8 × 6 = 48
9 × 6 = 54
10 × 6 = 60

Teaching Point: Teacher should guide students to develop table of 6 using repeated addition.

Table of 7

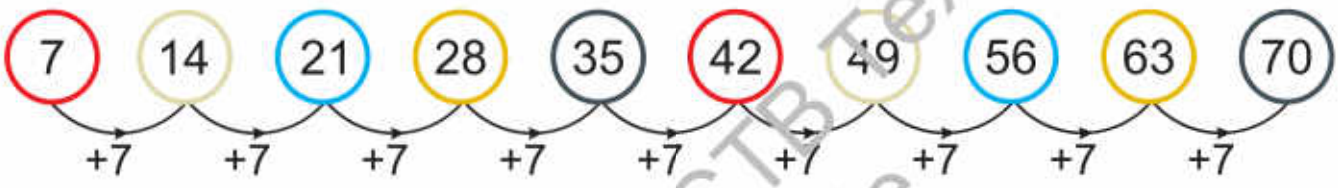
Faheem has 3 chocolates in each box. There are 7 boxes. What is the total number of chocolates?

Chocolates in 1 box = 7

Chocolates in 3 boxes = 7+7+7=21

Chocolates in 3 boxes = $3 \times 7 = 21$

Thus, there are 21 chocolates in 3 boxes.



$1 \times 7 = 7$

$2 \times 7 = 14$

$3 \times 7 = 21$

$4 \times 7 = 28$

$5 \times 7 = 35$

$6 \times 7 = 42$

$7 \times 7 = 49$

$8 \times 7 = 56$

$9 \times 7 = 63$

$10 \times 7 = 70$

Key Fact

$6 \times 7 = 42$

or

$6 \times 7 = 7 \times 6 = 42$

Key Fact

Repeated addition of numbers is called multiplication.

Teaching Point Teacher should guide students to develop table of 7 using repeated addition.

Table of 8

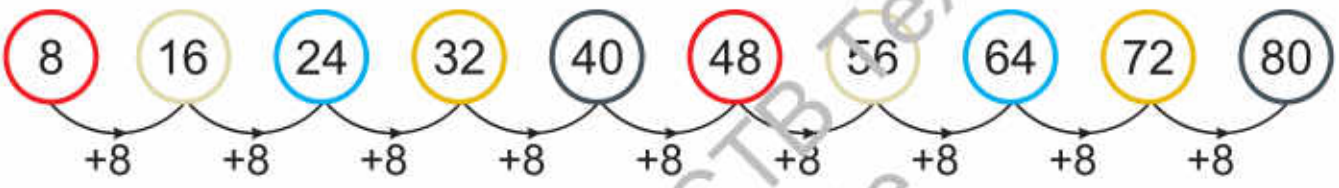
Madiha has 3 chocolates in each box. There are 8 boxes. What is the total number of chocolates?

Chocolates in 1 box = 8

Chocolates in 3 boxes = 8+8+8=24

Chocolates in 3 boxes = $3 \times 8 = 24$

Thus, there are 24 chocolates in 3 boxes.



$1 \times 8 = 8$

$2 \times 8 = 16$

$3 \times 8 = 24$

$4 \times 8 = 32$

$5 \times 8 = 40$

$6 \times 8 = 48$

$7 \times 8 = 56$

$8 \times 8 = 64$

$9 \times 8 = 72$

$10 \times 8 = 80$

Key Fact

$3 \times 8 = 24$

or

$3 \times 8 = 8 \times 3 = 24$

Teaching Point Teacher should guide students to develop table of 8 using repeated addition.

Table of 9

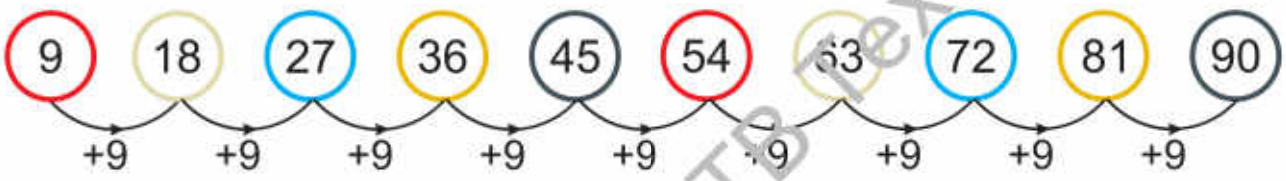
Madiha has 3 chocolates in each box. There are 9 boxes. What is the total number of chocolates?

Chocolates in 1 box = 9

Chocolates in 3 boxes = 9+9+9=27

Chocolates in 3 boxes = $3 \times 9 = 27$

Thus, there are 27 chocolates in 3 boxes.



$1 \times 9 = 9$

$2 \times 9 = 18$

$3 \times 9 = 27$

$4 \times 9 = 36$

$5 \times 9 = 45$

$6 \times 9 = 54$

$7 \times 9 = 63$

$8 \times 9 = 72$

$9 \times 9 = 81$

$10 \times 9 = 90$

Key Fact

$4 \times 9 = 36$

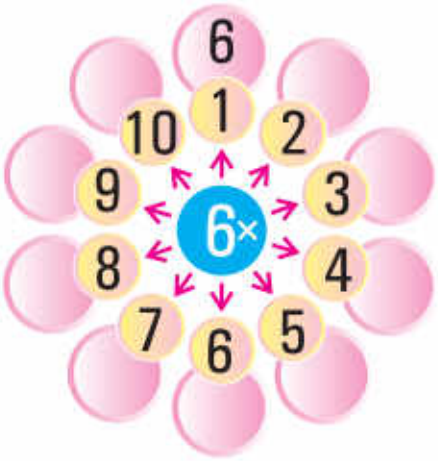
or

$4 \times 9 = 9 \times 4 = 36$

Teaching Point Teacher should guide students to develop table of 9 using repeated addition.

Exercise 3

1 Complete the following tables:



2 Fill in the boxes.

×	1	2	3	4	5	6	7	8	9	10
6	6				30				54	
7		14				42				70
8			24				56			
9				36				72		

Multiply 2-digit number by 1-digit number

Umair has 2 boxes. Each box has 24 pencils. How many total number of pencils he has?

	T	O
Pencils in a box =	2	4
Number of boxes = ×		2
Total number of pencils =	4	8

Now, we multiply 24 by 2.

Step 1

Write the given question in vertical form and write ones under ones.

T	O
2	4
×	2

Step 2

Multiply the digits at ones as:

$$4 \times 2 = 8$$

Write 8 at ones column.

T	O
2	4
×	2
	8

Step 3

Multiply 2 at tens place by 2 at ones place as:

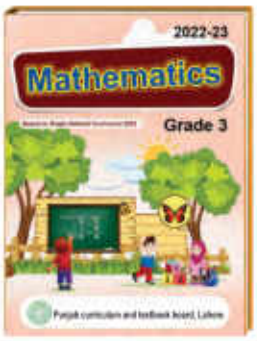
$2 \times 2 = 4$

Write 4 at tens column.

T	O
2	4
×	2
4	8

Thus, There are 48 pencils in two boxes.

The cost of Mathematics book of Grade-3 is Rs 65. Then what is the price of 6 books?



Price of 1 book = Rs 65

Price of 6 books = 6 × 65

= Rs 390

Now, we multiply 65 by 6

Step 1

Write the numbers in vertical form.

T	O
6	5
×	6

Step 2

Multiply 6 by 5 at ones place as:

$6 \times 5 = 30$

Write 0 at ones column

and carry 3 at tens column.

T	O
6	5
×	6
	③ 0

Step 3

$6 \times 6 = 36$

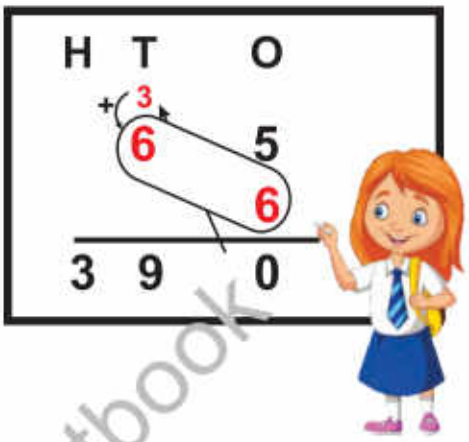
And add 3 tens.

36 tens + 3 tens = 39 tens

Write 9 at tens column

and 3 at hundreds column.

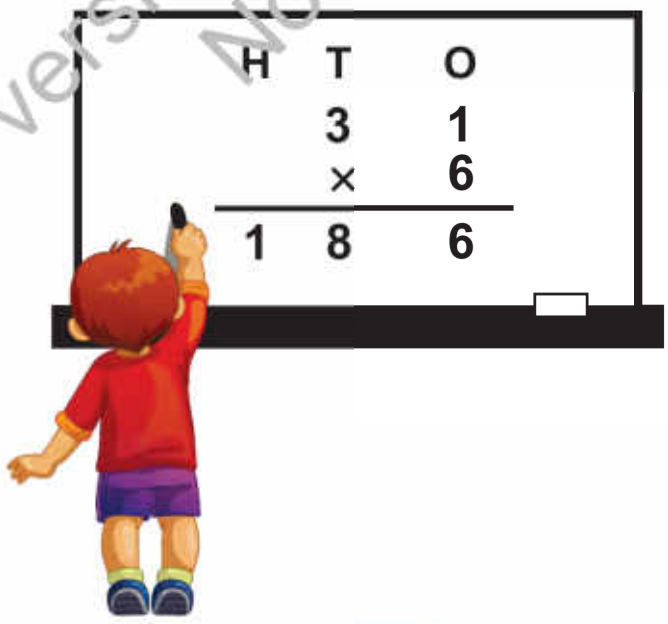
Thus, the price of 6 books will be Rs 390.



Mehwish has 6 toys. If the cost of one toy is Rs 31. What will be the cost of 6 such toys?

Cost of 1 toy = Rs 31

Cost of 6 toys = 6 × 31



Thus, the cost of 6 toys will be Rs 186.

Multiply a number by 0 and 1

(1) (2) (3)

There are 3 empty jars of toffees. It means that there is no toffee in each of the jars.

Sum of toffees in 3 jars = 0 + 0 + 0 = 0

or

Multiply 3 by 0 = 3 × 0 = 0

Similarly,

4 × 0 = 0

Thus, multiplying a number by '0' we always get '0'.

Total number of apples = 1 + 1 + 1

= 3

Teaching Point Teacher should explain the concepts of multiplication by giving daily life examples.

If these 3 apples are placed in one basket then we can write it as:

Number of apples in a basket = $3 \times 1 = 3$

Similarly, $4 \times 1 = 4$

If we multiply a number by 1 then we always get the same number.

Apply mental strategies to multiply 1-digit number by 1-digit number

Consider the multiplication of the following numbers:

$3 \times 6 =$	18	$7 \times 4 =$	28
$4 \times 5 =$	20	$9 \times 8 =$	72

Try Yourself

$9 \times 1 = ?$

$0 \times 6 = ?$

$1 \times 7 = ?$

$8 \times 1 = ?$

Key Fact

When two numbers are multiplied with each other we get the product of those numbers.

Exercise 4

1 Solve the following:

(i) $\begin{array}{r} 24 \\ \times\ 3 \\ \hline \end{array}$

(ii) $\begin{array}{r} 35 \\ \times\ 4 \\ \hline \end{array}$

(iii) $\begin{array}{r} 32 \\ \times\ 5 \\ \hline \end{array}$

(iv) $\begin{array}{r} 38 \\ \times\ 6 \\ \hline \end{array}$

(v) $\begin{array}{r} 45 \\ \times\ 7 \\ \hline \end{array}$

(vi) $\begin{array}{r} 48 \\ \times\ 8 \\ \hline \end{array}$

(vii) $\begin{array}{r} 54 \\ \times\ 9 \\ \hline \end{array}$

(viii) $\begin{array}{r} 56 \\ \times\ 7 \\ \hline \end{array}$

(ix) $\begin{array}{r} 62 \\ \times\ 6 \\ \hline \end{array}$

2 Solve the following by using tables:

(i) $7 \times 6 =$ ____

(ii) $5 \times 6 =$ ____

(iii) $4 \times 7 =$ ____

(iv) $9 \times 7 =$ ____

(v) $4 \times 9 =$ ____

(vi) $8 \times 7 =$ ____

3 Fill in the blanks.

(i) 5 × 0 = ☐

(ii) 35 × 0 = ☐

(iii) 45 × 0 = ☐

(iv) 48 × 1 = ☐

(v) 1 × 57 = ☐

(vi) 31 × ·· = ☐

4 Solve mentally.

(i) 4 × 9 = ☐

(ii) 5 × 4 = ☐

(iii) 6 × 3 = ☐

(iv) 6 × 5 = ☐

(v) 8 × 4 = ☐

(vi) 7 × 5 = ☐

5 If Habib spends Rs 24 in one day, then how many rupees will he spend in 4 days?

6 It there are 7 days in a week, then how many days are there in 52 weeks?

7 If there are 28 trees in one row, then how many trees are there in 5 such rows?

8 A motorcycle can cover a distance of 62 kilometres in one litre of petrol. How much distance will it cover in 4 litres?

Divide 2-digit number by 1-digit number with zero remainder

I have 30 marbles and I want to place them in 6 jars equally. How many marbles can be placed in each jar?

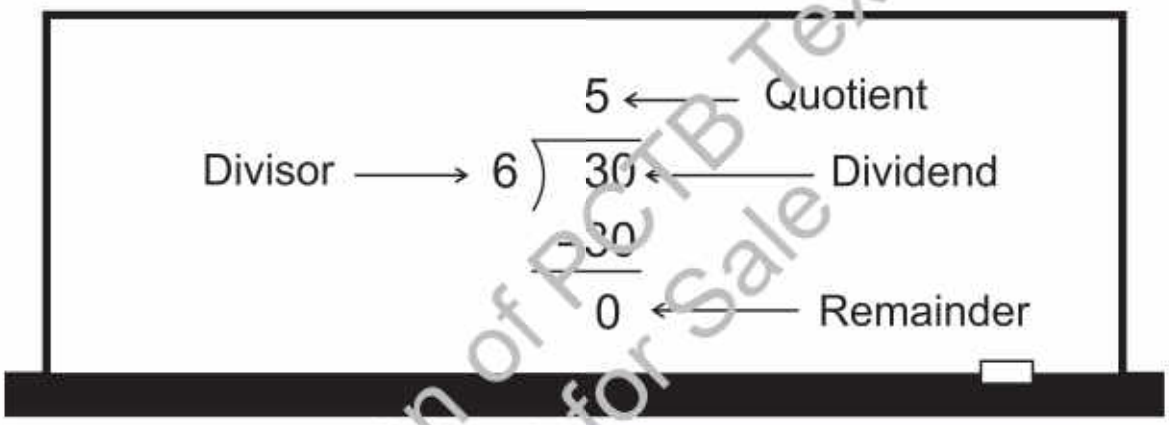
Dividing 30 by 6, we get 5.

Total number of marbles = 30

Number of jars = 6

Number of marbles in one jar = 30 ÷ 6

= 5



Thus, 5 marbles can be placed in each jar.

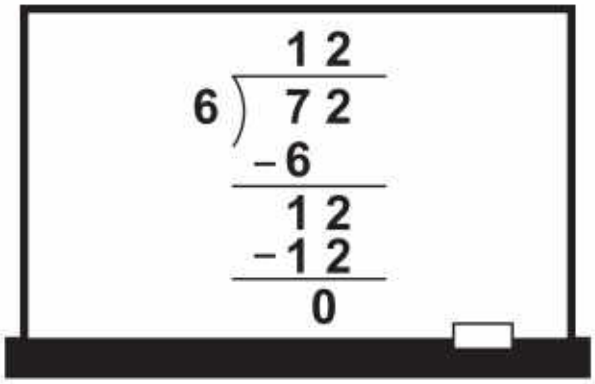
There are 72 mango trees in 6 rows. How many mango trees are there in 1 row?

Number of mango trees = 72

Rows of trees = 6

Number of trees in 1 row = 72 ÷ 6

= 12



Thus, there are 12 trees in one row.

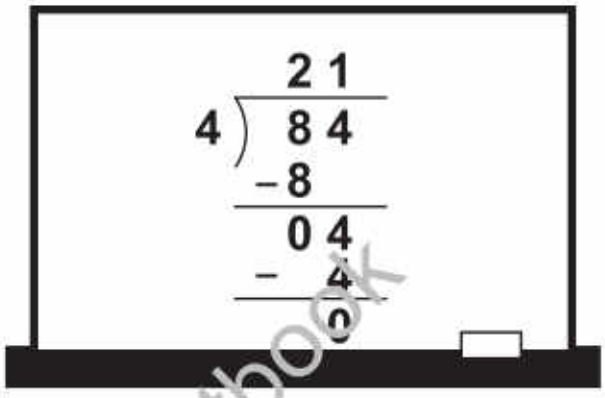
Distribute 84 pencils in 4 boxes equally.

Number of pencils = 84

Number of boxes = 4

Number of pencils in 1 box = 84 ÷ 4

= 21



Thus, there are 21 pencils in one box.

Key Fact

When 2-digit number is divided by 1-digit number, we divide the number at tens place first and then the number at ones place.

Key Fact

Division means to distribute the things equally.

Apply mental strategies to divide 1-digit number by 1-digit number.

Consider the division of the following numbers:

6 ÷ 2 = 3

9 ÷ 3 = 3

8 ÷ 2 = 4

8 ÷ 4 = 2

Teaching Point Teacher should guide the students that process of division can be made easy by dividing things into groups.

Exercise 5

Solve the following:

1. 20 ÷ 4 = ☐
2. 25 ÷ 5 = ☐
3. 42 ÷ 6 = ☐
4. 49 ÷ 7 = ☐
5. 72 ÷ 8 = ☐
6. 81 ÷ 9 = ☐
7. 48 ÷ 4 = ☐
8. 72 ÷ 6 = ☐
9. 84 ÷ 7 = ☐
10. 51 ÷ 3 = ☐
11. 96 ÷ 8 = ☐
12. 99 ÷ 9 = ☐

Solve mentally

13. 4 ÷ 2 = ☐
14. 8 ÷ 4 = ☐
15. 9 ÷ 3 = ☐

16. During school assembly, 96 students are standing in 6 rows. How many students are there in 1 row?

17. A man covered a distance 56 km in 4 days, then how much distance was covered in 1 day?

18 The price of 1 packet of biscuits is Rs 5. I have Rs 70. How many packets can I buy?

19 Zubair bought 7 notebooks for Rs 91. Find the price of 1 notebook.

20 If the price of 1 colour pencil is Rs 8. How many colour pencils can be bought in Rs 48?

I have learnt to:

- add numbers up to 4-digit with and without carrying.
- add numbers up to 100 using mental strategies.
- solve real life number stories up to 4-digit with and without carrying involving addition.
- subtract numbers up to 4-digit with and without borrowing.
- subtract numbers up to 100 using mental strategies.
- solve real life number stories up to 4-digit with and without borrowing involving subtraction.
- develop multiplication tables for 6, 7, 8, and 9.
- multiply 2-digit number by 1-digit number.
- multiply a number by 0 and 1.
- apply mental strategies to multiply 1-digit numbers to 1-digit numbers.
- solve real life situations involving multiplication of 2-digit numbers by 1-digit numbers.
- divide 2-digit number by a 1-digit number (with zero remainder).
- apply mental strategies to divide 1-digit number by a 1-digit number.
- solve real life situations involving division of 2-digit number by a 1-digit number.

Vocabulary

- Addition
- Subtraction
- Multiplication
- Division
- Mental strategies
- Box

Review Exercise

1 Choose the correct options and fill in the blanks.

(i) Sum of 1 564 and 7 325 is _____.

(a) 8 888 (b) 8 889 (c) 8 899 (d) 8 886

(ii) Difference of 6 351 and 1 265 is _____.

(a) 5 056 (b) 5 076 (c) 5 086 (d) 5 096

(iii) 3 246 is _____ less than 1 886

(a) 1 350 (b) 1 360 (c) 1 370 (d) 1 380

(iv) There are 6 eggs in a basket. Then _____ eggs are in 7 such baskets.

(a) 21 (b) 28 (c) 35 (d) 42

(v) When any number is multiplied by 0, we get _____.

(a) 0 (b) 1 (c) 10 (d) 100

(vi) By multiplying 12 by 1, we get _____.

(a) 13 (b) 112 (c) 12 (d) 14

(vii) By dividing 24 by 6, we get_____.

(a) 4 (b) 5 (c) 6 (d) 7

(viii) By dividing 84 by 4, we get _____.

(a) 18 (b) 19 (c) 20 (d) 21

Add:

2. 4 536 , 5 314

3. 8 645 , 3 456

Solve the following:

4. 4 554 − 2 342

5. 5 943 − 4 864

Solve mentally.

6. 2 8 + 1 3 =

7. 5 8 − 3 2 =

8. 8 × 6 =

9. 6 ÷ 3 =

10. In Najeebullah's shop, there are 1 457 mangoes and 7 321 bananas. Find total number of fruits.

11. The total number of students in a school is 4 356. If the number of female students is 1 968, then find the number of male students.

12. If Hanif spends Rs 35 in 1 day then how many rupees he spends in 7 days?

13. The price of 8 kilograms of salt is Rs 96. Then what will be the price of 1 kilogram of salt?

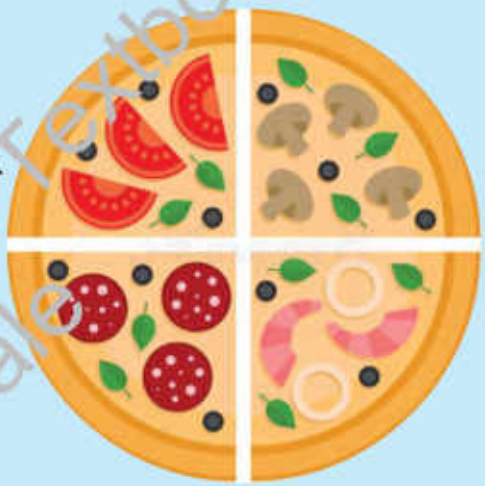
Unit 3

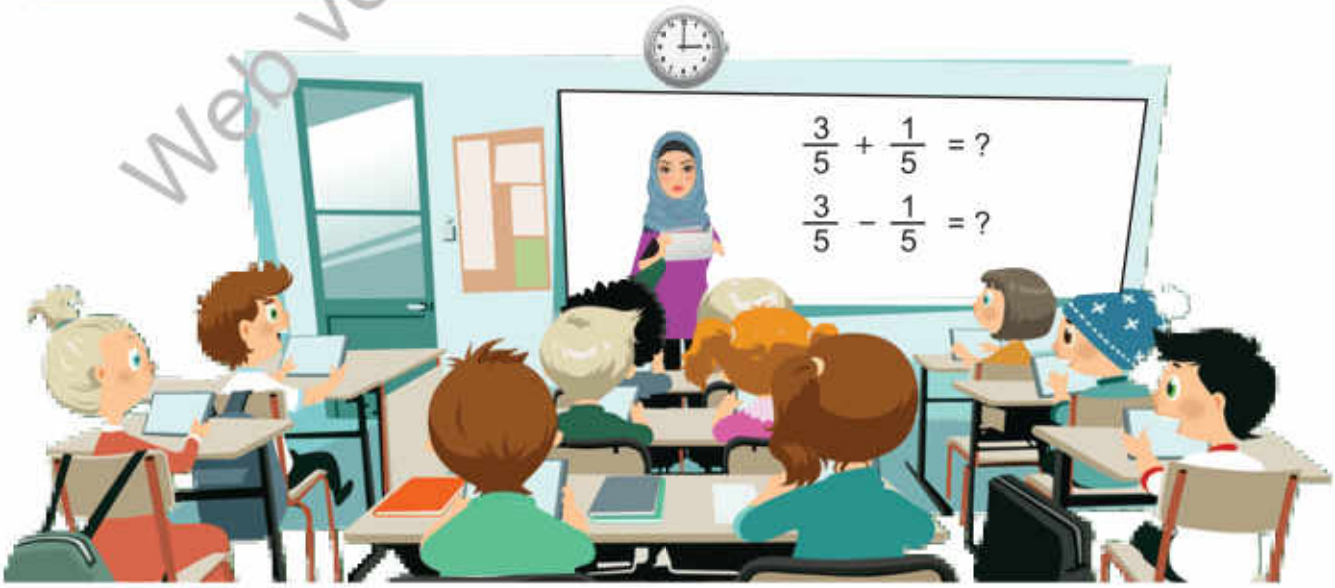
Fractions

Learning Outcomes

After completing this unit, you will be able to:

- Express the fractions in figures and vice versa.
- Match the fractions with related figures.
- Recognize proper and improper fractions.
- Differentiate between proper and improper fractions.
- Identify equivalent fractions from the given figures.
- Write three equivalent fractions for a given fraction.
- Compare fractions with same denominators using symbols "<", ">", or "=".
- Add two fractions with same denominators.
- Represent addition of fractions through figures.
- Subtract fractions with same denominators.
- Represent subtraction of fractions through figures.





Common Fractions

Saima's father brought a watermelon for Iftaar. When her mother was cutting watermelon into 4 pieces Saima was observing it keenly.

"Mother explained her that first I divided watermelon in 2 equal parts, then I divided each part into 2 pieces to make it 4 equal parts."

"Saima asked her mother, how did you cut it into 4 equal pieces".

Key Fact

Common fraction is also known as vulgar fraction.

One whole = 1

Half = $\frac{1}{2}$

One fourth = $\frac{1}{4}$

In the above given figure, 3 out of 4 parts are coloured. In fraction the coloured part can be written as: $\frac{3}{4}$

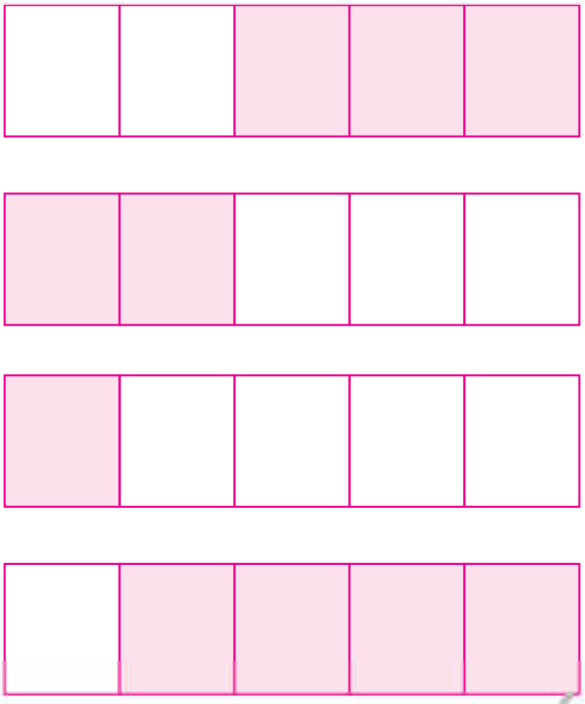
The above figure is divided into 8 equal parts.
5 parts out of 8 are coloured.
In fraction the coloured part can be written as: $\frac{5}{8}$

Key Fact

A fraction is called common fraction in which numerator and denominator both are integers and separated by a horizontal or slanted line e.g. $\frac{6}{7}$

Teaching Point Explain the concept of common fraction, using daily life examples.

Match the given coloured figures with the fraction.



$\frac{2}{5}$

$\frac{3}{5}$

$\frac{4}{5}$

$\frac{1}{5}$

Key Fact

How many parts of whole:

- the above number (the numerator) shows how many parts have been used.
- the below number (the denominator) shows how many equal parts the whole is divided into.

e.g. in $\frac{5}{8}$

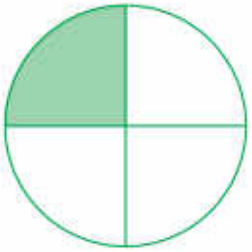
5 is numerator and 8 is denominator.

Exercise 1

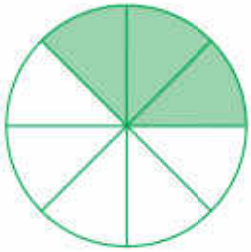
1. Identify numerator and denominator in the following fractions:

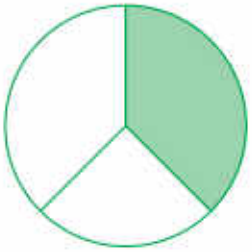
$\frac{2}{7}$, $\frac{3}{7}$, $\frac{5}{8}$, $\frac{2}{5}$, $\frac{10}{13}$, $\frac{9}{10}$, $\frac{1}{8}$, $\frac{2}{3}$, $\frac{4}{7}$, $\frac{3}{4}$

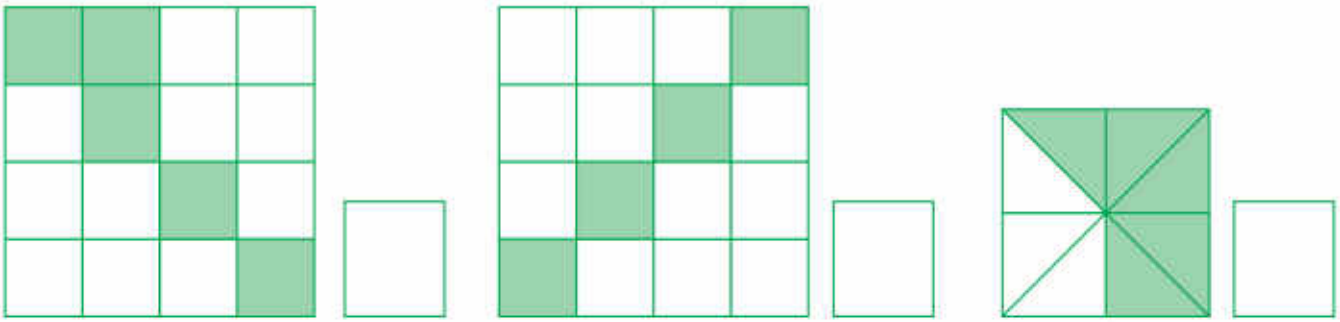
2. Write the fraction of the coloured part in the given boxes.



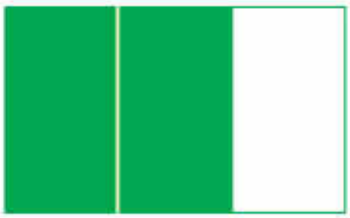
$\frac{1}{4}$





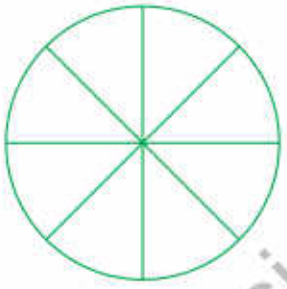


3 Colour the following figures according to the given fractions:

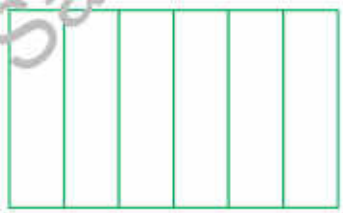


$\frac{2}{3}$

$\frac{3}{4}$



$\frac{3}{8}$



$\frac{3}{6}$

4 Write the fraction from the given numerator and denominator.

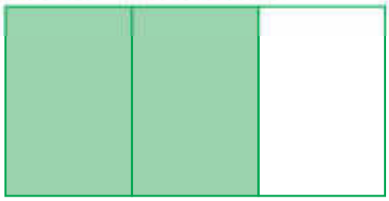
(i) Numerator = 4, Denominator = 11 → $\frac{4}{11}$

(ii) Numerator = 3, Denominator = 11 → ___

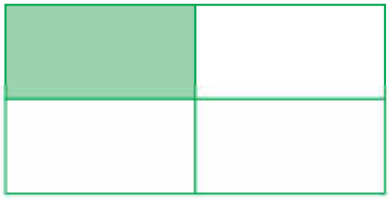
(iii) Numerator = 4, Denominator = 9 → ___

(iv) Numerator = 5, Denominator = 7 → ___

5 Match the following coloured part/parts of the figures with the given fractions:

(i) 

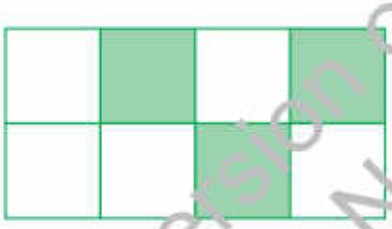
$\frac{3}{4}$

(ii) 

$\frac{3}{8}$

(iii) 

$\frac{1}{4}$

(iv) 

$\frac{2}{8}$

(v) 

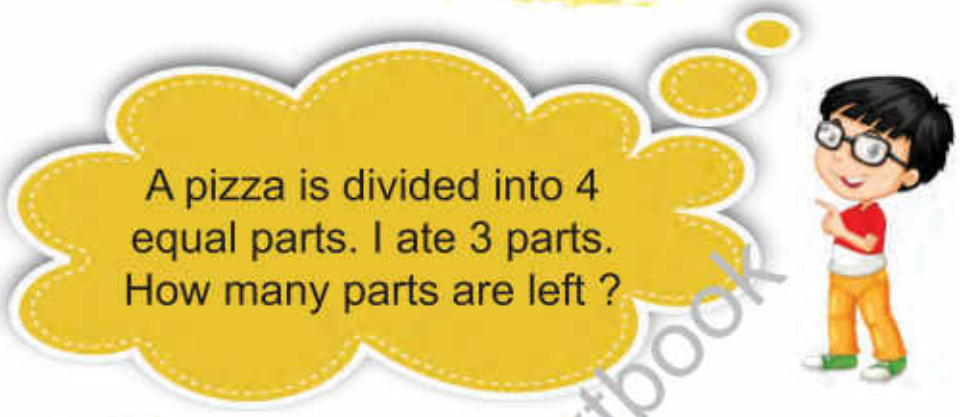
$\frac{2}{3}$

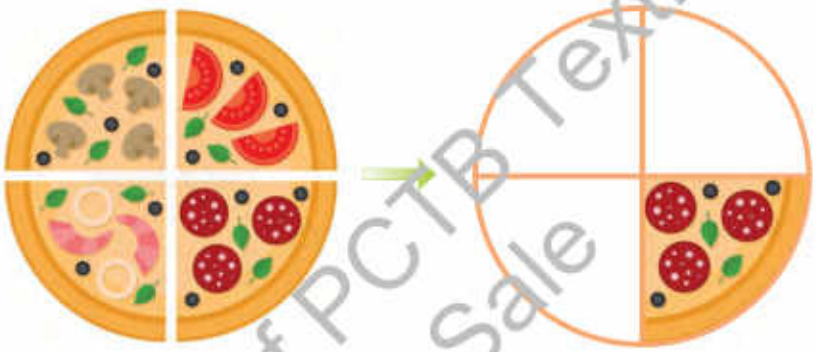
(vi) 

$\frac{2}{5}$

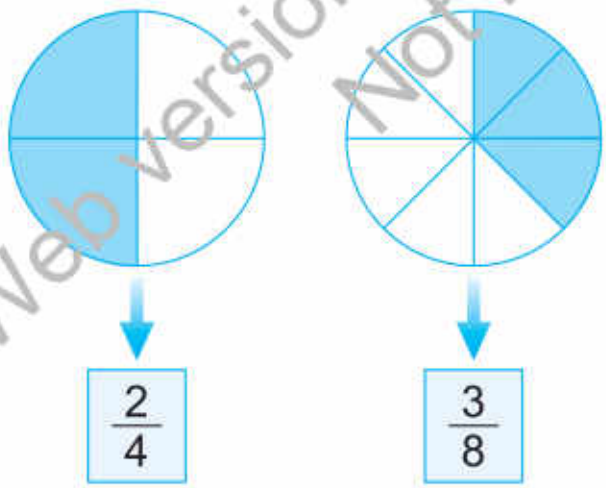
Proper and Improper Fractions

Proper Fraction:





Similarly, the left over part can be written as fraction : $\frac{1}{4}$



Key Fact

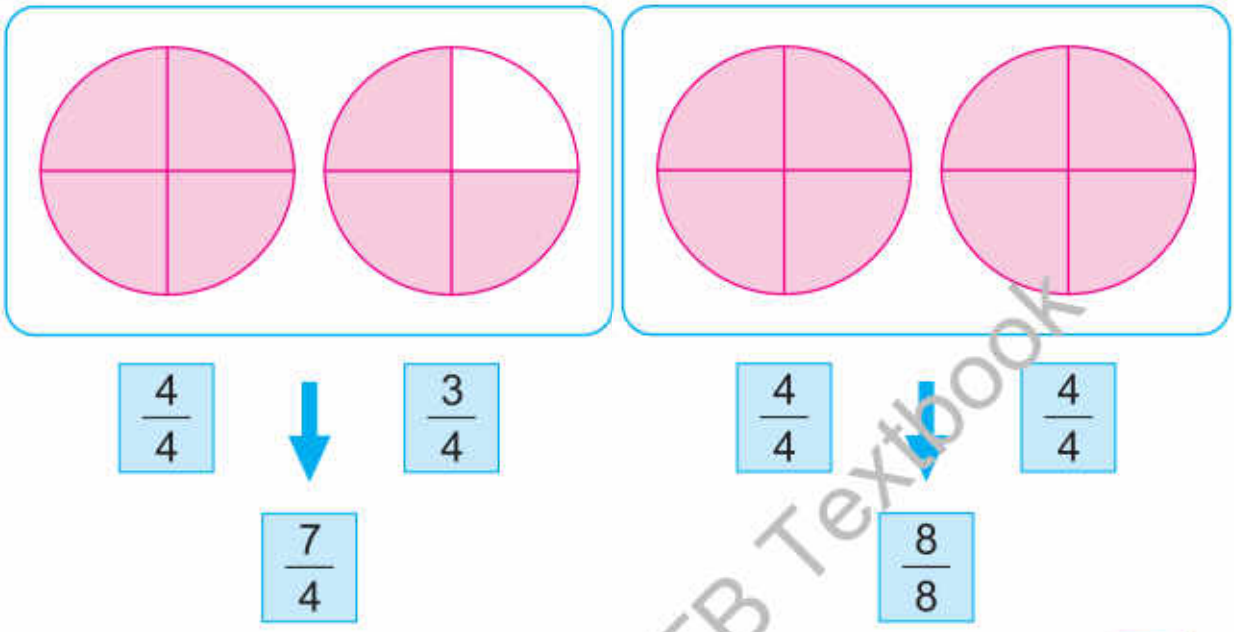
If the numerator of a fraction is smaller than its denominator, then the fraction is called proper fraction.

In these fractions, numerators are less than denominators. Therefore, these fractions are called proper fractions.

Check Point

Is $\frac{2}{3}$ a proper fraction?

Improper Fractions



In $\frac{7}{4}$, numerator is greater than denominator.

In $\frac{8}{8}$, numerator is equal to denominator.

Therefore, both the fractions are improper fractions.

Key Fact

If the numerator of a fraction is greater than or equal to its denominator, then the fraction is called improper fraction.

Exercise 2

1 Write proper or improper fractions in the following boxes:

(i) $\frac{3}{4} =$ ☐ (ii) $\frac{4}{5} =$ ☐ (iii) $\frac{4}{3} =$ ☐

(iv) $\frac{4}{9} =$ ☐ (v) $\frac{7}{5} =$ ☐ (vi) $\frac{9}{5} =$ ☐

(vii) $\frac{8}{9} =$ ☐ (viii) $\frac{3}{7} =$ ☐ (ix) $\frac{7}{7} =$ ☐

2 Match proper fractions with proper fractions and improper fractions with improper fractions in the following:

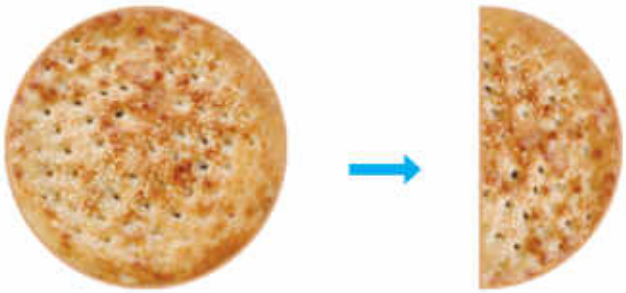
$\frac{13}{6}$ $\frac{14}{5}$ $\frac{4}{5}$ $\frac{9}{4}$

$\frac{8}{5}$ Proper fractions Improper fractions $\frac{7}{12}$

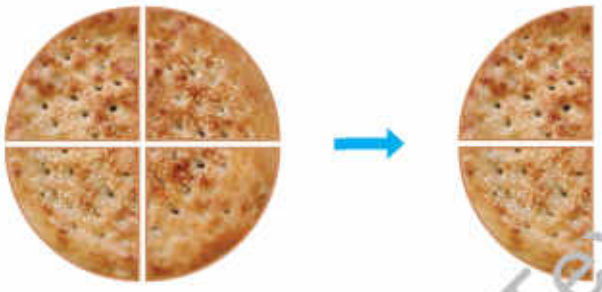
$\frac{7}{19}$ $\frac{8}{15}$ $\frac{7}{9}$ $\frac{7}{4}$

Equivalent Fractions

Umair divides a bread into 2 equal parts and eats $\frac{1}{2}$ of it.



Nousheen has a bread. She divided it into 4 equal parts and ate $\frac{2}{4}$ of it.



Uzair has a bread. He divided it into 8 equal parts and ate $\frac{4}{8}$ of it.

We observe that Umair, Nousheen and Uzair ate same quantity of bread.

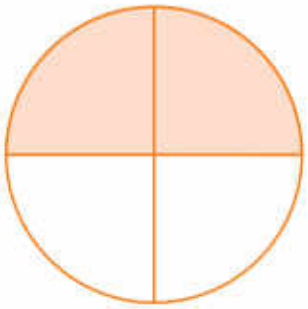
Fractions $\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$ look different but actually they ate same quantity of bread.

So, we can say that: $\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$ are equivalent fractions.

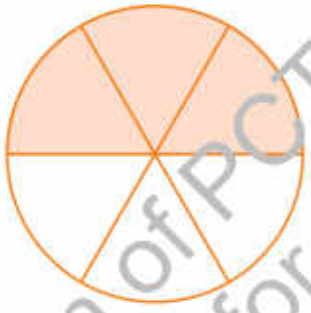
To find equivalent fractions, multiply or divide the numerator and the denominator by the same non zero number.

We can write three equivalent fractions of $\frac{1}{2}$ as:

$$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$$



$$\frac{1}{2} = \frac{1 \times 3}{2 \times 3} = \frac{3}{6}$$



$$\frac{1}{2} = \frac{1 \times 4}{2 \times 4} = \frac{4}{8}$$

Try Yourself

What will be three equivalent fractions of $\frac{2}{3}$?

Key Fact

To get equivalent fraction, multiply numerator and denominator by the same non-zero number.

Thus, three equivalent fractions of $\frac{1}{2}$ are:

$$\frac{2}{4}, \frac{3}{6} \text{ and } \frac{4}{8}$$

Teaching Point Explain the concept of equivalent fractions by using daily life examples.

Exercise 3

1 Match the equivalent fractions.

(i)	$\frac{3}{5}$	$\frac{8}{14}$
(ii)	$\frac{5}{9}$	$\frac{1}{2}$
(iii)	$\frac{4}{7}$	$\frac{15}{21}$
(iv)	$\frac{3}{6}$	$\frac{9}{24}$
(v)	$\frac{3}{8}$	$\frac{6}{10}$
(vi)	$\frac{5}{7}$	$\frac{10}{18}$

2 Write three equivalent fractions of each of the following:

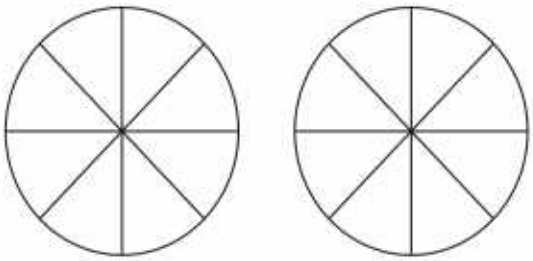
(i) $\frac{5}{6}$ (ii) $\frac{2}{3}$ (iii) $\frac{1}{4}$

(iv) $\frac{5}{8}$ (v) $\frac{3}{5}$ (vi) $\frac{2}{5}$

Exercise 4

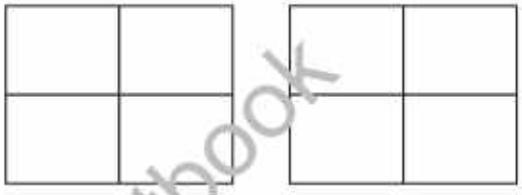
1. Colour the following figures according to fractions and then use "<" or ">" sign:

(i)



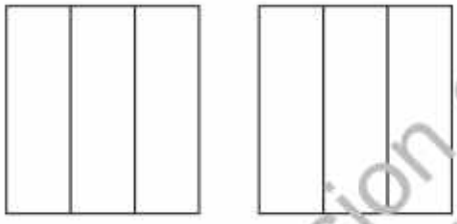
$\frac{5}{8}$ ☐ $\frac{7}{8}$

(ii)



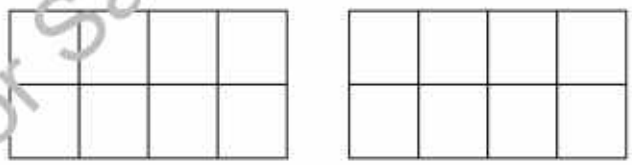
$\frac{3}{4}$ ☐ $\frac{2}{4}$

(iii)



$\frac{1}{3}$ ☐ $\frac{2}{3}$

(iv)



$\frac{5}{8}$ ☐ $\frac{3}{8}$

2. Use "<" , ">" and "=" in the following fractions:

(i) $\frac{3}{9}$ ☐ $\frac{5}{9}$

(ii) $\frac{3}{5}$ ☐ $\frac{2}{5}$

(iii) $\frac{4}{7}$ ☐ $\frac{4}{7}$

(iv) $\frac{2}{3}$ ☐ $\frac{1}{3}$

(v) $\frac{4}{9}$ ☐ $\frac{4}{9}$

(vi) $\frac{5}{11}$ ☐ $\frac{3}{11}$

Addition of Fractions

Zaryab and Nayab ordered one pizza. The pizza was divided into 8 equal parts. Zaryab ate 3 pieces of pizza. Nayab ate 2 pieces of pizza. How much pizza did they eat altogether?

Zaryab's ate + Nayab's ate = Total ate

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

To find the total quantity of pizza, we will add $\frac{3}{8}$ and $\frac{2}{8}$.

Total pizza eaten $= \frac{3}{8} + \frac{2}{8}$

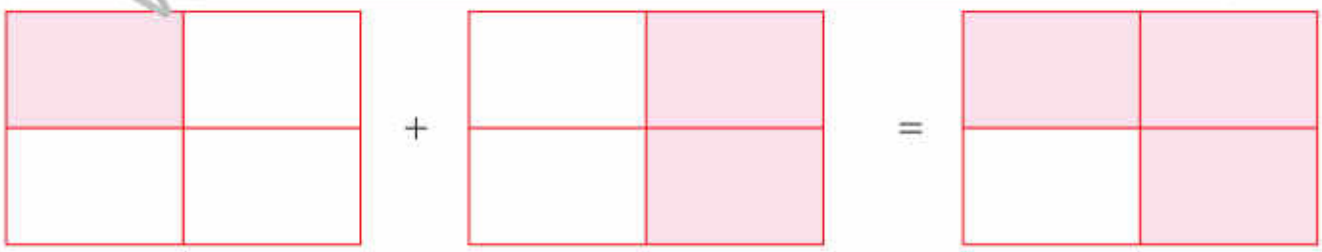
$= \frac{3+2}{8}$

$= \frac{5}{8}$

Key Fact

To add fractions with same denominators, we add numerators only.

Add $\frac{1}{4}$ and $\frac{2}{4}$ through figures



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

Teaching Point Explain the concept of addition of two fractions with same denominators to the students.

Exercise 5

Solve the following:

1. $\frac{3}{7} + \frac{2}{7}$

2. $\frac{3}{5} + \frac{1}{5}$

3. $\frac{1}{9} + \frac{4}{9}$

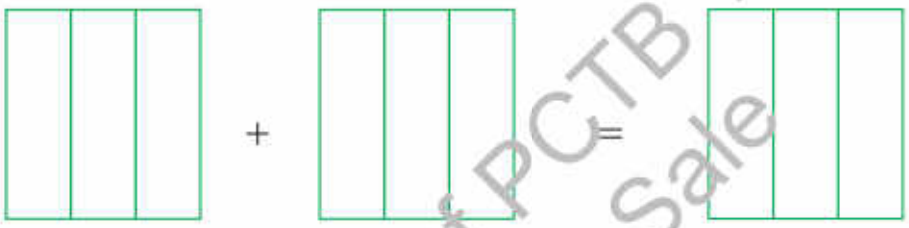
4. $\frac{5}{12} + \frac{2}{12}$

5. $\frac{1}{8} + \frac{3}{8}$

6. $\frac{1}{6} + \frac{3}{6}$

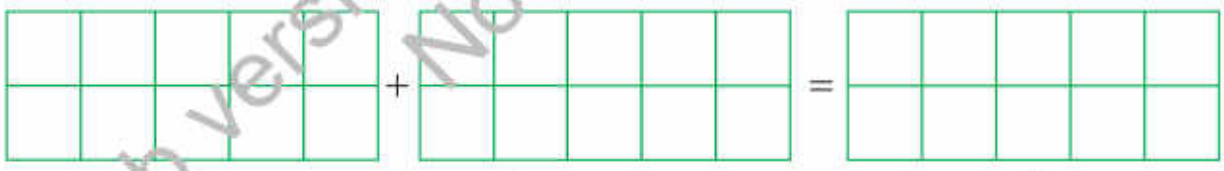
Colour the figures according to the given fractions.

7.



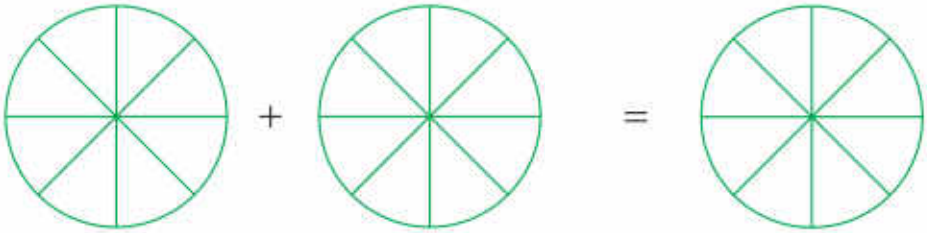
$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$

8.



$\frac{3}{10} + \frac{4}{10} = \frac{7}{10}$

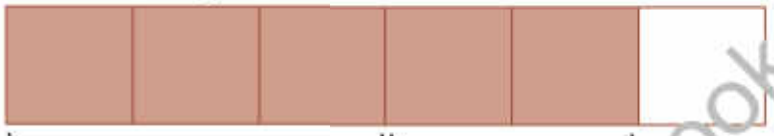
9.



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

Subtraction of Fractions

Shahzain and Tabish bought a chocolate in which Shahzain ate $\frac{3}{6}$ part of the chocolate and Tabish ate $\frac{2}{6}$ part of the chocolate. How much more chocolate has eaten by Shahzain than Tabish?



Shahzain ate = $\frac{3}{6}$

Tabish ate = $\frac{2}{6}$

Difference = $\frac{3}{6} - \frac{2}{6}$

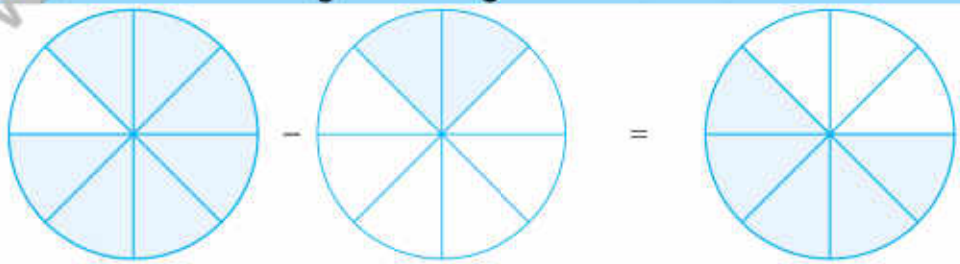
Shahzain ate more chocolate = $\frac{3-2}{6} = \frac{1}{6}$

Thus, Shahzian ate $\frac{1}{6}$ part more of the chocolate than Tabish.

Key Fact

To subtract fractions with same denominator, we subtract the numerators only.

Subtract $\frac{2}{8}$ from $\frac{7}{8}$ through figures.



$\frac{7}{8} - \frac{2}{8} = \frac{7-2}{8} = \frac{5}{8}$

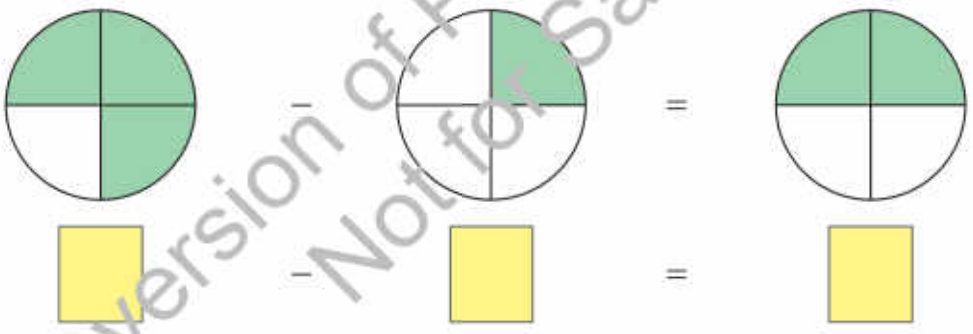
Teaching Point Teacher should explain the students the method of subtraction of two fractions with same denominators and give some questions for practicing.

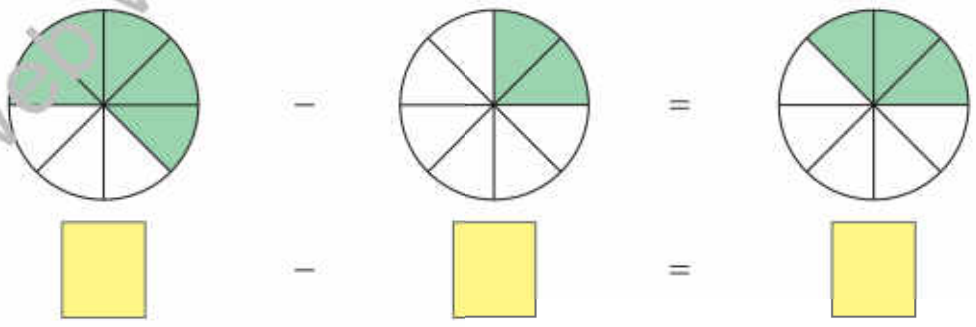
Exercise 6

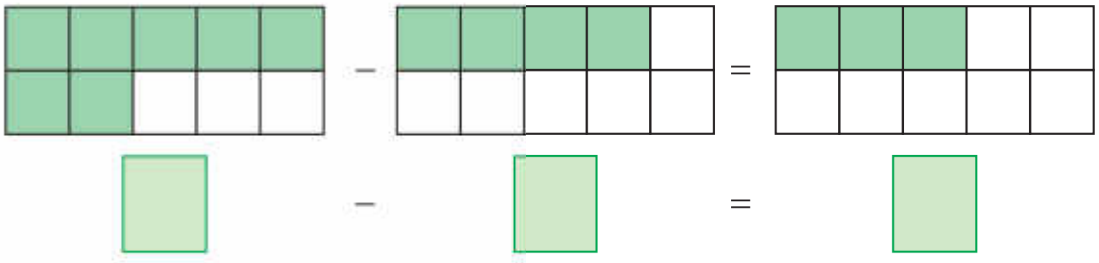
Solve the following:

1. $\frac{3}{7} - \frac{1}{7}$
2. $\frac{5}{9} - \frac{1}{9}$
3. $\frac{3}{5} - \frac{2}{5}$
4. $\frac{5}{8} - \frac{2}{8}$
5. $\frac{7}{12} - \frac{3}{12}$
6. $\frac{5}{6} - \frac{3}{6}$
7. $\frac{5}{8} - \frac{3}{8}$
8. $\frac{5}{11} - \frac{3}{11}$
9. $\frac{7}{15} - \frac{3}{15}$

Write the fractions of the coloured parts and then solve.

10. 

11. 

12. 

I have learnt to:

- express the fractions in figures and vice versa
- match the fractions with related figures
- recognize proper and improper fractions
- differentiate between proper and improper fractions
- identify equivalent fractions from the given figures
- write three equivalent fractions for a given fraction
- compare fractions with same denominators using symbols "<", ">", or "="
- add two fractions with same denominators
- represent addition of fractions through figures
- subtract fractions with same denominators
- represent subtraction of fractions through figures

Vocabulary

- Proper fraction
- Improper fraction
- Equivalent fraction
- Comparing fractions
- Common fractions
- Addition of fractions
- Subtraction of fractions

Review Exercise

1 Choose the correct options and fill in the blanks.

(i) A fraction in which numerator is smaller than denominator is called _____ fraction.

(a) proper (b) improper (c) equivalent (d) common

(ii) A fraction in which numerator is greater than denominator is called _____ fraction.

(a) equivalent (b) common (c) proper (d) improper

(iii) Equivalent fraction of $\frac{2}{5}$ is _____.

(a) $\frac{4}{3}$ (b) $\frac{4}{7}$ (c) $\frac{4}{6}$ (d) $\frac{4}{10}$

(iv) In fractions, $\frac{4}{5} \square \frac{3}{5}$, use symbol.

(a) < (b) > (c) = (d) ≠

(v) In fractions $\frac{4}{15} \square \frac{7}{15}$, use symbol.

(a) > (b) < (c) = (d) ≠

(vi) The sum of two fractions $\frac{3}{15}$ and $\frac{4}{15}$ is _____.

(a) $\frac{1}{15}$ (b) $\frac{7}{15}$ (c) $\frac{7}{30}$ (d) $\frac{1}{30}$

(vii) The difference of two fractions $\frac{7}{9}$ and $\frac{3}{9}$ is _____.

(a) $\frac{4}{9}$ (b) $\frac{10}{9}$ (c) $\frac{10}{18}$ (d) $\frac{4}{18}$

2 Identify numerators and denominators of the following fractions:

$\frac{2}{9}$, $\frac{3}{7}$, $\frac{4}{5}$, $\frac{10}{7}$, $\frac{4}{15}$, $\frac{11}{6}$

3 Separate proper and improper fractions from the following fractions:

$\frac{3}{5}$, $\frac{7}{5}$, $\frac{9}{6}$, $\frac{3}{8}$, $\frac{5}{9}$, $\frac{6}{6}$, $\frac{7}{18}$

4 To compare use "<" , ">" or "=" sign in the following fractions:

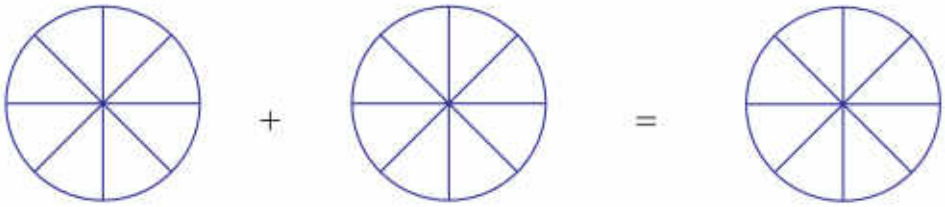
(i) $\frac{8}{9} \square \frac{4}{9}$ (ii) $\frac{5}{7} \square \frac{6}{7}$ (iii) $\frac{4}{5} \square \frac{4}{5}$

5 Write three equivalent fractions of the following fractions:

(i) $\frac{2}{3}$ (ii) $\frac{4}{5}$ (iii) $\frac{3}{7}$ (iv) $\frac{3}{8}$

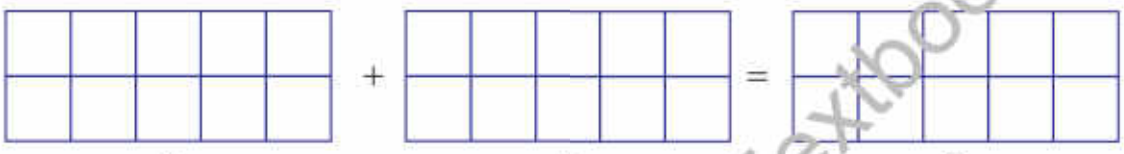
6 Colour the figures according to the given fractions.

(i)



$\frac{4}{8} + \frac{3}{8} = \frac{7}{8}$

(ii)



$\frac{3}{10} + \frac{5}{10} = \frac{8}{10}$

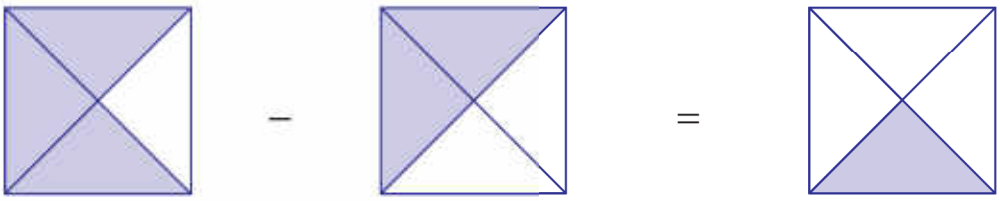
(iii)

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

7 Write the fraction of the coloured parts then solve it.

(i)

(ii)



Unit 4

Measurement: Length, Mass and Capacity

Learning Outcomes

After completing this unit, you will be able to:

- Use standard metric units of length (kilometre, metre and centimetre) including abbreviations.
- Add measures of length in same units without carrying.
- Solve real life situations involving same units of length for addition without carrying.
- Subtract measures of length in same units without borrowing.
- Solve real life situations involving same units of length for subtraction without borrowing.
- Use standard metric units of mass (kilogram and gram) including abbreviations.
- Add measures of mass in same units without carrying.
- Solve real life situations involving same units of mass for addition without carrying.
- Subtract measures of mass in same units without borrowing.
- Solve real life situations involving same units of mass for subtraction without borrowing.
- Use standard metric units of capacity (litre and millilitre) including abbreviations.
- Add measures of capacity in same units without carrying.
- Solve real life situations involving same units of capacity for addition without carrying.
- Subtract measures of capacity in same units without borrowing.
- Solve real life situations involving same units of capacity for subtraction without borrowing.

How can we measure an object?

Length

How distance is measured from home to school?

Key Fact

Metre is written in short form as 'm'
Centimetre is written in short form as 'cm'
1 m = 100 cm

Usually schools are far away from home, so this distance is measured in kilometre (km)

About 1 cm

About 1 m

Measurement in km

Metallic measuring tape

Metre rod

Following measuring scales are used to measure different objects.

Plastic measuring tape

Scale

How can we measure the length of a table?

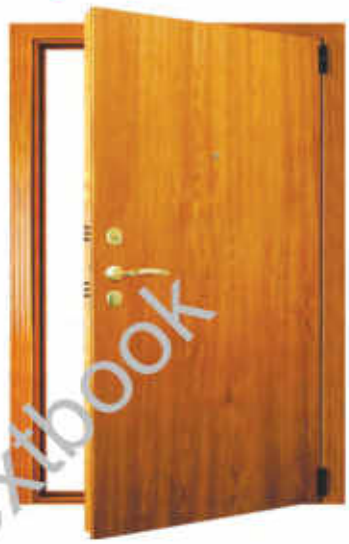
Length of table is measured in metres (m).

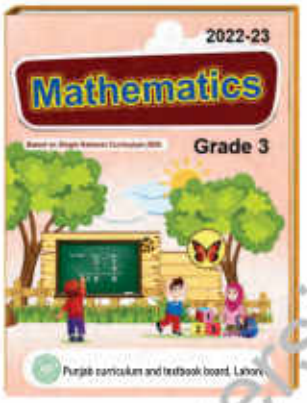
Its length is 1 metre and 20 centimetre.

Length of my bag is 45 cm.

Length 45 cm

- Which unit is suitable for measuring the following objects (metre/centimetre).





Try Yourself

Measure the length and width of your classroom with the help of measuring tape and also write the units

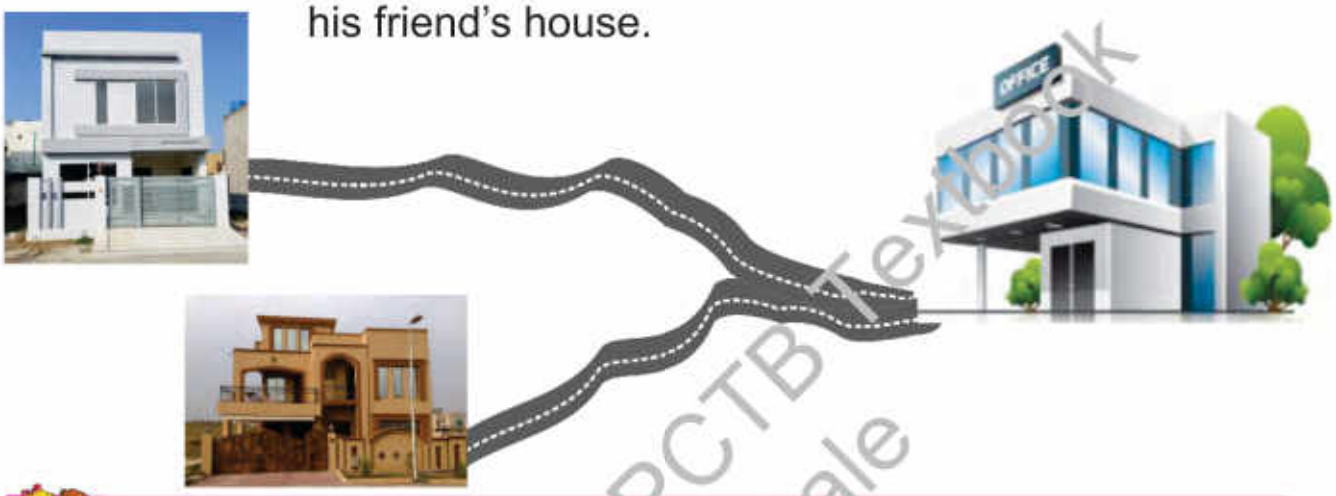
Length : ____

Width : ____

Addition of Length

The distance from Khalil's office to his house is 9 km 600 m and the distance from the office to his friend's house is 13 km 200 m.
How much distance will Khalil have to cover to go to his friend's house?

Let's add the two distances from Khalil's office to his friend's house.



Add 9 km 600 m and 13 km 200 m.

9 km 600 m
+ 13 km 200 m
22 km 800 m

Thus, Khalid will have to cover 22 Km 800 m to go to his friend's house.

Add 15 km 18 m and 20 km 40 m.

15 km 18 m
+ 20 km 40 m
35 km 58 m

Arsalan bought 4 m 70 cm cloth while Rizwan bought 5 m 20 cm cloth. Find the total length of cloth they bought.

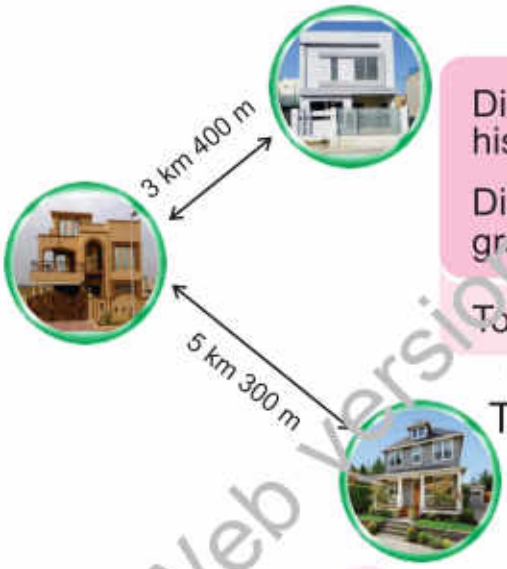
Key Fact

- 1 m = 100 cm
- Add centimetres to centimetres.
- Add metres to metres.

Arsalan's cloth	=	4 m	70 cm
Rizwan's cloth	= +	5 m	20 cm
Total cloth	=	9m	90cm

Thus, the total length of cloth was 9 m 90 cm.

Furqan went to his sister's house for Eid greetings. Distance of his sister's house is 3 km 400 m. Then they went to their grandmother's house that is 5 km 300 m away from his sister's house. Find the distance covered by Furqan.



Distance of Furqan's house from his sister's house	=	3 km	400 m
Distance from sister's house to grandmother's house	= +	5 km	300 m
Total distance	=	8 km	700 m

Thus, Furqan covered 8 km 700 m distance.

Exercise

Solve the following:

1.

	4 m		6 5 cm
+	5 m		1 2 cm

2.

	1 4 m		5 0 cm
+	9 m		4 0 cm

3.

7 km	6 3 2 m	
+8 km	2 1 4 m	

4.

2 5 km	3 1 2 m	
+ 2 1 km	6 7 6 m	

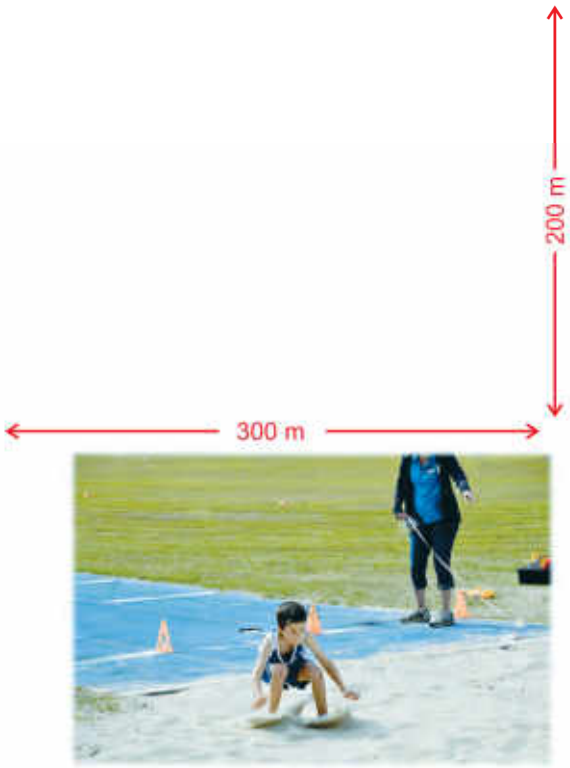
5.

2 1 km	8 1 5 m	
+1 7 km	1 8 3 m	

6.

4 1 km	7 4 5 m	
+ 3 8 km	1 [illegible] 4 m	

7



Subtraction of Lengths

Mount Everest is the highest peak in the world, with the height of 8848 m. K-2 is the second highest peak with the height of 8 611 m. How much more high is Mount Everest than K-2 peak?

Mount Everest

K-2

We will subtract the two heights to find the difference of height of two peaks

Height of Mount Everest = 8 848 m
Height of K-2 = − 8 611 m
Difference in heights = 237 m

Try it

Which unit is suitable for the following:

- Length of football ground.
- Height of mathematics book.
- Distance from Quetta to Islamabad.

Subtract 252 m 34 cm from 375 m 85 cm.

	375 m	85 cm
−	252 m	34 cm
	123 m	51 cm

A shopkeeper sold 16 m 34 cm cloth from 38 m 45 cm cloth. How much cloth was left with him?

	38 m	45 cm
–	16 m	34 cm
	22 m	11 cm

Thus, 22m 11cm cloth was left with him.

Asif has to cover a distance of 2 km 300 m to reach school. He covered 1 km 200 m distance with his friend. How much more distance he has to cover to reach school?

Total distance to school	=	2 km	300 m
Distance covered with friend	= –	1 km	200 m
More distance for reaching school	=	1 km	100 m

Thus, Asif has to cover 1 km 100 m more distance to reach the school.

Exercise 2

1 Solve the following:

(i)

	51 m	86 cm
−	30 m	75 cm

(ii)

	25 m	93 cm
−	14 m	23 cm

(iii)

	15 km	365 m
−	13 km	252 m

(iv)

	76 m	67 cm
−	35 m	41 cm

(v)

	67 km	891 m
−	51 km	760 m

(vi)

	35 km	786 m
−	13 km	675 m

(vii)

	19 km	345 m
−	16 km	231 m

(viii)

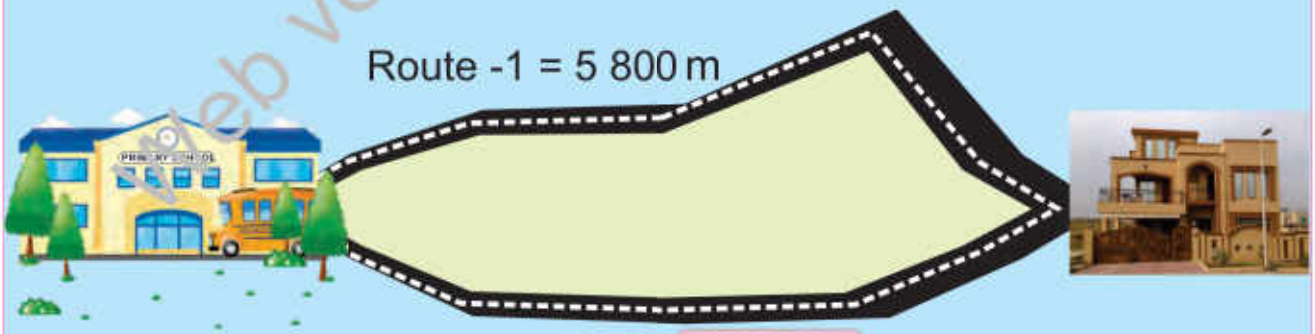
	19 km	708 m
−	15 km	205 m

2 Arsalan used 35 m 65 cm water pipe from 78 m 89 cm long pipe. How much pipe was left?

3 Rehana bought 19 m 82 cm lace and used 8 m 61 cm on her shirt. Find the length of remaining lace.

4 On returning from Karachi, Subhan travelled 950 km 460 m distance by bus and taxi. If he travelled 900 km 230 m distance by bus. Find how much distance he travelled by taxi?

Try it



Route -2 = _____

Suleman travels 5 800 metre to reach school via route - 1, while the distance from route - 2 to reach the school is 800 metre less. Find:

- The distance of route-2.
- The total distance of route-1 and route-2.

Mass

How can we weigh different objects?

Key Fact

Standard unit of mass is kilogram and gram.

We measure mass of heavy objects in kilograms (kg) and mass of light objects in grams (g).

Weight

To find the mass of various objects different balances are used.

Read the masses of following objects and write them in the boxes.

Addition of Mass

Ahmad bought 49 kg 600 g flour and 50 kg 200 g sugar. Find the total mass.

We will add both masses to find the sum of both masses.

Key Fact

- Add kilograms to kilograms.
- Add grams to grams.
- 1 kg = 1 000 g

Mass of flour =	49 kg	600 g
Mass of sugar = +	50 kg	200 g
Total mass =	99 kg	800 g

Add 17 kg 735 g and 32 kg 264 g.

Key Fact

- Kilogram is written in short form as 'kg'
- Gram is written in short form as 'g'

	17 kg	735 g
+	32 kg	264 g
	49 kg	999 g

Hameeda bought 6 kg 500 g apples and 4 kg 250 g peaches. Find the total mass of fruits.

Apples	=	6 kg	500 g
Peaches	= +	4 kg	250 g
Total mass	=	10 kg	750 g

Hence, the total mass of fruits is 10 kg 750 g.

Activity

Write the mass of following fruits in the table and examine:

- Which fruit basket is the heaviest.
- What is total mass of 4 fruit baskets:

3 kg | 10 kg | 12kg | 7 kg

Fruit	1	2	3	4
Mass				

• •

Exercise 3

1 Solve the following:

(i)

	85 kg	245 g
+	10 kg	134 g

(ii)

	28 kg	325 g
+	31 kg	550 g

(iii)

6 8 1 kg	8 4 5 g
+ 1 1 6 kg	1 0 2 g

(iv)

1 2 kg	3 4 0 g
+ 3 5 kg	2 5 7 g

(v)

9 6 2 kg	2 2 0 g
+ 3 6 kg	7 5 0 g

(vi)

3 4 2 kg	5 6 0 g
+ 3 7 kg	4 0 5 g

2 The mass of Zara and Sulemān's bags are 10 kg 300 g and 12 kg 400 g respectively. What is the total mass?

3 Rizwan bought 6 kg 250 g sweet biscuits and 3 kg 500 g salty biscuits. Find the total mass of the bistcuits.

4 Sohail bought 15 kg 500 g almond and 12 kg 250 g pistachio. What was the total mass?

Subtraction of Mass

The mass of Salma's bag is 8 kg 675 g. After taking out some books, the mass becomes 7 kg 550 g. What will be the mass of books that were taken out?

We will subtract to find the difference.

Subtract 7 kg 550 g from 8 kg 675 g

Mass of Salma's bag	=	8 kg	675 g
Mass of bag after taking out books	=	– 7 kg	550 g
Mass of taken out books	=	1 kg	125 g

Thus, the mass of books that were taken out will be 1 kg 125g.

Subtract 22 kg 125 g from 35 kg 235 g.

	35 kg	235 g
–	22 kg	125 g
	13 kg	110 g

Try it

Which is the most suitable unit for the following masses:

- Mass of bicycle.
- Mass of pencil.

Areeba bought two watermelons with a total mass of 8 kilogram 656 gram. If the small watermelon is 3 kilogram 250 gram, then find the mass of the big watermelon.

Total mass of two watermelons	=	8 kg	6 5 6 g
Mass of small watermelon	=	− 3 kg	2 5 0 g
Mass of big watermelon	=	5 kg	4 0 6 g

Thus, mass of big watermelon is 5 kg 406 g.

Jamil weighed 4 kg 850 g at birth. He weighed 8 kg 960 g a year later. How much weight did he gain in 1 year?

Weight of Jamil after one year	=	8 kg	9 6 0 g
Weight of Jamil at the time of birth	=	− 4 kg	8 5 0 g
Weight gained	=	4 kg	1 1 0 g

Thus, Jamil gained weight of 4 kg 110 g in a year.

(Activity)

- Find the total weight of bags of 3 children.
- Which bag will have the greatest mass among the bags?

Note: In daily life, mass is used for the measurement of weight.

Exercise 4

1 Solve the following:

(i)

	29 kg	750 g
−	18 kg	250 g

(ii)

	9 kg	763 g
−	7 kg	250 g

(iii)

	87 kg	986 g
−	66 kg	350 g

(iv)

	76 kg	565 g
−	34 kg	324 g

(v)

	97 kg	850 g
−	53 kg	340 g

(vi)

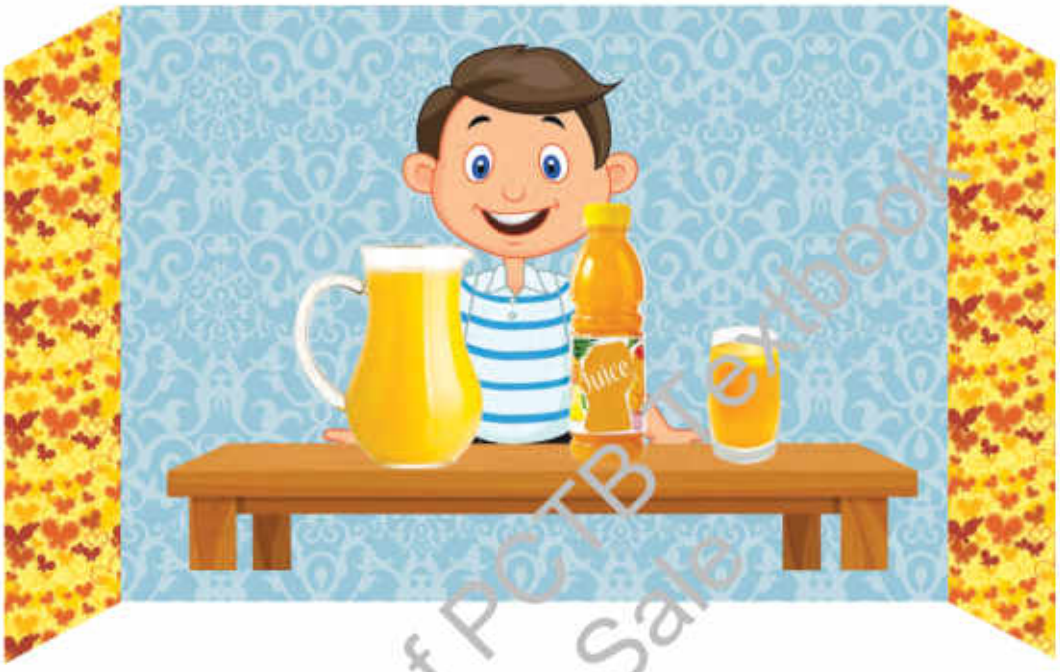
	82 kg	677 g
−	75 kg	500 g

2 A shopkeeper sold 16 kg 250 g chocolates from a chocolate carton of mass 27 kg 350 g. How much chocolates were left?

3 200 kilogram meat was used for cooking from 240 kilogram meat. How much meat was left?

Capacity

Which container contains less than a litre of juice.

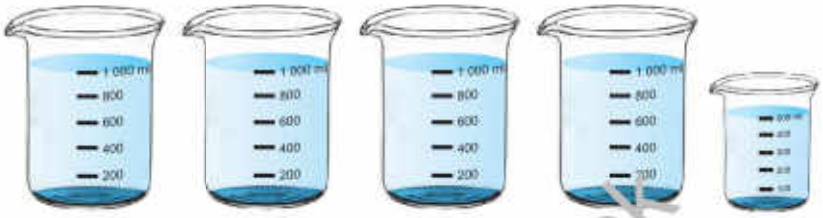


- A glass contains less than a litre of juice.
- The capacity of a jug is equal to 4 glasses of juice.

The capacity of water bottle is 1 000 millilitre or 1 litre.

Capacity is the quantity of liquid, a container can hold. Capacity is measured in litres or millilitres.
1 ℓ = 1 000 mℓ

What is the capacity of water in the cooler?



ℓ mℓ

Key Fact

1 litre (ℓ) = 1 000 millilitre (mℓ)
The standard unit of capacity is litre.

When do we use litre and millilitre?

We use litre to measure capacity of large containers and millilitre of small containers.

Tick (✓) the containers with more capacity and cross (✗) the containers with less capacity.

Addition of Capacity

A fish tank contains 3 litre 450 millilitre of water. 4 litre 500 millilitre of water is added to it. What is the total quantity of water?

To find out the total quantity of water, you will have to add the two quantities.

Add 3 litre 450 millilitre to 4 litre 500 millilitre.

	3 ℓ	450 mℓ
+	4 ℓ	500 mℓ
	7 ℓ	950 mℓ

Key Fact

- Add millilitres to millilitres.
- Add litres to litres.

Add 12 litre 765 millilitre to 11 litre 231 millilitre.

	12 ℓ	765 mℓ
+	11 ℓ	231 mℓ
	23 ℓ	996 mℓ

Rizwan bought 10 litre 500 millilitre cooking oil from a shop. His mother demanded 20 litre 300 millilitre more cooking oil. How much total cooking oil Rizwan bought?

	10 ℓ	500 mℓ
+	20 ℓ	300 mℓ
	30 ℓ	800 mℓ

Thus, Rizwan bought total 30 ℓ 800mℓ cooking oil.

Asif bought 2 litre 100 millilitre hand sanitizer on Monday and 3 litre 200 millilitre on Wednesday. How much did Asif buy altogether?

Monday	=	2 ℓ	100 mℓ
Wednesday	=	+ 3 ℓ	200 mℓ
Total	=	5 ℓ	300 mℓ

Thus, Asif bought total 5 ℓ 300 mℓ of hand sanitizer.

Exercise 5

1 Solve the following:

(i)

	15 ℓ	675 mℓ
+	32 ℓ	312 mℓ

(ii)

	8 ℓ	350 mℓ
+	9 ℓ	245 mℓ

(iii)

	42 ℓ	651 mℓ
+	21 ℓ	248 mℓ

(iv)

	35 ℓ	459 mℓ
+	63 ℓ	510 mℓ

(v)

	7 3 ℓ	3 4 2 mℓ
+	2 3 ℓ	6 1 0 mℓ

(vi)

	5 4 ℓ	8 0 0 mℓ
+	2 5 ℓ	1 2 5 mℓ

2 One bottle has 3 litre 240 millilitre and other has 5 litre 350 millilitre of water. How much water is there in both the bottles?

3 A house uses 35 litres of canola oil and 15 litres of soybean oil. How many litres of oil is used in total?

4 Farida asks for 3ℓ 500 mℓ of milk for the children to drink and 4ℓ of milk for tea. How much milk does Farida order?

Subtraction of Capacity

The capacity of a water cooler is 6 ℓ 800 mℓ. Farhan has a bottle with a capacity of 1 ℓ 500 mℓ. He fills the bottle from the cooler. How much water is left in the water cooler?

We will subtract to find the quantity of water.

Subtract 1 ℓ 500 mℓ from 6 ℓ 800 mℓ.

	6 ℓ	800 mℓ
−	1 ℓ	500 mℓ
	5 ℓ	300 mℓ

Key Fact

- Subtract litres from litres.
- Subtract millilitres from millilitres.

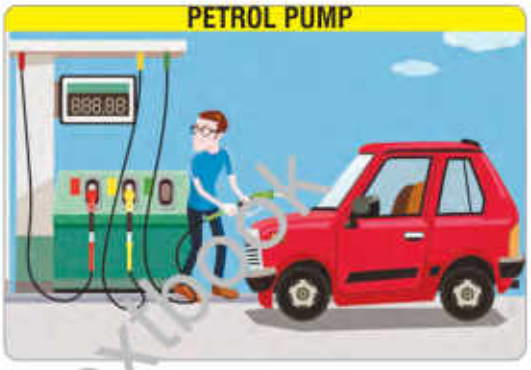
Subtract 6 litre 425 millilitre from 8 litre 627 millilitre.

	8 ℓ	627 mℓ
−	6 ℓ	425 mℓ
	2 ℓ	202 mℓ

Remember!
litre = ℓ
Millilitre = mℓ

Arif bought 45ℓ 500mℓ petrol and used 30ℓ of petrol from it. How much of petrol is left in the car?

Petrol bought =	45ℓ	500 mℓ
Petrol used =	– 30ℓ	000 mℓ
Petrol left =	15ℓ	500 mℓ



Thus, 15 ℓ 500 mℓ of petrol is left in the car.

A container had 5ℓ 750 mℓ of juice. Ahmed drank 550 mℓ and his elder brother drank 2ℓ of juice. How much juice is left?

Total juice in container =	5ℓ	750 mℓ
Juice drank by Ahmad and his elder brother =	– 2ℓ	550 mℓ
Juice left =	3ℓ	200 mℓ

Thus, 3ℓ 200 mℓ juice is left in the container.

Exercise 6

1 Solve the following:

(i)

	18 ℓ	655 mℓ
–	12 ℓ	321 mℓ

(ii)

	8 ℓ	742 mℓ
–	7 ℓ	421 mℓ

(iii)

	45ℓ	758mℓ
−	21ℓ	000mℓ

(iv)

	25ℓ	450mℓ
−	21ℓ	300mℓ

(v)

	75ℓ	915mℓ
−	61ℓ	800mℓ

(vi)

	58ℓ	884mℓ
−	35ℓ	621mℓ

2 A thermos contains 2 000 mℓ of tea, 1 500 mℓ tea is served to the guests. How much tea is left in the thermos?

3 Salman took 2ℓ 450 mℓ of water in a bottle to school. 1ℓ 200mℓ of water was in the bottle till break. How much water he drank?

4 Ahmar buys 15 ℓ 500 mℓ of milk to make milkshake. In the evening he had 3 ℓ of milk left. Tell how much milk he used?

I have learnt to:

- add measurements of length in same units without carrying.
- subtract measurements of length in same units without carrying.
- add measurements of mass in same units without carrying.
- subtract measurements of mass in same units without borrowing.
- add measurements of capacity in same units without carrying.
- subtract measurements of capacity in same units without borrowing.

Vocabulary

- Length
- Mass
- Weight
- Capacity
- Addition
- Subtraction

Review Exercise

1 Choose the correct options.

(i) What is the appropriate unit to determine the length of a needle?

(a) kilometre (b) metre

(c) centimetre (d) millilitre

(ii) How many millilitre of water is saved after extracting 2 000 mℓ of water from 3500 mℓ of water.

(a) 500 mℓ (b) 1 000 mℓ

(c) 1 500 mℓ (d) 2 000 mℓ

(iii) What is standard unit of mass?

(a) metre (b) litre

(c) kilometre (d) kilogram

(iv) What is abbreviation of units of litre?

(a) mℓ (b) g (c) ℓ (d) kg

(v) If I had two cans of 800 mℓ juice, what would be the total quantity?

(a) 200 mℓ (b) 1 000 mℓ (c) 800 mℓ (d) 1 600mℓ

2 Solve the following:

(i)

	5 m	3 5 cm
+	3 m	4 2 cm

(ii)

	7 km	2 1 9 cm
+	3 km	3 4 0 cm

(iii)

	8 m	4 2 cm
−	3 m	3 2 cm

(iv)

	9 km	6 9 5 m
−	5 km	3 6 2 m

3 Solve the following:

(i)

	4 kg	4 9 0 g
+	3 kg	5 0 7 g

(ii)

	7 kg	6 0 0 g
+	6 kg	2 5 0 g

(iii)

	9 kg	500 g
−	7 kg	300 g

(iv)

	15 kg	750 g
−	11 kg	250 g

4 Solve the following:

(i)

	8ℓ	780 mℓ
+	5ℓ	217 mℓ

(ii)

	7ℓ	500 mℓ
+	4ℓ	250 mℓ

(iii)

	9ℓ	300 mℓ
−	4ℓ	200 mℓ

(iv)

	6ℓ	500 mℓ
−	5ℓ	200 mℓ

5 The mass of two sacks of rice is 100 kg and 80 kg respectively. What is the total mass of both sacks?

6 A shopkeeper sold 120 metre of ribbon out of 350 metre. Find out the length of the rest of ribbon.

7 The capacity of water bottle is 5 litres, there is 4 litres of water in it. How many more litres of water is needed to fill it?

Unit
5

Measurement: Time

Learning Outcomes

After completing this unit, you will be able to:

- Use a.m. and p.m. to record the time from 12-hour clock.
- Read and write time from analog and digital clock.
- Read and write days and dates from the calendar.
- Add measurements of time in hours.
- Solve real life situations involving measurements of time for addition of hours.
- Subtract measurements of time in hours.
- Solve real life situation involving subtraction of measurements of time in hours.

Look at the clock, what is the time?

Analog and Digital Clocks

Umair: Look Aziz! my father has bought this watch.

Aziz: Wow! it is a beautiful watch. Can you tell the use of time?

Umair: " Yes Aziz, why not: It has a minute hand and an hour hand. It is an analog clock."

Aziz: " My mother has also bought a clock for me in which no hour hand and minute hand are shown and we can see the time in this way."

Umair: " This is called a digital clock."

Look at the clocks and write the time.

We get up early in the morning.

6 : 00 a.m.

Children go to school.

a.m.

It is off time of school.

p.m.

We take dinner.

p.m.

Key Fact

The time from midnight to 12 noon is known as ante meridiem which can be written as (a.m.). Similarly, the time from 12 noon to midnight is known as post meridiem which can be written as (p.m.).

Read the time from analog clock and write in the given boxes.



Key Fact

- There are 1 to 12 digits on the dial of an analog clock.
- Long hand shows the minutes and small hand shows hours .
- 1 hour = 60 minutes

From the given digital clock, read time and write in the given boxes.

Key Fact

There are only digits in the digital clock. Left side digits show the hours while right side digits show the minutes.

Teaching Point Teacher should place analog clock and digital clock in front of students and help them in reading time. Repeat this activity a number of time.

Exercise 1

1 Write the time in a.m. and p.m. in the following boxes.

(i) Khalid goes to the office in the morning.

(ii) Children play football in the evening.

(iii) Ayesha rides on bus for going to school.

(iv) Bus reaches village from the city in the evening.

(v) We take dinner.

2 Read the time from the following analog clock and write in the given box:

(i)

(ii)

(iii)

(iv)

(v)

(vi)

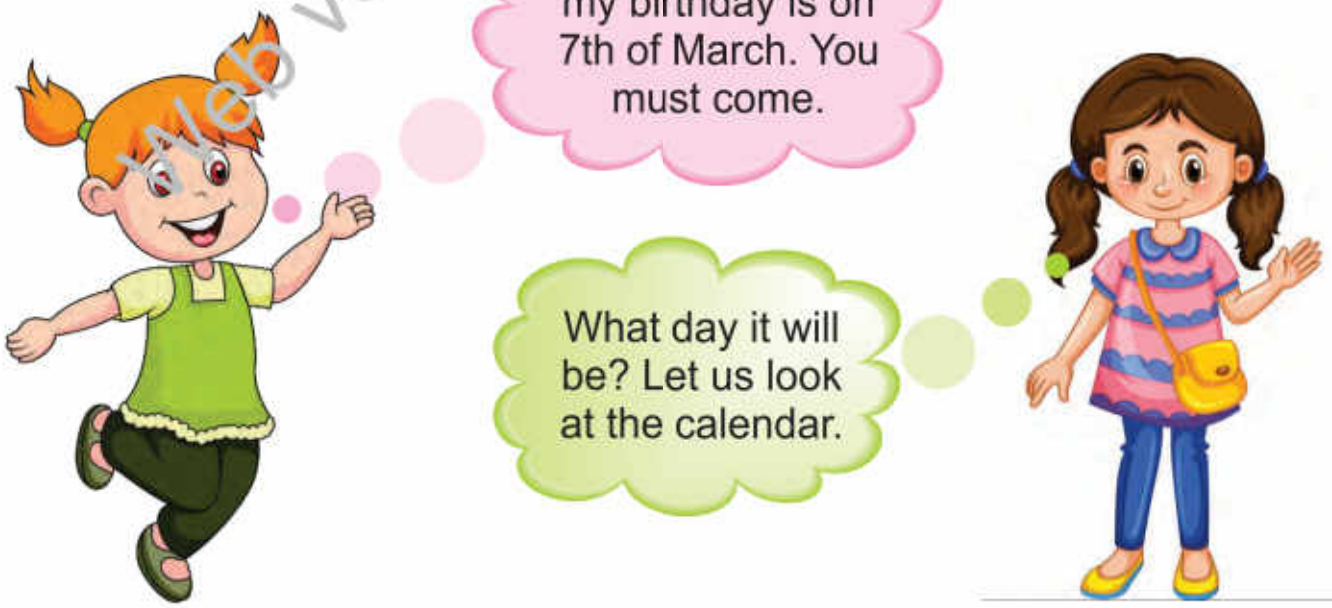
(vii)

(viii)

(ix)

3 Match the time of analog clock with the digital clock in the following:

Read and write days and dates from the calendar.



Calendar

January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					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						

February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	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						

March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	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			

April

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				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	

May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						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					

June

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		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			

July

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				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

August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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				

September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			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		

October

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					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						

November

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	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				

December

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			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	

In calendar, 7th March is Sunday.

Try Yourself

What date will be on the first Friday of July?

Key Fact

1 day = 24 hours
1 week = 7 days
1 year = 12 months

Teaching Point

Teacher will hang the calendar in the class and will ask the students to mark their birthdays.

Exercise 2

Calendar

January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					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						

February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	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						

March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	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			

April

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
		27	28	29	30	

May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						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					

June

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		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			

July

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						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

August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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				

September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			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		

October

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					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						

November

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		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				

December

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			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	

Look at the calendar and answer the following questions.

(i) What is the day on January 31?

(ii) Umair's birthday is on the second Wednesday of April. What is the date?

(iii) Ahsan's examination starts from the 3rd December. What is the day?

(iv) What is the date on last Friday of February?

(v) What is the day on the 23rd March?

Addition of time

A train takes 12 hours from Quetta to Sukhur and 9 hours from Sukhur to Multan. How much time it takes from Quetta to Multan?

Time taken by train from Quetta to Sukhur	=	12 h
Time taken by train from Sukhur to Multan	= +	9 h
Total time taken	=	21 h

Thus, train takes 21 hours from Quetta to Multan.

(i) Add 5 hours to 4 hours

5 h	
+ 4 h	
9 h	

(ii) Add 12 hours to 8 hours

12 h	
+ 8 h	
20 h	

Key Fact

Hours are denoted by "h"

Teaching Point Teacher will ask questions about real life situations related to addition of time from different groups of the students.

Exercise 3

1 Solve the following:

(i)
$$\begin{array}{r} 5\ \text{h} \\ +\ 3\ \text{h} \\ \hline \end{array}$$

(ii)
$$\begin{array}{r} 6\ \text{h} \\ +\ 4\ \text{h} \\ \hline \end{array}$$

(iii)
$$\begin{array}{r} 10\ \text{h} \\ -\ 5\ \text{h} \\ \hline \end{array}$$

(iv)
$$\begin{array}{r} 10\ \text{h} \\ +\ 8\ \text{h} \\ \hline \end{array}$$

(v)
$$\begin{array}{r} 7\ \text{h} \\ +\ 2\ \text{h} \\ \hline \end{array}$$

(vi)
$$\begin{array}{r} 15\ \text{h} \\ +\ 5\ \text{h} \\ \hline \end{array}$$

2 Saiqa's mother spends 5 hours for household chores and 2 hours for reading books. How much time does she spend altogether.

3 Waleed studies Science for 10 hours and Mathematics for 8 hours in a week. How much time does he spend for both of the subjects?

4 A bus takes 9 hours to reach from Peshawar to Zhob and takes 8 hours from Zhob to Quetta. What is the total time taken from Peshawar to Quetta?

Subtraction of time in hours

Ahmad took 8 hours for preparation of Mathematics test while Bilal took 12 hours. How much more time did Bilal spend?

Time taken by Bilal for preparation of Mathematics	=	12 h
Time taken by Ahmad for preparation of Mathematics	=	− 8 h
More time taken by Bilal than Ahmad	=	4 h

Bilal spent 4 hours more than Ahmad

Subtract the following:

(i)

9 h	
− 5 h	
4 h	

(ii)

15 h	
− 8 h	
7 h	

Key Fact

Always subtract the lesser time from the greater time.

Teaching Point

Teacher will ask questions about real life situations related to subtraction of time from different groups of the students.

Exercise 4

1 Solve the following:

(i) 8 h − 5 h

(ii) 18 h − 7 h

(iii) 15 h − 6 h

(iv) 18 h − 11 h

(v) 16 h − 10 h

(vi) 21 h − 8 h

2 Affan took 4 hours while his sister Areesha took 2 hours for cycling. How much more hours did Affan spend for cycling than Areesha? If Areesha started cycling at 11:00 a.m, then at what time did she stop cycling?

3 Nasir can build a wall in 8 hours while Umair builds the same wall in 5 hours. How much more time does Nasir spend to build the wall?

4 Saira spends 8 hours for studying Science while 5 hours for studying Mathematics. How much more time does she spend for Mathematics than Science?

I have learnt to:

- use a.m. and p.m. to record the time from 12-hour clock.
- read and write time from analog and digital clock.
- read and write days and dates from the calendar.
- add measures of time in hours.
- solve real life situations involving measures of time for addition of hours.
- subtract measures of time in hours.
- solve real life situation involving subtraction of measures of time in hours.

Vocabulary

- Digital Clock
- Analog Clock
- Hour Hand
- Minute Hand
- a.m.
- p.m.

Review Exercise

1 Match the time of analog clock with digital clock in the following figures:

2 Ahmad studies Mathematics for 3 hours, English for 2 hours and Islamiat for 1 hour. How much time does Ahmad spend altogether?

3 Answer the following questions:

(i) What is the date on the first Monday of May?

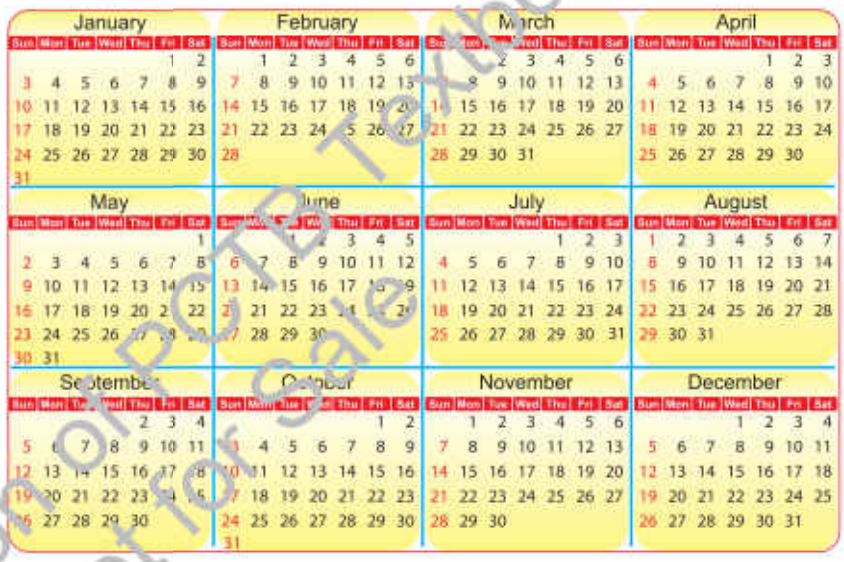
(ii) What is the date on the 15th April?

(iii) What is the date on the second Friday of August?

(iv) What is the date on the third Saturday of November?

(v) What is the day on the 31st December?

Calendar



4 A car took 5 hours from Rawalpindi to Lahore while 6 hours from Lahore to Multan. How much time did the car take to reach from Rawalpindi to Multan?

5 A train took 13 hours from Lahore to Sukhur. If the same train took 6 hours from Lahore to Multan. How much time did the train take to reach Sukhur from Multan?

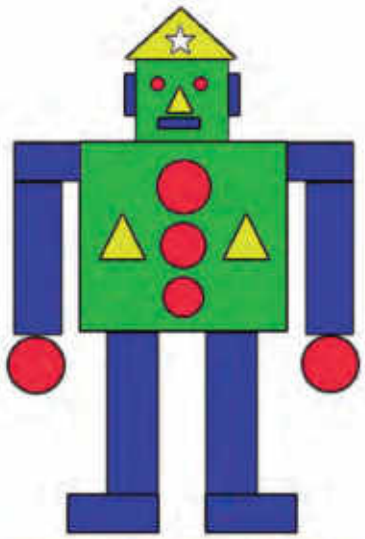
Unit 6

Geometry

Learning Outcomes

After completing this unit, you will be able to:

- Draw and measure line segments to the nearest centimetre and millimetre.
- Recognize point, line, ray and line segment.
- Classify figures according to number of sides as quadrilaterals (rectangles, square) and triangles.
- Calculate perimeter of square, rectangle and triangle
- Identify centre, radius and diameter of a circle.
- Identify reflective symmetry in two-dimensional (2-D) shapes.
- Identify and draw lines of symmetry
- Describe 3-D objects (cubes, cuboids, and pyramids) with respect to the number of edges and faces.
- Differentiate 3-D objects (cubes, cuboids, and pyramids) with respect to number of edges and faces.



List down the shapes, you can see in the figure.

Point, line, ray and line segment

Point

Ayesha and Rizwan are navigating Quetta on Google Map. Ayesha searched for Provincial Assembly and Rizwan for Serena hotel. They saw that both places are identified by points on the Google Map.

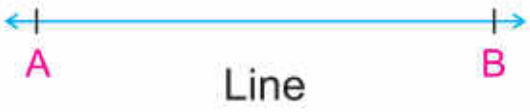
These points identify the correct location of the places

The points are used for location or place or position of objects. A point is represented by dot (.), on paper, and is denoted by capital letters as shown below.

Line

On Google Map, the distance between Quetta and Khuzdar is shown by a line.

A line is a straight path that keeps going on in both directions. It is represented by $\overleftrightarrow{AB}$.



Line

Key Fact

- A line has no end point.
- A line extends in both directions.

The above line can be represented by $\overleftrightarrow{AB}$

Ray

A ray is a part of a line. It has fixed initial point but can be extended.
It is represented by $\overrightarrow{AB}$

Key Fact

- A ray has one end point.
- A ray extends only in one direction.

Ray

Check Point

Can we write?

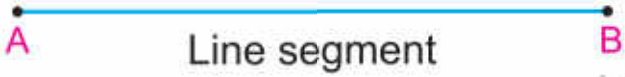
$\overrightarrow{AB} = \overrightarrow{BA}$

Line Segment

Line segment is a part of a line. It has two end points. It can be written as $\overline{AB}$.

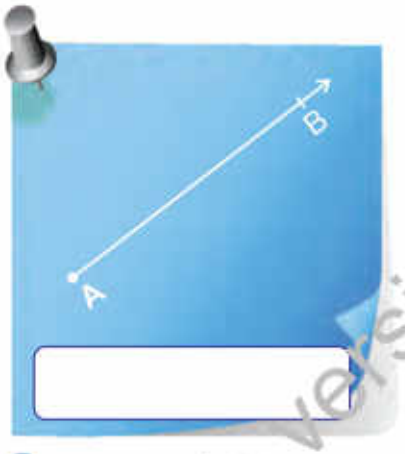
Key Fact

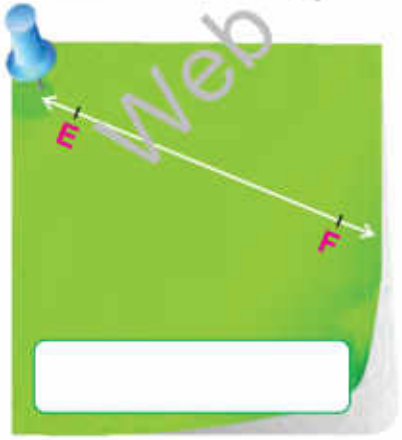
- Line segment cannot be extended to any direction. It has fixed length.

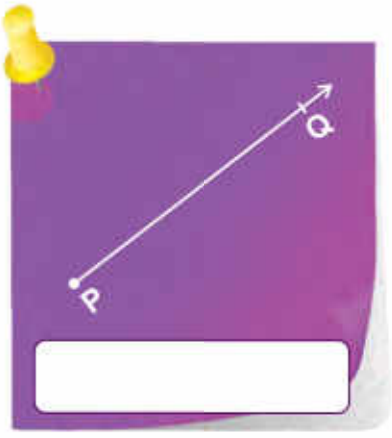


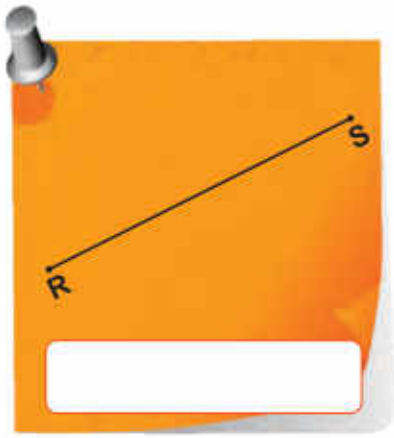
The length of the line segment AB is 4cm and is written as: $\overline{AB}$ = 4cm

Label the following as a point, a line, a line segment or a ray.









Teaching Point

Give flash cards of different shapes and instruct the students to identify point, line, line segment and ray.

Draw and measure line segment (centimetre and millimetre)

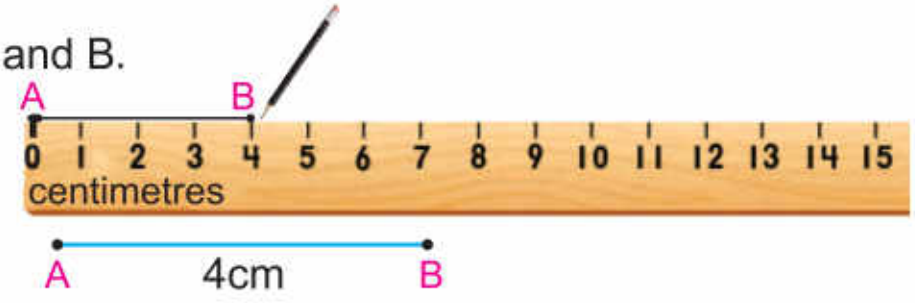
Draw a line segment AB = 4cm

(i) Place the scale on the paper.

(ii) Mark a point A at 0 of the scale.

(iii) Mark a point B on 4 cm of the scale.

(iv) Join the points A and B.



Thus, the required line segment AB = 4 cm.

Teaching Point Write the lengths of different line segments on white board for students to draw.

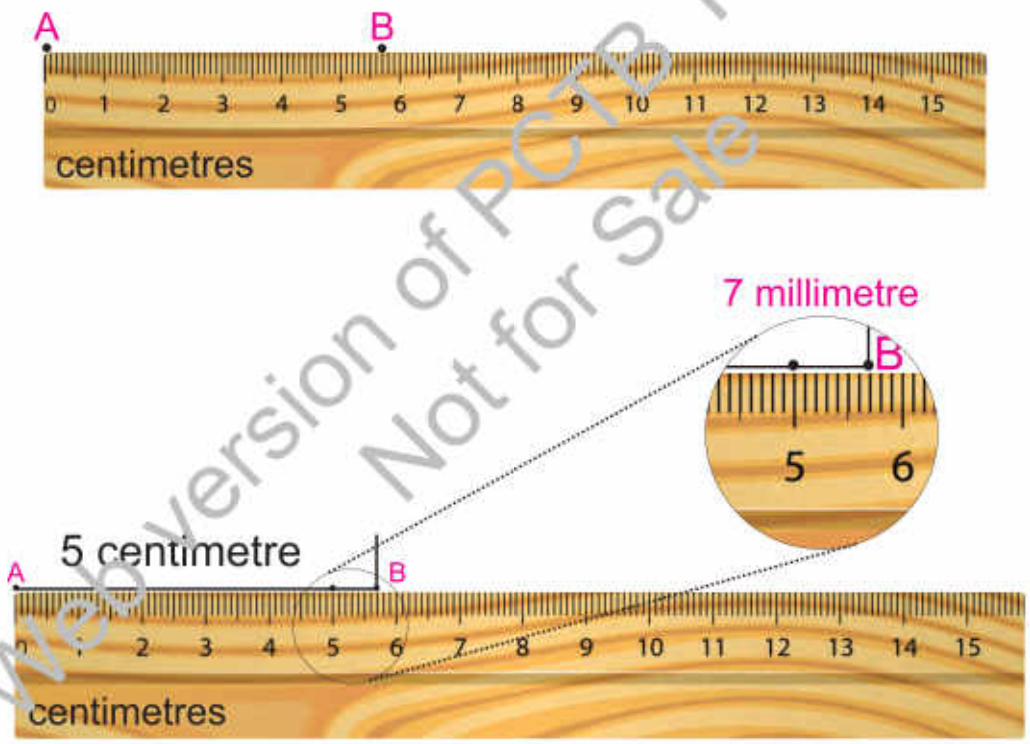
Measure the given line segment AB in centimetre and millimetre

A B

(i) Place the ruler on the line segment AB such that zero of the scale matches with the point "A".

(ii) Read the value on the scale that matches with the point "B".

(iii) The value of the scale that matches with point "B" is the length of the line segment.



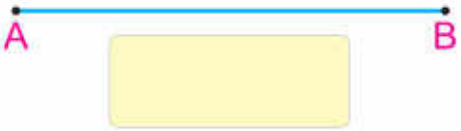
The length of the given line segment is 5cm and 7mm.

Key Fact

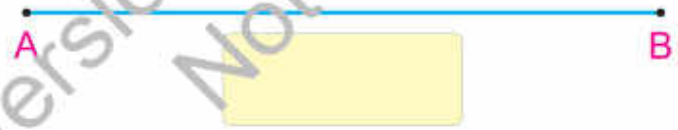
1 cm = 10 mm

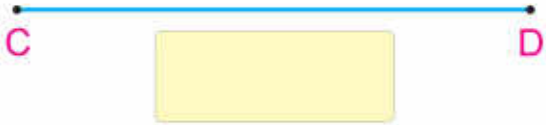
Exercise 1

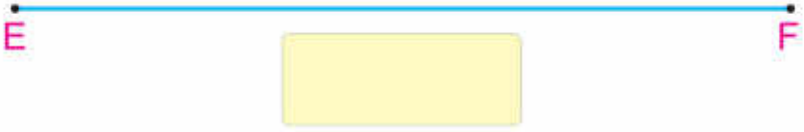
1 Identify point, line, line segment and ray.



2 Measure the length of the given line segments in centimetres and millimetres.







3 Draw the line segments of the given lengths.

(i) 1.9cm (ii) 4.2cm (iii) 5.6cm

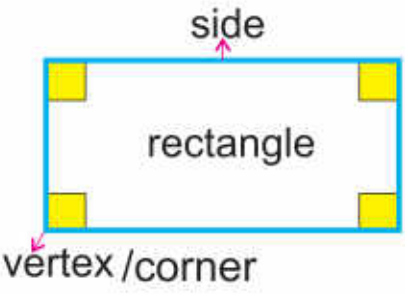
Quadrilaterals

What four sided objects can you see in your classroom?

I can see that shapes of door, window, board, table and book are same. They all have 4 sides and 4 vertices/corners.

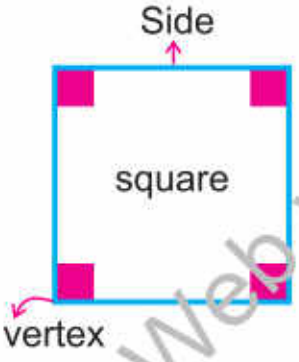
A closed figure with 4 sides and 4 corners is called quadrilateral. The 4 corners are also called 4 vertices of the quadrilateral.

Rectangle

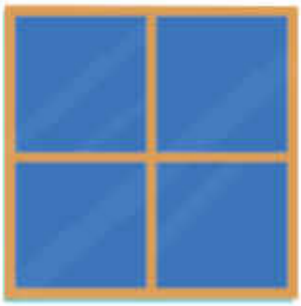


I am a rectangle. I have 4 straight sides and 4 vertices. The length of my opposite sides are equal.

Square

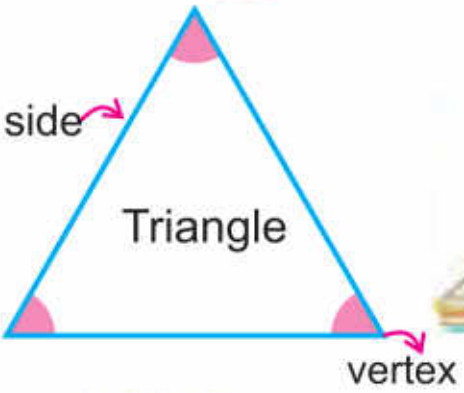


I am a square. I have 4 straight sides and 4 vertices. My all sides are equal.



Triangle

I am a triangle. I have 3 straight sides and 3 vertices. My sides may or may not be equal.

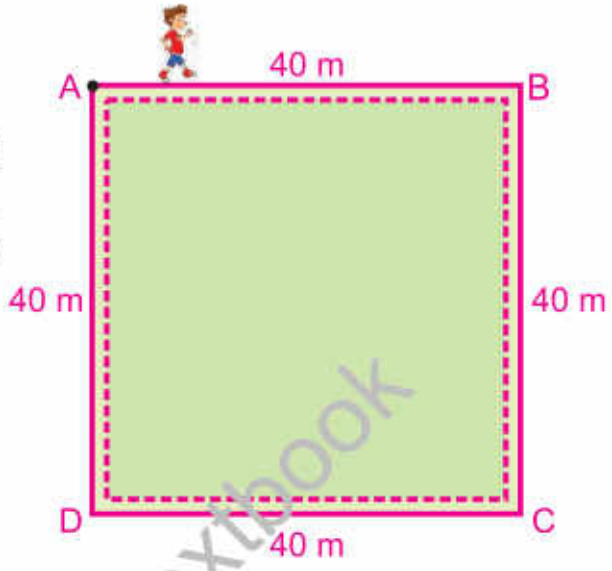


Circle

I am a circle. The distance of my all points from the centre is equal. I have no side and no vertex.

Perimeter of a Square

Furqan runs around a square shaped ground with the length of a side 40m. How much distance Furqan covers in one round?



To find the total distance he covers in one round, we will add lengths of all sides.

Total distance = Length of side + Length of side + Length of side + Length of side

= 40m + 40m + 40m + 40m

= 4 × 40

= 160m

The sum of all lengths of a closed figure is called perimeter.

Perimeter of a square = Sum of lengths of all sides.

Thus, perimeter of the square = 4 x length of a side

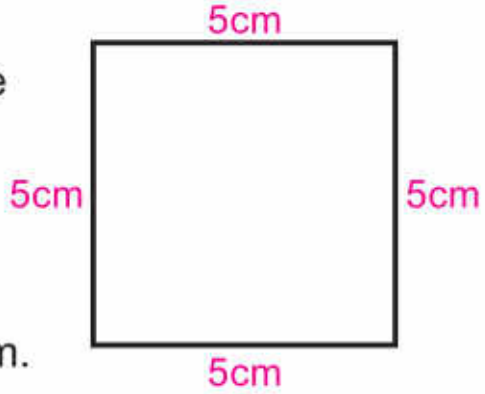
The length of a side of a square is 5 cm. Find its perimeter.

Length of a side = 5cm

Perimeter of a square = 4 × length of a side

= 4 × 5 cm

= 20cm



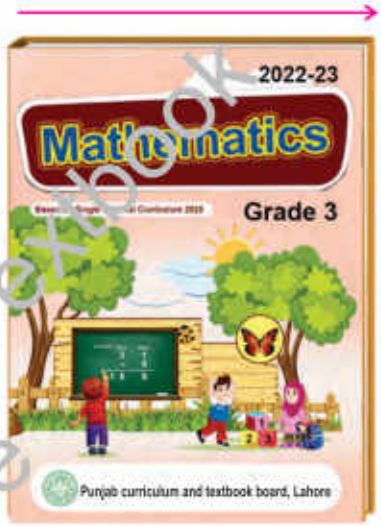
Thus, the perimeter of the square is 20 cm.

Perimeter of a Rectangle

Find the perimeter of the book with length of 27 cm and width of 21 cm.

Length = 27cm
Width = 21cm
Perimeter = Length+Length+Width+Width
= 27 cm + 27 cm + 21cm+ 21cm
= 54 cm + 42 cm
= 96 cm

Thus, the perimeter of the book is 96 cm.



Key Fact

Perimeter of a closed figure = Sum of lengths of all sides.

Perimeter of a rectangle = 2(Length + Width)

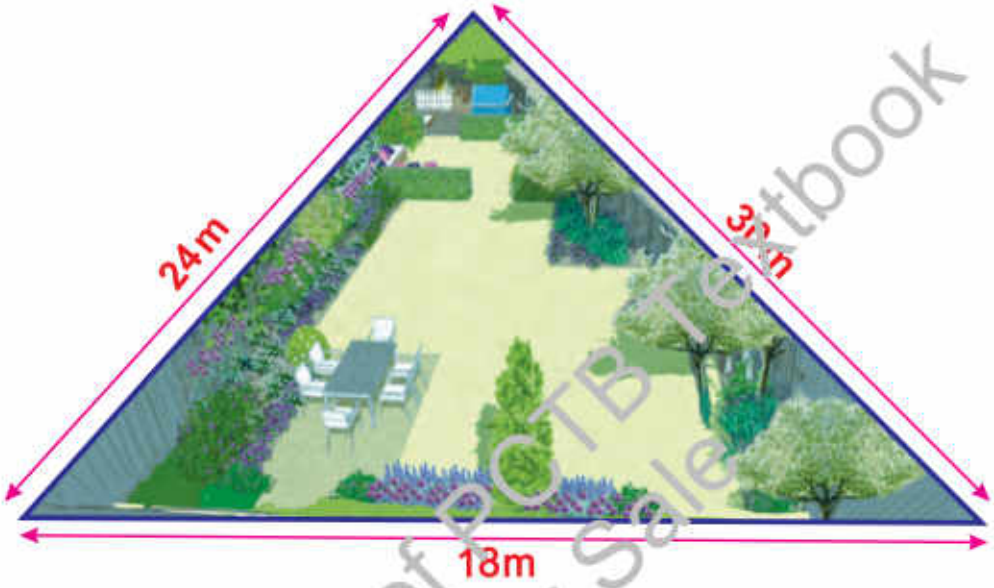
A door with a length of 210 cm and width of 118 cm. Find its perimeter.

Length of door = 210 cm
Width of door = 118 cm
perimeter of door = Sum of length of all sides
= Length + Length + Width + Width
= 210 + 210 + 118 + 118
= 656 cm

Thus, the perimeter of the door is 656 cm.

Perimeter of a Triangle

I have a triangular shaped garden in my house with lengths of 18m, 30m and 24m. Find perimeter of the garden.



Perimeter of a triangular garden = Sum of all three sides

= 18m + 24m + 30m

= 72m

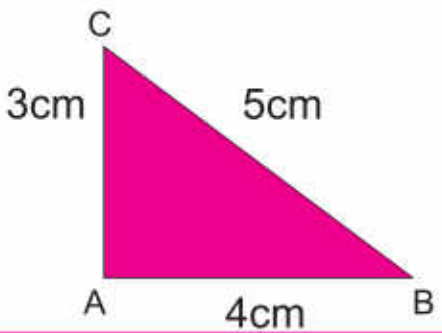
Thus, the perimeter of the garden is 72m.

Find the perimeter of a triangle whose length of sides are AB = 4cm, BC = 5cm and AC = 3cm.

Perimeter of a triangle = Sum of all three sides

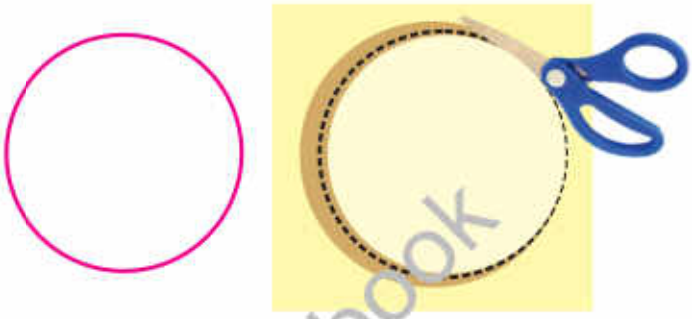
= 4cm + 5cm + 3cm

= 12cm



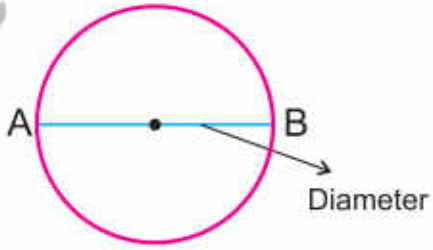
Thus, the perimeter of the triangle is 12 cm.

Identify centre, radius and diameter of a circle

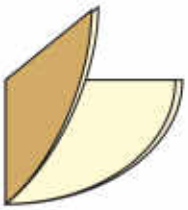


(i) Cut this page in circular shape.

(ii) Fold it into half and unfold it. You will get a crease that is represented by line segment AB.

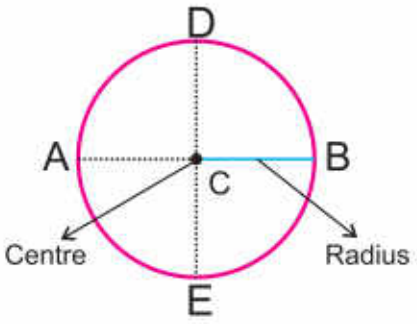


The line segment AB is called the diameter of the circle.



(iii) Now fold the paper into quarter and unfold it.

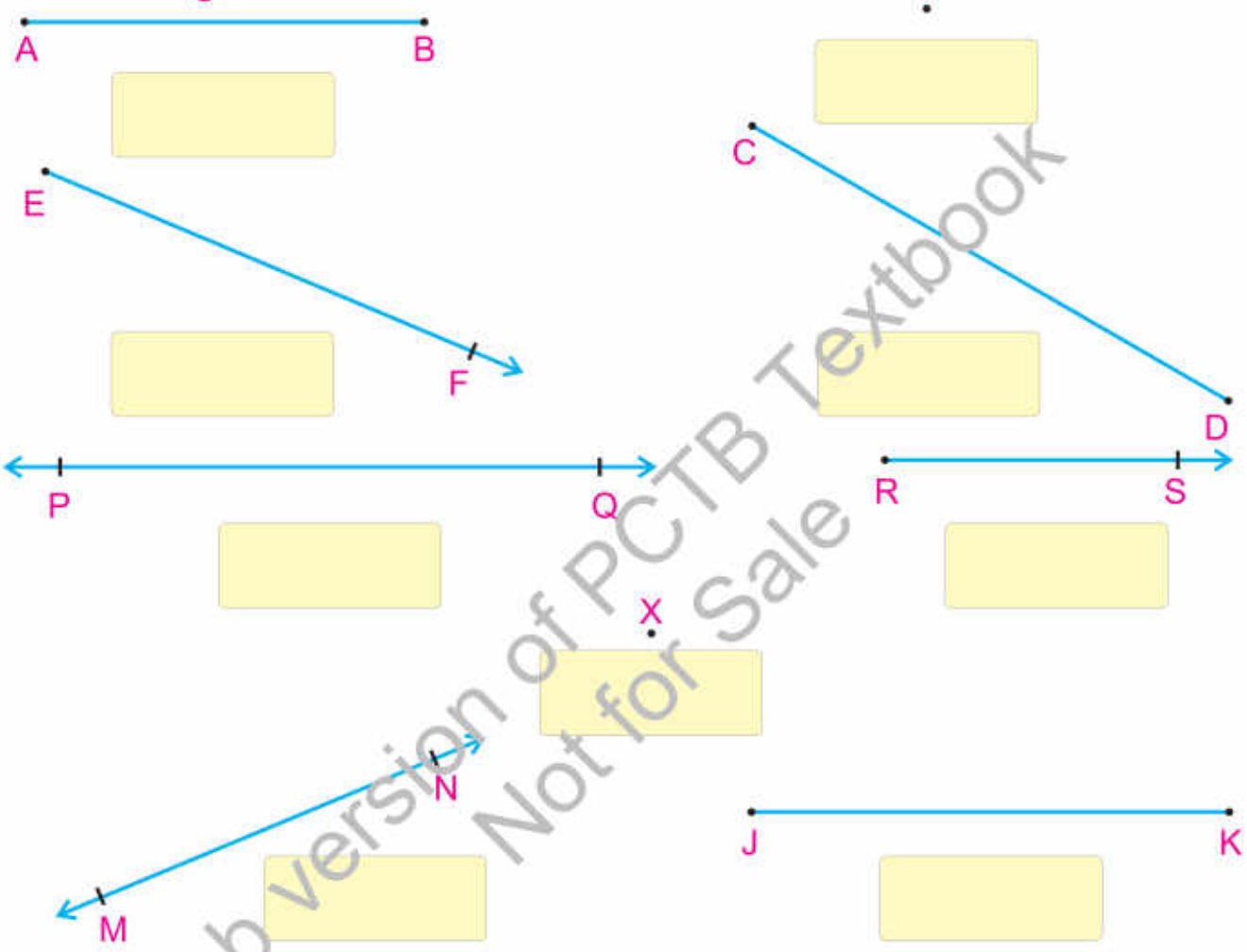
(iv) You will get another crease that is represented by line segment DE.
The line segment DE cuts at point C.



The point C is the Centre of the circle.
The distance from centre C to point A or B or D or E is called the Radius.

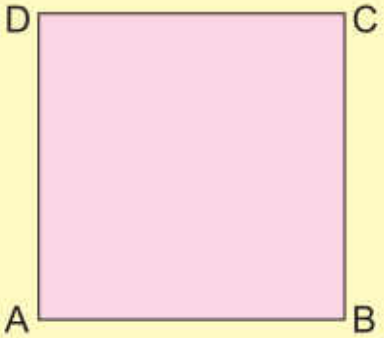
Exercise 2

1 Identify point, line, line segment and ray in the following figures:



2 Write name of the figure, measure the length of its sides, then find the perimeter of the following:

(i)



Name = ...

AB = ...

BC = ...

CD = ...

AD = ...

Perimeter = ...

(ii)

Name = ...

PQ = ...

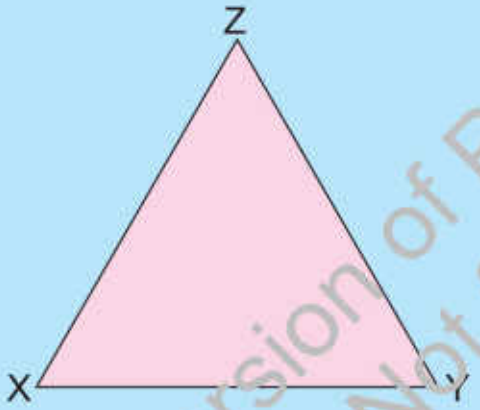
QR = ...

RS = ...

PS = ...

Perimeter = ...

(iii)



Name = ...

XY = ...

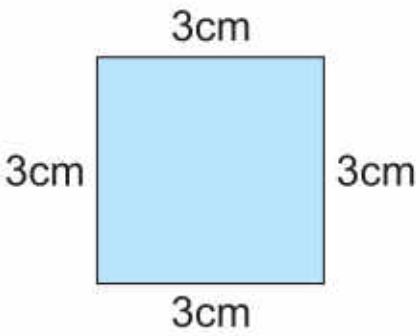
YZ = ...

XZ = ...

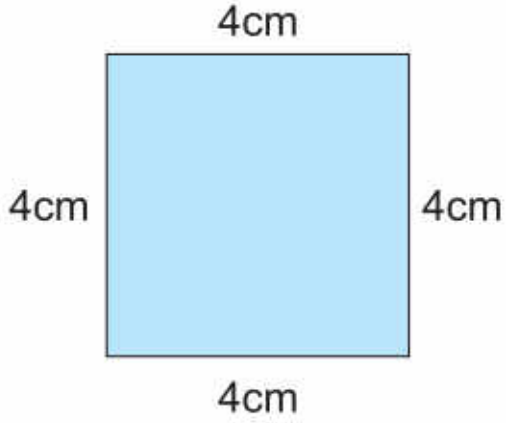
Perimeter = ...

3 Find the perimeter of the following squares:

(i)

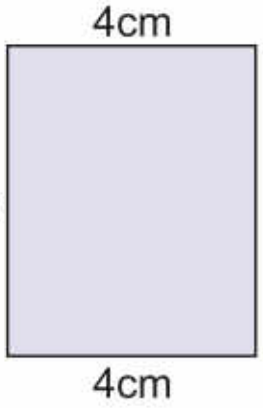


(ii)



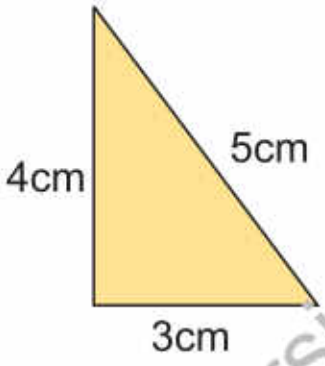
4 Find the perimeter of the following rectangles:

(i)

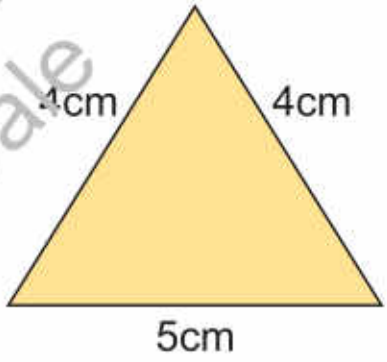


(ii)

5 Find the perimeter of the following triangles:

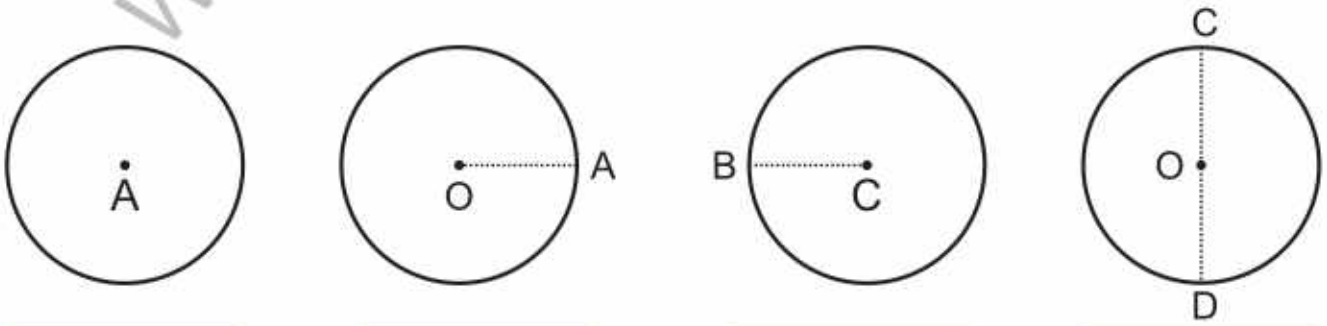


(ii)



6 Identify the centre, radius and diameter in the following circles:

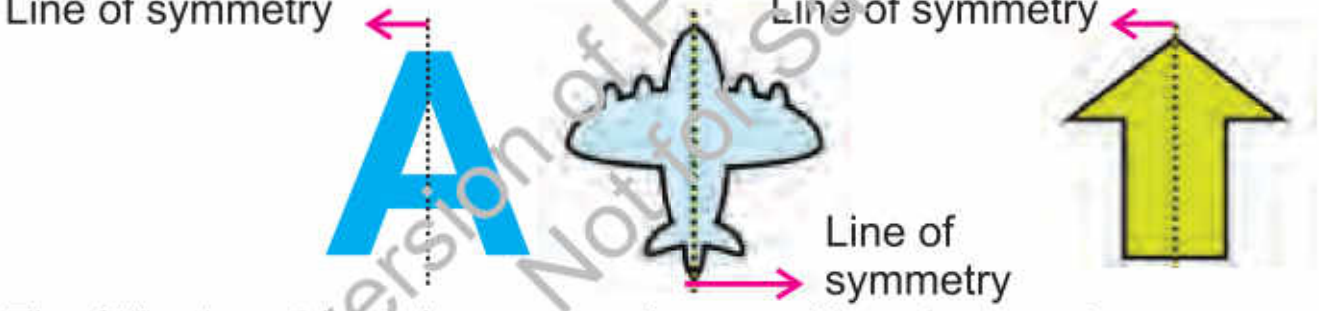
(i) (ii) (iii) (iv)



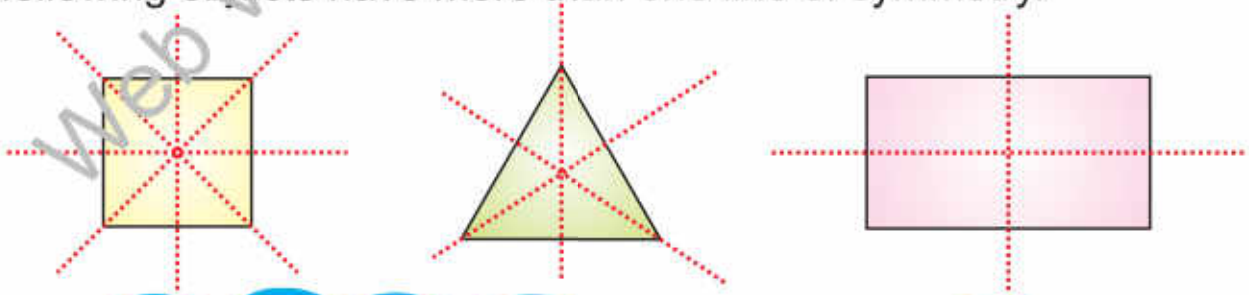
Reflective Symmetry

Many things around us are symmetrical. Things in nature animals, plants and buildings have symmetrical shapes. Look at the objects given below. These are symmetrical shapes because one part of the figure to the left of the line when folded, it exactly covers the right part of the figure. This "line" is called line of symmetry.

The following objects have only one lines of symmetry.

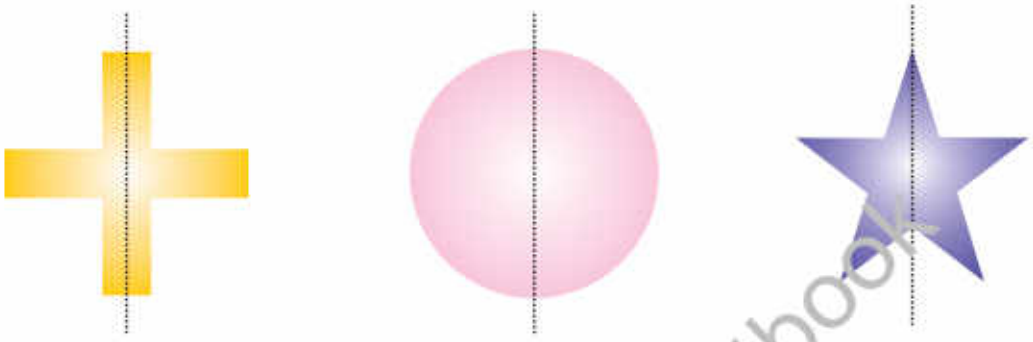


The following objects have more than one line of symmetry.

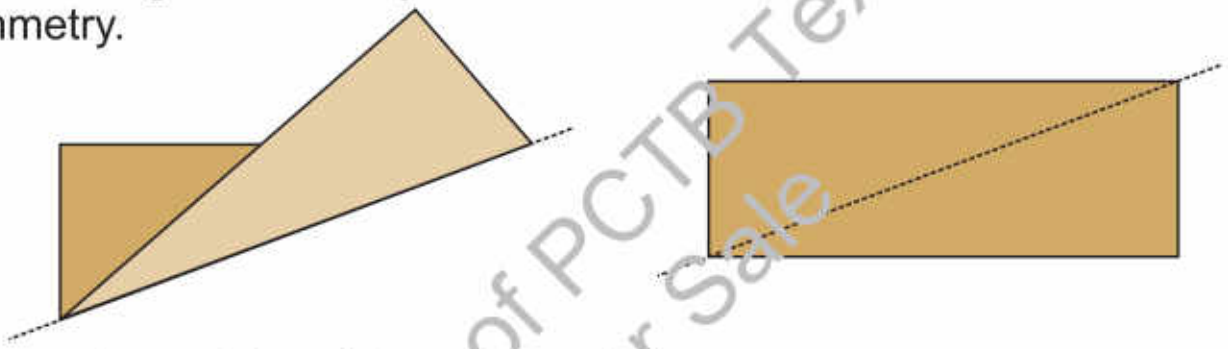


Put the mirror on the half side of an object we can see complete object. It is an example of line of symmetry.

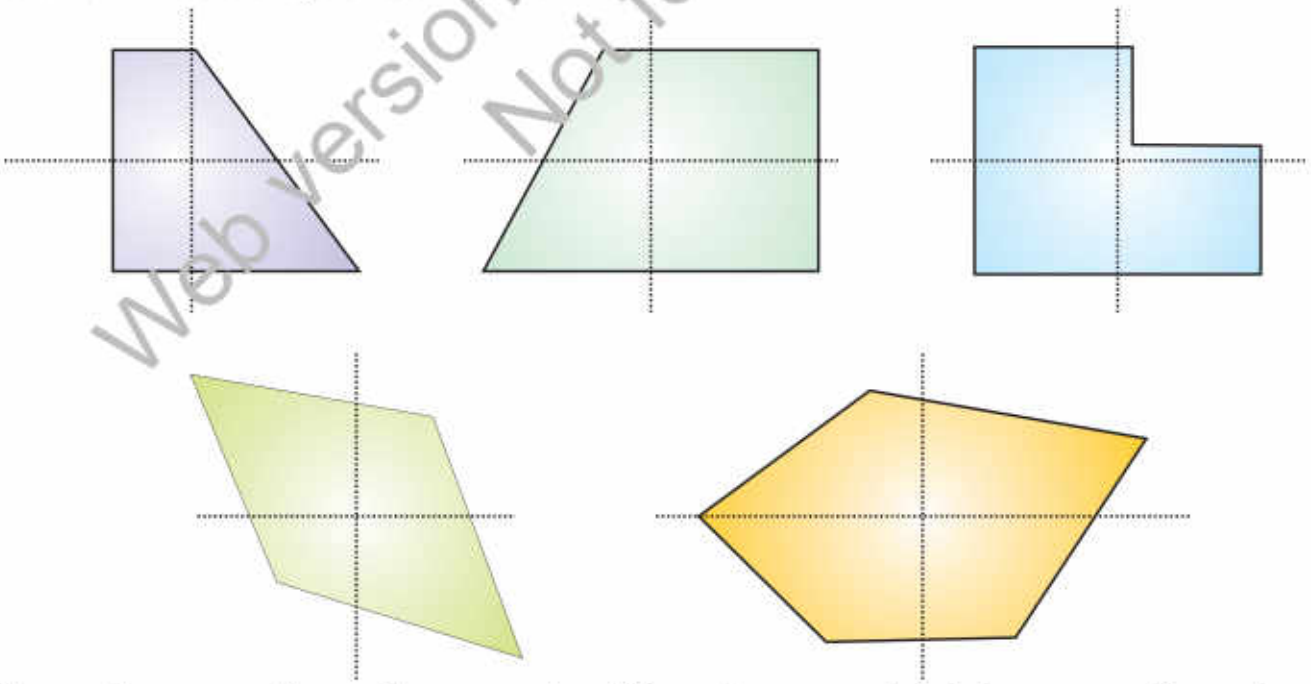
A line which divides a shape into two equal parts, is called line of symmetry.



Fold rectangle in this way we can see that the line is not a line of symmetry.



Look at these objects/shapes.

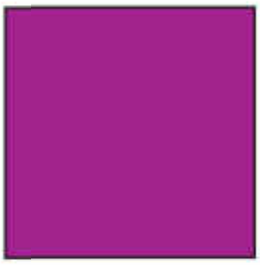


These have no line of symmetry. The shapes which have no line of symmetry are called non-symmetrical shapes.

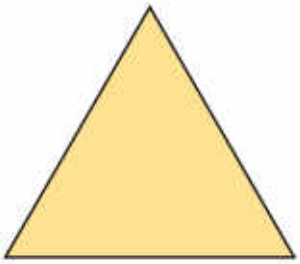
Exercise 3

1. Draw the line of symmetry in the following figures:

(i) 

(ii) 

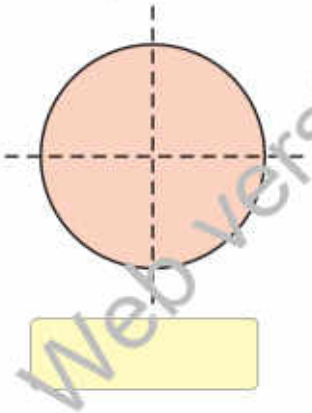
(iii) 

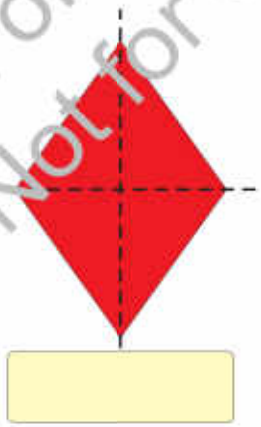
(iv) 

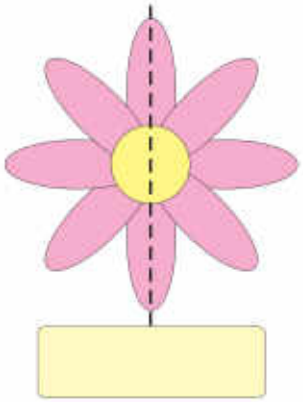
(v) 

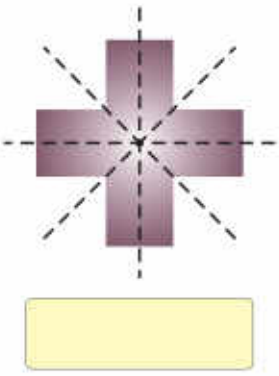
(vi) 

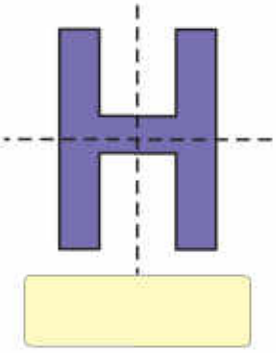
2. Count the number of lines of symmetry in the following figures:

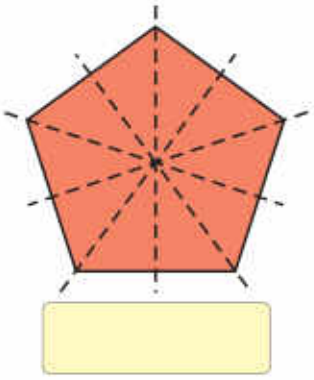
(i) 

(ii) 

(iii) 

(iv) 

(v) 

(vi) 

Three Dimensional Objects (3-D)

Cube

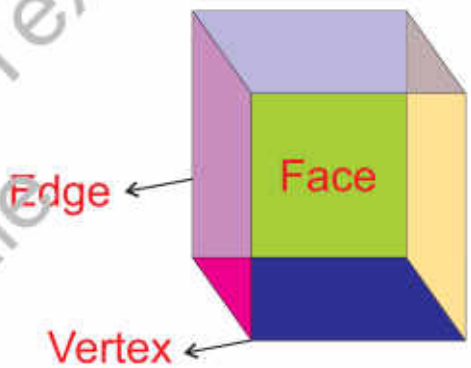
My name is cube.

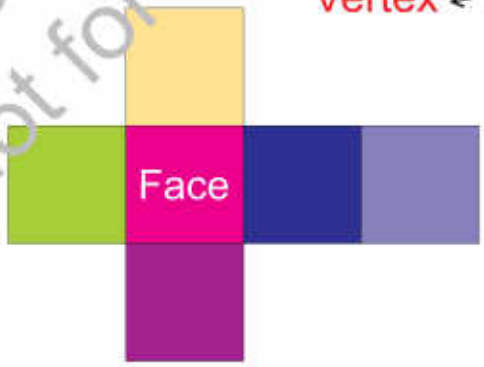
I have 6 faces.

My all faces are square.

I have 12 edges with same length.

I have 8 vertices.





Cuboid

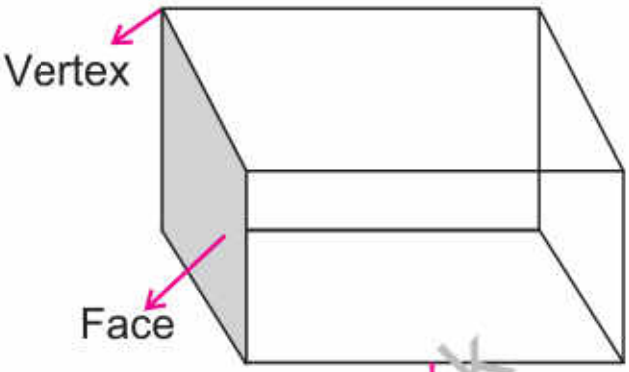
My name is cuboid.

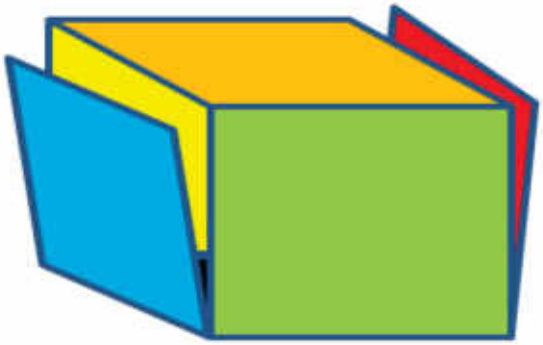
I have 6 faces.

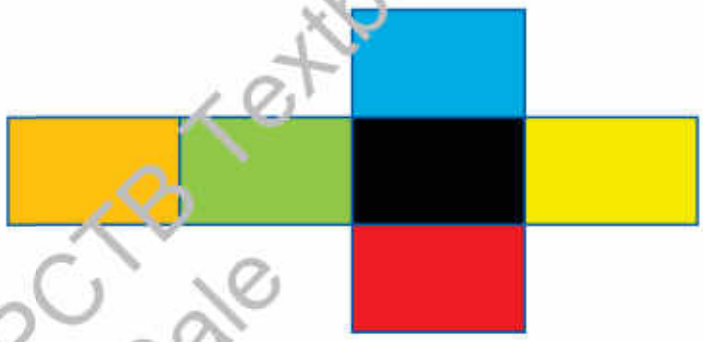
My all faces are rectangles.

I have 12 edges.

I have 8 vertices.







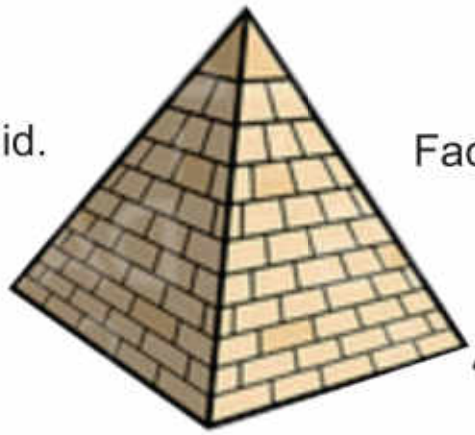
Pyramid

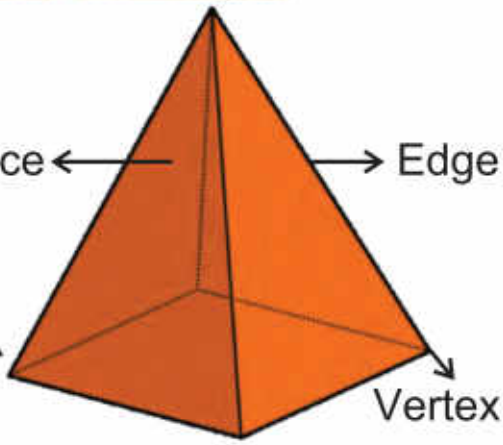
My name is pyramid.

I have 8 edges.

I have 5 faces.

I have 5 vertices.





Exercise 4

Write the required information in the following table:

Shape	Name	No. of faces	No. of edges	No. of vertices
				
				
				
				
				
				

I have learnt to:

- draw and measure line segments to the nearest centimetre and millimetre.
- recognize point, line, ray and line segment.
- classify figures according to number of sides as quadrilaterals (rectangles, square) and triangles.
- calculate perimeter of square, rectangle and triangle
- identify centre, radius and diameter of a circle.
- identify reflective symmetry in two-dimensional (2-D) shapes.
- identify and draw lines of symmetry
- describe 3-D objects (cubes, cuboids, and pyramids) with respect to the number of edges and faces.
- differentiate 3-D objects (cubes, cuboids, and pyramids) with respect to number of edges and faces.

Vocabulary

- Line
- Ray
- Line Segment
- Perimeter
- Diameter
- Reflective Symmetry
- Cube
- Cuboid
- Pyramid

Review Exercise

1 Choose the correct options and fill in the blanks.

(i) Number of sides in a quadrilateral are _____.

(a) 1 (b) 2 (c) 3 (d) 4

(ii) In a cube, number of edges are _____.

(a) 2 (b) 6 (c) 8 (d) 12

(iii) A triangle has _____ vertices.

(a) 2 (b) 3 (c) 4 (d) 5

(iv) Given figure  is _____

(a) Point (b) line (c) line segment (d) Ray

(v)  is _____

(a) line (b) Ray (c) line segment (d) Point

2 Fill in the blanks.

(i) Line of symmetry divides any shape into _____ equal parts.

(ii) Line segment has _____ end points.

(iii) A square shape has _____ sides and _____ vertices.

(iv) The sum of all sides of any closed shape is _____.

(v) Perimeter of a rectangle = _____.

3 Draw the line segments according to the given measurements.

(i) RS = 7cm (ii) XY = 3cm (iii) AB = 5cm

4 Ahmad walks a square shaped ground with length 249 m. How much distance does he cover in one round?

5 Classroom door is 210 cm long and 120 cm wide. Find its Perimeter .

6 Find the Perimeter of a triangular field with lengths of 15 m, 25 m and 40 m.

Unit 7

Data Handling

Learning Outcomes

After completing this unit, you will be able to:

- Representation of data by
  - Carroll diagram
  - Tally chart
- Read and interpret a Carroll diagram and Tally chart
- Read and interpret Picture Graph

How can you show the number of birds in a diagram?

Carroll Diagram

I want to sort out different things with the help of Carroll diagram. What should I do for this?

You can sort according to the colour and shapes

Shirts in blue colour

Caps in blue colour

	Shirts	Caps
Blue colour		
Not blue colour		

Shirts not in blue colour

Caps not in blue colour

Carroll diagram is a diagram in which different things are sorted according to two characteristics. Figures, numbers and different things can be sorted out using Carroll diagram.

In above Carroll diagram, we can observe that:

- three shirts are in blue colour
- three caps are in blue colour
- three shirts are not in blue colour
- four caps are not in blue colour

Sort out the given numbers by Carroll diagram

3, 8, 10, 12, 16, 18, 21, 25, 28, 33

On the basis of which two characteristics, can we sort these numbers?

We can use the size of the number for sorting smaller than 15 and greater than 15. Similarly, the numbers divisible by 4 and not divisible by 4.

Numbers smaller than 15 and divisible by 4

Numbers greater than 15 and divisible by 4

	Numbers smaller than 15	Numbers greater than 15
Numbers divisible by 4	8, 12	16, 28
Numbers not divisible by 4	3, 10	18, 21, 25, 33

Numbers smaller than 15 and not divisible by 4

Numbers greater than 15 and not divisible by 4

In the Carroll diagram, we can observe that:

- Numbers smaller than 15 and divisible by 4 are 8, 12.
- Numbers greater than 15 and divisible by 4 are 16, 28.
- Numbers smaller than 15 and not divisible by 4 are 3, 10.
- Numbers greater than 15 and not divisible by 4 are 18, 21, 25, 33.

Tally Chart

The number of members in 35 families of a society is as follows:

4,5,7,8,4,5,7,8,9,5,7,8,4,5,5,4,7,9
4,5,7,7,9,9,5,4,6,6,6,7,6,4,5,7,8

Let's prepare a Tally Chart using given data.

Number of members	Tally marks	Total number of members
4	𝍸 II	7
5	𝍸 III	8
6	IIII	4
7	𝍸 III	8
8	IIII	4
9	IIII	4

Key Fact

Marks in Tally column are equal to the number of observations in the data.

Answer the following questions by interpreting the Carroll diagram:

	Even numbers	Odd numbers
Numbers divisible by 5	10, 20, 30	5, 15, 25
Numbers not divisible by 5	4, 8, 14	3, 9, 19, 21

(i) What is the smallest even number which is divisible by 5? 10

(ii) What are the odd numbers which are divisible by 5?

(iii) What is the smallest even number which is not divisible by 5?

(iv) What is the greatest odd number which is not divisible by 5?

By using Tally Chart, answer the questions given below.

Animals	Tally marks
Monkey	𝍸 II
Lion	𝍸 I
Bear	IIII
Zebra	𝍸 I
Elephant	II

(i) Which animal is the least in numbers? Elephant

(ii) Which animal is the greatest in number?

(iii) Which two animals are equal in number?

(iv) What is the total number of monkey and lion?

(v) What is the total number of animals?

Exercise 1

1 Show the following fruits and vegetables by using Carroll diagram:

2 Complete the Carroll diagram using the given numbers

10, 18, 22, 25, 29, 30, 35, 37, 45, 43, 48, 52

	Even numbers	Odd numbers
Numbers divisible by 5		
Numbers not divisible by 5		

3 Observe the Carroll diagram and answer the questions given below.

	Numbers less than 25	Numbers greater than 25
Numbers divisible by 7	7, 14, 21	28, 35, 42
Numbers not divisible by 7	5, 9, 15, 19	27, 29, 38, 43

(i) Find the numbers greater than 25 and divisible by 7

(ii) Find the numbers greater than 25 and not divisible by 7

(iii) Find the numbers less than 25 and divisible by 7

(iv) Find the numbers less than 25 and not divisible by 7

4 A dice is rolled 20 times and the following numbers are obtained:

1, 3, 5, 6, 3, 2, 4, 5, 3, 2, 4,6, 3, 4, 3, 4, 2, 5, 1, 6

By using above numbers, prepare a Tally Chart

5 In a school, following number of students celebrated their birthdays in different months:

Answer the questions given below in the table.

Month	Tally marks
January	𝍸
February	𝍸 I
March	𝍸 𝍸
April	𝍸 II
May	IIII

(i) In which month least number of students celebrate the birthday?

(ii) In which month greatest number of students celebrate the birthday?

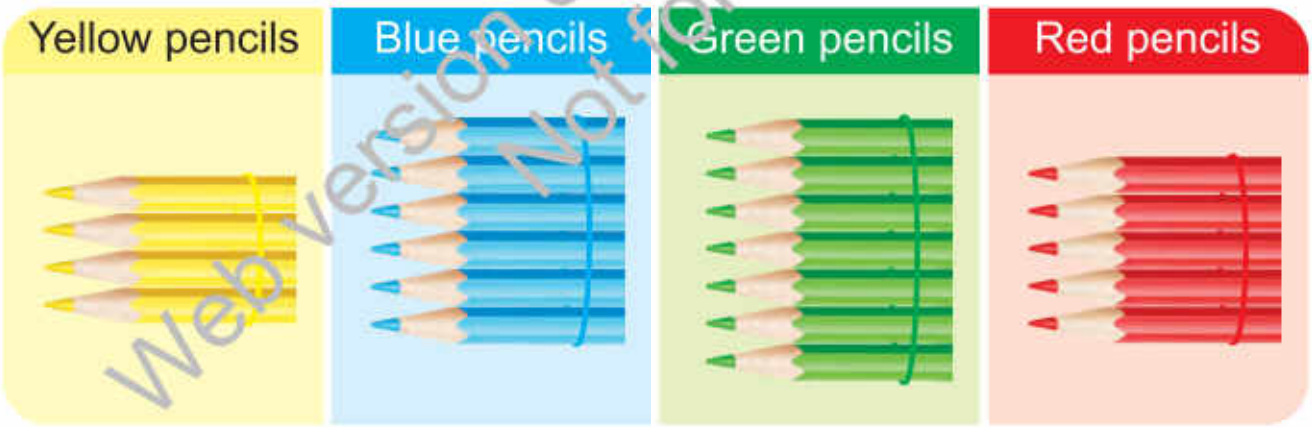
(iii) In January and April, how many total number of students celebrate their birthday?

(iv) How many total number of students celebrate their birthday in 5 months?

Picture Graph

I want to arrange pencils according to their colours.

We can arrange these pencils by using picture graph



In this picture graph,

(i) There are 4 yellow pencils.

(ii) There are 6 blue pencils.

(iii) There are 7 green pencils.

(iv) There are 5 red pencils.

In the following picture graph, favourite sports of students are shown:

1 picture = 2 students

Hockey	
Football	
Cricket	
Tenis	
Table Tenis	

Observe the above Picture graph and answer the following questions:

(i) What is the number of students playing hockey?

(ii) What is the number of students playing cricket?

(iii) Which is the most favourite game?

(iv) Which is the least favourite game?

(v) What is the number of students playing tennis?

Exercise 2

1 The following picture graph shows the number of students absent during a week:

1 picture = 1 student

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Observe the above graph and answer the following questions:

(i) How many students were absent on Monday?

(ii) How many students were absent on Tuesday?

(iii) On which day the most number of students were absent?

(iv) On which day, least number of students were absent?

(v) What is the total number of students absent on Wednesday and Thursday?

2 The following picture graph shows the production of cars in different years:

1 picture = 100 cars

Year	Number of cars
2008	
2009	
2010	
2011	
2012	

Observe the graph and answer the following questions:

(i) How many cars were manufactured in 2008?

(ii) How many cars were manufactured in 2010?

(iii) In which year, the most number of cars were manufactured?

(iv) In which year, the least number of cars were manufactured?

(v) In which two years, equal number of cars were manufactured?

I have learnt to:

- representation of data by
  - Carroll diagram
  - Tally chart
- read and interpret a Carroll diagram and Tally chart
- read and interpret Picture Graph

Vocabulary

- Carroll Diagram
- Tally Chart
- Picture Graph
- Characteristics

Review Exeercise

1 Prepare Carroll diagram from the given data.

12, 15, 16, 18, 17, 19, 21, 23, 28, 30, 32, 37, 39

	Even numbers	Odd numbers
Numbers less than 20		
Numbers greater than 20		

2 Observe the following Tally chart and answer the following questions:

Subjects	Tally marks
Urdu	𝍸 II
Science	𝍸 III
English	𝍸 𝍸
Mathematics	𝍸 I
General Knowledge	IIII

(i) Which subject is the least favourite?

(ii) Which subject is the most favourite?

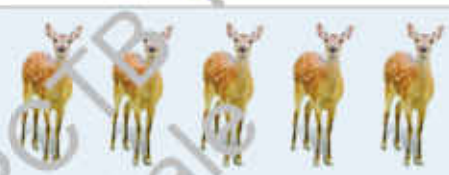
(iii) How many students like Science?

(iv) How many students like Urdu?

(v) How many students like Mathematics?

3 Answer the following questions by using the picture graph:

1 picture = 2 animals

Deer	
Elephant	
Monkey	
Cheetah	

(i) Which animal is the greatest in number?

(ii) Which animal is the least in number?

(iii) What is the total number of elephants and monkeys?

(iv) What is the total number of all animals?

قومی ترانہ

پاک سَرزمین شاد باد　　کِشورِ حسین شاد باد
تُو نِشانِ عزمِ عالی شان　　ارضِ　　پاکستان
مرکزِ یقین شاد باد
پاک سَرزمین کا نِظام　　قُوّتِ اُخُوّتِ عوام
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