SYLLABUS OUTLINE FOR TERM 3

- Conversation of length in kilometers to metres.
- Conversation of length in metres to kilometres
- Finding circumference of a circle given diameter.
- Finding circumference of a circle given radius.
- Finding the area of a square.
- Finding the unknown side of a square given area.
- Volume of prisms.
- Finding capacity of a cuboid.
- Finding volume of prism given capacity in litres.
- Finding the unknown side given volume and two sides.
- Line segment.
- Constructing perpendicular lines.
- Constructing a perpendicular line from a point.
- Constructing parallel lines.
- constructing angle 60^0
- constructing angle 90^0
- Bisecting of drawn angles
- Constructing angle 300
- Constructing angle 450
- Polygons.
- Drawing different polygons.
- Construction of a regular triangle.
- Construction of a regular quadrilateral.
- Construction of a regular hexagon.
- Nets of prisms.
- Finding the unknown longest side of right angled triangle.
- Finding the base and height using the Pythagoras theorem.
- Constructing right angled triangle.
- Quadrilaterals
- Prisms
- Definition and description of integers.
- Addition of integers using a number line.
- Addition of integers without using a number line.
- Subtracting integers using a number line.
- Subtracting integers without a number line.
- Plotting integers on number line using arrows.
- Giving the values of arrows.
- Writing additional statement writing a subtractional statements.
- solving word problems involving application of integers.
- Mathematical phases.
- Mathematical phrases.
- Mathematical expression
- Substitution
- Equations
- Equations involving division and multiplication.
-

Date : _____

TOPIC 1: LENGTH

LESSON 1: Conversation of length in kilometers to metres

- Length is the distance between two fixe4d points.
- The basic unit of length is metres.

Steps taken

- *Multiply the given length in km by 1000m.*
- *The product obtained is the length in m.*

Example 1

Change 43km into m.

1km = 1000m

= 4000 x 43

= 43000m

Example II

Express 0.81km into m.

1km = 1000m

= 1000 x 0.81m

= 1000 x 0.81m

$= 1000 \times \frac{81m}{100}$

= 810m

LEARNER'S ACTIVITY

1. **Change the following length in km into metres**

(a) 0.45km

(b) 2.74km

(c) 27km

(d) 143km

(e)	64.5	(f)	54km

CORRECTIONS

Date : _____

LESSON 2: Conversation of length in metres to kilometres

Steps taken

- *Multiply the given length in M by* $\frac{1}{1000}km$
- *Divide accurately.*
- *The quotient obtained is length in km.*

Example 1

Change 405m into km

$1m = \frac{1}{1000}km$

$= \frac{1}{1000} \times 405km$

$= 0.405km$

Example 2

Express 49m into km.

$1m = \frac{1}{1000}km$

$= \frac{1}{1000} \times 49km$

$= 0.049km$

Example 3

Express 4200m into km.

$1m = \frac{1}{1000}km$

$= \frac{1}{1000} \times 4200km$

$= 4.2km$

Example 3

Convert 23000m into km

$1m = \frac{1}{1000}km$

$= \frac{1}{1000} \times 23000km$

$= 23km$

LEARNER'S ACTIVITY

Express the following length into kimetres.

(a)	250m	(b)	700m

(c)	9000m	(d)	1200m
(e)	41m	(f)	48m

CORRECTIONS

Date : _____

LESSON 3: Finding the circumference of a circle given the Diameter

Circumference is the distance round a circular object.

Circumference = pi x diameter

= πd

Circumference = 2 x pi x radius

= 2nr

Pi is the ratio of circumference to diameter

$$\text{Pi} = \frac{\text{circumference}}{\text{Diameter}}$$

The constant value of $\pi = \frac{22}{7}$ or $3\frac{1}{7}$ or 3.14

Diameter is the longest distance through the centre of a circular object to the circumference.

Radius is half of diameter.

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

Steps taken

- *Multiply the given diameter by $\frac{22}{7}$ or 3.14 where applicable.*
- *The product obtained is the circumference.*

Example 1:

Find the circumference of a circle whose diameter is 28cm.

(use $\pi = \frac{22}{7}$)

Circumference = πd

= $\frac{22}{7}$ x 28cm

= 22 x 4cm

= 88 cm.

Example II

Find the circumference of a circle whose diameter is 20cm

Circumference = πd

= 3.14 x 20cm

= $\frac{314}{100}$ x 20cm

= $\frac{628}{100}$ cm

= 62.8cm

	LEARNER'S ACTIVITY
1.	Find the circumference of a circle whose diameter is 42cm^2
2.	If the diameter of a circle is 21cm, find its circumference. (Use $\pi = \frac{22}{7}$)
3.	The diameter of a circle is 49cm. Find its circumference. (Use $\pi = \frac{22}{7}$)

4.	The diameter of a circle is 56cm. Find its circumference. (Use $\pi = \frac{22}{7}$)
5.	The diameter of a bicycle wheel is 84cm. Calculate its circumference. (Use $\pi = \frac{22}{7}$)

CORRECTIONS

RELATIONSHIP BETWEEN RADIUS AND DIAMETER

Diameter = R + R

Or 2 x R

Examples

Find the diameter of a circle whose radius is,

Example 1	**Example 2**	**Example 3**
3cm	2.5cm	7½ dm
D = R + R	D = R + R	D = 2 x r
= 3cm + 3cm	= 2.5m	= 2 x 7½dm
= 6cm	+ 2.5m	= 2 x $\frac{15}{2}$dm
	5.0m	= 15dm
	= 5m	

ACTIVITY

1.	Find the diameter of a circle whose radius is				
(a)	4cm	(b)	6.3m	(c)	9¼ dm
2.	A circular garden has a radius of 5m. Calculate its diameter.				

3.	A circular pond has a radius of 3.25m. Find its diameter.

CORRECTIONS

Date : _____

LESSON 4: Finding circumference of a circle when given radius

Radius is the line which runs from the centre to the circumference.

Steps taken

- State the formular which is $2\pi r$
- Multiply the given radius by $\frac{22}{7}$ or 3.14 where applicable.
- The product obtained is the circumference.

Example 1

Calculate the circumference of a circle whose radius is 7cm.

(Use π $3\frac{11}{7}$

Circumference = $2\pi r$

= 2 x π x r

= 2 x $\frac{22}{7}$ x 7cm

= 44 x 1cm

= 44cm

Example II

Find the circumference of a circle with a radius of 10cm.

(use π as 3.14)

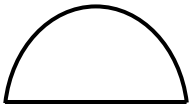
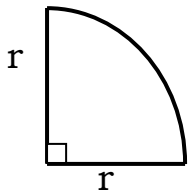
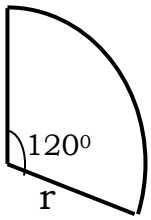
Circumference = $2\pi r$

= 2 x 3.14 x 10cm

= 2 x $\frac{314}{100}$ x 10cm

= $\frac{628}{10}$cm

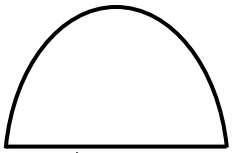
= 62.8cm

LEARNER'S ACTIVITY			
(a)	**Find the circumference of the circle given radius.**		
1.	7cm	2.	14cm
3.	28cm	4.	49cm
(b)	Finding perimeter of sectors of a circle **Semi circle**  $P = (\frac{1}{2} \times \pi D) + D$		
	Quadrant  $P = (\frac{1}{4} \times \pi D) + D$		
	Sector  $P = (\frac{120}{360} \times \pi D) + D$		

Examples

Find the perimeter of.

1.



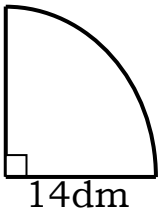
$P = (\frac{1}{2} \times \pi D) + D$

$P = (\frac{1}{2} \times \frac{\overset{11}{\cancel{22}}}{\cancel{7}} \times 7) + 7$

$= 11 + 7$

$=$ **18cm**

2.



D = 14dm + 14dm

28dm

$P = (\frac{1}{\cancel{4}} \times \frac{\cancel{22}}{\cancel{7}} \times \cancel{14}dm) + 28dm$

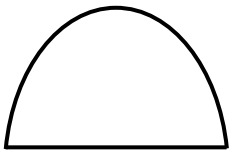
$= 11 + 28$

$=$ **39dm**

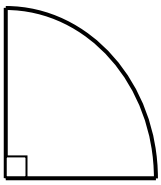
LEARNER'S ACTIVITY

Find the perimeter of the following shapes

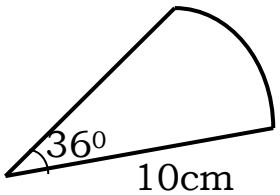
1.



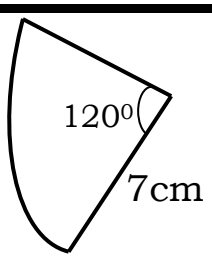
2.



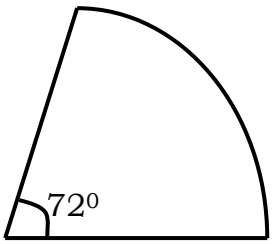
3.



4.



5.



CORRECTIONS

Date : _____

LESSON 5: Finding area of a circle

Steps taken

- *Multiply the given radius by $\frac{22}{7}$ or 3.14 where applicable.*
- *Expand correctly then simplify.*
- *Multiply to get product as area of the circle.*

Example 1:

Calculate the area of a circle whose radius is 7cm.

Area of a circle = πr^2

= $\frac{22}{7}$ x (7^2)sq.cm

= $\frac{22}{7}$ x 7cm x 7 sq.cm

= 22 x 7 sq.cm

= 154 sq.cm

Example II

Workout the area of a circle whose radius is 10m. (Use as 3.14)

Area of circle = πr^2

= 3.14 x 10 x 10 sq.m

= 314,00 sq.m

= 314.00 sq.m

LEARNER'S ACTIVITY

1. Calculate the area of a circle whose radius is 14cm.
(Use π as $\frac{22}{7}$)

2.	Workout the area of a circle whose radius is 28m. (Use π as $\frac{22}{7}$)
3.	Find the area of a circle whose radius is 35cm. (Take π as $\frac{22}{7}$).
4.	Calculate the area of a circle whose radius is 49cm. (Take π as $\frac{22}{7}$).
5.	Find the area of a circle whose radius is 20dm. (Use π as 3.14)

6.	Calculate the area of a circle whose radius is 30cm. (Use π as 3.14)

CORRECTIONS

Date : _____

LESSON 6: AREA OF QUADRILATERALS

Area of a rectangle

A = L x W

Examples

1. Find the area of a rectangle whose length is 8cm and width 5cm

   A = 9cm x 5cm

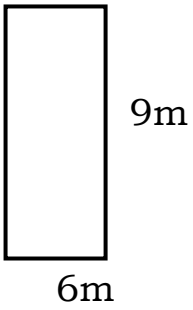
   = **<u>40cm²</u>**

LEARNER'S ACTIVITY

1. Find the area of the rectangles below:-

(b)

(b)



2. A rectangular floor measures 20m by 15m. Calculate its area.

3. Calculate the area of a rectangle whose length is 9dm and width 7dm.

CORRECTIONS

Date : _____

Find length or width of a rectangle when area is given

Examples

The area of the figure below is 24cm^2. Calculate its width.

L x W = A

6cm x W = 24cm^2

$\frac{6w}{-} = \frac{\overline{24}}{-}$

LEARNER'S ACTIVITY

1. The are of the figure below is 27cm^2. Calculate its length.

2. Given that A = L x W, find w if A = 36cm^2 and L = 9cm.

3. Calculate the width of a rectangular garden whose area is 100m^2 and its width is 4m.

CORRECTIONS

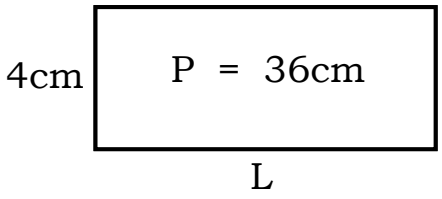
Date : _____

Find area of a rectangle when perimeter is given

Examples

The perimeter of a rectangle is 36cm, its width is 4cm.

(a) Find the length.



P = 2L + 2W.

36 = 2L + (2 x 4)

36 = 2L + 8

36 - 8 = 2L + 8 – 8

$\frac{28}{2} = \frac{2L}{2}$

14 = L

L = 14cm.

(b) Calculate its area

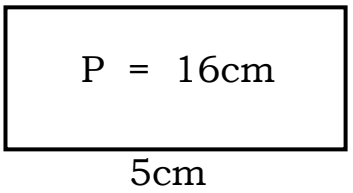
Area = L x W

14 x 4

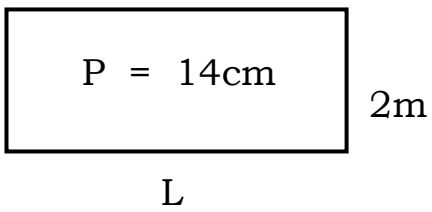
$66cm^2$

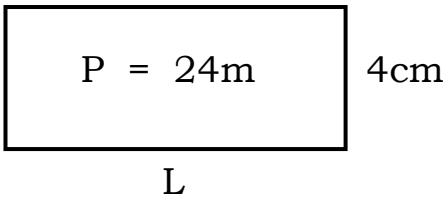
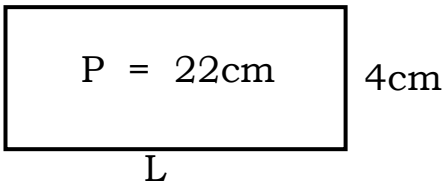
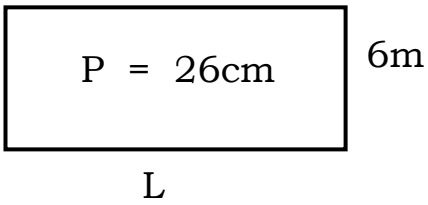
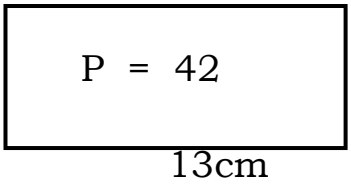
LEARNER'S ACTIVITY

1. Workout the area of these figures below given the perimeters.



2.



3.	
4.	
5.	
6.	

CORRECTIONS

Date : _____

Finding area of a square when perimeter is given

Examples

Find the area of a square whose perimeter is 24cm.

$4S = P$

$4S = 24cm$

$\frac{4}{4} \quad \frac{}{4}$

$S = 6cm.$

$A = S \times S$

$= 6cm \times 6cm$

$= \mathbf{36cm^2}$

LEARNER'S ACTIVITY

Find the area of a square whose perimeter is

1.	20cm	2.	32cm
3.	40m		

CORRECTIONS

Date : _____

LESSON 6: FINDING AREA OF A SQUARE

Property of a square.

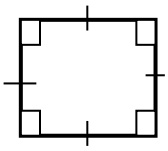
- A square has all sides equal.
- A square has four right angles

Steps taken

- *Give the formular*
- *Substitute correctly.*
- *Operate correctly.*
- *Give the area with correct units.*

Example 1:

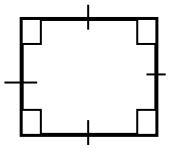
Find the area of a square whose side is 4cm.



Area = S^2
= side x side
= 4cm x 4cm
= 16 sq.cm

Example II:

Find the area of a square whose side is 2.4cm.

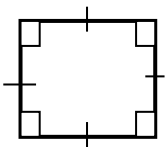


Area = S^2
= side x side
= 2.4cm x 2.4cm
= $\frac{24}{10}$ cm x $\frac{24}{10}$ sq.cm
= $\frac{24 \ x \ 24}{100}$
= 5.76 sq.cm

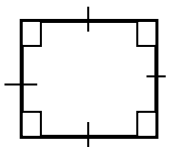
LEARNER'S ACTIVITY

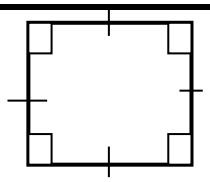
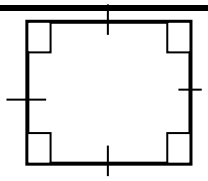
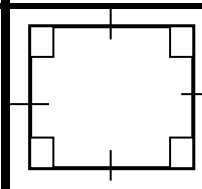
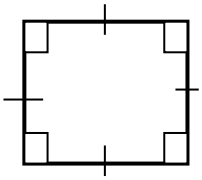
1. Calculate the area of the square.

(a)



(b)



(c)	 1.4cm	(d)	 11cm
(e)	 0.4m		 6m
2.	Calculate the area of a square whose side length is:		
(a)	15cm		18dm

(b)	12cm	(e)	25dm

CORRECTIONS

Date : _____

LESSON 7: FINDING THE UNKNOWN SIDE OF A SQUARE

Steps taken

- *Give the formular of the area of a square.*
- *Substitute correctly.*
- *Find the square root for both sides.*

Example 1:

The area of a square is $144m^2$. Find the length of each side.

Area of square = $144m^2$

$\sqrt{S^2} = \sqrt{144}$

S = 12m

Example II

Calculate the side length of each side, if the area of a square is $16dm^2$

Area of square = $16dm^2$

S = $16dm^2$

$\sqrt{S^2} = \sqrt{16}$

S = 4dm

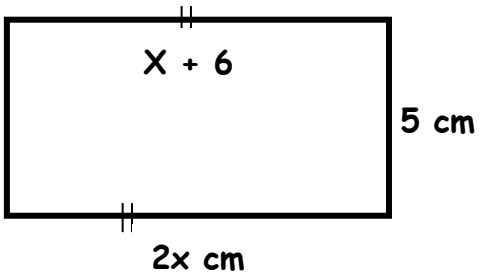
LEARNER'S ACTIVITY

1.	The area of a square garden is $100m^2$. Calculate the length of each side of the garden.	2.	The area if a square is $2\frac{7}{9}cm^2$. **Find the length of each side**

	Find the side length of a square, if the area of a square is		
(a)	$121cm^2$	(b)	$169m^2$
(c)	$225m^2$	(d)	$400m^2$
(e)	$625cm^2$	(f)	$81dm^2$

ACTIVITY:

1)

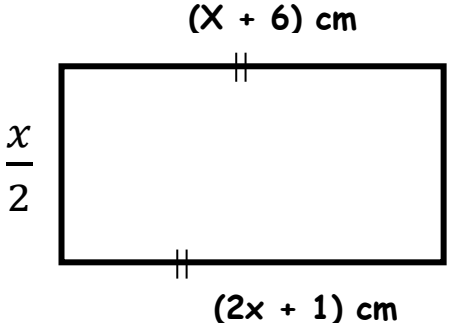


a) Find the value of x

b) Find the value of x

c) Find the area

2) **ABCD** is a rectangle.



a) Find the value of x

b) Find the length and width of the rectangle.

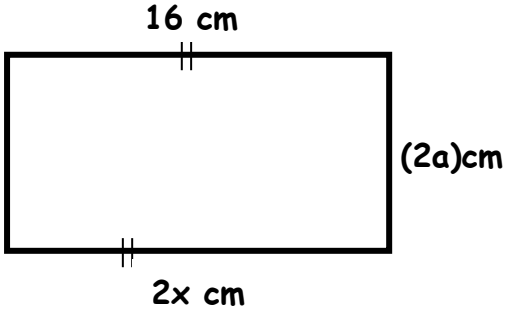
c) Find the perimeter of the rectangle

d) Find the area of the rectangle.

Finding sides, area and perimeter of a rectangle.

Example 1.

Given the rectangle below;



i) Find a

$2a + 6 = 16$

$2a + 6 - 6 = 16 - 6$

$2a = 10$

$\frac{2a}{2} = \frac{10}{2}$

a = 5 cm

ii) Find the actual width.

= (2a) cm

=(2x5)cm

=10 cm

3)

iii) Work out the perimeter.

Method 1

P = add all sides

= 10cm + 16cm + 10cm + 16cm

= 26cm + 26cm

= 52cm.

Method II

P = 2(L + W)

= 2(16cm + 10cm)

= 2 x 26 cm

= 52 cm.

iv) Find its area.

A = L x W

= L x W

= 16cm x 10cm.

$=160\ cm^2$

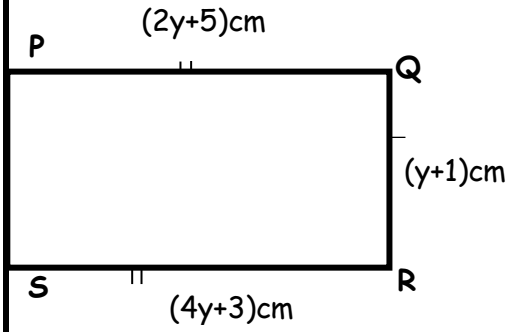
The three sides of a rectangle in order are 2x, (x +1) , and (x+7)cm.

i) Find the value of x

ii) Find the actual length and width.

iii) Find the area of the figure.

PQRS is a rectangle.



a) Find the value of y.

b) Find the width of the rectangle in cm.

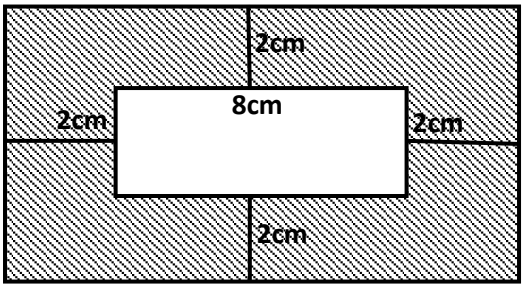
c) Find the actual length of the rectangle in cm.

d) Find its area.

e) Work out its perimeter.

Finding area of shaded parts of rectangles.

Find the area of the shaded part.



a) Length of outer rectangle.

= (8 + 2 +2) cm.

=12cm.

b) Width of the outer rectangle.

= (5 + 2 + 2)cm

=9cm.

c) Area of the outer rectangle.

=L x W

=12cm x 9cm.

= 108cm$^{2.}$

d) Area of inner rectangle.

= L X W

= 8cm X 5cm

= 40cm^2.

e) Area of the shaded part.

= L X W

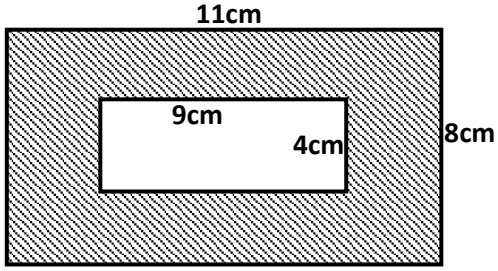
= 8cm X 5cm.

= 40cm cm^2.

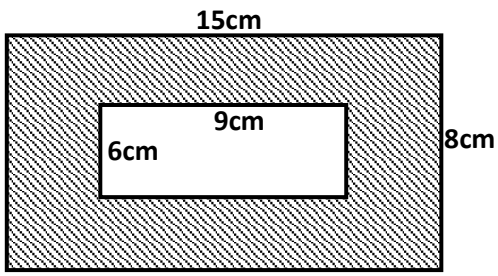
Activity:

Find the area of the shaded parts.

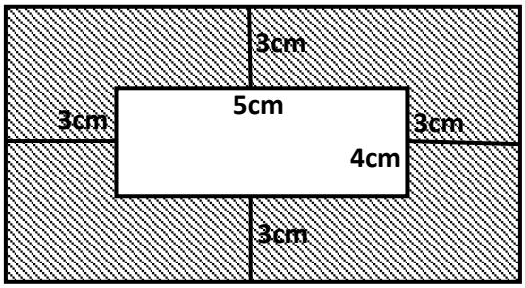
1)



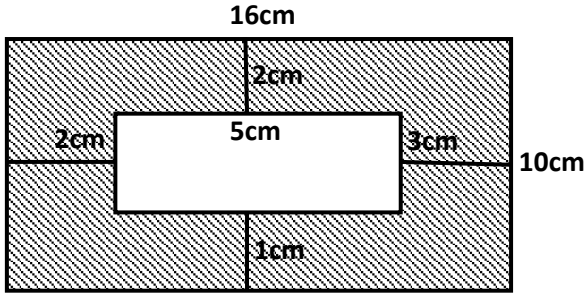
2)



3)

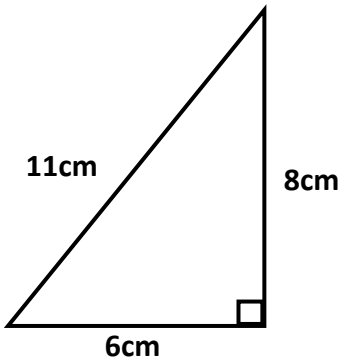


4)



Area of triangles.

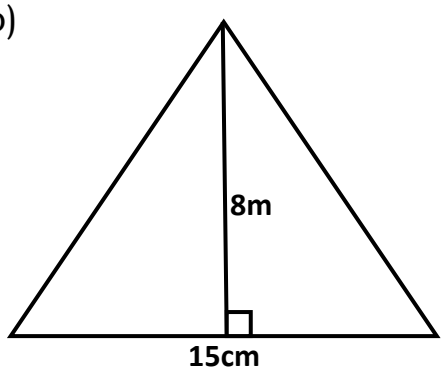
a)



Area = $\frac{1}{2}$ x b x h

= $\frac{1}{2}$ x 6cm x 4cm

b)



Area = $\frac{1}{2}$ x b x h.

= $\frac{1}{2}$ x 15m x $\cancel{8}^{4}$m

=1 x 15m x 4m

=24 cm^2.

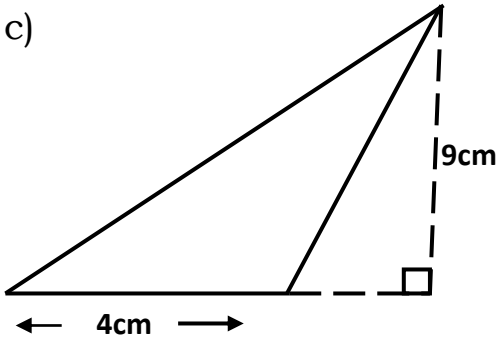
Area = $\frac{1}{2}$ x b x h.

= $\frac{1}{2}$ x 15m x $\cancel{8}^{4}$m

= 1 x 15m x 4m.

=60m^2

c)



Area = $\frac{1}{2}$ x b x h

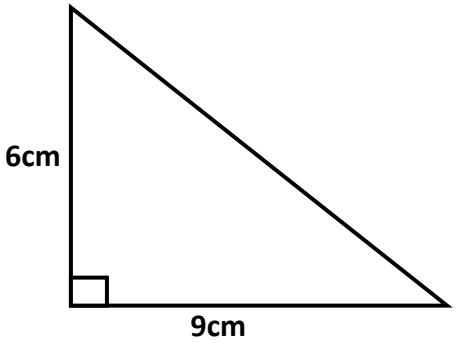
= $\frac{1}{\cancel{2}^{1}}$ x $\cancel{4}^{2}$cm x 9cm.

= 18cm^2.

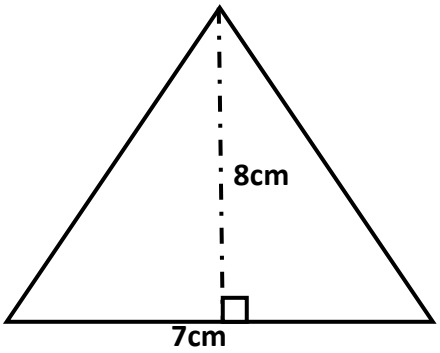
1)

= 24cm^2.

Activity



2)



Date : _____

LESSON 8: FINDING VOLUME OF A CUBOID

Finding Volume of a rectangular prism

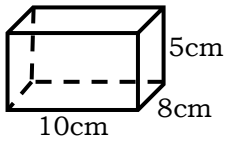
Volume of a rectangular prism = base area x height

Steps taken

- *State the formular of volume of a cuboid*
- *Substitute correctly.*
- *Multiply to get product.*
- *The product is the volume in cc or cm^3*

Example 1:

Find the volume of the rectangular prism



Volume = (base area) x height

= L x W x H

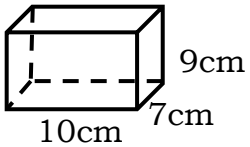
= (10cm x 8cm) x 5cm

= $80cm^2$ x 5cm

= **$400cm^3$**

Example: 2

Find the volume of box below

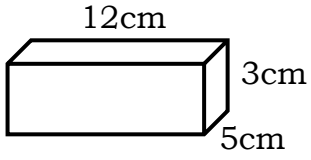
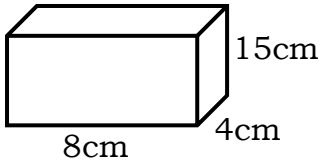
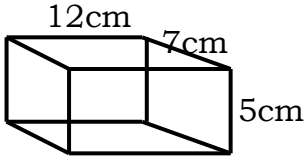
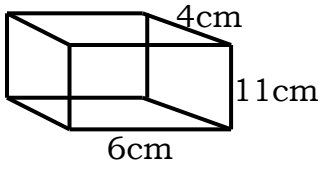


Volume = L x W x H

= 10cm x 7cm x 9cm

= $70cm^2$ x 9cm

= **$630cm^3$**

	LEARNER'S ACTIVITY		
1.	***Find the volume of each cuboid***		
(a)		(b)	
(c)		(d)	
2.	A cuboid has a length 9cm, width 4cm and height 3cm. Find its volume	3.	Find the volume of the box whose base area is $30cm^2$ and the height is 8cm.

CORRECTIONS

Date : _____

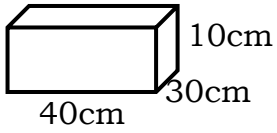
LESSON 9: FINDING CAPACITY OF A CUBOID

Steps taken

- Find the volume.
- Multiply the volume by $\frac{1}{1000}$ L
- Divide accurately to obtain the quotient.
- The quotient obtained is capacity in litres

Example 1:

A rectangular tank measures 40cm by 30cm by 10cm. Calculate its volume in litres.



Method 1

Volume in litres = $\frac{\text{volume}}{1000}$

$= \frac{L \times w \times h}{1000}$

$= \frac{40 \times 30 \times 10}{1000}$

$= 4 \times 3 \times 1$

= 12litres

Method II

Volume = L x w x h

= 40cm x 30cm x 10cm

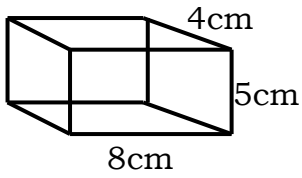
= 12,000cm^2

1 cm = $\frac{1}{1000}$ L

= $\frac{1}{1000}$ x 12000L

= 12 litres

Example III



Volume = Length x Width x height

= 8cm x 4cm x 5cm

= **160cm³**

$1cm^3 = \frac{1}{1000} L$

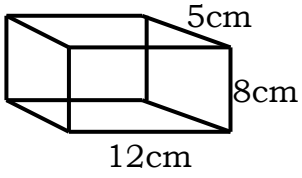
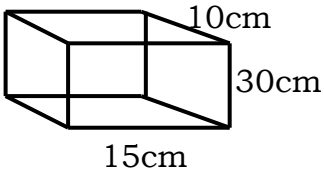
$= \frac{1}{1000} \times 160L$

$= \frac{16}{100}$

= 0.16Litres.

LEARNER'S ACTIVITY

1.	***Calculate the capacity of the cuboid whose volume is:***		
(a)	$3600cm^3$	(b)	$124cm^3$
(c).	$24000cm^3$	(c)	$6400cm^3$
2.	**Workout the number of litres each cuboid will hold when full,**		

(a)		(b)	

CORRECTIONS

Date : _____

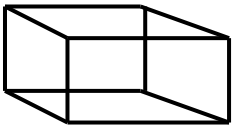
LESSON 10: FINDING VOLUME A PRISM GIVEN CAPACITY IN LITRES

Steps taken

- Multiply the given capacity by $1000cm^3$.
- The product got is volume in cm^3.

Example 1:

The cuboid below holds 42 litres. Find its volume in cm^3.



Solution

1L = $1000cm^3$

= 42 x $1000cm^3$

= $42{,}000cm^3$

Example

The capacity of the tank is 0.155litres when full. Calculate its volume.

1L = 1000cm3

$0.154 = \frac{154}{1000}$ x $1000cm^3$

= 154cm³

LEARNER'S ACTIVITY

1.	**Calculate the volume of a cuboid which holds.**

(a)	3 litres when full.	(b)	48 litres when full.
(c)	64 litres when full.	(d)	264 litres when full.
(e)	$\frac{1}{2}$ of 24	(f)	$\frac{3}{4}$ of 32 litres

CORRECTIONS

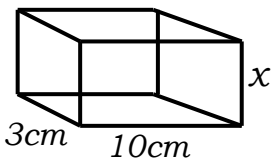
Date : _____

LESSON 11: FINDING UNKNOWN SIDE GIVEN ANY TWO SIDES AND VOLUME OF A CUBOID.

Steps taken

- ❖ Write the formular.
- ❖ Form the equation and solve.
- ❖ The value obtained is the length of the unknown side.

Example 1: Find the value of x, if the volume of a cuboid is $210cm^3$



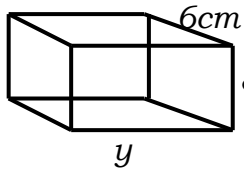
Volume of cuboid = $210cm^3$

10cm x 3cm x $\boldsymbol{x}$ = $210cm^3$

$\frac{30}{30}$ x = $\frac{210}{30}$

x = 7cm

Example 2: Calculate the value of y given the volume of a cuboid is 480cm^3

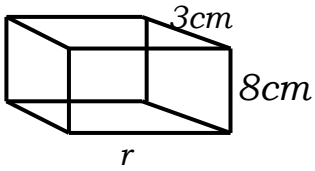
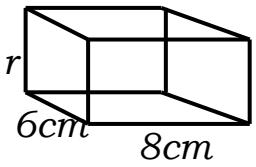
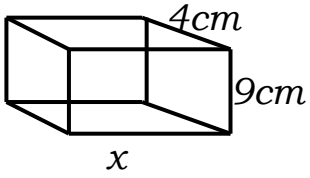
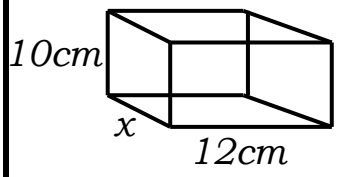


Volume = 480cm^3

y x 6 x 8 = 480cm^3

$\frac{48}{48}$ y = $\frac{480}{48}$

x = 10cm

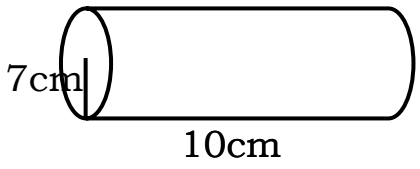
	LEARNER'S ACTIVITY		
1.	***Workout the value of r if the volume of a cuboid is 240cm³***		
(a)		(b)	
2.	**Calculate the value of x given the volume of 720cc**		
(a)		(b)	

CORRECTIONS

Date: _____

FINDING VOLUME OF CYLINDERS

1. Find the volume of the cylinders



Volume = Area of circle x height

$= \pi r^2$ x h

$= \frac{22}{7}$ x $\cancel{7}$ x 7 x 10

2. The diameter of a tin is 14cm. if its height is 60cm, calculate its volume.

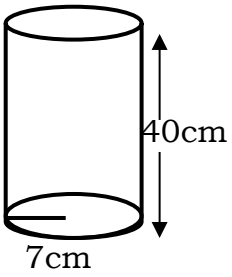
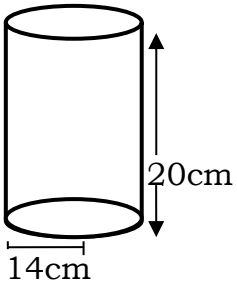
V = πr^2 x h

$= \frac{22}{7} \times \frac{\cancel{14}^{2}}{\cancel{2}_{1}} \times \frac{\cancel{14}^{7}}{\cancel{2}_{1}} \times 60$

= 22 x 420

= 9240cm³

1

	= 22 x 70 **= 1540cm³**		
	LEARNER'S ACTIVITY		
1.	Calculate the volume of the following cylinders below  	3.	Find the volume of the cylinder whose radius is 21cm and height 14cm.
2.	 	4.	The base diameter of a time is 14cm and its height is 30cm. Calculate the volume.

5.	Calculate the volume of the cylinder with radius 14cm and height 10cm.

CORRECTIONS

Date: _____

CAPACITY OF CONTAINERS

Capacity is the measure of liquids. They are measured in litres.

Examples

(a) How many 5 litre containers are in 40 litre containers?

No. of containers = $\frac{\overset{8}{\cancel{40}}}{\cancel{5}^{1}}$

= 8 containers

(b) How many 4 litre containers fill a 100 litre container?

No. of containers = $\frac{\overset{25}{\cancel{100}}}{\cancel{4}_{1}}$

= 25 containers

(c) How many ¼ litre container can be got from 40 litre container?

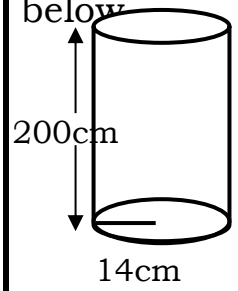
$40 \div \frac{1}{4}$

$40 \times \frac{4}{1}$

160 containers.

Calculating capacity in litres.

1. Find the capacity of 6 tins below



$V = \pi r^2 \times L$

$\frac{22}{7} \times 14 \times 14 \times 200$

44×2800

$123200cm^3$

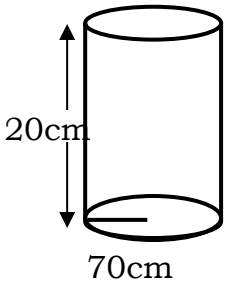
Capacity = $\frac{Volume}{1000}$

= $\frac{123200cm}{1000cm}$

= 123.2 litres

2. Find the capacity of the tin below in L ($1cm^3 = 1ml$)

($1000cm^3 = 1000ml$)



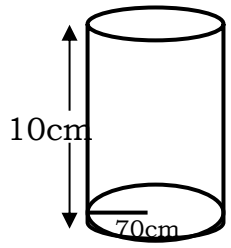
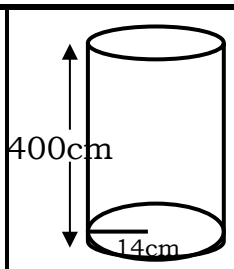
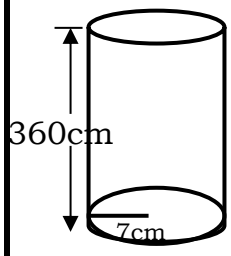
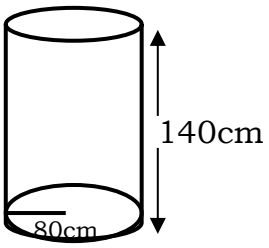
Volume = $\pi r^2 \times L$

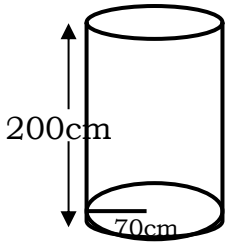
$\frac{22}{\cancel{7}} \times \cancel{70} \times 70 \times 20$

$22 \times 700 \times 20$

15400×20

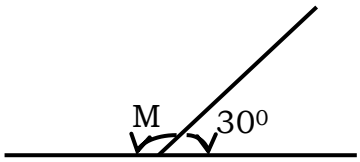
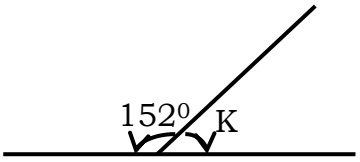
Capacity = $\frac{308000cm}{1000cm}$

			= **308 litres**
	LEARNERS ACTIVITY		
1	**Find the capacity of these containers**		
(a)		(b)	
(c)		(d)	



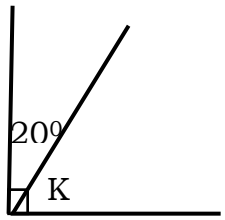
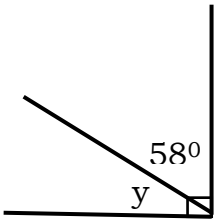
(e)	

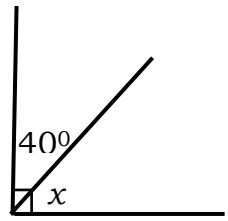
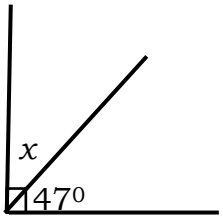
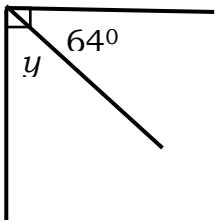
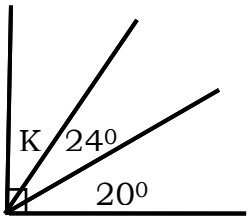
CORRECTIONS

	Date: _____ **NAMING SUPPLEMENTARY ANGLES**		
1.	Angles which add up 180^0  $M + 30^0 = 180^0$ $M + 30^0 - 30^0 = 180^0 - 30^0$ **$\underline{M = 150^0}$**	2.	What is the supplement of angle 152^0 Let the supplement  $K + 152^0 = 180^0$ $K + 152^0 – 152^0 = 180^0$ **$\underline{K = 028^0}$**
	LEARNER'S ACTIVITY		
1	**What is the supplement of the following angles.**		
(a)	40^0	(b)	82^0

(c)	110^0	(d)	112^0
(e)	58^0	(f)	48^0
(g)	142^0		

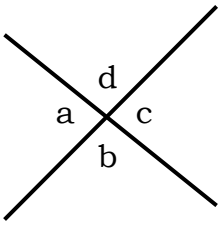
CORRECTIONS

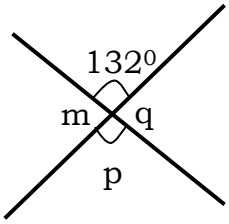
	Date: _____ **NAMING COMPLEMENTARY ANGLES** Angles which add up to 90^0.		
1.	Find the complementary angle to 20^0  $K + 20^0 = 90^0$ $K + 20^0 - 20^0 = 90^0 - 20^0$ **$K = 70^0$**	2.	Find the value of y.  $y + 58^0 = 90^0$ $y + 58^0 - 58^0 = 90^0$ **$y = 32^0$**
LEARNER'S ACTIVITY			
Find the value of the unknown.			

1		2.	
3.		4.	
5.	**Find the complementary of those angles**		
(a)	36^0	(b)	54^0

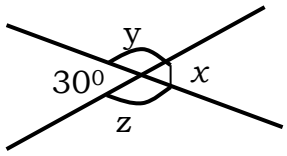
(c)	60^0	(d)	81^0

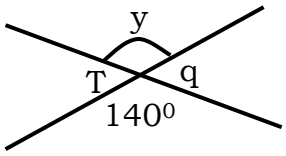
CORRECTIONS

1.	**Date:** _____ **VERTICALLY OPPOSITE ANGLES** These angles lie vertically to each other. They are equal angles.  $\angle a = \angle c$ $\angle b = \angle d$

2.	Find the size of angle marked p.  $\angle$ P = 132^0 (Vertically opposite angles) $\angle$ q + 132^0 = 180^0(Supplementary angles) q + 132^0 - 132^0 = 180^0 - 132^0 **q = 48^0**

Vertically opposite angles and supplementary angles

1.	 Find the size of :- (i) $\angle$ x	(ii)	$\angle$ z
	(iii) $\angle$ y		

2.	 Find the angles with letters.

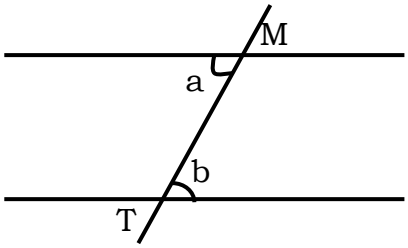
CORRECTIONS

Date: _____

ANGLES FORMED BY PARALLEL LINES

Alternate interior and exterior lines.

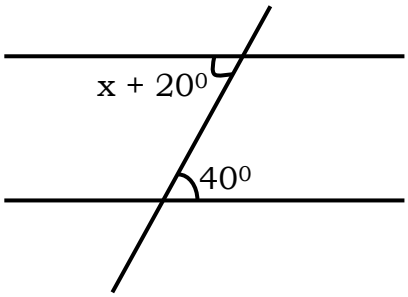
Alternate angles are equal angles.



∠ a and ∠ b are alternate interior angles. they are equal angles.

∠ T and ∠ m are alternate exterior angle. They are equal angles.

1. **Examples**

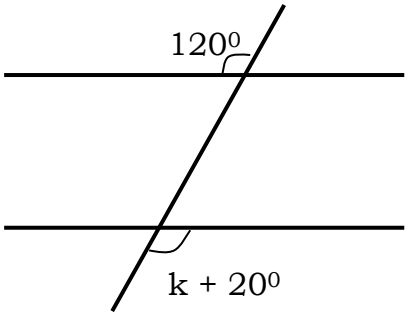


$x + 20^0 = 40^0$ (Alternate angles)

$x + 20^0 - 20^0 = 40^0 - 20^0$

$x = 20^0$

2.



$k + 20^0 = 120^0$ (Alternate angles)

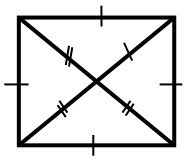
$k + 20^0 - 20^0 = 120^0 - 20^0$

$k = 100^0$

Date: _____

IDENTIFYING PROPERTIES OF QUADRILATERALS

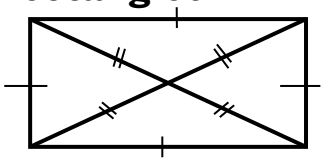
1. **Square**



Properties

- All sides are equal.
- Opposite sides are equal and parallel.
- Angles are 90^0
- Diagonals are equal.
- The diagonal bisect each other at right angles.

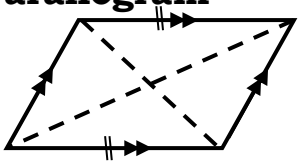
2. **Rectangles**



Properties

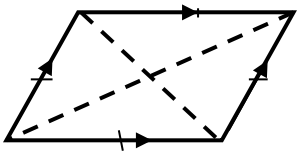
- Opposite sides are equal and parallels.
- Angles are 90^0
- Diagonals are equal.
- It has 2 lines of symmetry.

3. **Parallegram**



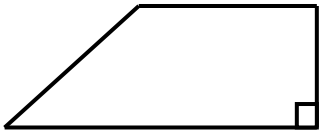
- Opposite sides are equal and parallel.
- Opposite angles are equal.
- Diagonals are not equal.
- Diagonals bisect each other.

4. **Rhombus**



- All sides are equal and parallel to each other.
- Opposite angles are equal.
- Diagonals are not equal but they bisect each other at right angles.

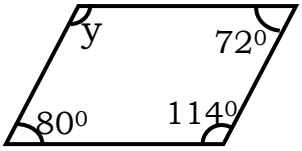
5. **Trapezium**



- Two of the sides are parallel but not equal.
- In an isosceles trapezium, the base angles are equal and in a scalene trapezium the base angles are of different size.
- Diagonal are equal.

Applying angle properties of quadrilateral

1. The angle sum of quadrilaterals is 360^0

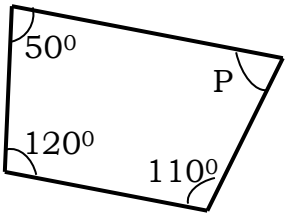


$y + (80^0 + 110^0 + 72^0) = 360^0$

$y + 262^0 - 252^0 = 360^0 - 262^0$

$y = 098^0$

2.



$P + (120^0 + 110^0 + 50^0) = 360^0$

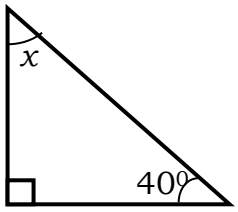
$P + 280^0 - 280^0 = 360^0 - 280^0$

$P = 080^0$

TRIANGLES

Applying the angle sums of interior angle of a triangle.

1. Find the size of angle x

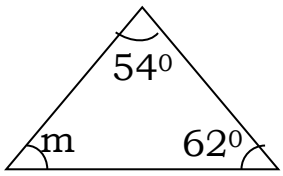


$x + (40^0 + 90^0) = 180^0$

$x + 130^0 - 130^0 = 180^0 - 130^0$

$x = 50^0$

2. Find the size of m.



$x + (54^0 + 62^0) = 180^0$

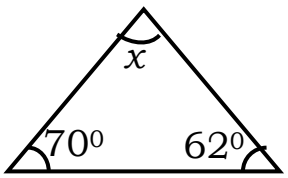
$x + 116^0 - 116^0 = 180^0 - 116^0$

$x = 64^0$

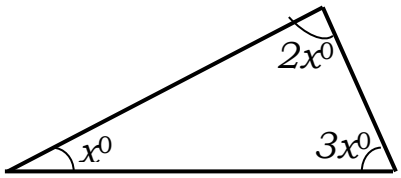
LEARNER'S ACTIVITY

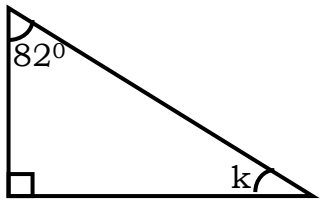
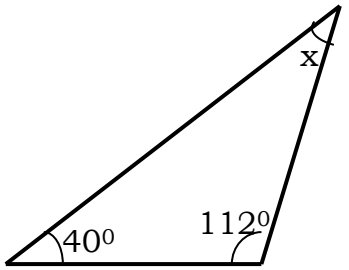
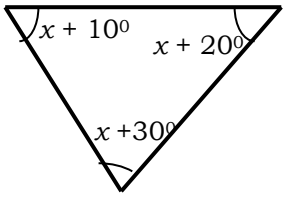
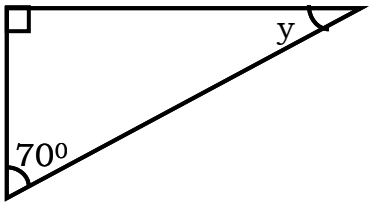
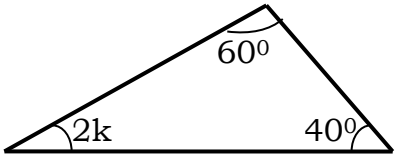
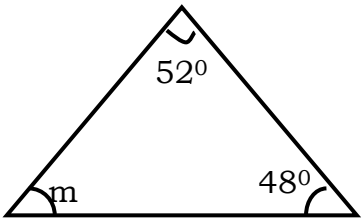
Work out the unknown angles.

1.



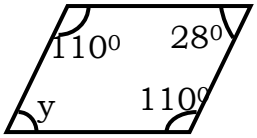
2.



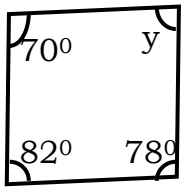
3.	 82^0 k	4.	 x 40^0 112^0
5.	 $x + 10^0$ $x + 20^0$ $x + 30^0$	6.	 y 70^0
7.	 60^0 2k 40^0	8.	 52^0 m 48^0

Find the volume of the unknown angles

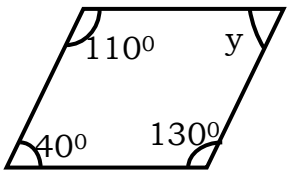
1.



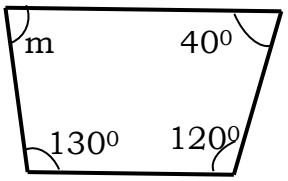
2.



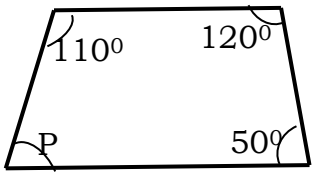
3.



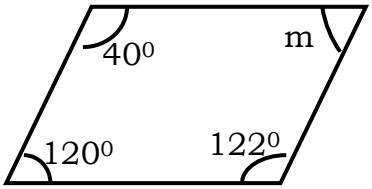
4.



5.



6.



CORRECTIONS

Date: _____

THEME: GEOMETRY

LESSON 12: LINE SEGMENT

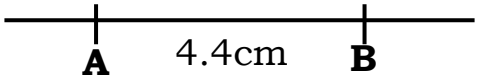
Is a point of a line between two points.

Steps taken

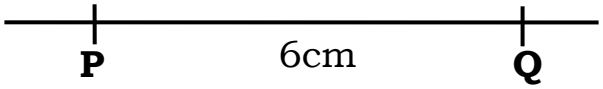
- *Use a ruler and a pair of compasses.*
- *Open the pair of compasses to the two marked point on the segments.*
- *Transfer the pair of compasses to ruler and take the reading.*

Example

Draw a line segment AB of 4cm.

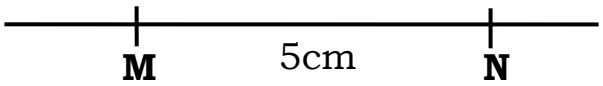


Example II: Draw a line segment PQ of 6cm.



Example III:

Draw a line segment MN of length 5cm.



	LEARNER'S ACTIVITY		
1.	***Draw line segment of length.***		
(a)	PQ = 3cm	(b)	MN 8.7cm
(c)	RS = 9cm	(d)	AB = 7.5cm
(e)	OR = 10cm	(f)	EF = 7.2cm

CORRECTIONS

Date: _____

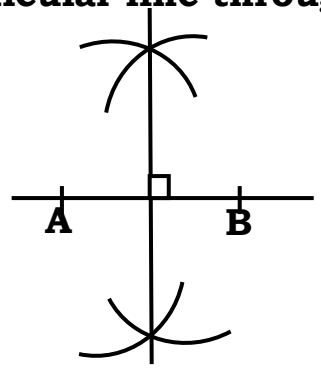
LESSON 13: CONSTRUCTING PERPENDICULAR LINES

Steps taken

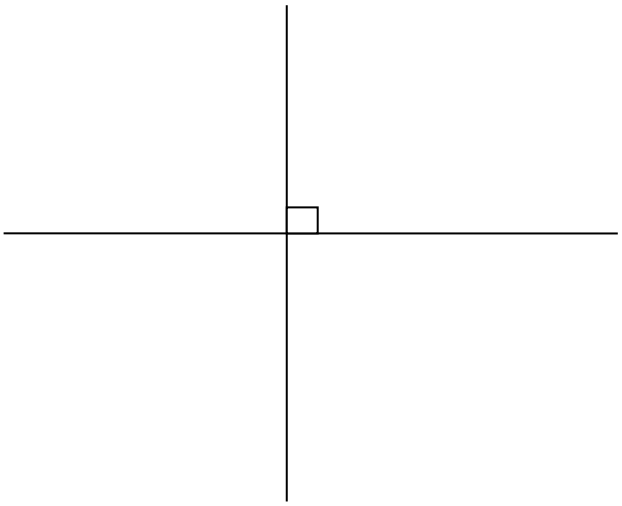
- ✓ Get the length of the drawn line segment.
- ✓ Place the pointer at end point on the left and mark off an arc above and then below the segment with same radius.
- ✓ Without adjusting the radius place the pointer at the end point on the right and do the same.
- ✓ Join the two intersecting points created with a ruler.

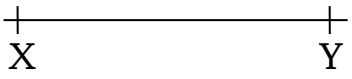
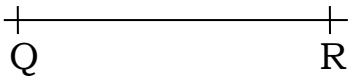
Example

Construct a perpendicular line through a line segment AB.



Example II



	LEARNER'S ACTIVITY		
1.	***Construct perpendicular line through the line segments.***		
(a)		(b)	
(c)			
(e)			

CORRECTIONS

Date: _____

LESSON 14: CONSTRUCTING A PERPENDICULAR LINE AT A POINT

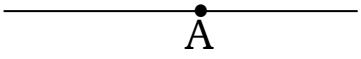
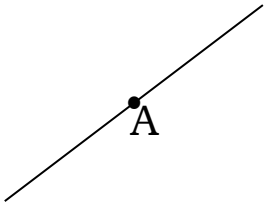
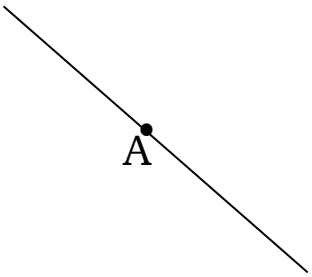
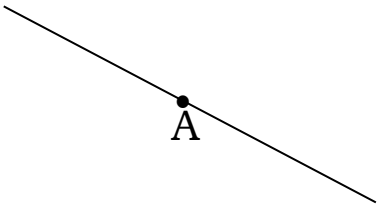
Steps taken

1. Place the pointer of the pair of compasses at the given point.
2. Increase the radius of the pair of compasses and let any two points on the line.
3. Place the pointer of the pair of compasses at either points created and mark off arcs below and above to intersect.
4. Join the intersect points to the centre with a ruler.

Example 1:

Construct a perpendicular line at point A.

Example II: Construct a perpendicular line at point Y.

	LEARNER'S ACTIVITY	
1.	***Construct perpendicular line at point A.***	
(a)		(b) 
(c)		(d) 

CORRECTIONS

Date: _____

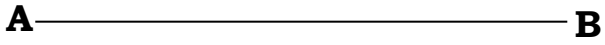
LESSON 15: CONSTRUCTION OF PARALLEL LINES

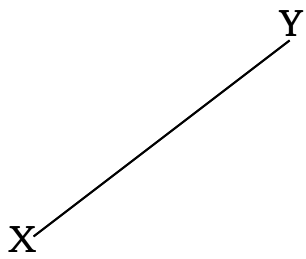
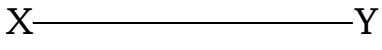
- ❖ Parallel lines are set of lines which run in same direction and have same distance apart / separated by same distance apart.
- ❖ Parallel lines will never meet.

Steps taken

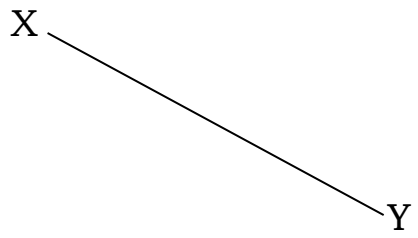
- ✓ *Place a set square along the line.*
- ✓ *Hold the ruler firmly in position of the square.*
- ✓ *Side smoothly along it.*
- ✓ *Draw the parallel line.*

Examples: Construct parallel line to AB



	LEARNER'S ACTIVITY		
1.	***Draw parallel line to XY***		
(a)	XY 	(b)	

(c)



CORRECTIONS

Date: _____

LESSON 16: CONSTRUCTING ANGLE 60^0

There are two base angles.

Angle of 60^0.

Angle of 90^0.

Steps taken when constructing base angle 60^0

- Draw a straight line.
- Mark a point on the straight (centre)
- Choose reasonable radius.
- Place the pointer at the centre.
- Mark an arc either on the right or left then above.
- Mark the arc below.
- Join the two points using ruler to the centre.

Example 1:

Construct an angle of 60^0.

	LEARNER'S ACTIVITY
1.	Using a ruler, a pencil and a pair of compasses only, construct an angle of 60^0
2.	Use a ruler and a pencil and a pair of compasses only, construct an angle of 60^0.
3.	Construct more angles of 60^0 for practice.

CORRECTIONS

Date : _____

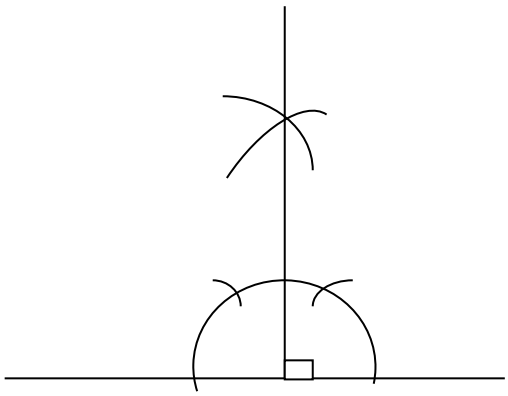
LESSON 17: CONSTRUCTING ANGLE 90^0

Steps taken

1. *Draw a straight line.*
2. *Mark off a centre on the straight line.*
3. *Draw a semi circle.*
4. *Mark off two arcs on the semi-circle.*
5. *Place the pair of compass at the point of intersection and mark off arcs above the semi circle.*
6. *Draw a straight line to the centre.*

Examples:

1. Construct an angle of 90^0



LEARNER'S ACTIVITY

1. Construct an angle of 90^0

2.	Using a ruler, a pencil and a pair of compasses only, construct an angle of 90^0
3.	Construct more angles of 90^0 for practice.

CORRECTIONS

Date : _____

LESSON 18: BISECTING DRAWN ANGLES

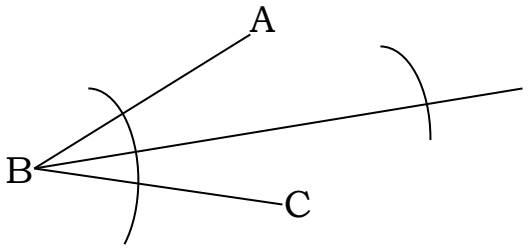
It means to divide an angle into two equal angles.

Steps taken

- Select a reasonable radius on the pair of compasses.
- Place the pointer at centre B and draw arcs to cut both lines AB and BC.
- Place the pointer at the intersection point of the arcs that have been cut in it above and create intersecting arcs of intersect.

Example

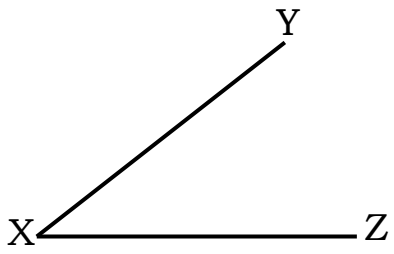
Bisect angle ABC using a ruler and a pair of compasses.



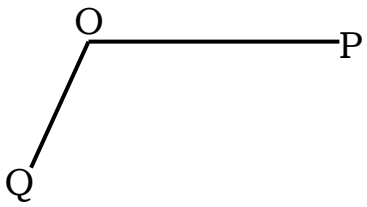
LEARNER'S ACTIVITY

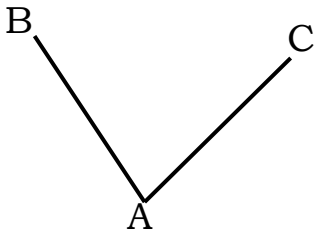
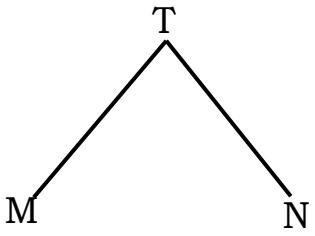
1. **Bisect the following drawn angles.**

(a)



(b)



(c)		(d)	

CORRECTIONS

Date : _____

LESSON 19: CONSTRUCTING ANGLE 30^0

Steps taken

- Follow through the steps of constructing angle of 60^0
- Bisect the angle 60^0
- Label angle 30^0

Example 1

Construct angle 30^0 in the space provided.

Method 1

LEARNER'S ACTIVITY	
1(a)	Construct angle 60^0

(b)	Bisect the angle above.
2.	Construct angle 30^0
3/	Construct more angles of 30^0 for practice,

CORRECTIONS

Date : _____

LESSON 20: CONSTRUCTING ANGLE 45^0.

Steps taken

- Follow the steps for constructing 90^0
- Bisect the angle 90^0

  Label angle 45^0

Example 1:

Construct angle 45^0

Method 1:

LEARNER'S ACTIVITY

1.	*Construct an angle of 45^0 in the space provided.*

2.(a)	*Construct an angle of 90^0*
(b)	*Construct more angles of 450 for practice.*
(c)	*Bisect the angle above.*

CORRECTIONS

Date : _____

LESSON 21: LESSON 21: POLYGON

Polygon: is a closed sided shape.

Polygons are classified into two:-

1. Regular polygon
2. Irregular polygon

Regular polygon is a polygon with all sides and angles are equal.

Irregular polygon is a polygon with sides and angles having different sizes.

Polygons are named according to number of sides.

Names of polygon	No. of sides
Triangle	3 sides
Quadrilateral	4 sides
Pentagon	5 sides
Hexagon	6 sides
Heptagon / septagon	7 sides
Octagon	8 sides
Nonagon	9 sides
Decagon	10 sides
Nuo-decagon	11 sides
Duo-decagon	12 sides

LEARNER'S ACTIVITY

1.	In a sentence give the meaning of a polygon.
2.	A four sided polygon is called
3.	A seven sided polygon is known as
4.	How many sides has:- (a) Decagon? _____ (b) Nuo decagon? _____ (c) Nonagon? _____ (d) Triangle? _____

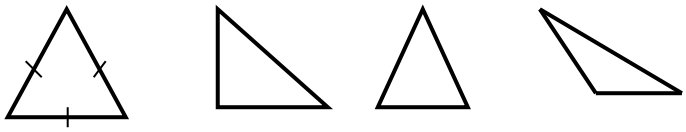
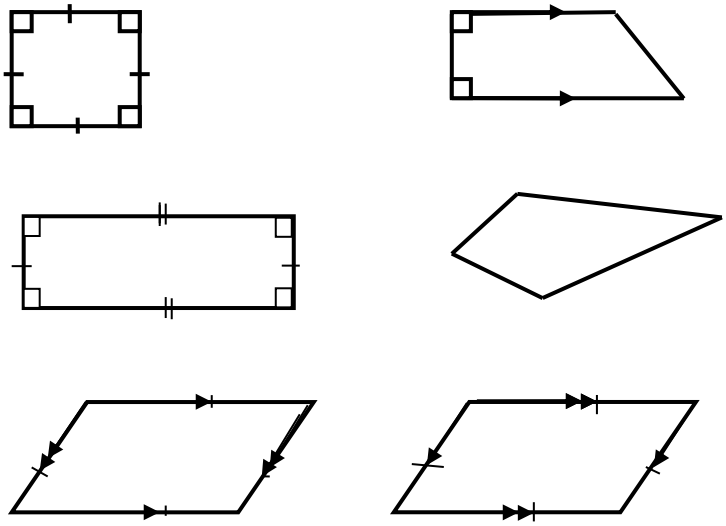
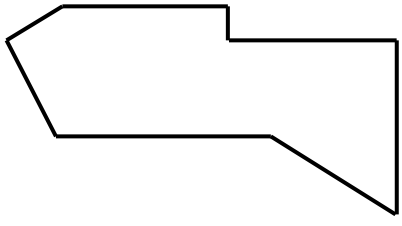
CORRECTIONS

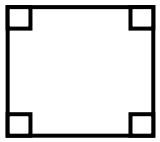
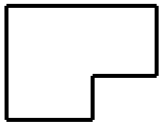
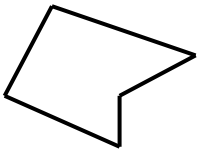
Date : _____

LESSON 22: DRAWING DIFFERENT POLYGONS

Steps taken

- ✓ Identify the number of sides a polygon stated has.
- ✓ Use a ruler and a pencil to draw a polygon given.

POLYGON	SHAPE
Triangle	
Quadrilateral	
Pentagon	
Hexagon	
Octagon	

LEARNER'S ACTIVITY	
1.	Name the following polygon. (a)  _____ (b)  _____ (c)  _____
2.	Draw any pentagon in the space provided.
3.	Draw a Heptagon

CORRECTIONS

Date : _____

LESSON 23: CONSTRUCTING A REGULAR TRIANGLE

- An equilateral triangle is a regular triangle.
- An equilateral triangle has all sides and angles equal.
- 60^0 is the interior angle size for each angle.

Steps taken

- ✓ Draw a straight line using a pencil and a ruler.
- ✓ Measure the given length.
- ✓ Mark off the arcs for line segment.
- ✓ Place the pointer at either side with same distance to create a point above the line segment.
- ✓ Join the points to form the triangle.
- ✓ Indicate the properties of the triangle.
- ✓ Consider other method in construction of equilateral triangle.

Example 1

Using a ruler, a pencil and a pair of compasses, construct an equilateral triangle of side 6cm.

	LEARNER'S ACTIVITY
(a)	Using a ruler, a pencil and a pair of compasses only construct a regular triangle (equilateral triangle of sides given) 7cm
(b)	5cm
(c)	4cm

(d)	Construction of triangle whose sides are not equal. Construct a triangle ABC where AB = 7cm, BC = 5cm, and AC = 6cm

CORRECTIONS

Date : _____

LESSON 24: CONSTRUCTING A REGULAR QUADRILATERAL

- ✓ A square is an example of a regular quadrilateral.
- ✓ It has four sides and angles which are equal.
- ✓ 90^0 is the angle size of each interior angle.

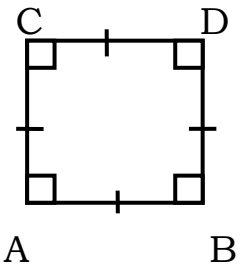
Steps taken

- ✓ Draw a sketch and indicate all the properties.
- ✓ Use the sketch and construct an accurate square basing on angle of 90^0 at each corner

Example1:

With help of a ruler, pencil and a pair of compasses only construct a square ABCD of side 4cm.

sketch



LEARNER'S ACTIVITY

Use a ruler, pencil and a pair of compasses only construct at a square of sides.

(a) 5cm

(b)	6cm
(c)	3cm

CORRECTIONS

Date : _____

LESSON 25: CONSTRUCTING A REGULAR HEXAGON

A regular hexagon is a six sided polygon.

60^0 is the centre angle of a regular hexagon.

60^0 is the interior angle of a regular hexagon.

120^0 is the exterior angle of a regular hexagon.

Steps taken to construct a regular hexagon

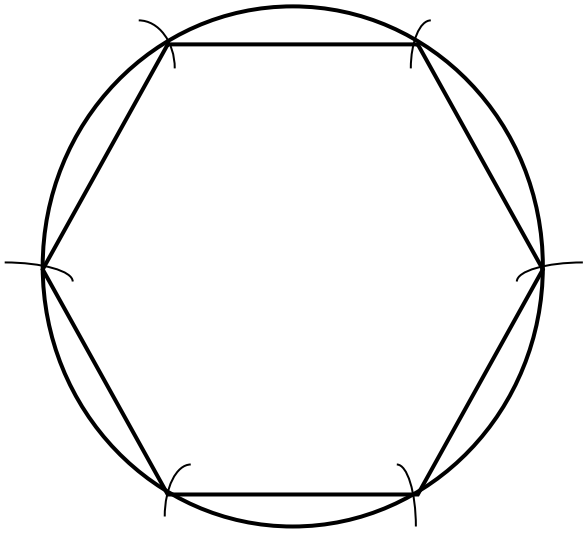
1. Draw a straight line.
2. Measure the given radius.
3. Draw a circle of the given radius (from the centre of the straight line)
4. Obtain the centre angle by dividing 360^0 by the number of sides which helps us to get the length of the sides of the hexagon.
5. Measure angle 60^0 and draw it at the centre.
6. Join a straight line from the centre to the circumference.
7. Copy the angle.
8. Mark off the similar angle on the circumference.
9. Join sides accurately.

Example 1

(a) Construct a regular hexagon of radius 2.5cm.

Centre angle = $\frac{360}{6}$

= 60^0



	LEARNER'S ACTIVITY
1.	Construct a regular hexagon of radius 3cm.
2.	Construct a regular hexagon of diameter 4cm.
3	Construct a regular hexagon of radius 2cm.

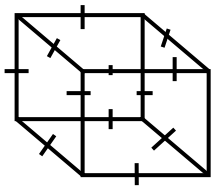
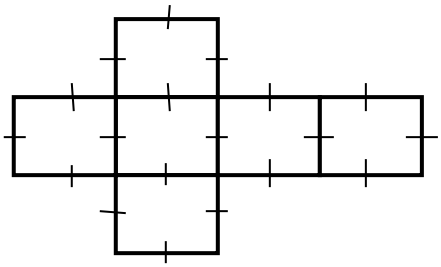
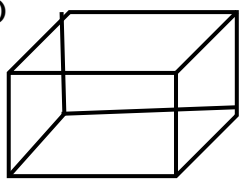
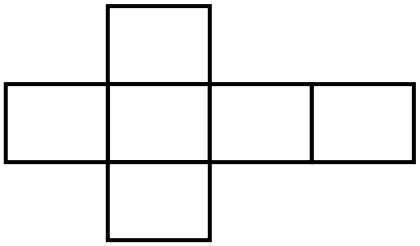
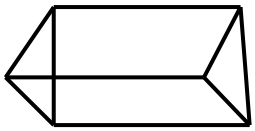
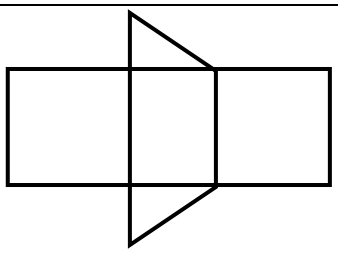
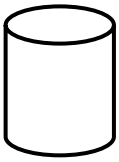
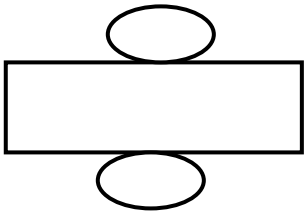
CORRECTIONS

Date : _____

LESSON 26: NETS OF PRISMS

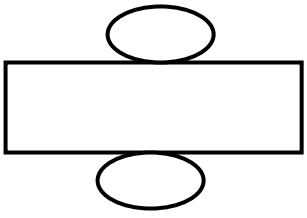
Steps taken

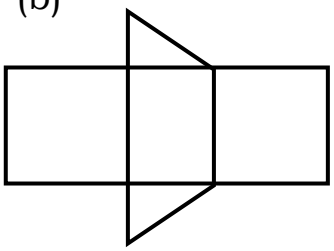
- ✓ Identify the given prism.
- ✓ Identify the number faces it has.
- ✓ Develop the net according to their number of faces it has.

PRISM	NET
CUBE 	
CUBOID 	
TRIANGULAR PRISM 	
CYLINDER 	

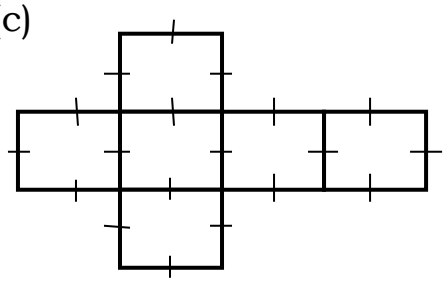
LEARNER'S ACTIVITY

What figure can be obtained from the net shown

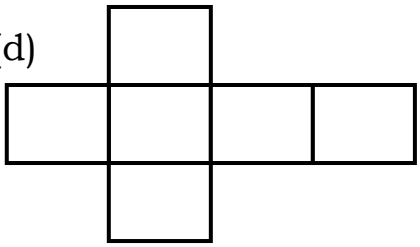
(a) 

(b) 

(c)



(d)



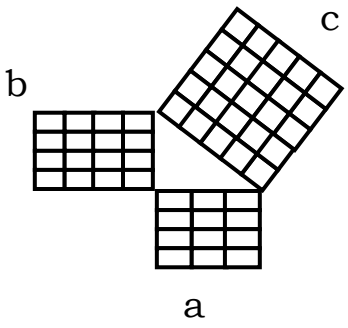
CORRECTIONS

Date : _____

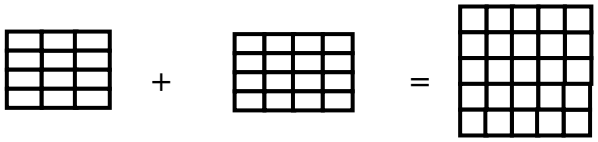
LESSON 27: FINDING THE UNKNOWN LONGEST SIDE OF A RIGHT ANGLED TRIANGLE USING PYTHAGORAS THEOREM

Note: In any right angled triangle, the area of the square drawn on the hypotenuse (longest side) is equal to the total area of the squares drawn on the other two sides.

Example 1: Study the three squares drawn to form a right angled triangle.



Square A + square B = square C



9sq + 16 = 25sq units

25 sq = 25sq units

Therefore $a^2 + b^2 = c^2$

$3^2 + 4^2 = 5^2$

(3 x 3) + (4 x 4) = (5 x 5)

9 + 16 = 25

25 = 25

PROOF OF RULES

$C^2 = a^2 + b^2$

25 = 9 + 16

25 = 25

$b^2 = c^2 - 92$

16 = 25 – 9

16 = 16

$a^2 = c^2 - b^2$

$3^2 = 5^2 - 4^2$

q = 25 - 16

q = 9

Area of

square b = s^2

= 4^2

= (4 x 4)

= 16 square units

Area of

square c = s^2

Rules extended to find unknown are:-

(i) $c^2 = a^2 + b^2$

(ii) $b^2 = c^2 - a^2$

(iii) $a^2 = c^2 - b^2$

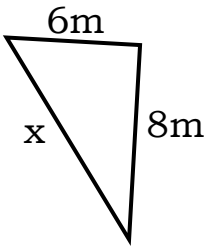
Finding unknown length (hypotenuse)

(We use $c^2 = a^2 + b^2$)

Steps taken

- *State the rule $c^2 = a^2 + b^2$*
- *Substitute the value of a and b correctly.*
- *Find the product of a^2 and b^2*
- *Add the product.*
- *Find the square root of the sum.*
- *The value of obtained is the length of Hypotenuse)*

Example 2: Find the value of x.



$c^2 = a^2 + b^2$

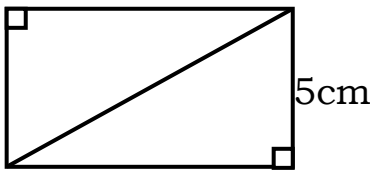
$x^2 = 6^2 + 8^2$

$x^2 = 36 + 64$

$\sqrt{x^2} = 100$

x = 10m

Example 3: Calculate the length of diagonal of the rectangle drawn.



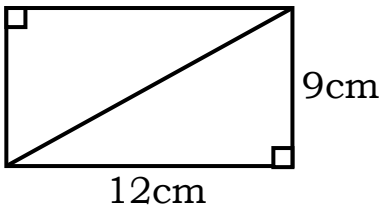
$c^2 = a^2 + b^2$

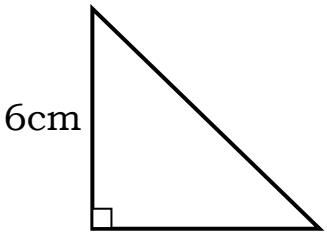
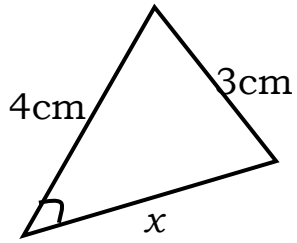
$c^2 = 12^2 + 5^2$

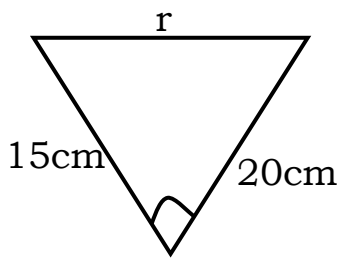
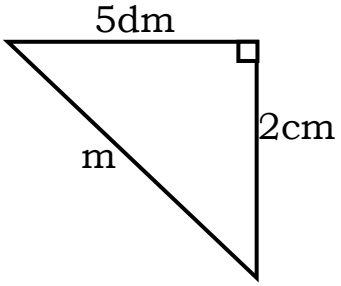
$c^2 = 144 + 25$

$\sqrt{c^2} = 169$

c = 13m

	LEARNER'S ACTIVITY
1.	***Find the length of diagonal of the rectangle below.***
(a)	
2.	***Calculate the length of unknown sides of the triangle drawn.***

(a)		(b)	

CORRECTION

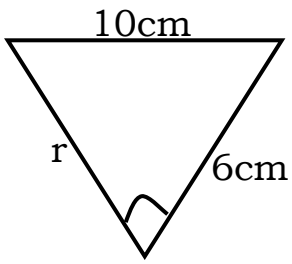
Date : _____

LESSON 28: FINDING THE BASE AND HEIGHT USING THE PYTHAGORAS THEOREM

Steps taken

- ✓ Give the rule of difference either $a^2 = c^2 - b$ or $b^2 = c^2 - a^2$
- ✓ Find the products of the squares.
- ✓ Get the difference of the products.
- ✓ Find the square root of the difference.

Example 1: Find the length of x



$r^2 = 10^2 - 6^2$

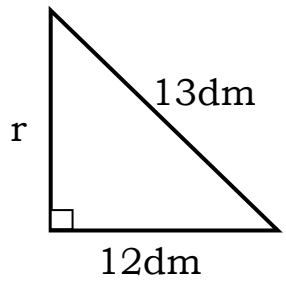
$r^2 = 100 - 36$

$r^2 = 64$

$\sqrt{r^2} = 64$

r = 8cm

Example 2: Find the value of y.



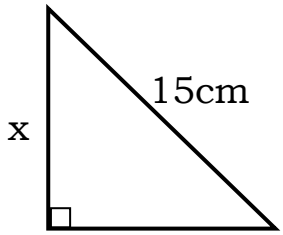
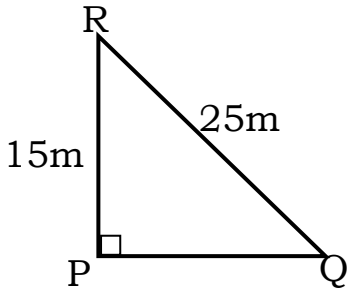
$y^2 = 13^2 - 12^2$

$y^2 = 169 - 144$

$y^2 = 25$

$\sqrt{y^2} = 25$

y = 5dm

	LEARNER'S ACTIVITY
1.	**Find the value of x** 
2.	-Calculate the length of PQ 

CORRECTIONS

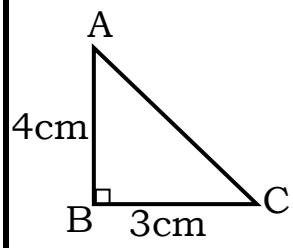
Date : _____

LESSON 29: CONSTRUCTION OF RIGHT ANGLED TRIANGLE

Steps taken

- ✓ Develop a sketch and label angle 90^0
- ✓ Use a sketch and construct an accurate right angled triangle.

Sketch **Accurate**



LEARNER'S ACTIVITY

1(a) Construct a right angled triangle PQR in which angle Q is 90^0, PQ = 6cm and QR = 8cm

(b) Measure PR

CORRECTIONS

Date : _____

LESSON 30: QUADRILATERALS

Quadrilaterals are four sided polygons.

Examples of Quadrilaterals.

- Rectangle
- Square
- Trapezium
- Kite
- Rhombus
- Parallelogram

Classification of Quadrilaterals.

Polygons are classified by properties of;

- Angles
- Sides
- Diagonals.
- Lines of folding symmetry.

General properties of quadrilaterals

- Have four sides
- Have four interior angles
- 3600 is the interior angle sum.
- They have two diagonals.
- Have 1 face.

	LEARNER'S ACTIVITY
1.	*Give the number of sides and diagonals the quadrilateral has.*

Quadrilateral	Sides	Diagonals
Square		
Rectangle		
Rhombus		
Kite		
Trapezium		
Parallelogram		

2.	*State the properties of the Quadrilateral given.*	
	Square	
	Rectangle	
	Rhombus	
	Parallelogram	
	Kite	

3, How many lines of folding symmetry has

(a) Square _____

(b) Rhombus _____

(c) Kite _____

(d) Rectangle _____

(e) Parallelogram_____

CORRECTIONS

Date : _____

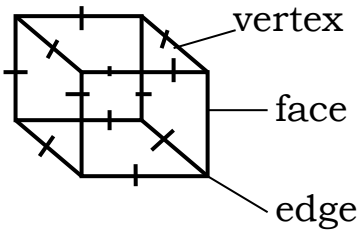
LESSON 31: PRISM

Is a polyhedron which has two congruent faces called bases that are parallel.

A polyhedron is a figure formed of polygonal parts of planes called faces, that enclosed a region of space.

❖ Prism are named according to their bases.

Cube

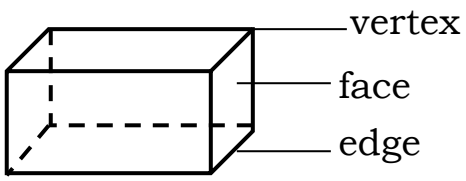


(i) 6 faces

(ii) 8 vertices

(iii) 12 edges

Cuboid

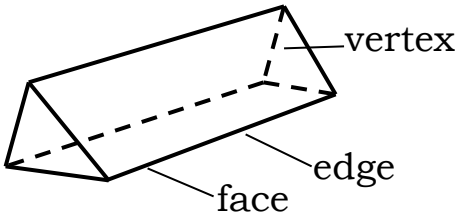


(i) 6 faces

(ii) 8 vertices

(iii) 12 edges

Triangular prism

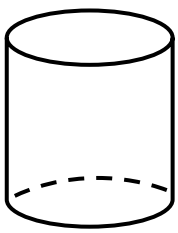


(i) 5 faces

(ii) 6 vertices

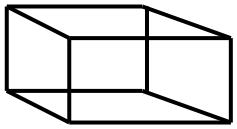
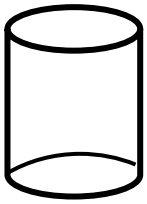
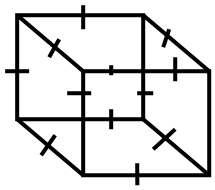
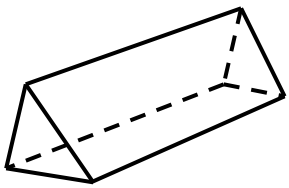
(iii) 9 edges

Cylinder



LEARNER'S ACTIVITY

Name the solid figures and give their number of faces, vertices and edges.

	Solid figure	No. of faces	No. of vertices	No. of edges
(a)		_____	_____	_____
(b)		_____	_____	_____
(c)		_____	_____	_____
(d)		_____	_____	_____

CORRECTIONS

Date : _____

THEME: NUMERACY

LESSON 32: DEFINITION AND DESCRIPTION OF INTEGERS

- Integers are negative numbers, positive numbers and zero.
- Zero is neither a negative integer nor positive integer.
- Negative integers are written with a minus sign.

(+) positive integers are written with plus sign or without

(-) means negative.

Examples of positive integers are:

$^{-}1$, $^{+}2$, $^{+}3$ .....

Note: Positive numbers can also be written without a sign. e.g. 2, 14, 17...

Examples of negative integers

-1, -2, -3, ...

	LEARNER'S ACTIVITY
1.	What are integers?
2.	Write any four examples of positive integers.
3.	Write down any six examples of negative integers.

4.	Which integer is referred to as neutral?
5.	List the integers in between $^{-}3$ and $^{+}5$ on the number line.
6.	Which integer is on the left hand side of "o" on the number line?
7.	Which integers are on the right hand side of zero on the number line?

CORRECTIONS

Date : _____

LESSON 33: ADDITION OF INTEGERS USING A NUMBER LINE

Note:

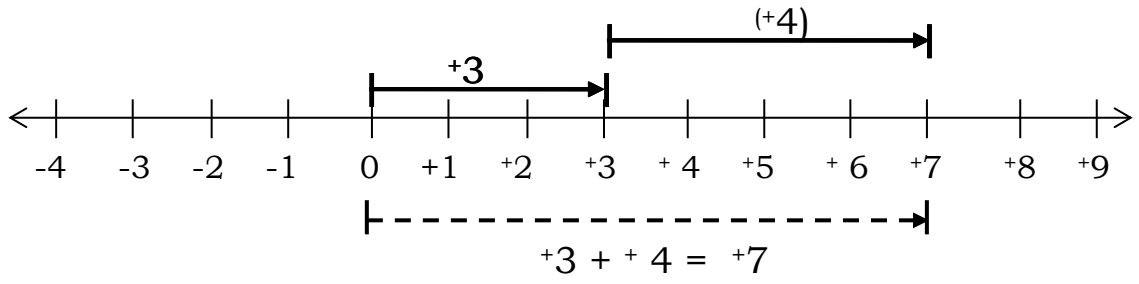
- The addition operation means face the direction of positive.
- Positive integers are forwarded movements. They are also movements on your right from the point stated as origin.
- Negative integers are backward movements.
- They are also movements on your left from the point stated as origin.

Steps taken

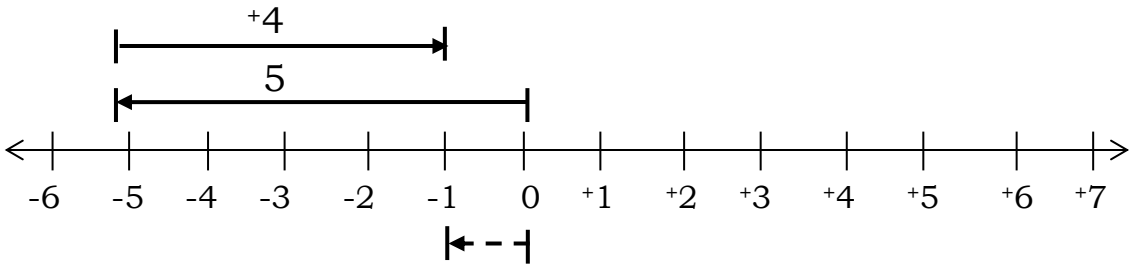
- *Draw a number line.*
- *Make correct movements according to the given question.*
- *Give the final site as your out come*

Examples:

Add: +3 + +4 using a numberline.

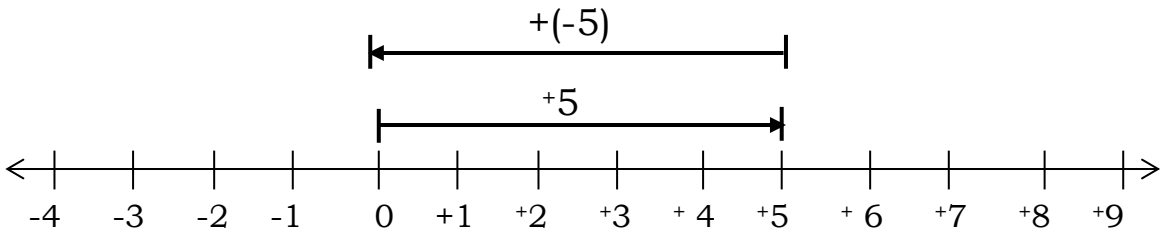


Example II: Workout -5 + +4 using a number line.



∴ -5 + +4) = -1

Example III: Add $^{+}5 + {}^{-}5$ using a number line.



$^{+}5 + {}^{-}5 = 0$

LEARNER'S ACTIVITY

1.	Simplify the following using a number line
(a)	$^{-}7 + {}^{+}2 =$
(b)	$-4 + {}^{-}2$
(c)	$^{+}2 + {}^{-}6$

(d)	$^{-}4 + {}^{+}7$

CORRECTIONS

Date : _____

LESSON 34: ADDING INTEGERS WITHOUT USING A NUMBERLINE

Steps taken

❖ Apply the rule of multiplication where applicable.

Note:

✓ Product of a positive and negative integer is a negative integer.

✓ The product of a positive and positive integer is a positive integer.

✓ The product of a negative and negative is a positive integer.

Example 1:

Add: $^{+}4 + {}^{+}7$

$^{+}4 + {}^{+}7 = 11$

Positive	(+ + + + + + +) (+ + + +)
Negative	

Example II:

Work out: $^{-}4 + {}^{+}9$

$^{-}4 + 9 = {}^{+}5$

Positive	+ + + + + + + + +
Negative	- - - -

Example III:

Simplify: $^{-}3 + {}^{-}4$

-3 - 4

Positive	+
Negative	- - - / - - - -

LEARNER'S ACTIVITY

(a) $-4 + {}^{+}9$

(b)	$^{+}5 + {}^{-}7$
(c)	$^{+}2 + {}^{-}8$
(d)	$^{-}3 + {}^{-}5$
(e)	$^{+}3 + {}^{+}4$
(f)	$^{+}5 + {}^{+}6$

(g)	$^{-}4 + {}^{+}4$
(h)	$^{+}13 + {}^{+}10$

CORRECTIONS

Date : _____

LESSON 35: SUBTRACTING INTEGERS USING A NUMBER LINE

❖ The subtraction operation means face the direction of negative.

Steps taken

✓ *Draw a number line.*

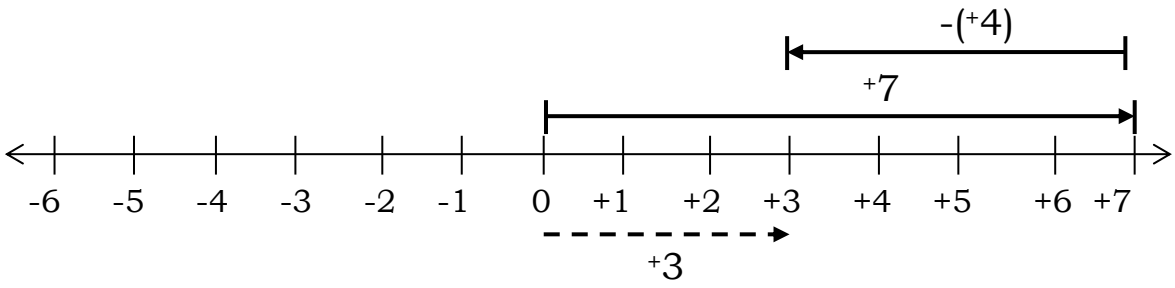
✓ *Make correct movements according to the given question.*

✓ *Give the final steps as your outcome*

(a)

Example 1:

Subtract $^{+}7 - {}^{+}4$ using a numberline.

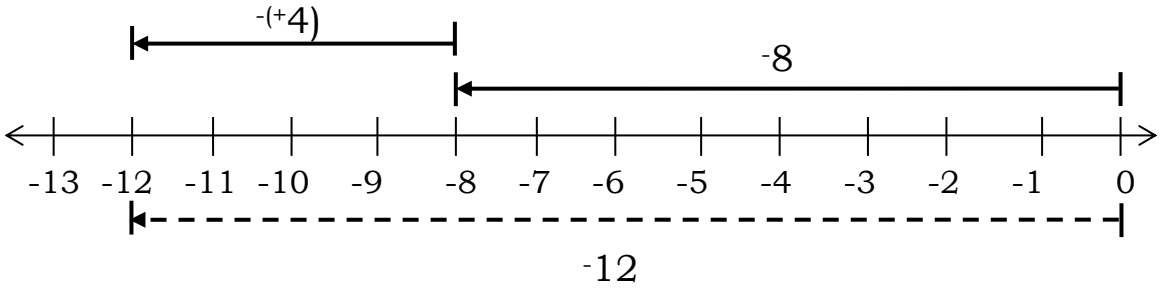


$^{+}7 - {}^{+}4 = {}^{+}3$

(b)

Example II:

Workout $-8 - {}^{+}4$ using a numberline



∴ **$-8 - {}^{+}4 = {}^{-}12$**

LEARNER'S ACTIVITY

1, Subtract using a number line

(a) $^{+}6 - {}^{+}4$

(b)	$^{+}7 - {}^{+}6$
(c)	$^{+}4 - {}^{+}5$
(d)	$^{+}4 - {}^{+}4$

CORRECTION

Date : _____

LESSON 36: SUBTRACTION OF INTEGERS WITHOUT USING A NUMBER LINE

Note: Apply multiplier rule if applicable.

Example 1: Simplify: -3 - +8

-3 – (+8)

-3 – 8

$^{-}$**11**

+ve	
-ve	- - - / - - - - - - - -

Example II: Simplify: $^{+}3 - {}^{+}5$

$^{+}3 – (^{+}5)$

$^{+}3 – 5$

$^{-}$**2**

+ve (+) (+) (+) √ √

-ve (-) (-) (-) - -

LEARNER'S ACTIVITY

Simplify

(a) $^{-}3 - {}^{+}3$

(b) -7 - $^{-}3$

(c) -4 - $^{-}5$

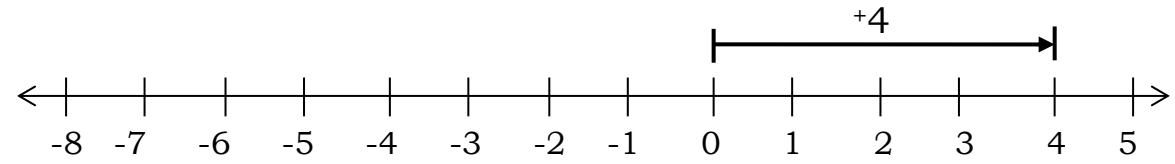
(d)	$^{+}3 - {}^{-}4$
(e)	$^{+}5 - {}^{+}2$
(f)	$^{+}5 - {}^{-}7$

CORRECTIONS

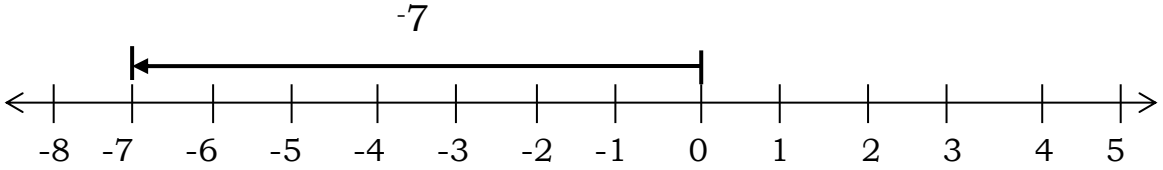
Date : _____

LESSON 37: PLOTTING INTEGERS ON NUMBER LINE USING ARROWS

Example 1: Draw an arrow of $x = {}^{+}4$ on a number line



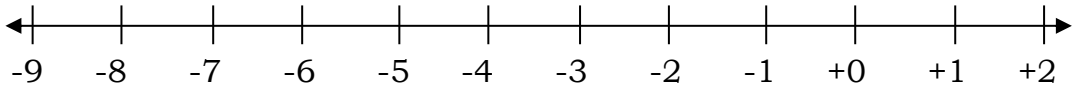
Example II: Draw an arrow to represent y = $^{-}$7 on a number line.



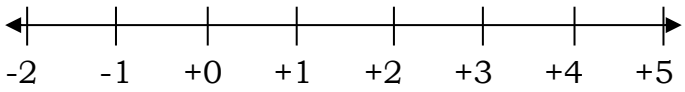
LEARNER'S ACTIVITY

1. Draw arrows on a number line to represent

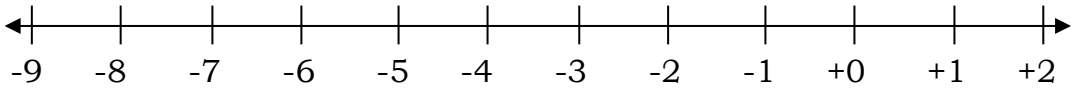
(a) a = -6



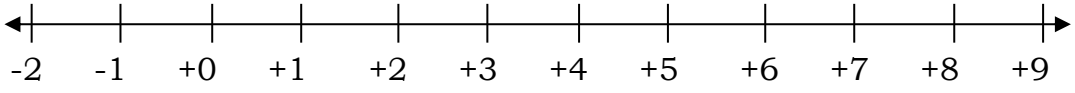
(b) $x = {}^{+}3$



(c) y = -7



(d) r = $^{+}$5



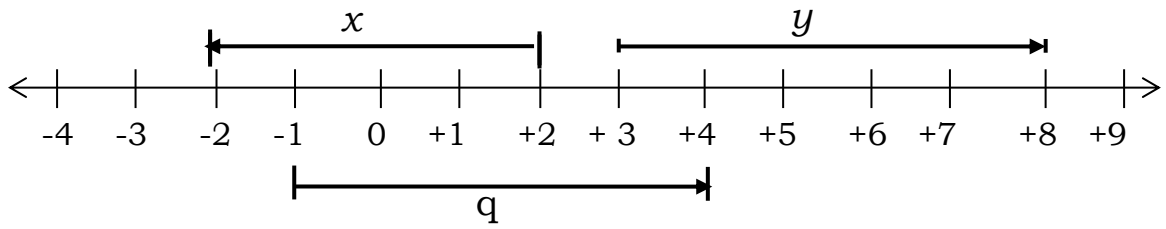
CORRECTIONS

Date : _____

LESSON 38: GIVE THE VALUES OF AN ARROW DRAWN ON A NUMBER LINE

Example: 1

Give the value of x, y, q

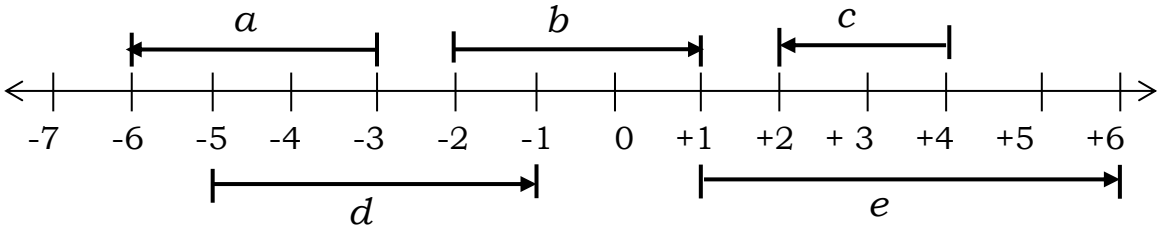


(i) x = -4

(ii) y = +5

(iii) q = +5

Example II



Give the value of:-

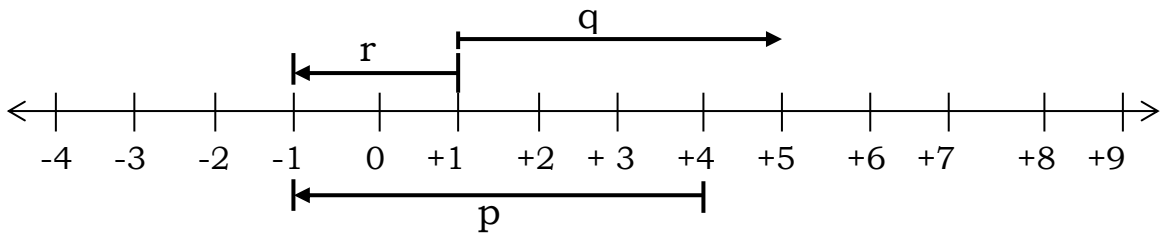
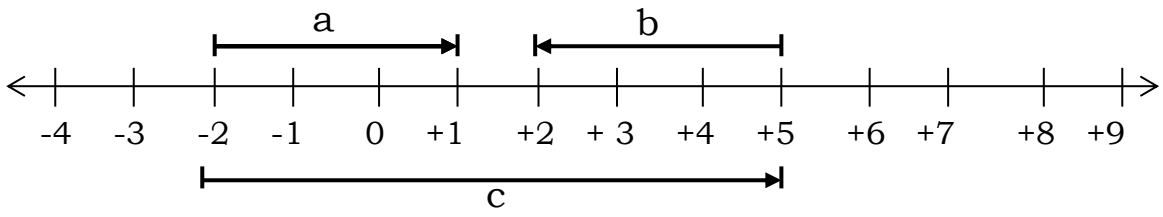
(i) a = -3

(ii) b = +3

(iii) c = -2

(iv) d = +4

(v) e = +5

	LEARNER'S ACTIVITY
	Study the drawn number line.
1.	 Give the value of (i) r = _____ (ii) q = _____ (iii) p = _____
2.	Use the number line below:-  Give the value of: (i) a = _____ (ii) b = _____ (iii) c = _____

CORRECTIONS

Date : _____

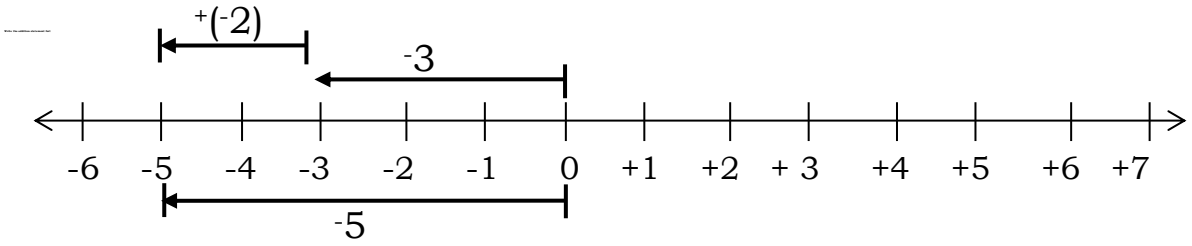
LESSON 39: WRITING AN ADDITIONAL STATEMENT

Steps taken

- Give their values
- Write the additional statements.

Example 1:

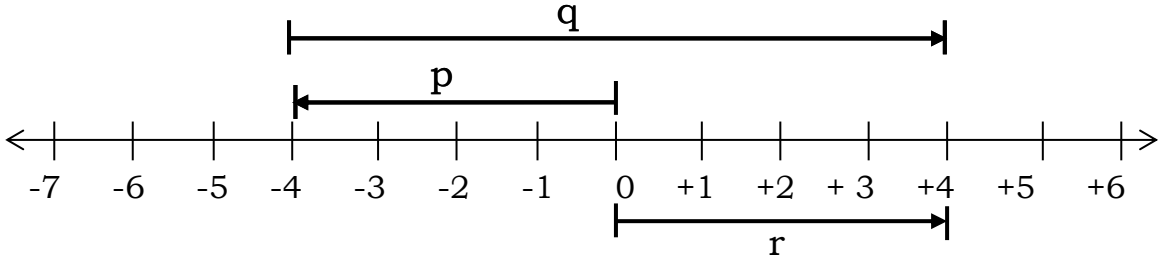
Write the addition statement for the number line below:-



$^{+}3 + 2 = 5$

Example II

Write the mathematical statement for the number line below.



p + q = r

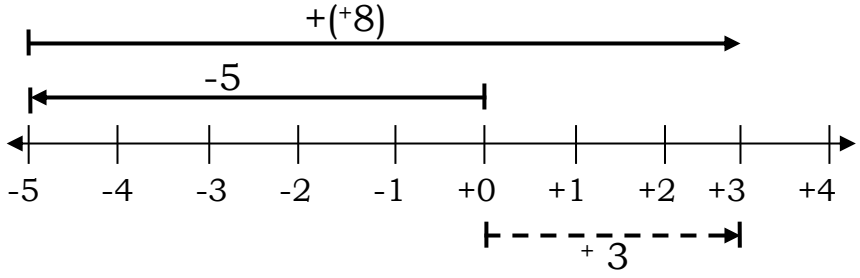
$-4 + {}^{+}8 = {}^{+}4$

$^{-}4 + {}^{+}8 = {}^{+}4$

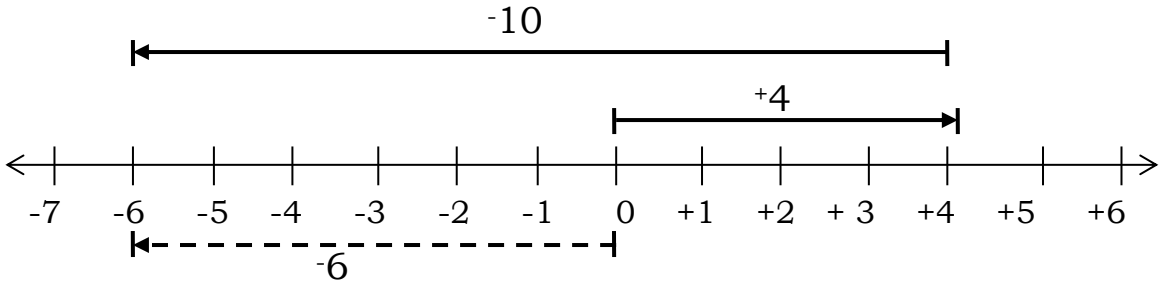
LEARNER'S ACTIVITY

(a) Write the mathematical statements for the arrows shown on the number line.

1. Write the addition statement on the number line below:-

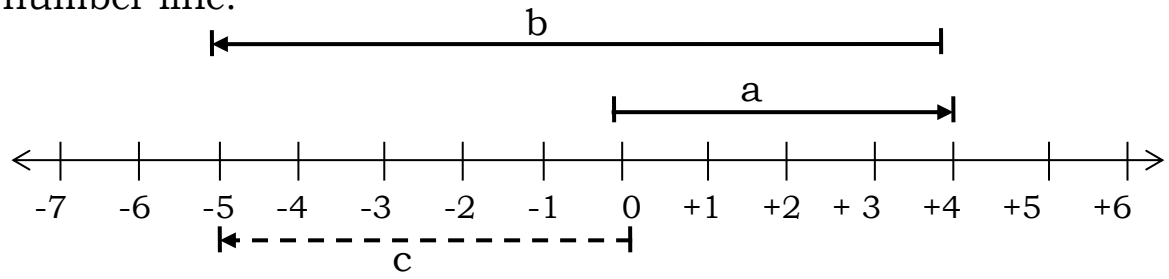


2. Write the subtraction sentence for the arrows on the numberline.

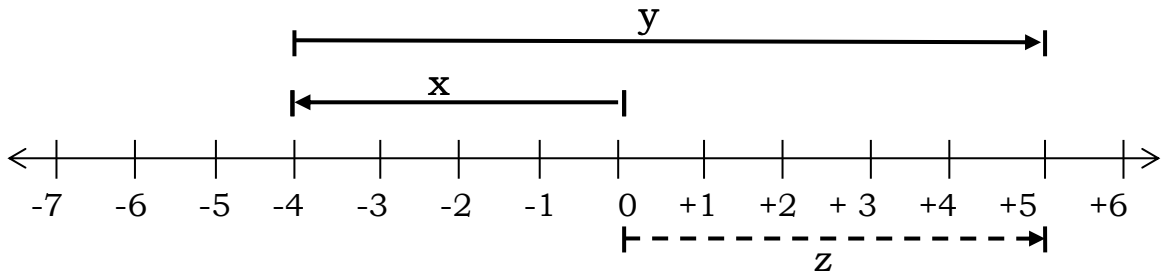


3. Write the mathematical statement for each arrow shown on the number line.

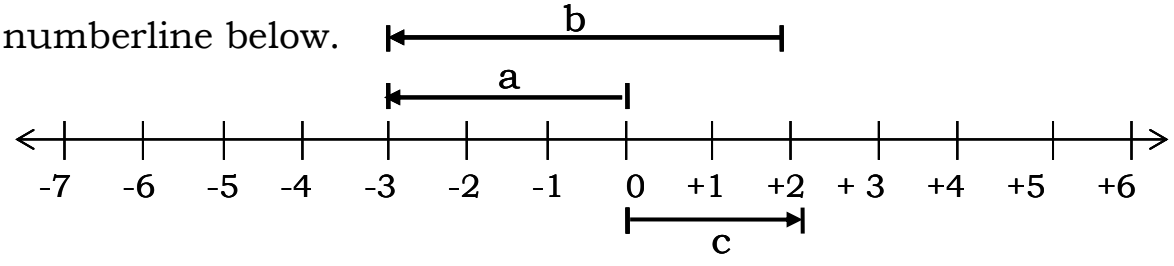
(a)



(b)



4. Write a mathematical statement for the integers on the numberline below.



CORRECTIONS

Date : _____

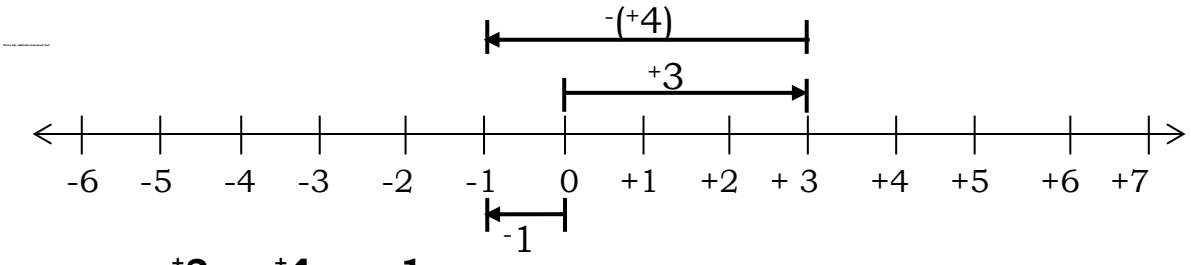
LESSON 40: WRITING A SUBTRACTION STATEMENT

Steps taken

1. Give the value for each arrow.
2. Write the subtraction statement

Example 1:

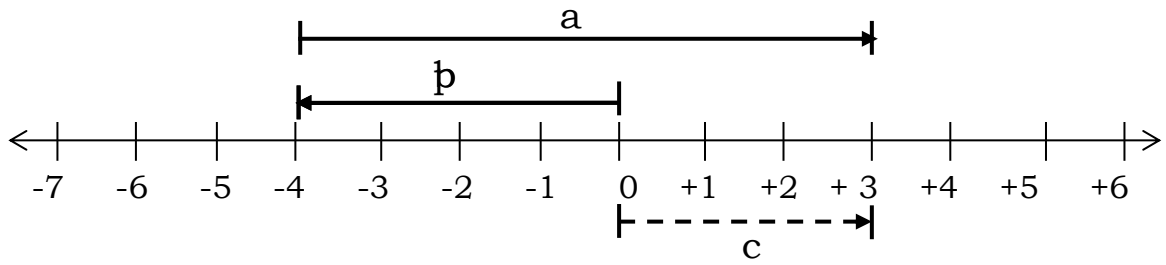
Write the subtraction statement for the number line below:-



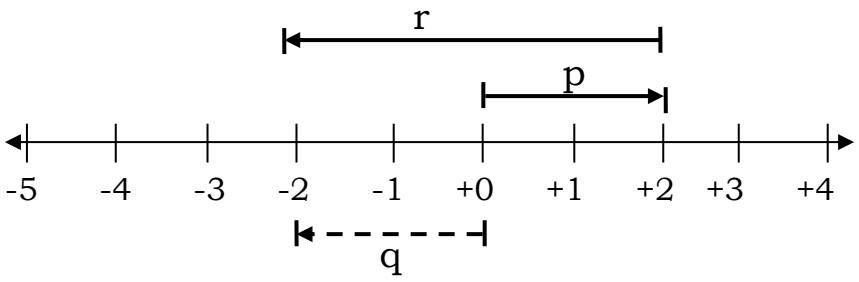
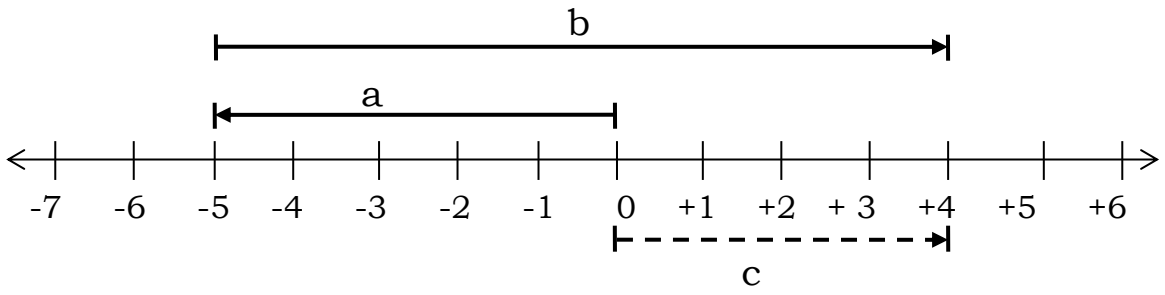
+3 - +4 = -1

Example II

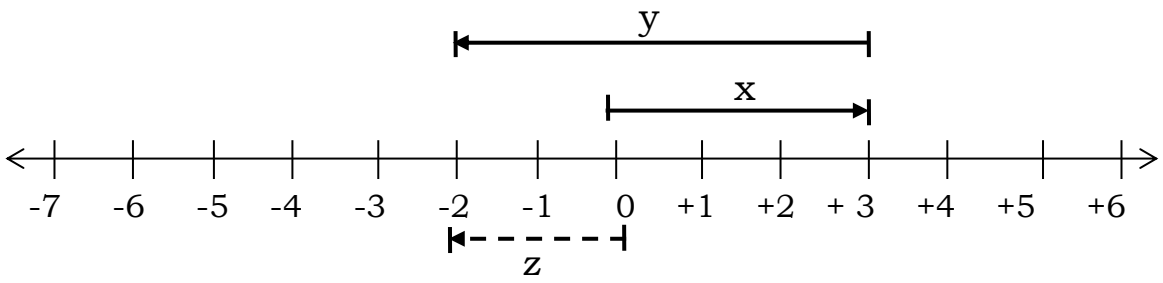
Write the subtraction statement for the number line below



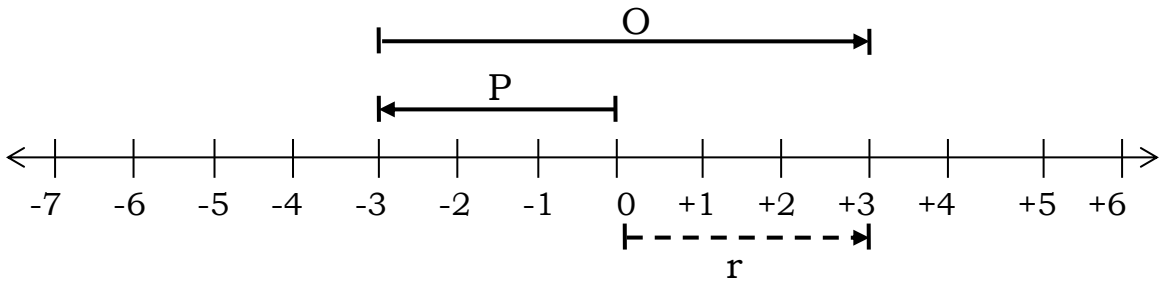
-4 - -7 = +3

	LEARNER'S ACTIVITY
1. (a)	Write the subtraction statement for the following number lines 
(b)	

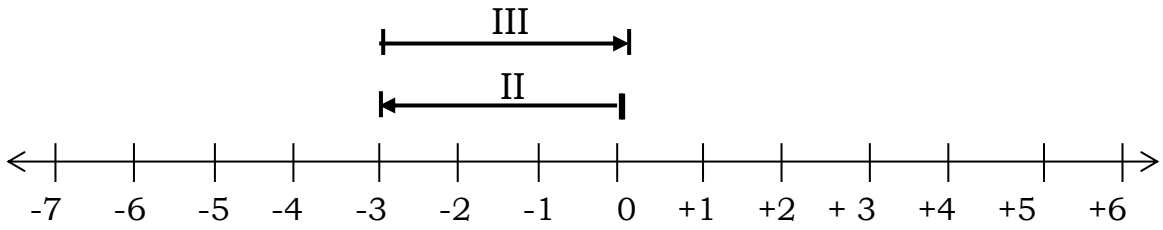
(c)


y
x
-7 -6 -5 -4 -3 -2 -1 0 +1 +2 + 3 +4 +5 +6
z

(d)


O
P
-7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6
r

(e)


III
II
-7 -6 -5 -4 -3 -2 -1 0 +1 +2 + 3 +4 +5 +6

CORRECTIONS

Date : _____

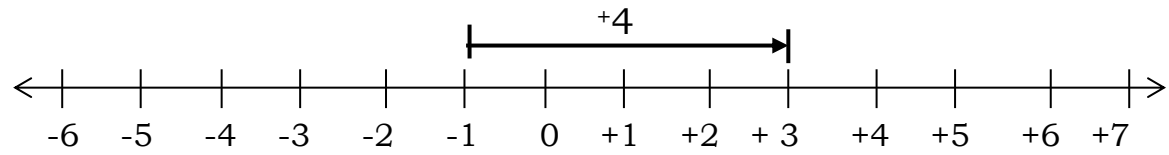
LESSON 41: SOLVING WORD PROBLEMS INVOLVING APPLICATION OF INTEGERS

Steps taken

- *Read and interpret correctly.*
- *Develop mathematical statements.*
- *Operate accurately*

Example 1:

What integer is 4 steps right of -1?

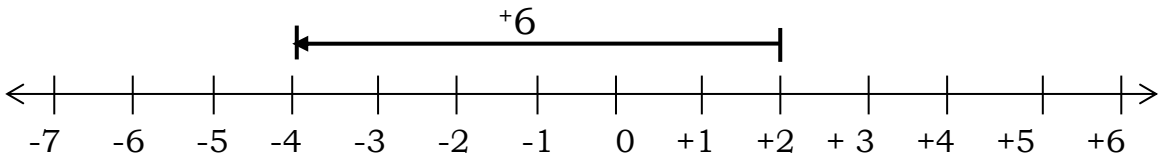


✓ From -1 move 4 steps on your right.

✓ The final step is the outcome.

-1 + 4 = +3

Example II



✓ From +2 more 6 steps on your left.

✓ The final step is the outcome.

+2 - 6 = -4

LEARNER'S ACTIVITY

1. What integer is 6 steps right of -2?

2.	What integer is 5 steps left of $^{+}5$.
3.	Raymond had 30,000shs. he received shs. 50,000, he wanted to buy a radio for shs. 100,000. How much money does he need?
4.	Jimmy played a game on a computer with his friend at Bright Stars School. He won 12 points, then lost 7 points then lost 5 points, then won 7 points, then won 2 points and finally lost 9 points. What was his final score?
5.	In another game, Jimmy recorded his scores as $+4 + 5 + {}^{-}6 + {}^{+}10 + {}^{-}9$

CORRECTIONS

Date : _____

LESSON 42: MATHEMATICAL PHRASES

In mathematics, we often use symbols to translate word phrases into mathematical expressions.

The following are some of the word phrases that we associate with each other of the four operations.

+	-	x	÷
Add Sum Plus Total More than Increased by	Subtract Difference Minus Remainder Decreased by	Multiply Product Time	Divide Share Quotient

Example: Write the mathematical expression for these phrases.

(i) 3 more than t.

Add 3 to t

$\underline{\underline{1 + 3}}$

(ii) 4 less than y

Subtract 4 from y

$\underline{\underline{y - 4}}$

(iii) Divide n by 2 and add it to results.

$\frac{n}{2} + 3$

(iv) y multiplied by 3.

y x 3 OR 3y

	LEARNER'S ACTIVITY		
(a)	The product of m and n	(b)	Subtract y from 10
(c)	5 less than k	(d)	A quarter the difference between u and y.
2.	***Write the algebraic expression for the following phrases.***		
(a)	The sum of twice n and thrice b.	(b)	Subtract q from p

5.	The quotient of x and y.	(d)	Multiply the difference between P and 2 by 3.

CORRECTIONS

Date : _____

LESSON 43: MATHEMATICAL EXPRESSION

Examples

(i) 3m means 3 x m

M multiplied by 3

(ii) $\frac{ab}{c}$ means $\frac{a \ x \ b}{c}$

Multiply a by c then divide the result by c.

Write the phrases for the following algebraic expressions:

(a)	x + y	(b)	$\frac{p}{q}$
(c)	$\frac{a \ x \ b}{r}$	(d)	$\frac{m - 3}{4}$

(e)	py		$\frac{a}{b}$

CORRECTIONS

Date : _____

LESSON 44: SUBSTITUTION

The word substitution is the same as to replace.

Example 1:

Given that p = 3, q = 5 and r = 2. Find the value of

(i) pq + 2r

p x q + 2 x r

3 x 5 + 2 x 2

15 + 4

= 19

(ii) pq + r

3 x 5 + 2

15 + 2

= 17

(iii) p + q + r

3 + 5 + 2

8 + 2

= 10

	LEARNER'S ACTIVITY		
1.	Given that a = 3, b = 7. Find the value of (i) 2a + 2b	(ii)	2b - 3a
	(ii) a + b	(iv)	ab

2.	Given that c = d = -2, e = 3. Find the value of (i) c + d	(ii)	cde

CORRECTIONS

Date : _____

LESSON 45: EQUATIONS

A mathematical sentence with an equal sign to indicate that two expressions give the same value.

Find the unknown

Note: *Addition and subtraction are related operations.*

Steps taken

- Either subtract or add on both sides where applicable.
- Operate correctly

Example I:	**Example II:**
Solve for x x + 9 = 20 x + 9 - 9 = 20 - 9 **x = 11**	*Solve for p* p + 5 = 13 p + 5 - 5 = 13 - 5 **p = 8**
Example III:	**Example III:**
Find the value of y y - 12 = 18 y - 12 - 12 = 18 + 12 **y = 30**	*Solve for r* r - 7 = 10 r - 7 - 7 = 10 + 7 **r = 17**

LEARNER'S ACTIVITY

1.	Solve for the unknowns		
(a)	a + 6 = 10	(b)	x - 4 = 9

(c)	r + 11 = 13	(d)	y - 6 = 4
(e)	6 + t = 15	(f)	m - 14 = 17
(g)	x + 9 = 12	(h)	t + 14 = 15

CORRECTIONS

Date : _____

LESSON 46: EQUATIONS INVOLVING DIVISION AND MULTIPLICATION

Steps taken

- *Multiply or divide same numbers on both sides.*
- *Operate accurately.*

Example I:

Solve for a

$2a = 10$

$\frac{2a}{2} = \frac{10}{2}$

a = 5

Example II:

Find the value of t.

$4t = 28$

$\frac{4t}{4} = \frac{28}{4}$

a = 7

Example III:

Solve for n.

$\frac{n}{2} = 7$

$2 \times \frac{n}{2} = 7 \times 2$

n = 14

Example III:

Solve for n.

$\frac{x}{7} = 5$

$\frac{x}{7} \times 7 = 5 \times 7$

x = 35

LEARNER'S ACTIVITY

1. Solve for unknowns

(a) $\frac{a}{4} = 7$

(b) $\frac{x}{3} = 8$

(c)	$2n = 18$	(d)	$9y = 27$
(e)	$12k = 48$	(f)	$9y = 4$
(g)	$\frac{a}{3} = \frac{1}{7}$	(h)	$\frac{x}{0.4} = 0.3$

CORRECTIONS

Date : _____

LESSON 47: SOLVING EQUATIONS INVOLVING MORE THAN ONE OPERATION (MIXED OPERATION)

Example I: *Solve for a*

$2a + 3 = 11$

$2a + 3 - 3 = 11 - 3$

$\frac{2a}{2} = \frac{8}{2}$

$a = 4$

Example II: *Solve for x*

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

$\frac{x}{3} + 4 - 4 = 10 - 4$

$\frac{x}{3} = 6$

$\frac{x}{3} \times 3 = 6 \times 3$

***x* = 18**

Example III: *Solve for y.*

$2y - 7 = 5$

$2y - 7 + 7 = 5 + 7$

$\frac{2y}{2} = \frac{12}{2}$

$y = 6$

Example III: *Solve for x.*

$\frac{2x}{3} - 4 = 6$

$\frac{2x}{3} - 4 + 4 = 6 + 4$

$\frac{2x}{3} = 10$

$\frac{2x}{3} \times 3 = 10 \times 3$

$\frac{2x}{2} = \frac{30}{2}$

***x* = 15**

LEARNER'S ACTIVITY			
1.	Solve for unknown		
(a)	$2a + 5 = 15$	(b)	$\frac{3t}{4} - 2 = 7$
(c)	$4x - 3 = 9$	(d)	$2p + 3 = 6$
(e)	$\frac{5a}{6} + 4 = 14$	(f)	$3p - 6 = p + 10$

(g)	$2m - 5 = 11$	(f)	$4y + 1 = 9$
(i)	$\frac{2a}{4} = 3$	(j)	$4k + 2 = 18$

CORRECTIONS

Date : _____

LESSON 48: COLLECTING LIKE TERMS AND SOLVING EQUATIONS

Example I: *Solve.*

$m + 4m = 20$

$\frac{5m}{5} = \frac{20}{5}$

$m = 4$

Example II:

Musa is as twice as Mugabi. Their total age is 18 years. How old is Mugabi?

Musa	Mugabi	Total
2x	x	18yrs

$2x + x = 18$

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$years

Example III:

Nakayenga is twice the age of Nakaye. Their total age is 24. Find their ages.

Nakaye	Nakayenga	Total
p	2p	24

$P + 2p = 24$

$\frac{3p}{3} = \frac{24}{3}$

$p = 8$

Nakaye is 8 years

Nakayenga is $2p = 2 \times 8$

$= 16$

LEARNER'S ACTIVITY			
1.	Collect like terms and solve.		
(a)	$3y + y = 12$	(b)	$y + y + 2y = 24$
(c)	$p + 5p + 2p = 40$		
2.	A mother is 4 times as old as her daughter. Their total age is 30 years. Find the daughter's age.		
3.	Opio weighs 3x (kg) and Wasswa weighs 4k (kg). if their total weight is 140 kg. Find Opio's weight.		

4.	A father is 3 times the age of his son. Their total age is 48 years. How old is the daughter?
5.	Namukasa is twice the age of her son. Their total age is 36years. How old is the son?
6.	Mubiru is twice the age of his brother. Their total age is 42 years. How old is each now?
7.	Makalu is 4 times the age of his daughter. their total age is 60 years. How old is each?

CORRECTIONS

Date : _____

LESSON 49: FORMING AND SOLVING EQUATIONS

Example I:

A boy is 5 years older than his sister. Their total age is 19 years. Find their ages.

Sister	Boy	Total
m	m+s	19

(m + m)+5 = 19

2m + 5-5 = 19 – 5

$\frac{2m}{2} = \frac{14}{2}$

M = 7

Boy = 5 + 7 **= 12 years**

Sister = **7 years**

Example II:

Namuswa has 7 more cows than Kakonge. Altogether they have 47 cows. how many cows does each one have.?

Namuswa	kakonge	Total
P	P + 7	47

(p + p)+ 7 = 47

2p + 7 - 7 = 47 – 7

$\frac{2p}{2} = \frac{40}{2}$

P = 20

Namuswa = **20 years**

Kakonge = 20 + 7

= 12 years

LEARNER'S ACTIVITY

1. Namuwonge got 6 more books than her brother Mulika. Altogether they got 24 books. How many books did Mulika got?

2	Ntungo is 4 years older than Nuwa. Their total age is 22 years. How old is Ntunga?
3.	Nalumunye got 96 more pupils than Bandwe. Their total number is 960pupils. How many pupils are in Bandwe?
4.	Ntuyo is 8 years older than the sister. Their total age is 48 years. Find their ages.

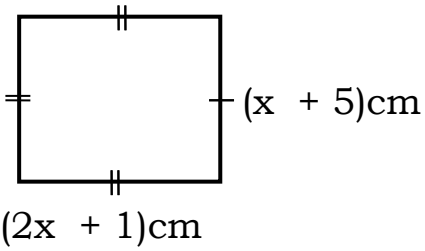
CORRECTIONS

Date : _____

LESSON 50: SOLVING EQUATIONS FORMED FROM POLYGONS

Example I:

The square has all its sides equal.



(a) Find the value of x

$2x + 1 = x + 5$

$2x - x = 5 - 1$

$x = 4$

(b) Find the actual length of its sides.

$2x + 1$

$(2 \times 4) + 1$

$8 + 1$

9cm

(c) Workout its area,

Area = L x L

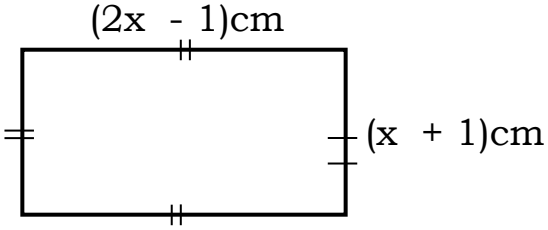
9 x 9

$81cm^2$

Example II:

Find the value of x in the figure below.

(Opposite sides of a rectangle are equal)



(a) Find the value of x.

$2x - 1 = x + 3$

$2x - x = 3 + 1$

$x = 4$

(b) Find the actual length and width of the figure.

Length	**Width**
x + 3	x + 1
4 + 3	4 + 1
7cm	**5cm**

(c) Area = L x W

7 x 5

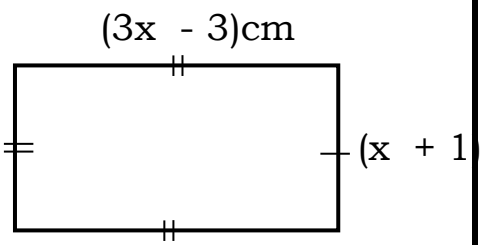
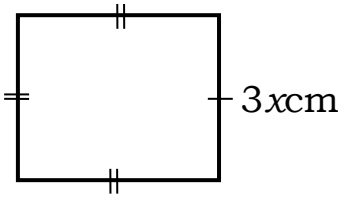
$35cm^2$

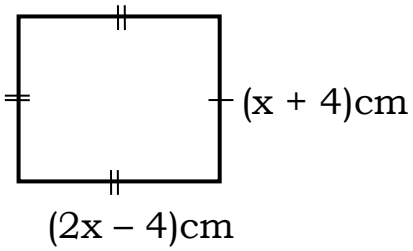
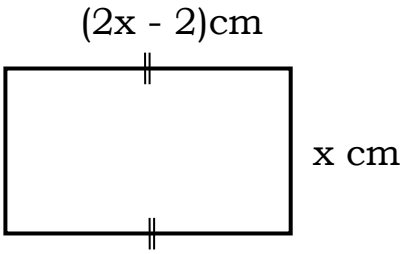
Perimeter = 2L + 2W

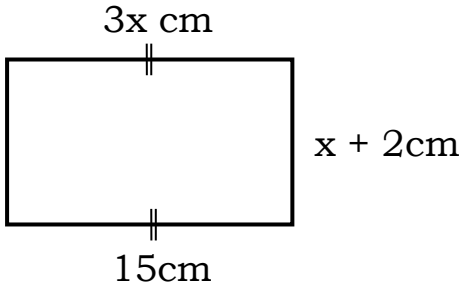
= (2x7) + (2 x 5)

= 14 + 10

= **24cm**

LEARNER'S ACTIVITY			
1.	 (a) Find the value of x	2.	 (a) Find the value of x
(b)	Find the area and perimeter	(b)	Work out the area and perimeter

3.	 (a) Find the value of x	4.	 (a(Find the value of x
(b)	Work out the area and perimeter	(b) (c)	Find the actual length and width Workout the area and perimeter

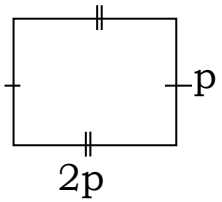
5.		b	Find the actual length and width
(a(	Find the value of x		
(c)	Work out the perimeter and area		

CORRECTIONS

Date : _____

LESSON 51: FORMING AND SOLVING MORE EQUATIONS

Example I:



P = L + W + L + W

2P + P + 2P + P = 24

$\frac{6p}{6} = \frac{24}{6}$

P = 4

Length = 2 x 4

= 8cm

Width **= 4cm**

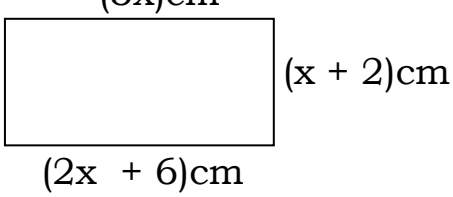
Area = L x W

= 8 x 4

= 32cm²

Example II:

Three of the sides of a rectangle in order are 3x, x + 2 and 2x + 6. Find the perimeter.



3x = 2x + 6

3x – 2x = 6

Width = x + 2

6 + 3 =

8cm

Length = 3x

3 x 6 =

18cm

(b) Work out its area

Area = L x w

= 8 x 18

= **144cm²**

(c) Find the perimeter.

2L + 2N = P

(2 x 18) + (2 x 8)

36 + 16

52cm

x = 6cm			
LEARNER'S ACTIVITY			
1.	The length of a rectangle is 2cm more than its width. Find its area if the perimeter is 20cm.	(2)	The length of a rectangle is twice its width. The perimeter of the rectangle is 300cm Find its area.

3.	The width of a rectangle is 3cm less than its length. Its perimeter is 22cm. Find its area.
4.	The sides of a square are (4x + 4)cm and (3x + 6)cm. Find the value of x and its area.

5.	Three sides of a rectangle are in order as (5x + 7), 2x and x +19)cm. (a) Find the value of x and its area. (b) Work out its perimeter.

CORRECTIONS

