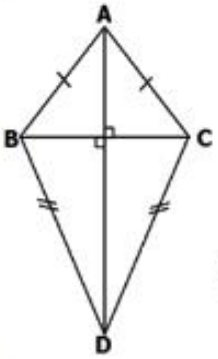
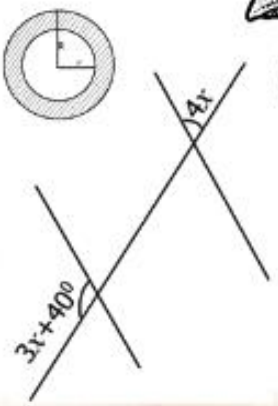
SUREKEY EXAMINATIONS BOARD

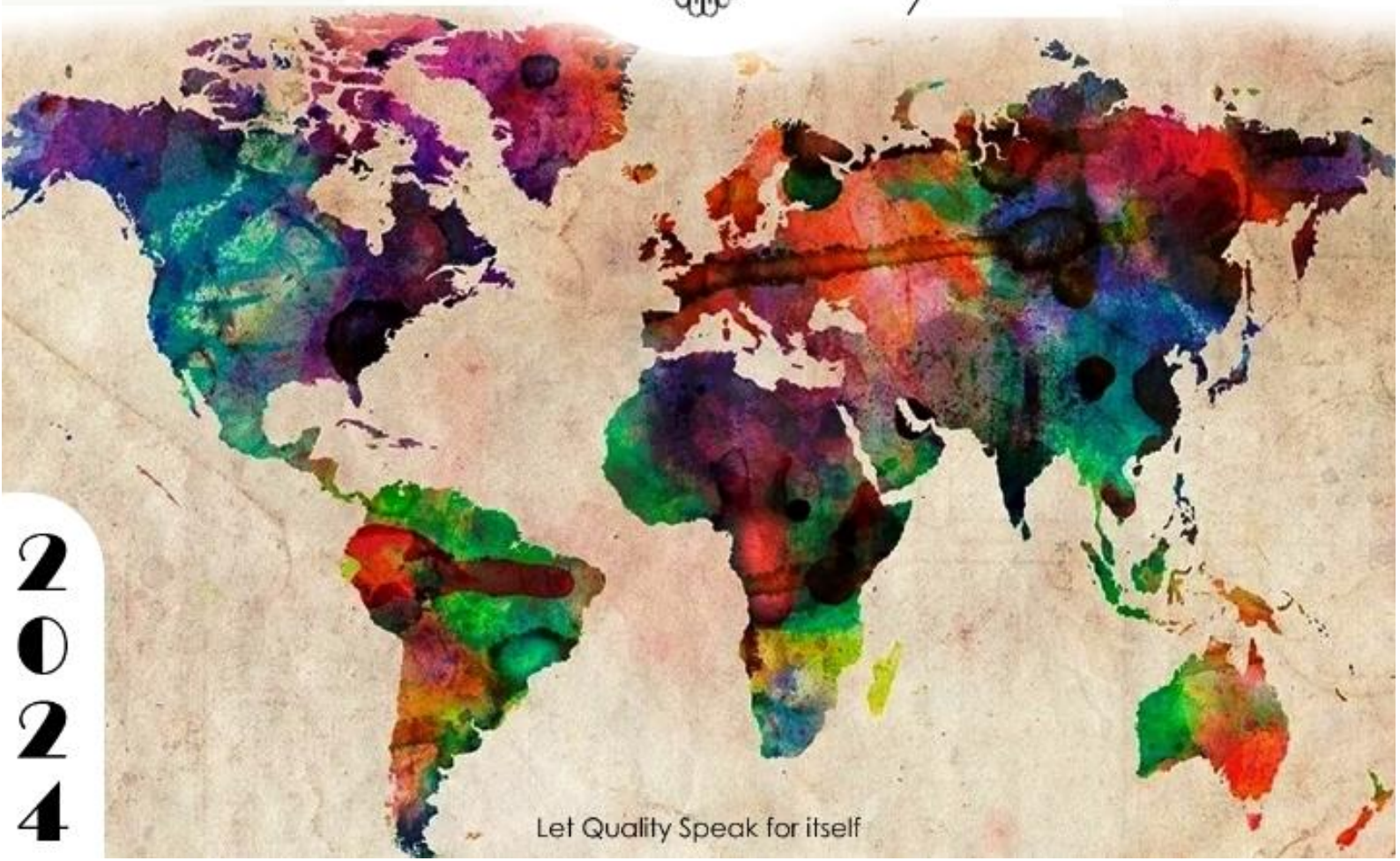
PLE MOCK

MATHEMATICS

Official Marking Guide







2024

Let Quality Speak for itself

SECTION A: 50 MARKS

Answer **all** questions in this section

Questions **1** to **20** carry **two** marks each

1. Find the product of 2 and 134.

$$\begin{array}{r} 134 \\ \times \quad 2 \\ \hline 268 \\ \hline \end{array}$$

OR

$(100 \times 2) + (30 \times 2) + (4 \times 2)$

$200 + 60 + 8$

268

---

2. Round off 4362 to the nearest hundreds.

TH	H	T	O
4	3	~~6~~ ^{0}	~~2~~ ^{0}

$$\begin{array}{r} + \quad 1 \quad 0 \quad 0 \\ \hline 4 \quad 4 \quad 0 \quad 0 \\ \hline \end{array}$$

$4362 \approx 4400$

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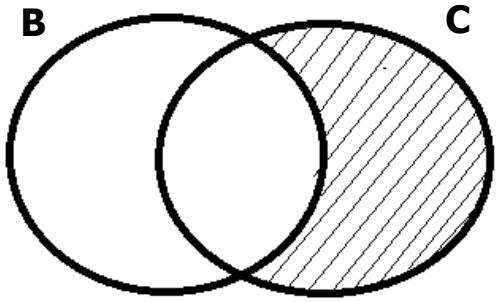
3. Write a mathematical statement representing the shaded region of the Venn diagram below.



C – B // Set C – Set B // Set C only

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4. If a =3, b=4 and c = $^{-}3$. Find the value of $ab - c^3$.

$(a \times b - (c \times c \times c)$

$(3 \times 4) - (^{-}3 \times ^{-}3 \times ^{-}3)$

$12 - (^{-}27)$

$12 + 27$

39

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5. Joan drew a circle on the ground using her foot covering a distance of 132cm. how long was her foot? (Use π as $\frac{22}{7}$)

The foot represents the radius of the circle

$2\pi r = C$

$2 \times \frac{22}{7} \times r = 132cm$

$\frac{44r}{7} \times 7 = 132cm \times 7$

$44r = 132cm \times 7$

$\frac{44r}{44} = \frac{924cm}{44}$

$r = 21cm$

The foot is 21cm long

6. Find the next number in the sequence below;

$^{-}14, \quad ^{-}11, \quad ^{-}8, \quad ^{-}5, \ldots\ldots\ldots\ldots ^{-}2$

$^{-}14 + 3 = ^{-}11$

$^{-}11 + 3 = ^{-}8$

$^{-}8 + 3 = ^{-}5$

$^{-}5 + 3 = ^{-}2$

7. How many groups of hundred represent the value of 5 in the numeral?

75834

T/TH	TH	H	T	O
7	5	8	3	4

Value of 5

5 x 1000

5000

Groups of hundreds

5000 ÷ 100

50 groups

8. An athlete was covering 5 metres every second. Calculate his speed in kilometres per hour.

$1000m = 1km$

$5m = \frac{5km}{1000}$

$1sec = \frac{1hr}{3600}$

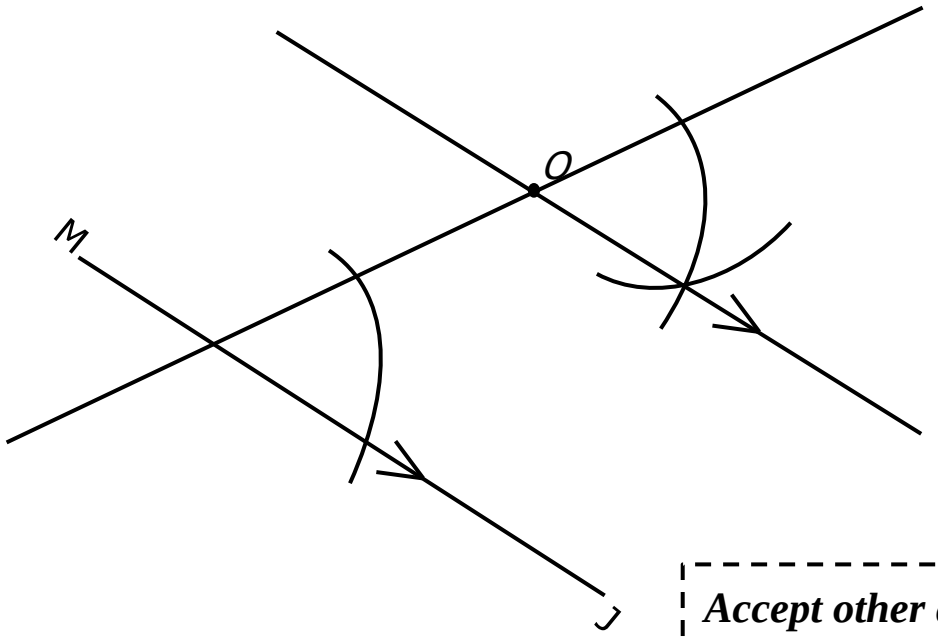
$\frac{5km}{1000} \div \frac{1hr}{3600}$

$\frac{5km}{1000} \times \frac{3600}{1hr}$

$\frac{5km \times 36}{10hr}$

$18km/hr$

9. Using a ruler, a pencil and a pair of compasses only, construct a line which is parallel to line MJ through point O.



Accept other approaches

10. Write the number whose expanded form is;

$(6 \times 10^3) + (5 \times 10^0) + (7 \times 10^2)$

(6 x 1000) + (5 x 1) + (7 x 100)
6000 + 5 + 700
6705

11. Kagiri borrowed sh.25,000 from a money lender which generated an interest of sh.6,000 after 3 years. Calculate the interest rate.

(P x R x T)	=	***S.I***
sh.25~~00~~ x $\frac{R}{1~~00~~}$ x 3	=	***sh.6000***
sh.250 x R x 3	=	***sh.6000***
$\frac{~~sh.750R~~}{~~sh.750~~}$	=	$\frac{~~sh.6000~~}{~~sh.750~~}$
R	=	***8%***

12. Use the prime factors below to find the largest factor which is common in both 12 and 18.

$12 = 2^2 \times 3$

$18 = 2 \times 3^2$

12 = 2 x 2 x 3

18 = 2 x 3 x 3

Common factors = {2, 3}

Largest common factor = 2 x 3

= 6

---

13. Arrange the diagrams below in decreasing order.

1/2

4/5

2/3

LCD = 30

$\frac{1}{2} \times \frac{30^{15}}{} = 15$ ‖ $\frac{4}{5} \times \frac{30^{6}}{} = 24$ ‖ $\frac{2}{3} \times \frac{30^{10}}{} = 20$

In decreasing order

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14. A teacher gave out two money offers to the best performing child in a Mock paper.

- First offer = sh.4,500
- Second offer = sh.100 doubled everyday for 24 days

Which of the two is the highest offer?

First offer = sh.4500

Amount for second offer.

1 day ⟶ sh.100 x 2

1 day ⟶ sh.200

24days ⟶ sh.200 x 24

24days ⟶ sh.4,800

The second offer is the highest.

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15. Change 4367 into scientific notation.

$4367 \div 10$
$436.7 \div 10$
$43.67 \div 10$

4.367×10^3

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16. Express 0.4545…… as a rational number in the lowest form.

Let the rational number be y

$y = 0.4545... \quad (i)$
$100 \times y = 0.4545... \times 100$
$100y = 45.45... \quad (ii)$
$(ii) - (i)$
$100y = 45.45...$
$-y = 0.45...$
$99y = 45$

$\frac{99y}{99} = \frac{45}{99}$
$y = \frac{5}{11}$

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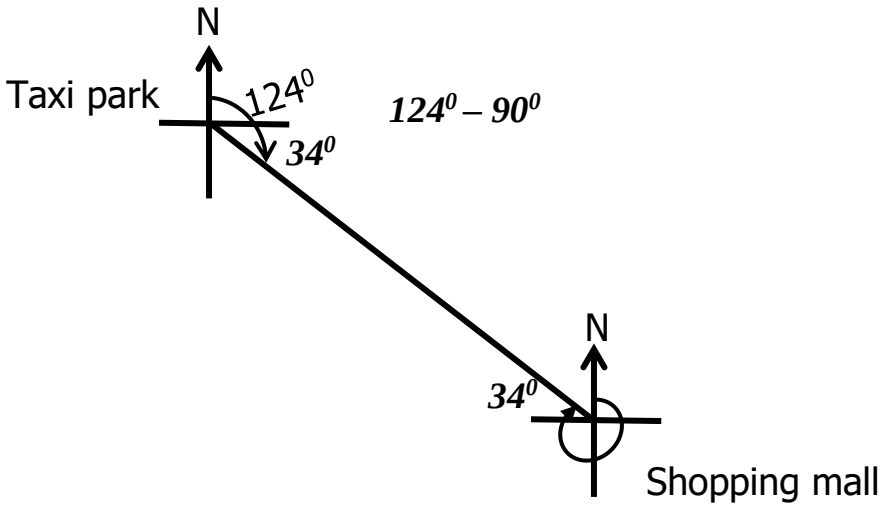
17. The bearing of the shopping mall from the taxi park is 124^0. Use the diagram below to find the bearing of the taxi park from the shopping mall.



Bearing of Taxi park from Shopping mall

$270^0 + 034^0 = 304^0$

OR

$180^0 + 124^0 = 304^0$

OR

$90^0 + 90^0 + 90^0 + 034^0 = 304^0$

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18. Solve for t: $3^{t-1} = 81$.

First Prime factorize 81

3	*81*
3	*27*
3	*9*
3	*3*
	1

$3^{t-1} = 3^4$

$t - 1 = 4$

$t - 1 + 1 = 4 + 1$

$t = 5$

19. A forty-minute lesson started at 4:06p.m. write the time the lesson ended in the 24-hour clock system.

E.T = S.T – D

ET = 4 : 06

+ 0 : 40

4 : 46

In 24 hour clock system

4:46 + 12:00

16 46HRs

20. A tourist van carries 42 tourists in 3 trips to Murchison falls National park. How many tourists does the van carry in 5 trips?

3 trips ⟶ 42 tourists

1 trip ⟶ 42 ÷ 3

1 trip ⟶ 14 tourists

5 trips ⟶ 14 x 5

5 trips ⟶ 70 tourists

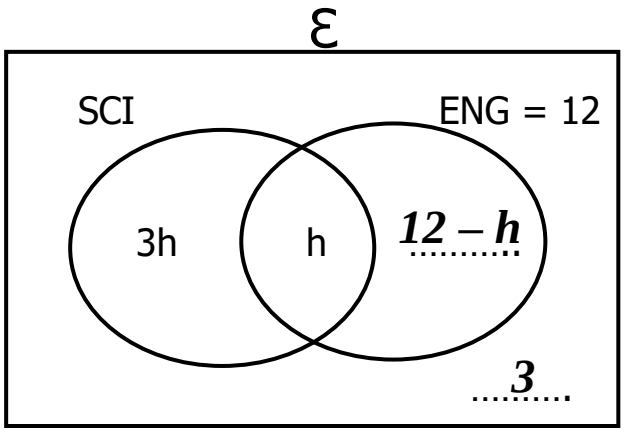
SECTION B: 60 MARKS

Answer **all** the questions in this section

Marks for each question are indicated in brackets

21. The Venn diagram below shows the number of pupils in a class and the subjects they like most. 3 of the pupils in the class do not like the two subjects.

(a) Complete the Venn diagram correctly. (02 Marks)



(b) If 10 pupils in the class do not like Science, find the value of h. (02 Marks)

$$12 - h + 3 = 10$$
$$15 - 15 - h = 10 - 15$$
$$-h = -5$$
$$-1 = -1$$
$$h = 5$$

(c) How many pupils are in the class? (02 Marks)

Number of pupils

$3h + h + 12 - h + 3$
$4h - h + 12 + 3$
$3h + 15$
$(3 \times 5) + 15$
$15 + 15$
$30 pupils$

OR

$3h + h + 10$
$4h + 10$
$(4 \times 5) + 10$
$20 + 10$
$30 pupils$

22. The average of 2y+5, 4+y, 3y+1 and 12 is 19.

(a) Find the value of y. (03 Marks)

$$\begin{aligned} S.O.D &= Av \times N.O.D \\ 2y + 5 + 4 + y + 3y + 1 + 12 &= 19 \times 4 \\ 2y + y + 3y + 5 + 4 + 1 + 12 &= 76 \\ 6y + 22 &= 76 \\ 6y + 22 - 22 &= 76 - 22 \\ \frac{6y}{6} &= \frac{54}{6} \\ y &= 9 \end{aligned}$$

(b) Find their median. (02 Marks)

$2y + 5$ $(2 \times 9)+5$ $18 + 5$ 23 $4 + y$ $4 + 9$ 13	$3y + 1$ $(3 \times 9)+1$ $27 + 1$ 28	**Median** 12, 14, 23, 28 $(14 + 23) \div 2$ $37 \div 2$ $18\frac{1}{2}$ 0r 18.5

23. Hanifah and Aloyo shared 21 sweets given to them by their uncle. If Hanifah got $\frac{3}{4}$ of what Aloyo got, calculate Hanifah's share.

(04 Marks)

Let Aloyo's share be y

$$\text{Hanifah's share} = \frac{3}{4} \times y$$

$$y + \frac{3y}{4} = 21$$

$$(4 \times y) + \frac{3y}{4} \times 4 = 21 \times 4$$

$$\begin{aligned} 4y + 3y &= 84 \\ \frac{7y}{7} &= \frac{84}{7} \\ y &= 12 \end{aligned}$$

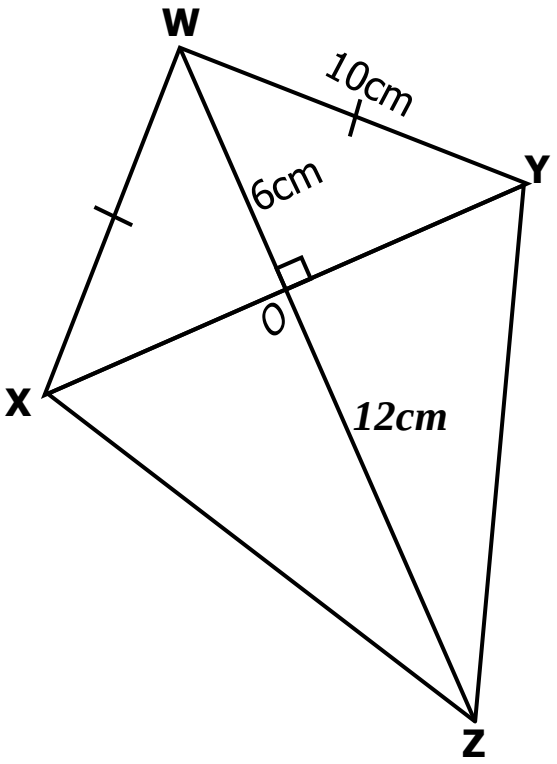
Hanifah's share

$$\frac{3}{4} \times \frac{12}{}$$

3×3

9sweets

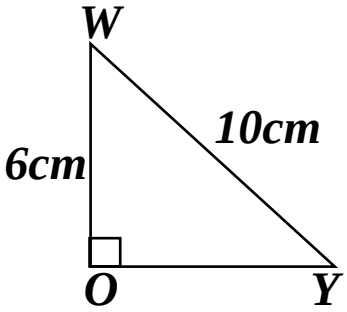
24. In the diagram below, **WX** = **WY**, diagonal **WZ** is perpendicular to diagonal **XY** and **WZ** is three times **WO**. Study and use it to answer the questions that follow.



$WZ = 3 \text{ x } 6xm$
$= 18cm$

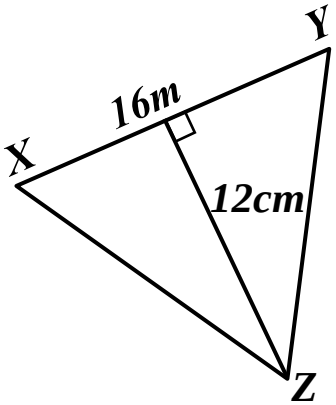
$OZ = WZ - OW$
$= 18cm - 6cm$
$OZ = 12cm$

(a) Find the length of **XY**. (03 Marks)



$b^2 = c^2 - a^2$
$b^2 = 10^2 - 6^2$
$b^2 = 100 - 36$
$\sqrt{b^2} = \sqrt{64}$
$b = 8cm$
$XY = 8cm \text{ x } 2$
$XY = 16cm$

(b) Calculate the area of the triangle **XYZ**. (02 Marks)



$Area = \frac{b \text{ x } h}{2}$
$= \frac{16cm \text{ x } 12cm}{2}$
$Area = 96cm^2$

25. Othieno used part of his pocket money to buy the items below and remained with sh.15,500.

- One and a half dozen of crayons at sh.8,000 per dozen.
- Twenty-five sweets at sh.500 for every five sweets.
- Two small balls for sh.10,000.

If he used half of the total cost for crayons for transport, how much was his pocket money altogether? (05 Marks)

Crayons

$1\frac{1}{2}$ x *sh.8000*

$\frac{3}{2}$ x *sh.~~8000~~*

3 x *sh.4000*

sh.12000

Sweets

$\frac{25}{5}$ x *sh.~~500~~*

25 x *sh.100*

sh.2500

Transport

$\frac{1}{2}$ x *sh.~~12000~~*

1 x *sh.6000*

sh.6000

balls

sh.10,000

Total cost

sh. 10,000
sh.12,000
sh. 6,000
+ *sh. 2,500*
sh.30,500

Pocket Money

sh. 30,500
+ *sh.15,500*
sh.46,000

26. (a) Workout:

$$\begin{array}{r} {\scriptstyle 1\ \ 1} \\ 1\ 2\ 1\ 1_{three} \\ +\ 2\ 2\ 1_{three} \\ \hline 2\ 2\ 0\ 2\ three \end{array}$$

1 + 1 = 2
1 + 2 = 3
3 ÷ 3 = 1 rem 0
1 + 2 + 2 = 5
5 ÷ 3 = 1 rem 2
1 + 1 = 2

(02 Marks)

(b) A teacher had counters in a Mathematics lesson. She grouped them in groups of four and 3 counters remained. When she grouped them in sevens, 5 counters remained. How many counters did the teacher have in the lesson? (03 Marks)

Applying finite systems;

3(finite4) = 3, 7, 11, 15, (19,) 23, 27 ...

5(finite7) = 5, 12, (19,) 26, 33 ...

The teacher had 19 counters

27. The exterior angle of a regular polygon is 72^0.

(a) Name the polygon. (02 Marks)

$$\underline{\textbf{Number of sides}} = \frac{\textbf{Ext < sum}}{\textbf{Ext <}}$$

$$= \frac{360^0}{72^0}$$

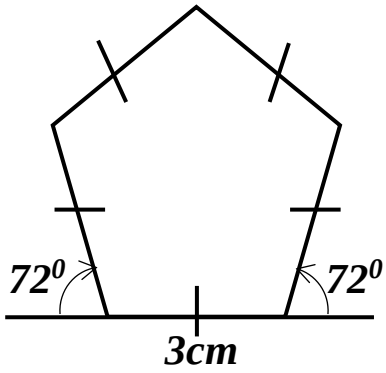
$$= 5 \text{sides}$$

A 5 sided polygon is a pentagon

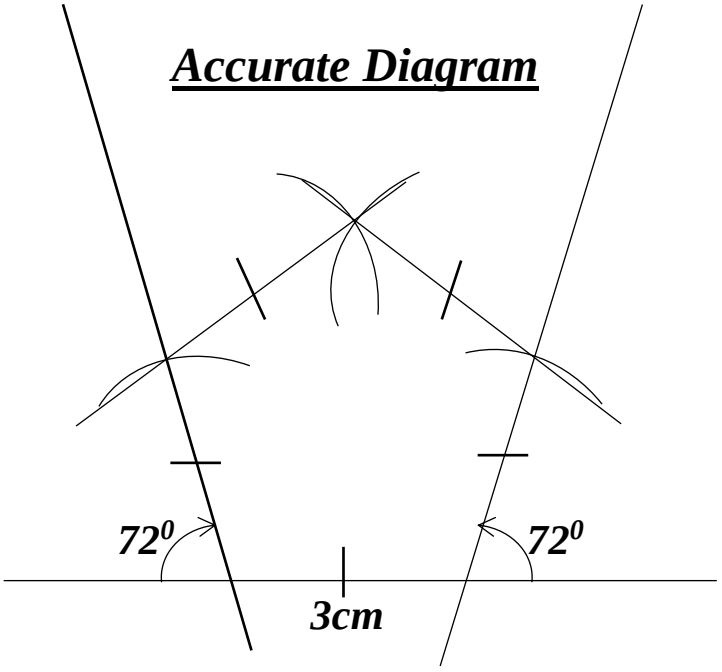
(b) Using a ruler, a protractor and a pair of compasses, construct the above polygon with side length 3cm.

(04 Marks)

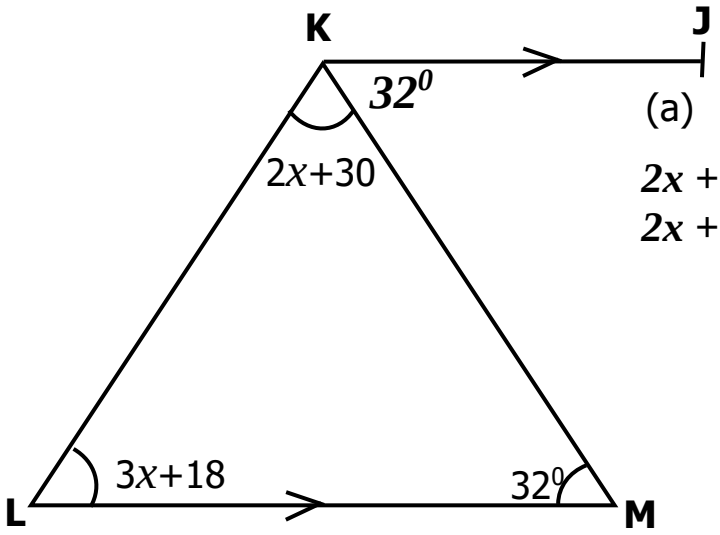
Sketch



Accurate Diagram



28. In the diagram below, Line **JK** is parallel to **LM**. **KLM** is a triangle. Use the diagram carefully and then answer the questions that follow.



(a) Calculate the value of x. (03 Marks)

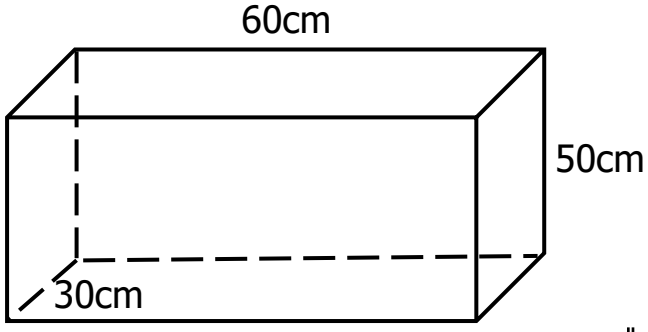
$2x + 30^0 + 3x + 18^0 + 32^0 = 180^0$
$2x + 3x + 30^0 + 18^0 + 32^0 = 180^0$
$5x + 80^0 = 180^0$
$5x + 80^0 - 80^0 = 180^0 - 80^0$
$\frac{5x}{5} = \frac{100^0}{5}$
$x = 20^0$

(a) Workout the size of angle **JKL**. (02 Marks)

$JKL = (2x + 30^0) + 32^0$
$= (2 \times 20^0) + 30^0 + 32^0$
$= 40^0 + 30^0 + 32^0$

$JKL = 102^0$

29. The diagram below shows a drinking water trough used by Mr. Teffe to give his animals water. Study the diagram and use it to answer the questions that follow.



If Mr. Teffe filled the trough with water using a 5 litre jerrycan. How many jerrycans did he use to fill two thirds of the trough? (05 Marks)

Volume of trough

Volume = l x w x h
= 60cm x 30cm x 50cm
= 90,000cm^3

Two thirds of Volume of trough

$\frac{2}{3} \times 90000cm^3$
60000cm^3

Capacity = V ÷ 1000cm3

Capacity = $\frac{60000cm^3}{1000cm^3}$
= 60litres

Number of Jerrycans used

60 ÷ 5
12Jerrycans

30. A boutique woman sold a belt at sh.4,200 and made a 5% profit. At how much money would the woman have sold the belt if she had realized a 20% loss? (04 Marks)

SP = B.P + P

Selling Percentage

100% + 5%

105%

B.P percentage = 100%

105% ⟶ sh.4200

1% ⟶ sh.4200 ÷105

1% ⟶ sh.40

100% ⟶ sh.40 x 100

100% ⟶ sh. 4000

Buying price = sh.4000

Selling price making a loss

Selling percentage = 100% - 20%

= 80%

$$\textit{Selling price} = \frac{80}{100} \times \textit{sh.4000}$$

= 80 x sh.40

= sh.3200

Accept other approaches

31. A class contains boys and girls in the ratio of 7:4 respectively. If there are 15 more boys than girls.

(a) How many girls are in the class? (02 Marks)

Total ratio = 7 + 4

= 11

More parts = 7 – 4

= 3

3parts ⟶ 15boys

1part ⟶ 15 ÷ 3

1part ⟶ 5pupils

Number of girls

1part ⟶ 5pupils

4parts ⟶ 5 x 4

4parts ⟶ 20girls

(b) If $\frac{3}{5}$ of the girls and 40% of the boys are day scholars. How many boarding pupils are in the class? (03 Marks)

Number of boys in class

1part ⟶ 5pupils

7parts ⟶ 5 x 7

7parts ⟶ 35boys

Pupils in boarding

Girls

5 – 3 = 2 parts

$$\frac{2}{5} \times 20$$

8 girls

Boys

100% – 40%

60%

$$\frac{60}{100} \times 35$$

21boys

Total number of pupils in boarding

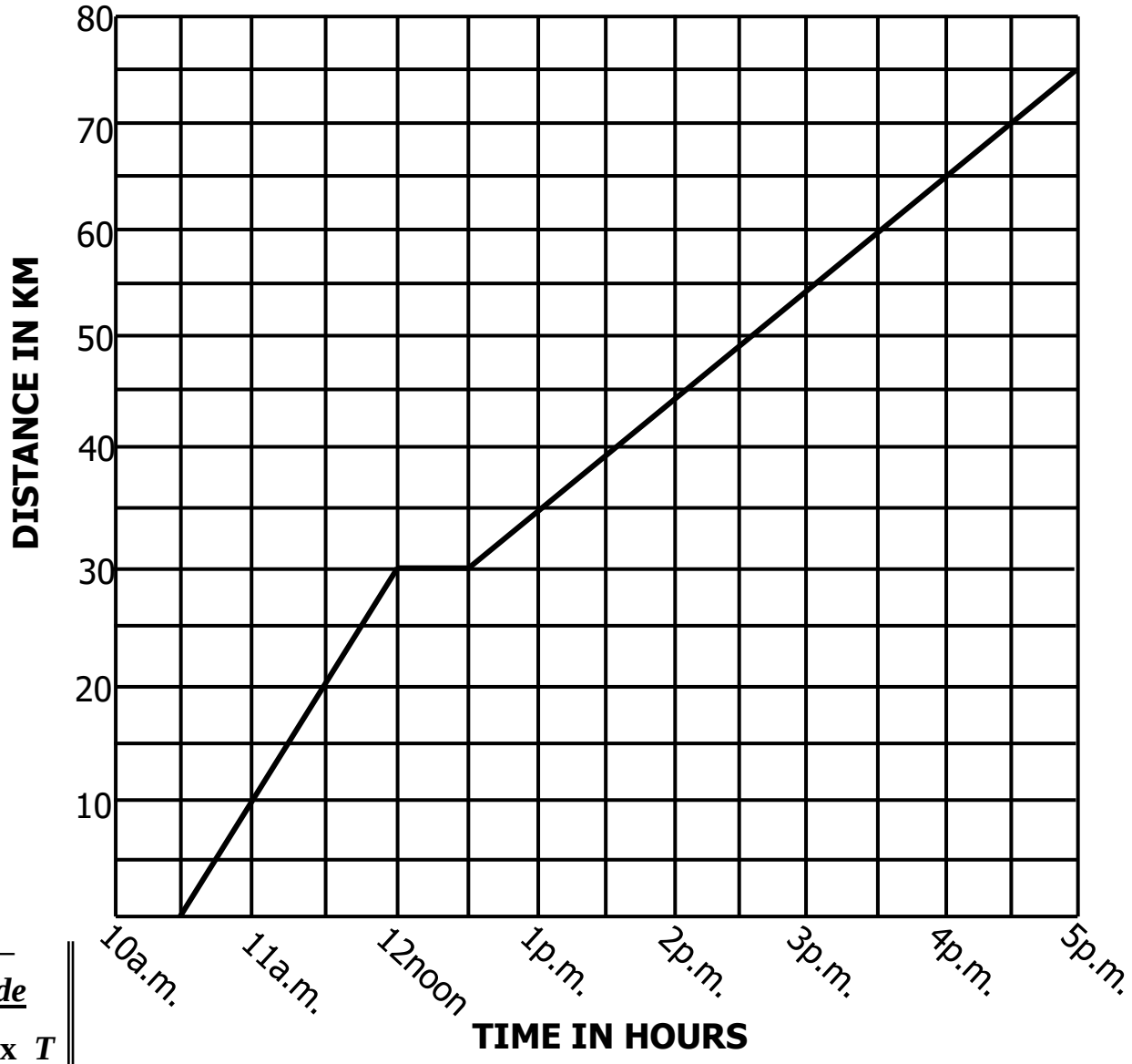
21 + 8

29pupils

Accept other approaches

32. A motorcyclist left Masaka at 10:30a.m. for Lyantonde moving at a speed of 20km/h for $1\frac{1}{2}$ hours. He spent 30 minutes at Lyantonde while having lunch meals. The motorcyclist resumed the journey to Mbarara at a speed of 10km/h in $4\frac{1}{2}$ hours.

(a) Draw on the graph below, the journey of the taxi. (03 Marks)



Masaka – Lyantonde

$D = S \times T$

$= 20 \times \frac{3}{2}$

$= 30km$

Lyantonde – Mbarara

$D = S \times T$

$= 10 \times \frac{9}{2}$

$= 45km$

(b) Calculate the motorcyclist's average speed for the whole journey. (02 Marks)

$$Average\ Speed = \frac{TDC}{TTT}$$

$$\frac{75km}{6\frac{1}{2}hr}$$

$$75km \div \frac{13hr}{2}$$

$$75km \times \frac{2}{13hr}$$

$$\frac{150km}{13hr}$$

$$11\frac{7}{13}\ km/hr$$

MATHEMATICS

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