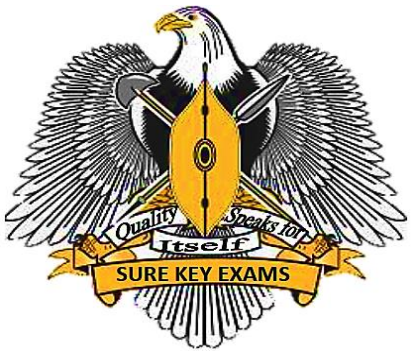
SUREKEY

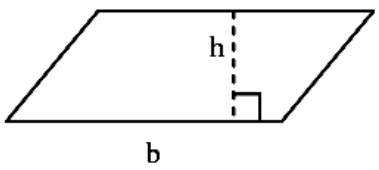
PRIMARY SEVEN PRE-MOCK EXAMINATION

MATHEMATICS

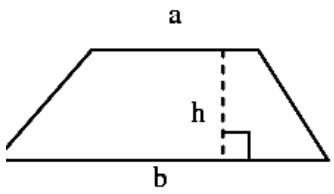
2025



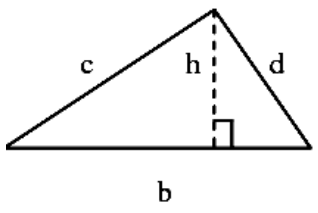
P = 2l + 2w
A = lw



A = bh

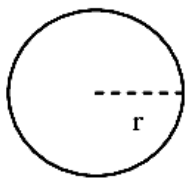


$A = \frac{1}{2}h(a + b)$

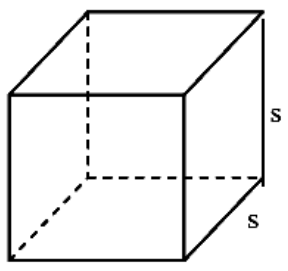


P = b + c + d

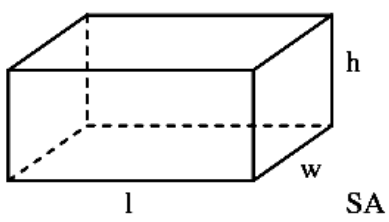
$A = \frac{1}{2}bh$



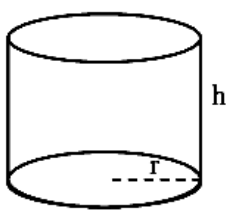
$C = 2\pi r$
$A = \pi r^2$



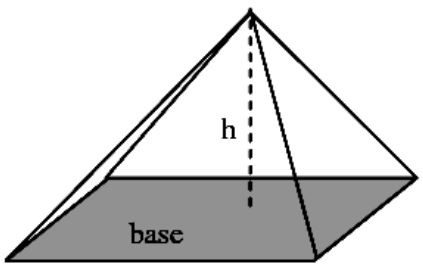
$SA = 6s^2$
$V = s \cdot s \cdot s$



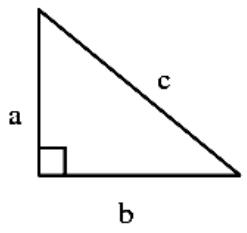
SA = 2lw + 2lh + 2wh
V = lwh



$V = \pi r^2 h$



$V = \frac{1}{3}$ (area of base) × h



Pythagorean Theorem:

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

Distance: d = rt

Simple Interest: I = prt

Degrees in a polygon:

Sum of angle measures = 180(n − 2)
where n = number of sides

Temperature Conversions:

$°C = \frac{5}{9}(°F - 32)$ $°F = \frac{9}{5}°C + 32$

Customary Conversions:

1 mile (mi) = 5,280 feet (ft)
1 yard (yd) = 3 feet (ft)
1 feet (ft) = 12 inches (in)

1 ton (T) = 2,000 pounds (lb)
1 pound (lb) = 16 ounces (oz)

1 gallon (gal) = 4 quarts (qt)
1 quart (qt) = 2 pints (pt)
1 pint (pt) = 2 cups (c)
1 cup (c) = 8 fluid ounces (fl oz)

1 year (yr) = 365 days (d)
1 day (d) = 24 hours (hr)
1 hour (hr) = 60 minutes (min)
1 minute (min) = 60 seconds (sec)

Metric Conversions:

Km Hm Dm m dm cm mm

MARKING GUIDE

0700758668

SECTION A: 40 MARKS

Answer **all** questions in this Section

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

1. Workout: $\frac{7}{9} - \frac{2}{9}$

$$\frac{7-2}{9}$$

$$\frac{5}{9}$$

2. Write "Eight thousand, four hundred ninety-four" in number figures.

$$\begin{array}{r} 8000 \\ +\ 494 \\ \hline 8494 \end{array}$$

3. Find the Lowest Common Multiple (L.C.M) of 45 and 30.

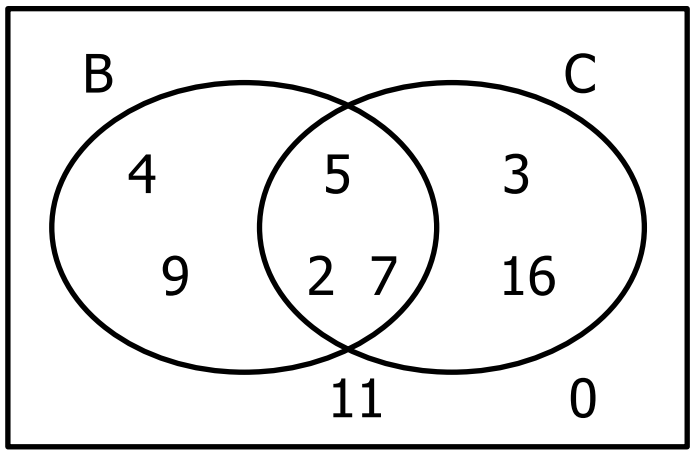
2	45	30
3	45	15
3	15	5
5	5	5
	1	1

$LCM = 2 \times 3 \times 3 \times 5$

$= 6 \times 15$

$= 90$

4. From the Venn diagram below, write down all the subsets that can be formed from Set $(B \cup C)'$



$(B \cup C)' = \{11, 0\}$

Subsets got

$\{\}, \{11\}, \{0\}, \{11, 0\}$

5. Find the square root of 0.16.

$$\sqrt{0.16} = \frac{\sqrt{16}}{\sqrt{100}}$$

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

$$= \frac{4}{10}$$

$$= 0.4$$

2	16
2	8
2	4
2	2
	1

2	100
2	50
5	25
5	5
	1

6. Planes land at Entebbe airport every after 25 hours. If they first landed at the same time at 8:00a.m. At what time will their next landing be?

8:00 a.m. – 8:00a.m. (24 hours)
(25 – 24)hrs. = 1 hour
8:00a.m. + 1 hour
9:00a.m.
Their next landing will be at 9:00a.m.

7. Simplify: (4p – 3k) – (p – 3k).

4p – 3k – p + 3k
4p – p – 3k + 3k
3p

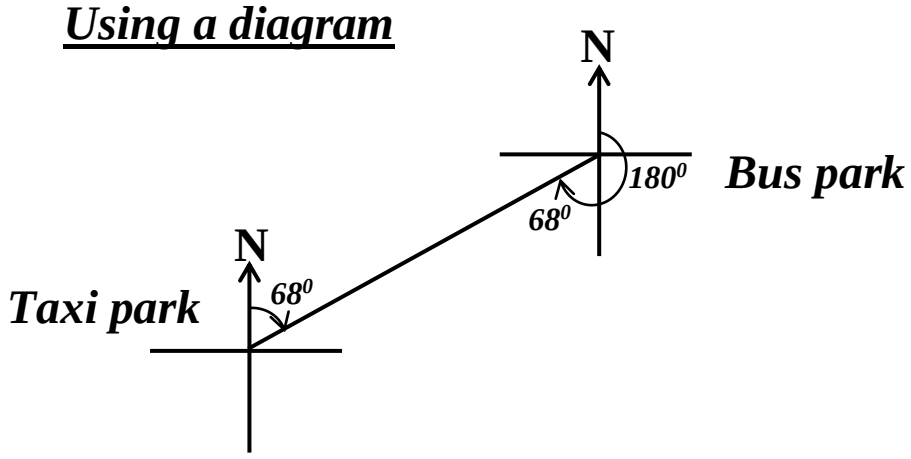
8. In a bookshop, 4 textbooks cost Sh.36,000. Find the cost of 6 similar books.

4 textbooks cost sh 36,000
1 textbook costs $\frac{\text{sh } 36{,}000}{4}$
6 textbooks cost $\frac{\text{sh } \cancel{36{,}000}}{\cancel{4}}$ x 6

6 textbooks cost sh 9,000 x 6
6 textbooks cost sh 54,000

9. The bearing of the Taxi Park from the Bus Park is 248^0. What is the bearing of the Bus Park from the Taxi Park?

Using a diagram

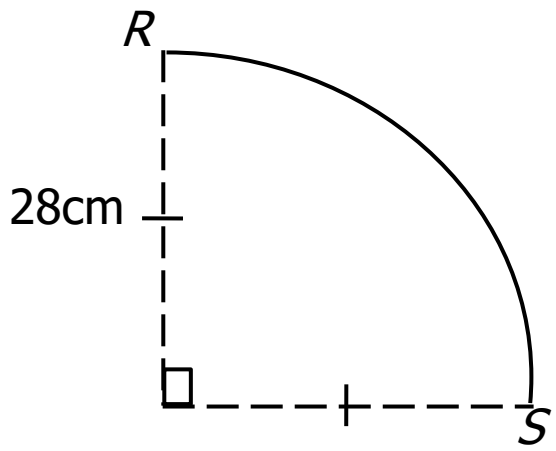


Calculation Method

$$\begin{array}{r} {}^{1}\cancel{2}{}^{14}\cancel{48}^{0} \\ -\ 180^{0} \\ \hline 068^{0} \end{array}$$

The bearing of the Bus park from the Taxi park is 068^0

10. A wire of unknown length was folded to form the arc RS below. Find the length of the wire. (Use $\pi = \frac{22}{7}$)



Length of wire $= \frac{1}{4} 2\pi r$

$= \frac{1}{4} \times 2 \times \frac{22}{7} \times \cancel{28}^{\cancel{7}}\ cm$

$= 1 \times 2 \times 22 \times 1\ cm$

$= 44\ cm$

11. Write 645 in scientific notation form.

$645 \div 10 = 64.5$
$64.5 \div 10 = 6.45$
$645 = 6.45 \times 10^2$

12. Workout (26 x 12) – (6 x 12).

$(26 - 6) \times 12$
20×12
240

13. A cyclist was riding at a speed of 5 metres every second. At what speed was he riding in kilometres per hour?

Metres to kilometres

$1000\ m = 1km$
$5m = \frac{5km}{1000}$

Seconds to hours

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

$Speed = D \div T$
$= \frac{5km}{1000} \div \frac{1h}{3600}$
$= \frac{5km}{1000} \times \frac{3600}{1}$
$= 18km/h$

14. Simplify: $m^5 \div m^2 \times m^4$

$m^{(5-2)} \times m^4$
$m^3 \times m^4$
$m^{(3+4)}$
m^7

OR

$\frac{m \times m \times m \times \cancel{m} \times \cancel{m}}{\cancel{m} \times \cancel{m}} \times m^4$
$m \times m \times m \times m \times m \times m \times m$
m^7

15. Okello uses $\frac{1}{3}$ of his land for gardening and 60 hectares for animal grazing. Calculate the total area of Okello's land.

Fraction for animal grazing

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

Total area of land

$60 \div \frac{2}{3}$
$\cancel{60} \times \frac{3}{\cancel{2}}$
30×3
$90\ hectares$

16. Given the equation: $x = y^2$. Use it to complete the table below correctly.

x	9	25
y	3	5

$x = y^2$
$x = 5^2$
$x = 5 \times 5$
$x = 25$

$\sqrt{9} = \sqrt{y^2}$
$3 = y$
$y = 3$

3	9
3	3
	1

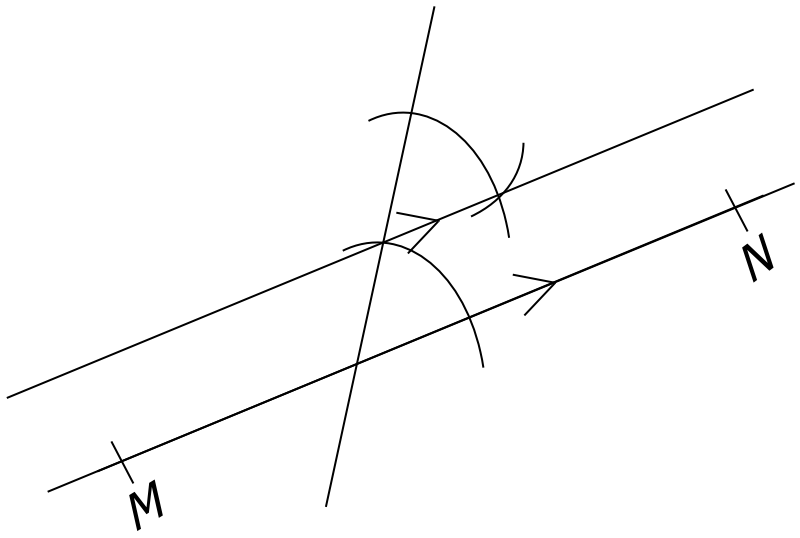
17. The amount of maize flour in kilograms prepared for students in a certain school decreased in the ratio 4:7. If the initial quantity was 420kg. find the new quantity.

7 parts rep 420kg
1 part rep $\frac{420kg}{7}$
4 parts rep $\frac{420kg}{7} \times 4$
4 parts rep 60kg x 4
4 parts rep 240kg

OR

$$\text{New quantity} = \frac{4}{7} \times 420kg$$
$$= 4 \times 60kg$$
$$= 240kg$$

18. Using a ruler a pencil and a pair of compasses or otherwise, draw a line which is parallel to the line MN below.



19. Use the digits 3, 8, 0 and 7 to form the largest and smallest four digit numbers.

(i) Largest: ***7830***

(ii) Smallest: ***378***

20. The prime factors of 90 are; 2_1 , 3_1 , g and 5_1. Find the value of g.

$PF_{90} = \{2_1, 3_1, g, 5_1\}$
$90 = 2 \times 3 \times g \times 5$
$90 = 30g$
$\frac{90}{30} = \frac{30g}{30}$
$3 = g$
$g = 3_2$

SECTION B: 60 MARKS

Answer all questions in this section

Marks for each question are indicated in brackets.

21. (a) Change 234_{six} to base ten. (02 Marks)

$(2 \times 6^2) + (3 \times 6^1) + (4 \times 6^0)$

$(2 \times 6 \times 6) + (3 \times 6) + (4 \times 1)$

$72 + 18 + 4$

94_{ten}

(b) Workout: $\begin{array}{r} {\scriptstyle 1\ \ \overset{2}{\cancel{3}}\ \ 4} \\ 2\ 0\ 1_{three} \\ -\ 1\ 1\ 2_{three} \\ \hline 1\ \ 2_{three} \end{array}$ (02 Marks)

22. A farmer borrowed some money from a bank at an interest rate of $5\frac{2}{3}\%$ per month. After 9 months, the borrowed money had generated an interest of Sh.326,400. Find the amount of money the farmer borrowed. (04 Marks)

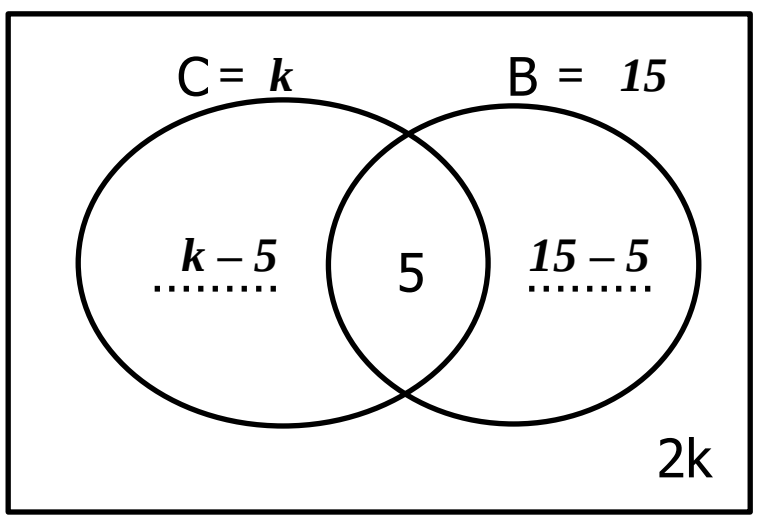
Simple interest	=	$P \times R \times T$
Sh.326,400	=	$\frac{P \times 5\frac{2}{3} \times 9}{100}$
Sh 326,400 x 100	=	$\frac{P \times 5\frac{2}{3} \times 9}{\cancel{100}} \times \cancel{100}$
Sh. 32,640,000	=	$\frac{P \times 17 \times \cancel{9}}{\cancel{3}}$
Sh32,640,000	=	*51P*

51P	=	*Sh32,640,000*
$\frac{51P}{51}$	=	$\frac{Sh32,640,000}{51}$
P	=	*Sh 640,000*

The farmer borrowed sh 640,000

23. In a class, k pupils like Chocolate (C), 15 pupils like Biscuits (B), 5 pupils like both snacks, 2k pupils don't like any of the two snacks and 13 pupils do not like biscuits.

(a) Use the above information to complete the Venn diagram below. (02 Marks)



(b) Find the value of k. (02 Marks)

$$k - 5 + 2k = 13$$
$$k + 2k - 5 = 13$$
$$3k - 5 = 13$$
$$3k - 5 + 5 = 13 + 5$$
$$3k = 18$$
$$\frac{3k}{3} = \frac{18}{3}$$
$$k = 6$$

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

$$13 + 15$$
$$28 \text{ pupils}$$

24. (a) Convert 4000 square centimetres into square metres. (02 Marks)

$$100cm = 1m$$
$$100cm \times 100cm = 1m \times 1m$$
$$10{,}000cm^2 = 1m^2$$
$$4000cm^2 = \frac{4000m^2}{10{,}000}$$
$$4000cm^2 = \frac{4m^2}{10}$$
$$4000cm^2 = 0.4m^2$$

(b) A cylindrical bucket can hold 2.04 litres of water when completely full. When 0.5 litres of water are removed, the remaining water raises to a height of 10cm. Workout the radius of the bucket. (Use $\pi = \frac{22}{7}$) (04 Marks)

Remaining Volume of water

$$2.04\ l - 0.5\ l$$
$$1.54\ l$$

1.54 l to cm3

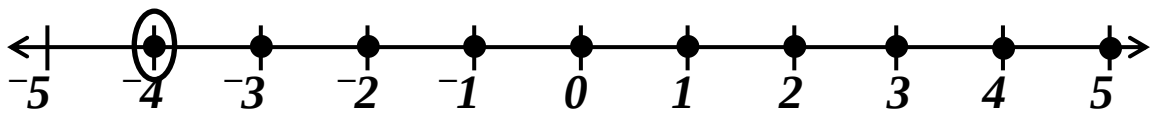
$$1\ l = 1000cm^3$$
$$1.54\ l = 1000cm^3 \times 1.54\ l$$
$$1.54\ l = 1540\ cm^3$$

$$Volume = \pi r^2 h$$
$$1540cm^3 = \frac{22 \times r^2 \times 10cm}{7}$$
$$1540cm^3 \times 7 = \frac{220r^2cm}{7} \times 7$$
$$\frac{1540cm^3 \times 7}{220cm} = \frac{220r^2cm}{220\ cm}$$

$$\frac{1540cm^3 \times 7}{220cm} = \frac{220r^2cm}{220\ cm}$$
$$7\ cm^2 \times 7 = r^2$$
$$\sqrt{49cm^2} = \sqrt{r^2}$$
$$7cm = r$$
$$r = 7cm$$

25. (a) Solve and write the solution set for $6 - 2y \leq 14$. (03 Marks)

$$6 - 6 - 2y \leq 14 - 6$$
$$-2y \leq 8$$
$$\frac{-2y}{-2} \geq \frac{8}{-2}$$
$$y \geq -4$$



$$y : y = \{-4, -3, -2, -1, 0, 1, 2, 3, 4, 5, \ldots\}$$

(b) Find the value of d that satisfies the equation: (03 Marks)

$$\frac{d + 3}{2} = \frac{11 + d}{4}$$

$$LCM = 4$$

$$4 \times \frac{d + 3}{2} = \frac{11 + d}{4} \times 4$$

$$2(d + 3) = 11 + d$$
$$2d + 6 = 11 + d$$
$$2d - d + 6 = 11 + d - d$$
$$d + 6 = 11$$
$$d + 6 - 6 = 11 - 6$$
$$d = 5$$

26. The time table below shows the journey of Nile Star Bus from Kampala to Juba through Karuma, Gulu and Nimule. Study the table below carefully and use them to answer the questions that follow.

Town	Arrival time	Departure time
Kampala	……	6:25a.m
Karuma	11:00a.m	11:15a.m
Gulu	1:35p.m	1:50p.m
Nimule	3:15p.m	3:30p.m
Juba	4:40p.m	……

(a) At what time did the bus leave Nimule for Juba? (01 Mark)

The bus left Nimule for Juba at 3:30 p.m.

(b) Convert the departure time of the bus at Gulu in the 24-hour clock.

(02 Marks)

Hr	Min
12	: 00
+ 1	: 50
13	: 50 hr

(c) If the distance from Kampala to Juba is 820km, calculate the average speed of the bus for the whole journey. (03 Marks)

Hr	Min
12	: 00
+ 4	: 40
16	: 40 hr

Hr	Min
16	: ~~40~~ (3 10)
+ 6	: 25
10	: 15 hr

$$\text{Average speed} = \frac{\text{total distance}}{\text{Total time}}$$

$$= 820\ km \div 10\frac{\cancel{15}}{\cancel{60}}hr$$

$$= 820\ km \div 10\frac{1}{4}\ hr$$

$$= 820km \div \frac{41hr}{4}$$

$$= \cancel{820}^{20}km \times \frac{4}{\cancel{41}hr}$$

$$= \frac{20km \times 4}{1hr}$$

$$= 80km/hr$$

27. (a) Write the place value of 5 in 194.53. (01 Mark)

hundredths

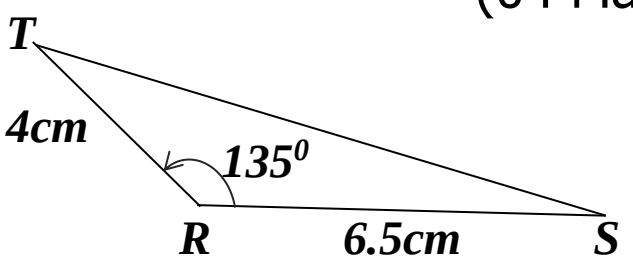
(b) Find the numeral that is expanded to give;
$(8 \times 10^3) + (6 \times 10^2) + (9 \times 10^1) + (7 \times 10^{-2})$ and hence write it in words. (03 Marks)

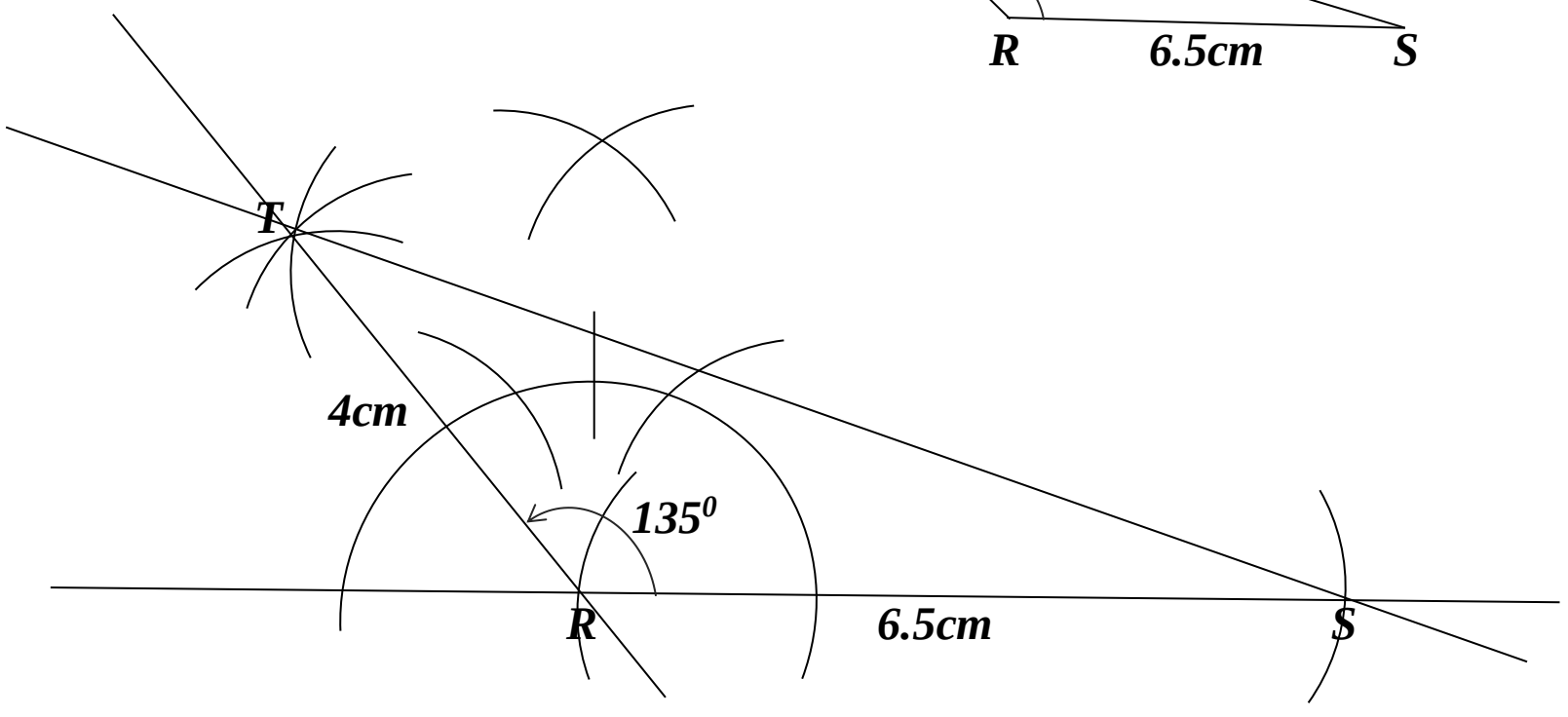
$$(8 \times 10 \times 10 \times 10) + (6 \times 10 \times 10) + (9 \times 10) + (7 \times \frac{1}{100})$$

$$8000 + 600 + 90 + 0.07$$

	8000
	600
	90
+	0.07
	8690.07

28. (a) Using a ruler pencil and a pair of compasses only, construct a triangle **RST** where length **RS** = 6.5 cm, angle **TRS** = 135^0 and length **RT** = 4cm. (04 Marks)

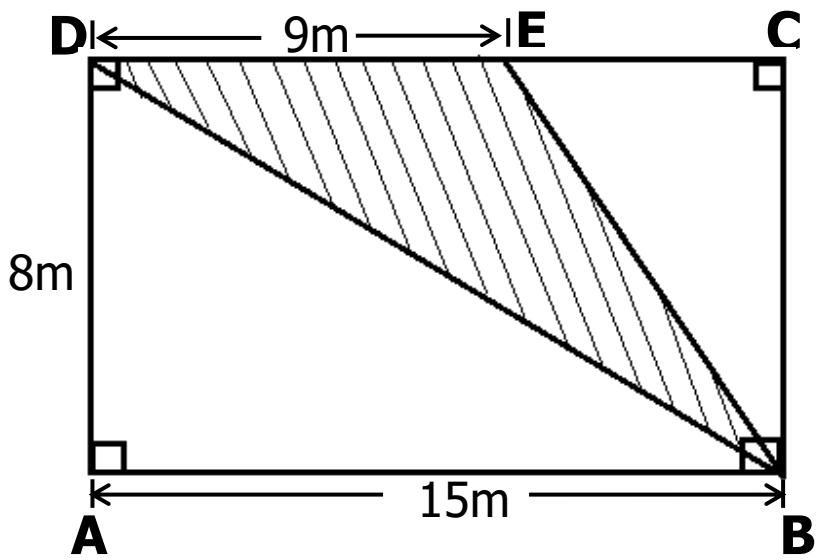




(b) Measure the size of angle **RST** = …….. (01 Mark)

$$RST = 16^0 // 17^0 // 18^0$$

29. The diagram below shows a rectangular door curtain **ABCD** of length 15m patched with a shaded triangular design **DEB**. Length **DE** = 9cm. Study the diagram carefully and answer the questions that follow.



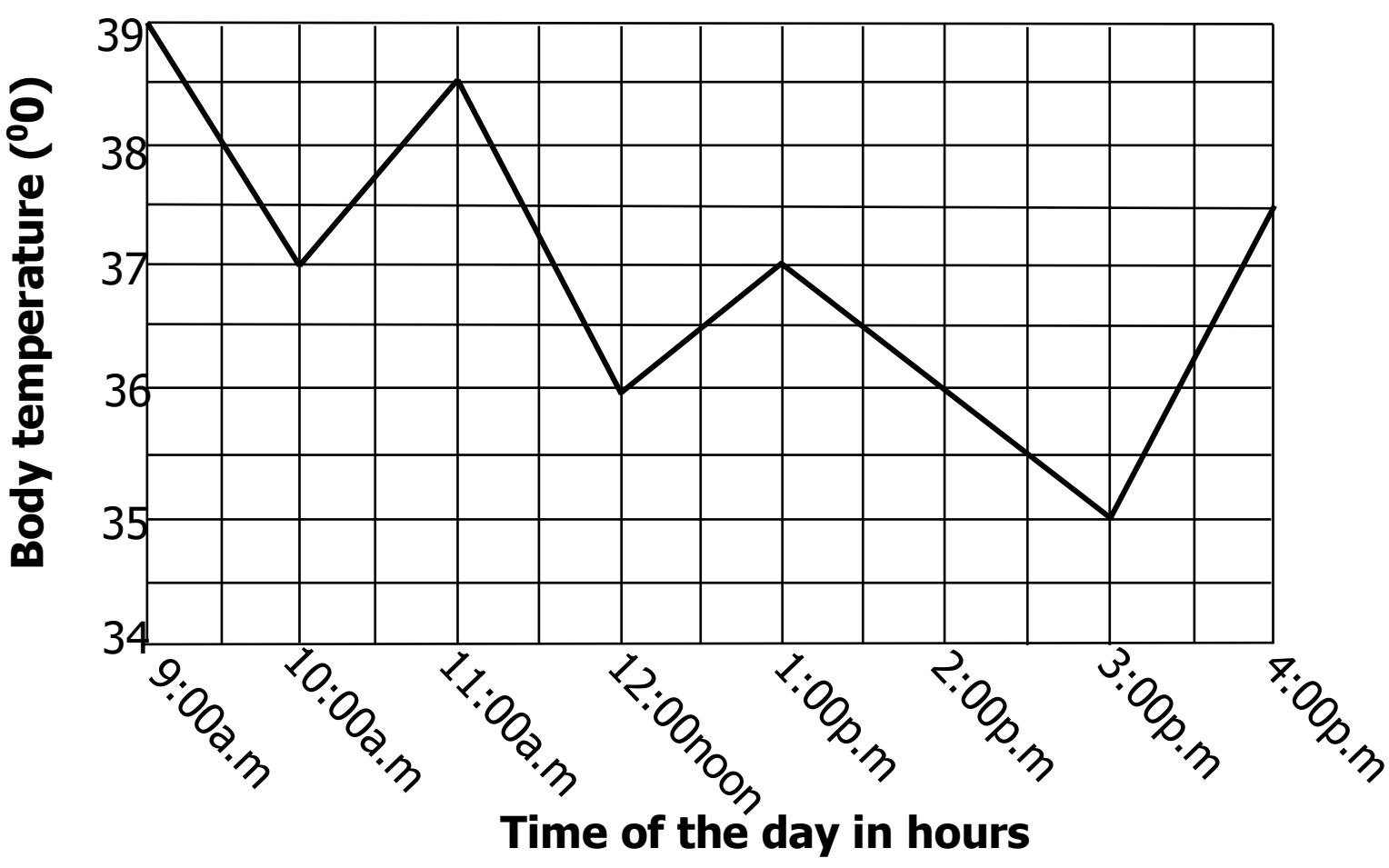
(a) Workout the area of the triangular door **DEB**. (02 Marks)

$$Area = \frac{b \times h}{2}$$
$$= \frac{9m \times \cancel{8}^{4}m}{\cancel{2}}$$
$$= 9m \times 4m$$
$$= 36m^2$$

(b) Find length **BE**. (03 Marks)

$$EC = 15m - 9m$$
$$= 6m$$
$$a^2 + b^2 = c^2$$
$$(6m \times 6m) + (8m \times 8m) = c^2$$
$$36m + 64m = c^2$$
$$100m^2 = c^2$$
$$\sqrt{100m^2} = \sqrt{c2}$$
$$10m = c$$
$$BE = 10m$$

30. A patient whose body temperature was 39^0c was admitted at Maanyi Health Centre III on a certain day. The changes in the body temperature at different time intervals was recorded on the graph below. Study and use it to answer the questions that follow.



(a) Write the scale used on the vertical axis. (01 Mark)

$\frac{35 - 34}{2}$

$\frac{1}{2}$

1 square box represents $\frac{1}{2}^{o}c$ or $0.5^{0}c$

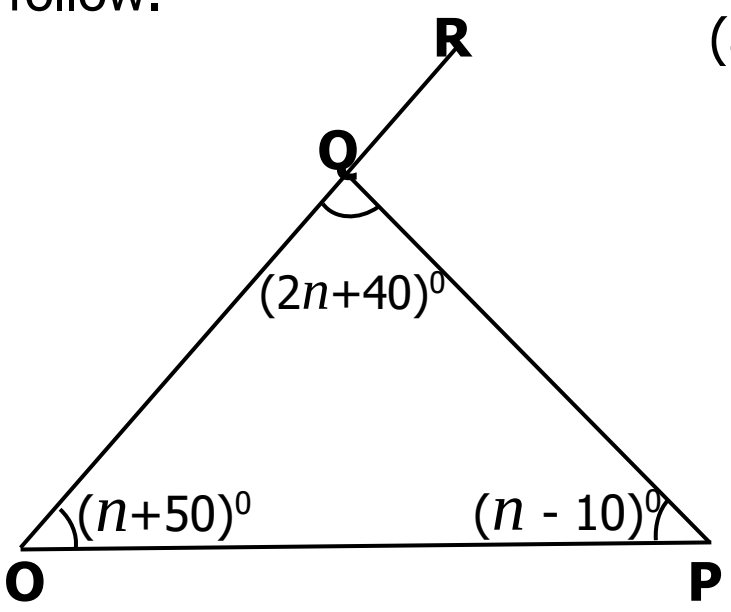
(b) What was the patient's temperature at 2:30p.m? (01 Mark)

The patient's temperature at 2:30p.m was $35.5^{0}c$

(c) Workout the patient's temperature range. (02 Marks)

$$\begin{aligned} \textbf{Range} &= \textbf{Highest} - \textbf{Lowest} \\ &= 39^{0}c - 35^{0}c \\ &= 4^{0}c \end{aligned}$$

31. Study the diagram below carefully and use it to answer the questions that follow.



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

$$\begin{aligned} \frac{(2n + 40)^{\theta} + (n + 50)^{\theta} + (n - 10)^{\theta}}{1^{\theta}} &= \frac{180^{\theta}}{1^{\theta}} \\ 2n + 40 + n + 50 + n - 10 &= 180 \\ 2n + n + n + 40 + 50 - 10 &= 180 \\ 4n + 40 + 40 &= 180 \\ 4n + 80 &= 180 \\ 4n + 80 - 80 &= 180 - 80 \\ 4n &= 100 \\ \frac{4n}{4} &= \frac{\cancel{100}}{4} \\ n &= 25 \end{aligned}$$

(b) Find the size of angle **PQR**. (02 Marks)

$$\begin{aligned} (2n + 40)^{0} + PQR &= 180^{0} \\ (2 \times 25) + 40)^{0} + PQR &= 180^{0} \\ (50 + 40)^{0} + PQR &= 180^{0} \\ 90^{0} + PQR &= 180^{0} \\ 90^{0} - 90^{0} + PQR &= 180^{0} - 90^{0} \\ PQR &= 90^{0} \end{aligned}$$

32. The table below shows the weights in kilograms of men in a Rugby team. Study and use it to answer the questions that follow.

Weight in kg	80	65	44	30
No. of men	2	2	t	3

(a) If the mean weight of all the men is 50kg, find the value of t. (04 Marks)

$$\begin{aligned}
\textit{Mean x Number of data} &= \textit{Sum of data} \\
50\,(2 + 2 + t + 3) &= (80 \times 2) + (65 \times 2) + (44 \times t) + (30 \times 3) \\
50(7 + t) &= 160 + 130 + 44t + 90 \\
350 + 50t &= 380 + 44t \\
350 - 350 + 50t &= 380 - 350 + 44t \\
50t &= 30 + 44t \\
50t - 44t &= 30 + 44t - 44t \\
6t &= 30 \\
\frac{6t}{6} &= \frac{30}{6} \\
t &= 5
\end{aligned}$$

(b) How many men weigh less than the mean weight? (01 Mark)

$$\begin{aligned}
&t + 3 \\
&5 + 3 \\
&8 \text{ men}
\end{aligned}$$