

STEM EXAMINATIONS BOARD

PRE-PRIMARY LEAVING EXAMINATION SET I, 2022

MATHEMATICS

Time Allowed: 2 hours 30 minutes

Random No.					Personal No.		

Candidate's Name:

Candidate's Signature:

District ID No:

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Read the following instructions carefully:

1. Do not write your school or district name anywhere on this paper.
2. This paper has **two** sections: A and B. Section A has **20** questions and Section B has **12** questions. The paper has **8 printed pages** altogether.
3. Answer **all** questions. **All** the working for both sections A and B must be shown in the spaces provided.
4. **All** working must be done using a **blue** or **black** ball point pen or ink. Any work done in pencil other than graphs and diagrams will **not** be marked.
5. **No calculators** are allowed in the examination room.
6. Unnecessary **changes** in your work and handwriting that cannot easily be read may lead to loss of marks.
7. Do not fill anything in the table indicated: "For Examiners' use only" and boxes inside the question paper.

FOR EXAMINERS' USE ONLY		
Qn. No.	Marks	EXR'S NO.
1 - 5		
6 - 10		
11 - 15		
16 - 20		
21 - 22		
23 - 24		
25 - 26		
27 - 28		
29 - 30		
31 - 32		
TOTAL		

SECTION A : 40 MARKS

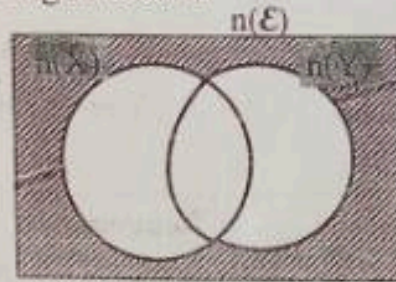
Answer all questions in this section.

Question 1 to 20 carry two marks each.

1. Work out:

$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

2. Describe the un-shaded region in the Venn diagram below.



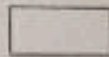
3. Expand 104.8 using powers of ten.

4. Write "Sixty thousand thirteen" in numerals.

5. Calculate the least number when divided by 20 or 18 leaves 7 as a remainder.

Use distributive property to simplify;

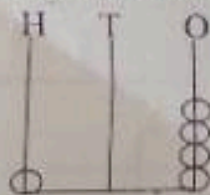
$$\left(\frac{1}{3} \times 10\right) + \left(\frac{1}{3} \times 11\right)$$



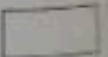
7. Express 5:15pm in a 24-hour clock.

8. Simplify: $2(t - 1) - (t - 3)$

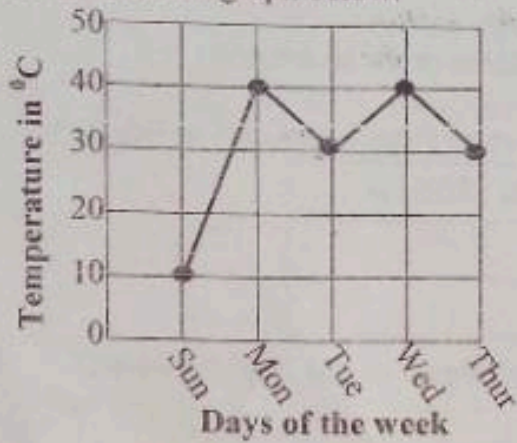
9. Write the numeral shown on the abacus below in Roman numerals.



10. John turned clockwise through an angle of 135° from the East. Find his new direction.



11. Calculate the average temperature recorded on the graph below.



12. Tom bought a dozen of pens at Shs. 500 per pen and paid the note shown below. Find his change.



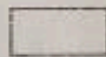
13. If 80 trees were planted 20 metres apart along side a straight road, what distance was covered?

14. Subtract:

$$\begin{array}{r} 1010_{\text{two}} \\ - 111_{\text{two}} \\ \hline \end{array}$$

15. Using a ruler, a pencil and a pair of compasses only, construct an angle of 45° in the space provided below.

16. Abdul borrowed Shs. 1000,000 at an interest rate of 10% per year for three months. How much did he pay back?

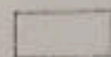
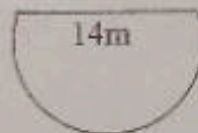


17. Tap K takes 4 minutes to fill a tank while tap M takes 5 minutes to draw the same water from the tank. How many minutes will it take to fill the tank if both taps are opened at the same time?

18. Solve for \square : $2\square - 3 = 15$

19. If today is Thursday, what day of the week will it be 80 days from today?

20. Work out the total distance round the figure below.



SECTION B : 60 MARKS.

Answer all questions in this section.

Marks for each question are indicated in the brackets.

21. The exchange rates to Uganda shillings at City Centre forex bureau are as below;

Currency	Buying Uganda Shillings
1 US Dollar (\$)	Ug Shs. 3870
1 Kenya Shilling (K Sh.)	Ug Shs. 120

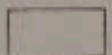
- (a) How much will Andrew get in Uganda shillings if he has 300 US dollars?
(2 marks)
- (b) If Joan has 193,500 Kenya Shillings, how many US dollars can she get from the forex bureau?
(3 marks)

22. Given that:

$$F_Y = \{2_1, 2_2, 3_1, p\}$$

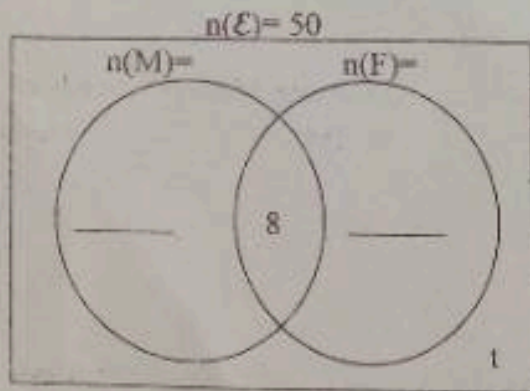
$$F_{90} = \{2_1, 3_1, 3_2, p\}$$

- (a) Find the value of:
(i) Y (1 mark) (ii) p (1 mark)
- (b) Work out the Greatest Common Factor (GCF) of Y and 90. (1 mark)
- (c) Calculate the Lowest Common Multiple of Y and 90. (2 marks)



23. Ijumo Junior has 50 pupils, 16 of them eat fish only (F), $(t + 8)$ eat meat (M), 8 eat both fish and meat while t eat neither of the two foods.

(a) Use the above information to complete the Venn diagram below. (2 marks)



- (b) Find the value of t . (2 marks) (c) If a candidate is picked at random to play, what is the probability that a candidate picked eats meat only? (1 mark)

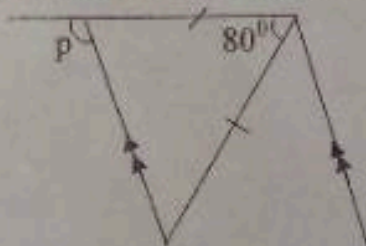
24. A motorist left town A at 10:30 a.m and arrived town B at 12:30 p.m driving at an average speed of 60 km/hr. She made a stop over at town B for an hour and thereafter continued to town C at a speed of 40 km/hr for 3 hours.

(a) How far is town C from town A? (3 marks)

(b) Work out her average speed for the whole journey. (2 marks)

25. Calculate the size of angle p in degrees.

(3 marks)



26. Out of Mukasa's cattle, 30% are calves, 55% are cows while the rest are bulls.

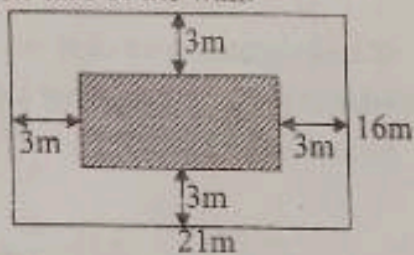
(a) What percentage of cattle are bulls? (2 marks)

(b) If he had 480 heads of cattle, how many cows does he have?

(c) Decrease Mukasa's heads of cattle by 25%. (2 marks)

(2 marks)

27. The figure below shows a sitting room covered with a carpet leaving a space of 3 metres on either side of the wall.



Calculate the area not covered by the carpet.

(5 marks)

28. A rectangular tank holds 168 litres of milk when full.

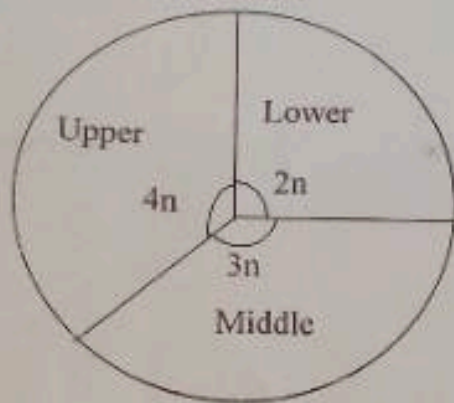
(a) Find the volume of the tank in cubic centimetres.

(2 marks)

(b) Work out the height of the tank if its base measures 40cm by 60cm.

(3 marks)

29. The pie-chart below shows the number of pupils at Bukede P/S. Use it to answer the questions that follow.



- (a) Solve for the value of n in degrees. (2 marks)

- (b) If there are 160 pupils in Lower Primary, how many pupils are in the school altogether? (3 marks)

- (c) Express the number of pupils in Upper Primary as a fraction of the pupils in the whole school. (1 mark)

30. (a) With the help of a ruler, a sharp pencil and a pair of compasses only, construct a triangle EFG where $EF = 7\text{cm}$, angle $EFG = 120^\circ$ and line $FG = 6\text{cm}$. (4 marks)

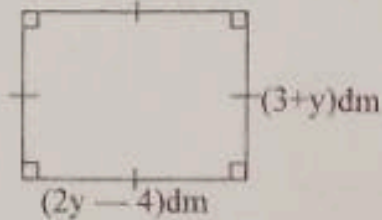
- (b) Measure the length EG. (1 mark)

31. (a) Find the solution set for x : $6 < 3x < 12$

(2 marks)

(b) Calculate the distance round the figure below.

(3 marks)



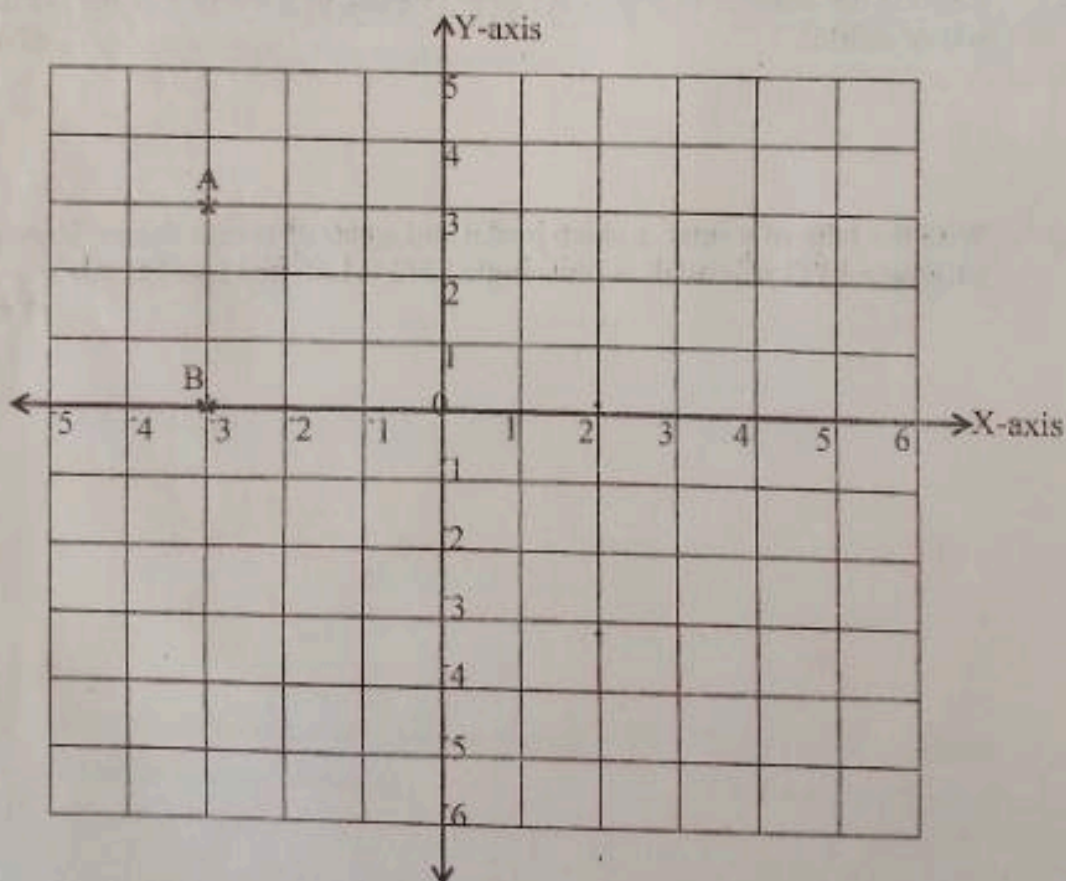
32. (a) From the graph below, state the co-ordinates for points A and B.

(i) A

(1 mark)

(ii) B

(1 mark)



(b) Plot the points C (4, 5) and D (0, 3)

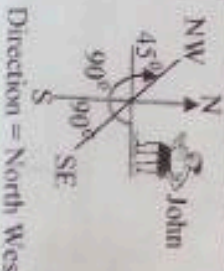
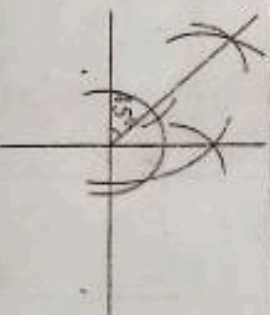
(2 marks)

(c) Join A to B, B to C, C to D, D to A to form a quadrilateral.


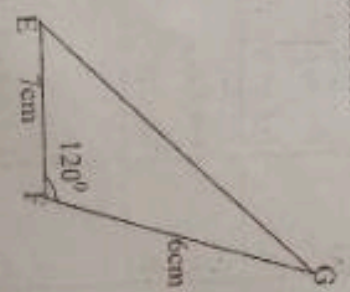
(1 mark)

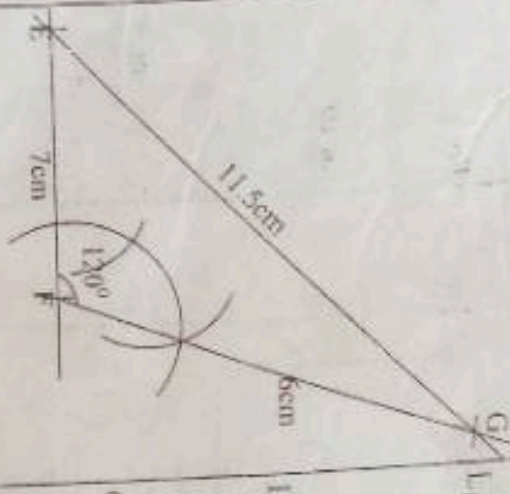
END

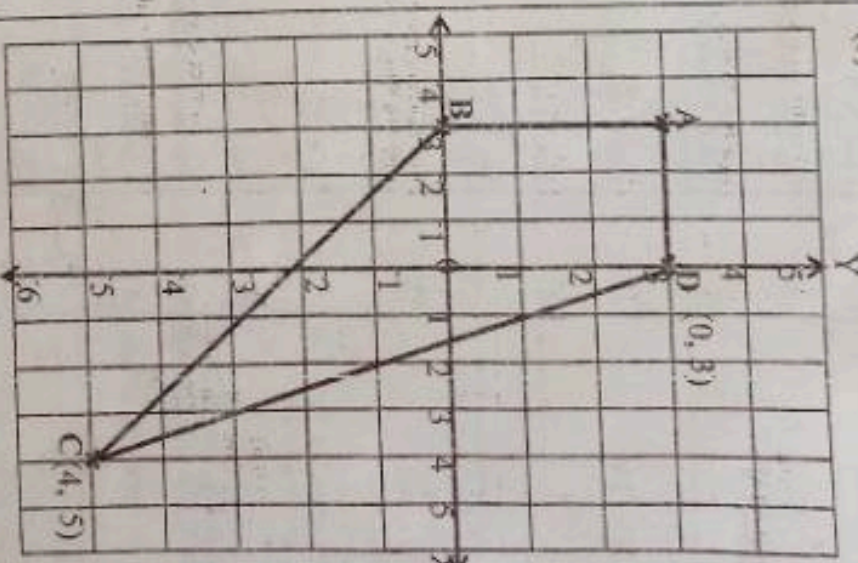
P.7 MATHS MARKING GUIDE P.R.I.-P.L.E SET I, 2022

S/N	SOLUTION	MRRKS	COMMENTS
1.	$\frac{7}{21} \times \frac{3}{21}$	B ₂	For 21
2.	(XUY) ⁷	B ₂	For C.A.O
3.	$104.8 = (1 \times 10^2) + (0 \times 10^1) + (4 \times 10^0) + (8 \times 10^{-1})$	B ₂	For correct expansion
4.	Sixty thousand = 60,000 thirteen = $\frac{13}{60,013}$	M ₁ A ₁	For correct method For 60,013
5.	LCM of 2, 20, 18 $\frac{2}{2} \frac{10}{10} \frac{9}{9}$ $\frac{1}{1} \frac{5}{5} \frac{3}{3}$ $\frac{2}{2} \frac{5}{5} \frac{1}{1}$ $= 5 \times 3 \times 3 \times 2 \times 2 + 7$ $= 180 + 7$ $= 187$ text books	B ₁	For prime factorization For 187 textbooks
6.	$= \left[\frac{1}{3} \times 10 + \frac{1}{3} \times 11 \right]$ $= \frac{1}{3} (10 + 11)$ $= \frac{1}{3} \times 21$ $= 7$	M ₁ A ₁	For using the property For 7
7.	5:15p.m = 5:15 $+ \frac{12:00}{17:15}$ hours	M ₁ A ₁	For correct addition For 17:15 hours
8.	$2t(t-1) - (t-3)$ $\frac{2t}{2t} - \frac{2}{2} - \frac{t}{2} + \frac{3}{2}$ $t + 1$	M ₁ A ₁	For removing brackets For t + 1
9.	Numeral = 104 $= 100 + 4$ $= C + IV$ $= CIV$	B ₁ B ₁	For 104 For CIV
10.		B ₁	For correct sketch For North West
11.	Average = $\frac{\text{Total Number of items}}{5}$ $= \frac{10^0c + 40^0c + 30^0c + 40^0c + 30^0c}{5}$ $= \frac{150^0c}{5}$ $= 30^0c$	M ₁	For correct addition
12.	Cost of pens = 12 pens x Shs. 500 $= \text{Shs. } 6000$ Change = Shs. 10000 — Shs. 6000 $= \text{Shs. } 4000$	B ₁ B ₁	For Shs. 6000 For Shs. 4000
13.	$= (80 - 1) \times \text{distance apart}$ $= 79 \times 20$ metres $= 1580$ metres	M ₁ A ₁	For correct method For 1580 metres
14.	$\begin{array}{r} 1010 \\ -111 \\ \hline 1110 \end{array}$	M ₁ A ₁	For correct subtraction For 1110
15.		C ₁ A ₁	For accurate arcs For identifying angle 45°
16.	SI = P x R x T $= \text{Shs. } \frac{25000}{100} \times 10\% \times 21$ $= \text{Shs. } 25,000$ Amount = Shs. 1,000,000 + 25,000 $= \text{Shs. } 1,025,000$	B ₁ B ₁	For Shs. 25,000 For Shs. 1,025,000
17.	Tap K take 4 minutes = $\frac{1}{4}$ Tap M take 5 minutes = $\frac{1}{5}$ In one minute = $\frac{1}{4} - \frac{1}{5} = \frac{5}{20} - \frac{4}{20}$ Time taken = $1 \div \frac{1}{20}$ $= 20$ minutes	M ₁ A ₁	For correct method For 20 minutes

S/N	SOLUTION	MRKS	COMMENTS
18.	$3 + 3 = 15$ $3 + 3 = 15 + 3$ $\square = 9$	M ₁ A ₁	For collection of like terms For $\square = 9$
19.	<p>Thursday = 4</p> $= 4 + 80 = ? \text{ (finite 7)}$ $= (84 + 7) = ? \text{ (finite 7)}$ $= 12 \text{ remainder } 0$ <p>= Sunday</p>	M ₁ A ₁	For correct method For 0 = Sunday
20.	<p>Distance = $\frac{1}{2} \pi D + D$</p> $= \frac{1}{2} \times 11^2 \times \frac{22}{7} + 14m$ $= 22m + 14m$ $= 36m$	M ₁ A ₁	For correct method For 36m
SECTION B			
21.	<p>(a) 1 US dollar costs Ug Shs. 3870 3000 US dollars cost Ug Shs. 3870×300 = Ug Shs. 1,161,000</p> <p>(b) 1 Kenya shilling costs Ug Shs. 120 193500 Kenya Shillings cost = Ug Shs. $23,220,000$ 1 US dollar costs Ug Shs. 3870 ? US dollars cost Ug Shs. $\frac{23,220,000}{3870}$ = 6000 US dollars</p>	M ₁ A ₁ M ₁ A ₁	For correct multiply For Ug Shs. 1,161,000
22.	<p>(a) (i) $y = 2 \times 2 \times 3 \times 5$ $y = 60$</p> <p>(ii) $2 \times 3 \times 3 \times 3 \times p = 90$ $\frac{180 = 90}{18 \quad 18}$ $p = 5$</p> <p>(b) GCF = $2 \times 3 \times 5$ = 30</p> <p>(c) LCM = $2 \times 3 \times 3 \times 5 \times 2$ = 18×10 = 180</p>	B ₁ B ₁ B ₁ M ₁ A ₁	For $y = 60$ For $p = 5$ For 30 For correct multiplying For 180
23.	<p>(a)</p> <p>(b) $t + t + 8 + 16 = 50$ $2t + 24 = 50$ $2t = 50 - 24$ $2t = 26$ $t = 13$</p> <p>(c) Probability = $\frac{EOC}{POC}$ Probability = $\frac{13}{50}$</p>	B ₁ M ₁ A ₁ B ₁ A ₁	For t For 16 For forming equation For $t = 13$
24.	<p>(a) Time = $\frac{12.30 - 10.30}{2.00 \text{ hrs}}$ First distance = $\frac{\text{Speed} \times \text{Time}}{60 \text{ km/hr} \times 2}$ = 120km Second distance = $\frac{\text{Speed} \times \text{Time}}{40 \text{ km/hr} \times 3 \text{ hrs}}$ = 120km Total distance = 120km + 120km = 240km</p> <p>(b) Average speed = $\frac{TDT}{TTT}$ = $\frac{240 \text{ km}}{2 + 3 + 1 \text{ hr}}$ = $\frac{240 \text{ km}}{6 \text{ hr}}$ = 40km/hr</p>	B ₁ B ₁ B ₁ M ₁ A ₁	For 120km For 120km For 240km For correct method For 40km/hr

S/N	SOLUTION	MARKS	COMMENTS
25.	 $= a + a + 80^\circ = 180^\circ$ $2a + 80^\circ = 180^\circ$ $2a = 180^\circ - 80^\circ$ $2a = 100^\circ$ $a = \frac{100^\circ}{2}$ $a = 50^\circ$ $p = 50^\circ + 180^\circ$ $p = 130^\circ$ $p = 50^\circ + 180^\circ$ $p = 130^\circ$	<p>M₁</p> <p>M₁</p> <p>A₁</p> <p>B₁</p> <p>U3</p>	<p>For forming equation</p> <p>For forming equation</p> <p>For n = 50°</p> <p>For p = 130°</p>
26.	<p>(a) $n = 30\% + 55\% = 100\%$</p> <p>$n + 85\% = 100\%$</p> <p>$n = 100\% - 85\%$</p> <p>$n = 15\%$</p> <p>(b) Cows = $\frac{15}{100} \times 2480$</p> <p>$= 11 \times 24$ cows</p> <p>$= 264$ cows</p> <p>(c) $\frac{100}{25} \times 2480$</p> <p>$= 15 \times 24$</p> <p>$= 360$ heads of cattle</p>	<p>M₁</p> <p>M₁</p> <p>A₁</p> <p>M₁</p> <p>M₁</p> <p>A₁</p> <p>M₁</p> <p>A₁</p> <p>U6</p>	<p>For forming equation</p> <p>For 15%</p> <p>For correct method</p> <p>For 264 cows</p> <p>For correct division</p> <p>For 360 heads of cattle</p>
27.	<p>Length = 21m — (3 + 3m)</p> <p>= 21m — 6m</p> <p>= 15m</p> <p>Width = 16m — (3 + 3m)</p> <p>= 16m — 6m</p> <p>= 10m</p> <p>Area of carpet = L x W</p> <p>= 15m x 10m</p> <p>= 150m²</p> <p>Area of the room = L x W</p> <p>= 21m x 16m</p> <p>= 336m²</p>	<p>B₁</p> <p>B₁</p> <p>B₁</p> <p>B₁</p> <p>B₁</p> <p>B₁</p>	<p>For 15m</p> <p>For 10m</p> <p>For 150m²</p> <p>For 336m²</p>
28.	<p>(a) Volume = 1 litre = 1000cm³</p> <p>168 litres = 168 x 1000cm³</p> <p>= 168,000cm³</p> <p>(b) Volume = L x W x H</p> <p>40cm x 60cm x h = 168,000cm³</p> <p>$\frac{2400h}{2400} = \frac{168000}{2400}$</p> <p>h = 70cm</p>	<p>B₁</p> <p>M₁</p> <p>A₁</p> <p>M₁</p> <p>A₁</p> <p>U5</p>	<p>For 186m²</p> <p>For correct multiplying</p> <p>For 168000cm³</p> <p>For forming equation</p> <p>For correct division</p> <p>For h = 70cm</p>
29.	<p>(a) $\frac{40 + 2n + 3n = 360^\circ}{2n} = \frac{360^\circ}{2}$</p> <p>$n = 40^\circ$</p> <p>(b) Lower primary = 2n = 2 x 40° = 80°</p> <p>100°</p> <p>Let the pupils be y</p> <p>80 x y = 160 pupils</p> <p>$\frac{80y}{80} = \frac{160}{80}$</p> <p>$y = 2 \times 360$</p> <p>$y = 720$ pupils</p> <p>(c) $\frac{4n}{360} = \frac{4 \times 40}{360}$</p> <p>$\frac{4n}{360} = \frac{160}{360}$</p> <p>$n = \frac{160}{4}$</p> <p>$n = 40$</p>	<p>M₁</p> <p>A₁</p> <p>B₁</p> <p>M₁</p> <p>A₁</p> <p>M₁</p> <p>A₁</p> <p>B₁</p> <p>A₁</p> <p>M₁</p> <p>A₁</p> <p>U6</p>	<p>For correct division</p> <p>For n = 40°</p> <p>For 80°</p> <p>For correct method</p> <p>For 720 pupils</p> <p>For 40</p>
30.	<p>SKETCH</p> 	<p>S₁</p>	<p>For correct sketch</p>

S/N	SOLUTION	MIRKS	COMMENTS
	ACCURATE TRIANGLE		
		L ₁	For base EF = 7cm
		L ₁	For length FG = 6cm
		C ₁	For accurate angle 120°
	(b) EG = 11.5cm	B ₁ 05	For 11.5cm (±0.1)cm
31.	(a) $6 < 3x < 12$ $6 < 3x < 12$ $2 < x < 4$ $2 < x < 4$ $x = \{1, 0, 1, 2, 3\}$	M ₁ A ₁	For correct solving For $x = \{1, 0, 1, 2, 3\}$
	(b) $(2y - 4)dm = 3 + y$ $2y - y = (3 + 4)dm$ $y = 7dm$ Side = $3 + y = 3 + 7 = 10dm$ Distance = $4L$ $= 4 \times 10dm$ $= 40dm$	B ₁ B ₁ B ₁ B ₁ 05	For $y = 7dm$ For 10dm For 40dm

S/N	SOLUTION	MIRKS	COMMENTS
32.	(a) (i) A (3, 3) (iii) B (3, 0)	B ₁ B ₁	For A (3, 3) For B (3, 0)
	(b)	P ₁ P ₁	For plotting C (4, 5) For plotting D (0, 3)
		P ₁ P ₁	For plotting C (4, 5) For plotting D (0, 3)
	(c) Joining all points	J ₁ 05	For joining all points correctly