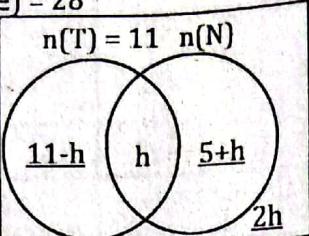


THE SIPRO PRE PLE SET I MATHEMATICS MARKING GUIDE - 2023

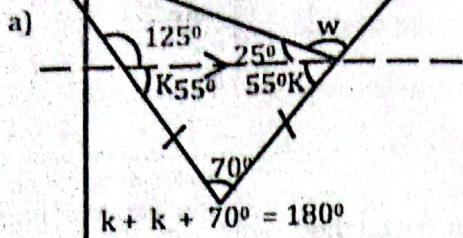
NO	LEVEL	SOLUTION	AWARD	REASON	COMMENT
1.	P.2	$ \begin{array}{r} 5 & 2 & 7 \\ - & 1 & 0 & 3 \\ \hline 4 & 2 & 4 \end{array} $	B ₂	For the answer	Expose candidates to operations with regrouping
2.	P.4	$ \begin{aligned} CIX &= C & IX \\ &= 100 + 9 \\ &= 109 \\ \text{One hundred nine.} \end{aligned} $	B ₁ B ₁	For 109 For the answer	Make a review on conversion of Roman numerals to Hindu-Arabic.
3.	P.5	$ \begin{aligned} 1 - \frac{3}{4} &= \frac{(1 \times 4) - (3 \times 1)}{4} \\ 1 - \frac{3}{4} &= \frac{4 - 3}{4} \\ &= \frac{1}{4} \end{aligned} $	M ₁ A ₁	For the method For the answer	Operate fractions and involve word problems.
4.	P.6	$ \begin{aligned} 2(e-3) &= 18 \\ (2xe) - (2 \times 3) &= 18 \\ 2e - 6 &= 18 \\ 2e - 6 + 6 &= 18 - 6 \\ 2e &= 12 \\ 2e &= 12^{\cancel{2}} \\ e &= 6 \end{aligned} $	M ₁ A ₁	For the method For the answer	Revisit a variety of equations for practice.
5.	P.7	W (3, 0)	B ₂	For the answer	Make a review on co-ordinate graph.
6.	P.6	$ \begin{aligned} \text{Set H} &= \{4, 6, 8, 9, 10\} \\ \text{Set G} &= \{1, 3, 6, 10, 15\} \\ \text{Set HUG} &= \{1, 3, 4, 8, 9, 15\} \\ n(\text{HUG}) &= 6 \end{aligned} $	M ₁ A ₁	For set HUG For n(HUG)	Make practice on reciting types of numbers.
7.	P.7	$ \begin{array}{ccccccc} 8 & 4 & 2 & 1 & \frac{1}{2} \\ \downarrow 2 & \downarrow 2 & \downarrow 2 & \downarrow 2 & \\ \end{array} $	M ₁ A ₁	For the pattern For the answer	Expose candidates to sequences involving division and multiplication as well.
8.	P.7	$ \begin{array}{r} 12:00 \text{hours} & 5:20 \text{am} \\ -10:05 \text{hours} & +1:55 \\ \hline 1:55 \text{pm} & 7:15 \end{array} $ <p>The journey took 7 hours 15 minutes or $7\frac{1}{4}$ hours</p>	B ₁ B ₁	For 1:55 For $7\frac{1}{4}$ hrs	Accept any other method leading to correct answer.
9.	P.7	$ \begin{aligned} \text{No of poles} &= 20 \\ \text{Interval} &= 5 \text{m} \\ \text{No of intervals} &= 20 - 1 \\ \text{Length of the road} &= (19 \times 5) \text{metres} \\ &= 95 \text{metres} \end{aligned} $	M ₁ A ₁	For 19 For 95 metres	Help candidates to understand the concept of poles, distance and the intervals.

10.	P.6	<p>For '6 For '2</p>		Expose candidates to a variety of operations on the number line.
	Alternative			
11.	P.7	$ \begin{array}{r} 616 \\ \times 2 \\ \hline 1232 \end{array} $ $ \begin{array}{r} 199 + 1 \\ = 200 \text{ cards} \end{array} $ $ \begin{array}{r} \text{Sh. } 20,000 \times 200 \\ \text{Sh. } 4,000,000 \end{array} $	B ₁ For 200 cards B ₁ For the answer	Assist the learners to understand why one is added.
12.	P.7	$ \begin{array}{l} 1\pi d = c \\ 2 \\ \frac{1}{2} \times 3 \frac{1}{7} \times d = 22 \text{ dm} \\ 7 \times 11d = 22 \text{ dm} \times 7 \\ 11d = \frac{22 \text{ dm} \times 7}{11} \\ d = 14 \text{ dm} \\ \text{Diameter} = 14 \text{ cm} \end{array} $	M ₁ For the method A ₁ For the answer	Make a review on area and circumference on parts of a circle.
13.	P.7	$ \begin{array}{l} \text{Sh. } 216000 \\ - \text{Sh. } 180000 \\ \hline \text{Sh. } 36000 \end{array} $ $ P \times R \times T = S.I $ $ \text{sh. } 180,000 \times R \times 3 = \text{sh. } 36,000 $ $ 100 \times \text{sh. } 180,000 \times R \times 3 $ $ \frac{1}{3} \times \text{sh. } 180,000 \times 3 \times R = \frac{\text{sh. } 36000 \times 100}{180,000} $ $ R = \frac{20}{3} $ $ \text{Rate} = 6 \frac{2}{3} \% $	M ₁ For the method A ₁ For the answer	Expose candidates to finding time, Principal, rate etc.

14.			B ₁ B ₁	For the answer	Emphasise accuracy and sharp pencils
15.	P.7	$3^{2b} \div 81 = 1$ $3^{2b} \div 3^4 = 3^0$ $2b - 4 = 0$ $2b - 4 + 4 = 0 + 4$ $2b^1 = 4^2$ $\cancel{2}b^1 = \cancel{4}^2$ $b = 2$	M ₁ A ₁	For the method For the answer	Make a review on operation of indices.
16.	P.7	<u>Mass of 4 girls</u> $35 \times 4 \text{ kg}$ $= 140 \text{ kg}$ <u>Mass of 3 girls</u> $(90 \times 3) \text{ kg}$ $= 270 \text{ kg}$ <u>Mass of 3rd girl</u> 270 kg -140 130 kg	M ₁ A ₁	For the method For the answer	Expose candidates to a variety of such related questions.
17.	P.6	$\frac{1}{2}bh = \frac{1}{2}bh$ $\frac{1}{2} \times 48m \times 6m = \frac{1}{2} \times n \times 18m$ $\frac{1}{2} \times 48m \times 6m = \frac{1}{2} \times n \times 18m$ $24m \times 6m = 9m$ $16m = n$ $n = 16m$	M ₁ A ₁	For the method For the value of n	Make a review on area of different figures and their perimeter.
18.	P.7	$3(2 - p) < 15$ $(3 \times 2) - (3 \times p) < 15$ $6 - 3p < 15$ $6 - 6 - 3p < 15 - 6$ $-3p < 9$ $\frac{-3p}{3} > \frac{9}{-3}$ $p > -3$	M ₁ A ₁	For the method For $p > -3$	Help the candidates to operate the inequality and find the solution set.
19.	P.7	$M = 6 \pmod{7}$ $5 \times M = 6 \times 5 \pmod{7}$ 5	M ₁	For the method	Expose candidates to a variety of solving integers with word problems.

		$M = 30 \pmod{7}$ $\begin{array}{r} 4 \\ 7 \overline{) 30} \\ -28 \\ \hline 2 \end{array}$ $M = 2 \pmod{7}$	A ₁	For the answer	
20.	P.7	5034 $5034 \div 10 = 503.4$ $503.4 \div 10 = 50.34$ $50.34 \div 10 = 5.034$ 5.034×10^3	B ₁ B ₁	For 5034 For 5.034×10^3	Make fraction of standard form, and distributive property.
SECTION B (60 Marks)					
21.	a)	$n(\epsilon) = 28$ $n(T) = 11 \quad n(N)$ 	B ₁ B ₁ B ₁	For each correct gap filled	Do a variety on application of sets and make enough practice.
	b)	$11 - h + h + 5 + h + 2h = 28$ $11 + 5 + h + h + 2h = 28$ $16 + 4h = 28$ $16 - 16 + 4h = 28 - 16$ $4h = 12$ $4 \quad 4$ $h = 3$ $11 - h + 2h$ $11 + h$ $11 + 3$ 14 girls	B ₁ B ₁ B ₁	For the equation For $h = 3$ For 14 girls	
22.	a)	In one minute Tap w fills $\frac{1}{9}$ Tap Z fills $\frac{1}{9+3} = \frac{1}{12}$ Combined $\frac{1}{9} + \frac{1}{12} = \frac{4+3}{36}$ $= \frac{7}{36}$ $\frac{7}{36} = 700 \text{ litres}$ $36 = 700 \div \frac{7}{36}$ $= 700 \times \frac{36}{7}$ 3600 litres	M ₁ B ₁ B ₁	For the method For $\frac{7}{36}$ For 3600litres	Follow through candidates' work and revisit applications of fractions.
	b)	20litres \rightarrow 1 jerrycan 1litre \rightarrow $\frac{1}{20}$ 3600litre \rightarrow $\frac{1}{20} \times 3600$ $\rightarrow 180$ 1 jerrycan \rightarrow sh 16000 180 jerrycan \rightarrow sh 1600×180 sh 2,880,000	B ₁ B ₁	For 180 For sh.2,880,000	

23



$$k + k + 70^\circ = 180^\circ$$

$$2k + 70^\circ - 70^\circ = 180^\circ - 70^\circ$$

$$2k = 110^\circ$$

$$\frac{2}{2}$$

$$K = 55^\circ$$

$$180^\circ$$

$$-55^\circ$$

$$\underline{125^\circ}$$

$$n^\circ + 125^\circ + 25^\circ = 180^\circ$$

$$n^\circ + 150^\circ + 150^\circ = 180^\circ - 150^\circ$$

$$n^\circ = 30^\circ$$

$$n^\circ = \underline{30^\circ}$$

$$1^\circ \quad 1^\circ$$

$$n = 30$$

B₁

For 55°

B₁

For 125°

B₁

For n = 30

$$ii) 55^\circ + 250 + w = 180^\circ$$

$$80 + w = 180^\circ$$

$$80^\circ - 80^\circ + w = 180^\circ - 80^\circ$$

$$w = 100^\circ$$

$$e = 100^\circ + 25^\circ$$

$$e = 125^\circ$$

B₁

For 100°

B₁

For 125°

24

P.6

Water melons

Sh.9000

$$\text{Rice} \\ \underline{1200} \times \text{sh.} 5000 \\ 1000$$

Sweets

 $\underline{20} \times \text{sh.} 300$ $\underline{-5}$

$$= 4 \times \text{sh.} 300$$

$$= \text{sh.} 1200$$

sh. 9 0 0 0

sh. 6 0 0 0

sh. 1 2 0 0

+ sh. 42000

Sh. 58200

$$100\% - 10\% = 90\%$$

$$\underline{90} \times \text{shs.} 58200$$

100

Sh. 5820 $\times 9$

Sh. 52380

B₁

For sh. 6000

B₁

For sh. 1200

B₁

For sh. 42000

B₁

For the sum

B₁

For sh. 52380

Emphasise the units

Expose candidates to a variety of equations

25.

P.7 a)

$$2m - \frac{m}{5} = 5$$

$$2m - \frac{m}{5} = 5$$

$$1 \quad 3m \quad 1$$

$$\left(\frac{2m \times 3}{1} \right) - \left(\frac{m \times 3}{3} \right) = \left(\frac{5 \times 3}{1} \right)$$

$$6m - m = 15$$

$$\underline{5m} = \underline{15}$$

$$5 \quad 5$$

$$M = 3$$

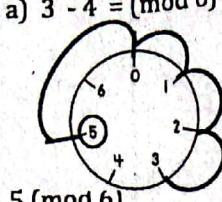
M₁

For the method

A₁

For the answer

Make a review on terms involved and how to apply them.

		b) $4(4g - 2) - 4(2g + 6) = 16$ $(4 \times 4g) - (4 \times 2) - (4 \times 2g) + (-4 \times 6) = 16$ $16g - 8 - 8g - 24 = 16$ $16 - 8g - 8 - 24 = 16 + 32$ $8g = 48$ $8 \quad 8$ $g = 6$	B ₁ B ₁ B ₁	For collecting like terms For the method For the answer	
26	P.7	a) $3 - 4 = (\text{mod } 6)$ 	M ₁ A ₁	For the method For the answer	Make a review on application of integers.
		b) $5(\text{finite } 6)$ $5, 11, 17, 23, 29, 35, \textcircled{41}, 46$ $6(\text{finite})$ $6, 13, 20, 27, 34, \textcircled{41}, 48, \dots$ $\text{They were } 41 \text{ apples}$	B ₁ B ₁ B ₁	For the 5 (finites) For 6 (finites) For 41 apples	
		$\pi d = c$ $22 \times d = 88m$ 7 $7 \times \frac{22 \times d}{7} = 88m \times 7$ $\frac{22d}{22} = \frac{88m \times 7}{22}$ $d = 28m$ $\text{radius} = \frac{1}{2} \times \text{diameter}$ $= \frac{1}{2} \times 28m$ $= 14m$	B ₁ B ₁	For 28m For 14m	
27	P.7	<u>Area of the circle</u> $\text{Area} = \pi r^2$ $= \frac{22}{7} \times 14m \times 14m$ $= 44m \times 14m$ $= 616m^2$ <u>Area of unshaded region</u> $616m^2$ $- 196m^2$ $\underline{\underline{420m^2}}$	B ₁ B ₁ B ₁	For $616m^2$ For $196m^2$ For $420m^2$	Revisit finding area and circumference plus their applications.
		$2 \mid 60 \mid 75 \mid 90$ $2 \mid 30 \mid 25 \mid 45$ $3 \mid 15 \mid 25 \mid 45$ $5 \mid 5 \mid 25 \mid 15$ $5 \mid 1 \mid 5 \mid 1$ $1 \mid 1 \mid 1 \mid$ $(2 \times 2) + (3 \times 3) + (5 \times 5) + (4 \times 9) \times 25$ 900 seconds	M ₁ A ₁	For the method For the answer	Make a review on application of L.C.M

b)

$$\begin{aligned}
 1000\text{m} &= 1\text{km} \\
 1\text{m} &= \frac{1}{1000}\text{km} \\
 1000\text{m} &= \left[\frac{1}{1000} \times 1000 \right] \text{km} \\
 &= \frac{1000}{1000} \text{km}
 \end{aligned}$$

$$\begin{aligned}
 3600\text{sec} &= 1\text{hr} \\
 1\text{sec} &= \frac{1}{3600}\text{hr} \\
 90\text{sec} &= \frac{1}{3600} \times 90\text{hr} \\
 &= \frac{90}{3600}\text{hr} \\
 &= \frac{1000}{1500} \div \frac{90}{3600}\text{hr} \\
 &= \frac{1000}{1500} \times \frac{3600}{90}\text{hr} \\
 &= 40\text{km/h}
 \end{aligned}$$

B₁

For the substitution

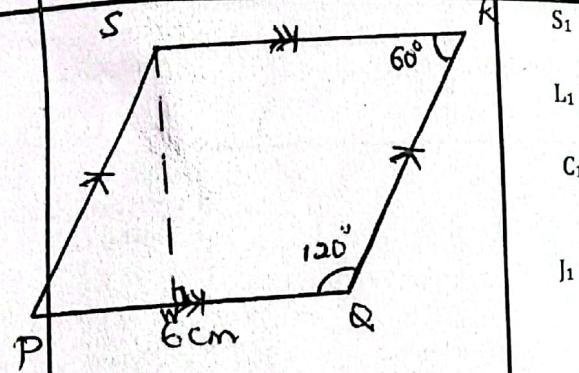
M₁

For the method

A₁

For the answer

29.



S₁

For the sketch

L₁

For 6cm

C₁

For 120°

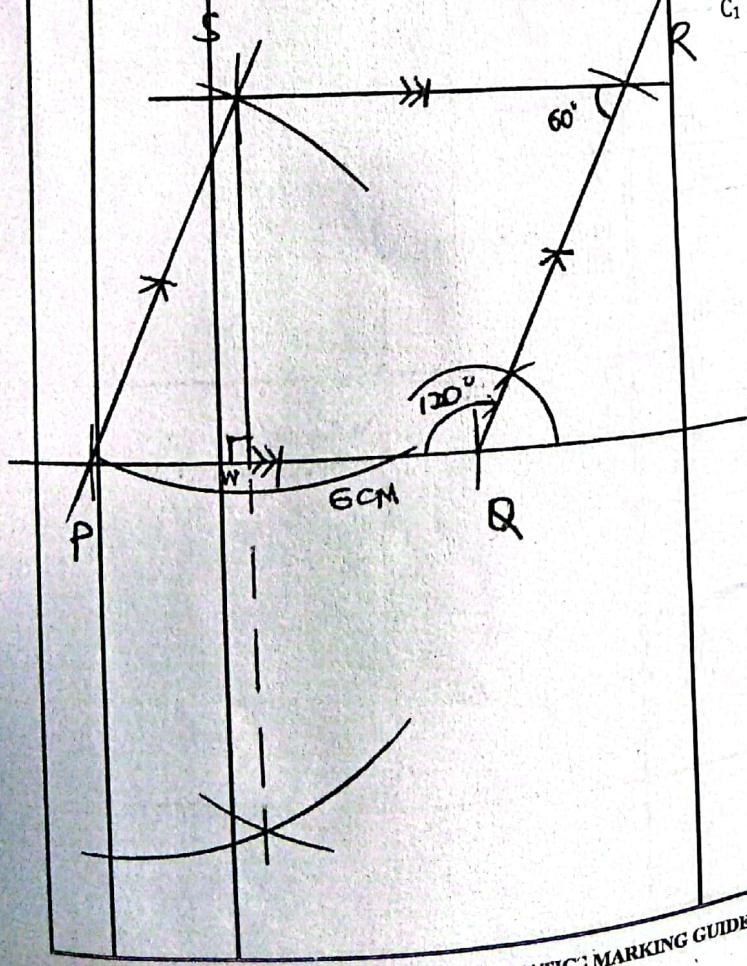
J₁

For joining

C₁

For angle PSW

Emphasise neatness and accuracy.



30.	P.7	a) $\begin{array}{r} 277 \\ -113 \\ \hline 164\text{km} \end{array}$	B ₁	For 164km	Make a view on time tables when its given in 24hour clock system.												
		b) $\begin{array}{r} 6:10\text{pm} = 6 : 10\text{pm} \\ + 12 : 00\text{hour} \\ \hline 18 : 10\text{hour} \end{array}$	M ₁	For the method													
		c) $\begin{array}{r} 9:45\text{am} \\ -9:00 \\ \hline 45\text{minutes} \end{array}$	A ₁	For the answer													
		d) Speed = $\frac{D}{T}$ Distance = 277 $\begin{array}{r} -165 \\ \hline 112\text{km} \end{array}$ Time = 6:10pm $\begin{array}{r} -2:10\text{pm} \\ \hline 4:00 \end{array}$ It took 4hours Speed = $\frac{112\text{km}}{4\text{hours}}$ $=28\text{km/h}$	B ₁	For 4hours													
			B ₁	For 28km/hr													
31.	P.7	$\left[\frac{15600}{30} \right] \text{trays}$ $\left[\frac{520}{30} \right] \text{trays}$ $\left[\frac{520}{40} \right] \text{number of trips}$ $\left[\frac{520}{40} \right] = 13 \text{trips}$	M ₁	For 520 trays	Expose candidates to a variety of related questions.												
			M ₁	For the method													
			A ₁	For 13 trips													
32.	P.7	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>X</td><td>4</td><td>1</td><td>$\frac{1}{3}$</td><td>-1</td><td>3</td></tr><tr><td>Y</td><td>Z</td><td>-2</td><td>-4</td><td>-8</td><td>4</td></tr></table> $\begin{array}{l} Y = 3x - 5 \\ Y = (3 \times x) - 5 \\ Y = (3 \times 4) - 5 \\ Y = 12 - 5 \\ Y = 7 \end{array} \quad \begin{array}{l} Y = 3x - 5 \\ -2 = 3x - 5 \\ -2 + 5 = 3x - 5 + 5 \\ 3 = 3x \\ 3 \\ 3 \\ x = -1 \end{array}$ $\begin{array}{l} Y = 3x - 5 \\ Y = (3 \times \frac{1}{3}) - 5 \\ Y = 1 - 5 \\ Y = -4 \end{array} \quad \begin{array}{l} Y = 3x - 5 \\ -8 = 3x - 5 \\ -8 + 5 = 3x - 5 + 5 \\ -3 = 3x \\ -3 \\ -3 \\ x = -1 \end{array}$ $\begin{array}{l} Y = 3x - 5 \\ Y = (3 \times 3) - 5 \\ Y = 9 - 5 \\ Y = 4 \end{array}$	X	4	1	$\frac{1}{3}$	-1	3	Y	Z	-2	-4	-8	4	B ₁	For each correct filled	Make a review on how the co-ordinates can be plotted on the grid.
X	4	1	$\frac{1}{3}$	-1	3												
Y	Z	-2	-4	-8	4												
			B ₁														
			B ₁														
			B ₁														