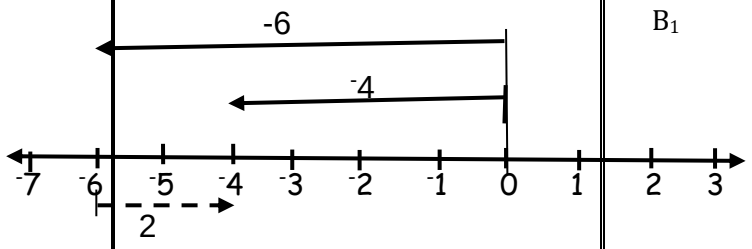
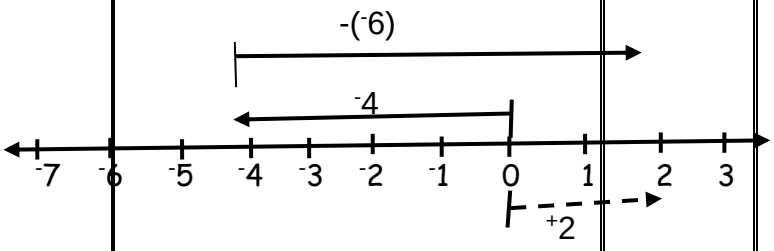
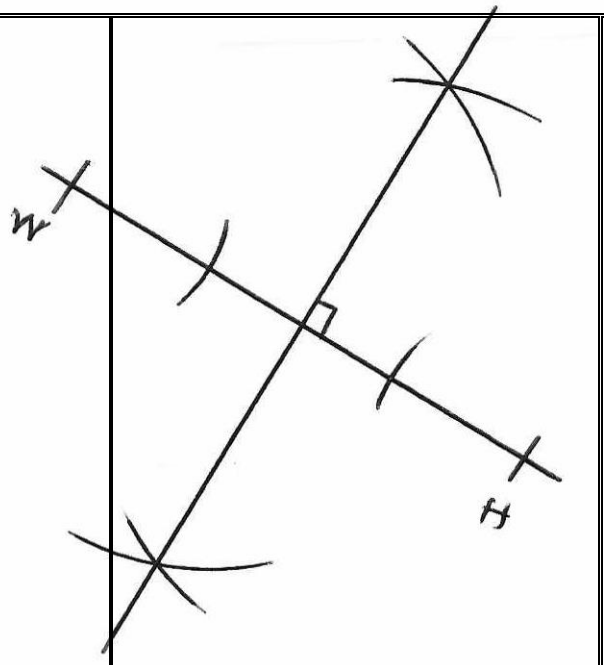
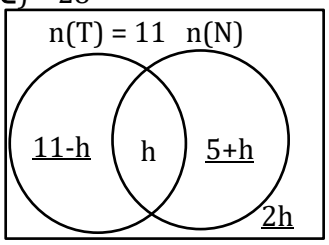
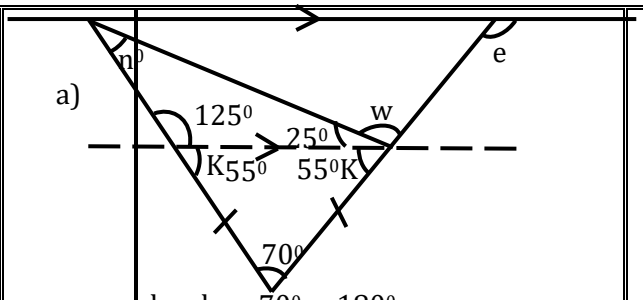
THE SIPRO PRE PLE SET I MATHEMATICS MARKING GUIDE - 2023

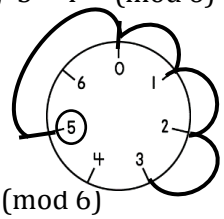
NO	LEVEL	SOLUTION	AWARD	REASON	COMMENT
1.	P.2	5 2 7 -1 0 3 4 2 4	B_2	For the answer	Expose candidates to operations with regrouping
2.	P.4	CIX = C IX = 100 + 9 = 109 One hundred nine.	B_1 B_1	For 109 For the answer	Make a review on conversion of Roman numerals to Hindu-Arabic.
3.	P.5	$1 - \frac{3}{4}$ $1 - \frac{3}{4} = \frac{(1 \times 4) - (3 \times 1)}{4}$ $= \frac{4 - 3}{4}$ $= \frac{1}{4}$	M_1 A_1	For the method For the answer	Operate fractions and involve word problems.
4.	P.6	2(e-3) =18 (2xe) – (2 x 3) = 18 2e - 6 = 18 2e – 6 + 6 = 18 – 6 2e = 12 $\frac{2e}{2} = \frac{12^{6}}{2_{1}}$ e = 6	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	Set H = {4, 6, 8, 9, 10} Set G= {1, 3, 6, 10, 15} Set H∪G = {1, 3, 4, 8, 9, 15} n(H∪G) = 6	M_1 A_1	For set H∪G For n(H∪G)	Make practice on reciting types of numbers.
7.	P.7	8, 4, 2, 1, $\frac{1}{2}$ ÷2 ÷2 ÷2 ÷2	M_1 A_1	For the pattern For the answer	Expose candidates to sequences involving division and multiplication as well.
8.	P.7	12: 00hours -10: 05hours 1: 55pm 5 : 20am + 1 : 55 7 : 15 The journey took 7 hours 15minutes or $7\frac{1}{4}$ hours	B_1 B_1	For 1:55 For $7\frac{1}{4}$hrs	Accept any other method leading to correct answer.
9.	P.7	No of poles = 20 Interval = 5m No of intervals =20 – 1 Length of the road = (19 x 5)metres = 95metres	M_1 A_1	For 19 For 95 metres	Help candidates to understand the concept of poles, distance and the intervals.

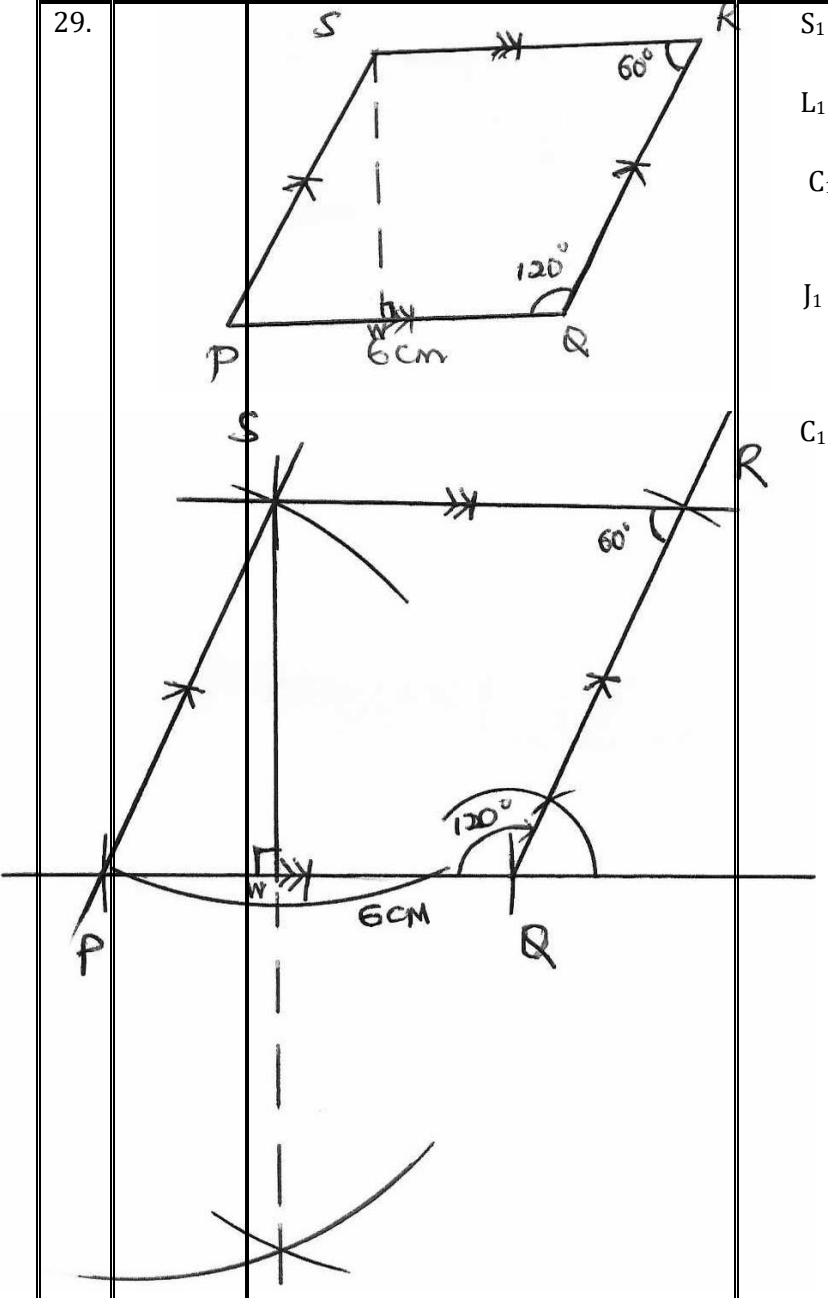
10.	P.6	$^{-}4 - {}^{-}6$  **Alternative**  	B_1 B_1	For $^{-}6$ For $^{+}2$	Expose candidates to a variety of operations on the number line.
11.	P.7	$\begin{array}{r} 616 \\ \cancel{777} \\ -\ 5\ 7\ 2 \\ \hline 1\ 9\ 9 + 1 \end{array}$ = 200cards Sh. 20,000 x 200 Sh. 4,000,000	B_1 B_1	For 200 cards For the answer	Assist the learners to understand why one is added.
12.	P.7	$\frac{1}{2}\pi d = c$ $\frac{1}{2} \times 3\frac{1}{7} \times d = 22dm$ $\frac{1}{\cancel{2}} \times \frac{\cancel{22}}{7} \times \frac{d}{1} = \frac{22}{1}dm$ $7 \times \frac{11d}{7} = \frac{22dm}{1} \times 7$ $\frac{\cancel{11}d}{\cancel{11}} = \frac{\cancel{22}dm \times 7}{\cancel{11}}$ d = 14dm Diameter = 14cm	 M_1 A_1	 For the method For the answer	Make a review on area and circumference on parts of a circle.
13.	P.7	Sh.216000 -Sh.180000 Sh. 36,000 P x R X T = ST sh.180,000 x R x 3 = sh 36,000 $100 \times \text{sh } 180{,}000 \times R \times 3$ 1 $\text{Sh } 180{,}000 \times 3 \times R = \text{sh } 36000 \times 100$ Sh 180000 x 3 sh 180,000 x 3 $R = \frac{20}{3}$ Rate = $6\frac{2}{3}\%$	 M_1 A_1	 For the method 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	$3^{2b} \div 81 = 1$ $3^{2b} \div 3^4 = 3^0$ $2b - 4 = 0$ $2b - 4 + 4 = 0 + 4$ $\frac{2b^1}{2_1} = \frac{4^2}{2_1}$ $b = 2$ 3 | 81 3 | 27 3 | 9 3 | 3 1	M_1 A_1	For the method For the answer	Make a review on operation of indices.
16.	P.7	Mass of 4 girls 35x4 kg = 140kg Mass of 3 girls (90 x 3)kg = 270kg Mass of 3rd girl 2 70 kg -1 4 0 1 3 0kg	M_1 A_1	For the method For the answer	Expose candidates to a variety of such related questions.
17.	P.6	$\frac{1}{2}bh = \frac{1}{2}bh$ $\frac{1}{2} \times 48m \times 6m = \frac{1}{2} \times n \times 18m$ $\frac{1}{2} \times \frac{24}{48m} \times 6m = \frac{1}{2} \times n \times \frac{9}{18}m$ $24m \times 6m = 9n$ $\frac{3}{9} \frac{1}{9}m$ $16m = n$ $n = 16m$	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	$3(2 - P) < 15$ $(3x2) - (3 \times P) < 15$ $6 - 3p < 15$ $6 - 6 - 3p < 15 - 6$ $-3p < 9$ $\frac{-3p}{-3} > \frac{9}{-3}^3$ $P > -3$	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	$\frac{M}{5} = 6 \pmod 7$ $5 \times \frac{M}{5} = 6 \times 5 \pmod 7$	M_1	For the method	Expose candidates to a variety of solving integers with word problems.

		M = 30 7 (mod 7) 4 7⌈30 -28 2 M = 2 (mod 7)	A_1	For the answer	
20.	P.7	5034 5034 ÷ 10 = 503.4 503.4 ÷ 10 = 50.34 50.34 ÷ 10 = 5.034 5.034 x 10^3	B_1 B_1	For 5034 For 5.034 x 10^3	Make fraction of standard form, and distributive property.
SECTION B (60 Marks)					
21.	a)	n(∈) = 28  	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 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 1/9 Tap Z fills 1/9 + 3 = 1/12 Combined 1/9 + 1/12 = 4 + 3/36 = 7/36 7/36 = 700 litres = 700 ÷ 7/36 = 700/100 x 36/7 3600 litres	M_1 B_1 B_1	For the method For 7/36 For 3600litres	Follow through candidates' work and revisit applications of fractions.
	b)	20litres → 1 jerrycan 1litre → 1/20 3600litre → 1 x 3600/20 (180) 1 jerrycan → sh 16000 180 jerrycan → sh 1600 x 180 sh 2,880,000	B_1 B_1	For180 For sh.2,880,000	

23	a)	 k + k + 70⁰ = 180⁰ 2k + 70⁰ - 70⁰ = 180⁰ -70⁰ 2k = 110⁰ 2 2 K =55⁰ 180⁰ -55⁰ 125⁰ n⁰ +125⁰ + 25⁰ = 180⁰ n⁰ +150⁰ + 150⁰ = 180⁰ -150⁰ n⁰ = 30⁰ n⁰ = 30⁰ 1⁰ 1⁰ n = 30	B1 B1 B1	For 55⁰ For 125⁰ For n =30	Make a review on terms involved and how to apply them.
		ii) 55⁰ + 25⁰ + w = 180⁰ 80 + w = 180⁰ 80⁰ - 80⁰ + w = 180⁰ - 80⁰ w = 100⁰ e = 100⁰ + 25⁰ e = 125⁰	B1 B1	For 100⁰ For 125⁰	
24	P.6	**Water melons** Sh.9000 **Sweets** 20 x sh 300 5 = 4 x sh 300 = sh 1200 **Rice** 1200 x sh 5000 1000 Sh.500 x 12 Sh.6000 **Cooking oil** 7 x sh12,000 2 Sh. 42,000 sh 9 0 0 0 sh 6 0 0 0 sh 1 2 0 0 + sh 42000 Sh.58200 100%- 10% = 90% 90 x shs 58200 100 Sh.5820 x 9 Sh.52380	B1 B1 B1 B1 B1	For sh.6000 For sh.1200 For sh.42000 For the sum Forsh.52380	Emphasise the units
25.	P.7 a)	2m - m = 5 5 2m – m = 5 1 3m 1 (2m x 3) – (m x 3) = (5 x 3) (1) (3) (1) 6m – m = 15 5m = 15 5 5 M = 3	M1 A1	For the method For the answer	Expose candidates to a variety of equations

		b) 4(4g – 2) -4 (2g + 6) = 16 (4x4g)–(4x2) - (4 x 2g)+(-4 x 6) =16 16g - 8 - 8g - 24 = 16 16 – 8g – 8 – 24 =16 + 32 $\frac{8g}{8} = \frac{48}{8}$ g = 6	B_1 B_1 B_1	For collecting like terms For the method For the answer	
26	P.7	a) 3 - 4 = (mod 6)  5 (mod 6)	M_1 A_1	For the method For the answer	Make a review on application of integers.
		b) 5(finite 6) 5, 11, 17, 23, 29, 35, (41), 46 6(finite) 6, 13, 20, 27, 34, (41), 48,------- They were 41 apples	B_1 B_1 B_1	For the 5 (finites) For 6 (finites) For 41 apples	
27	P.7	$\pi d = c$ $\frac{22}{7} \times d = 88m$ $7 \times \frac{22}{7} \times d = 88m \times 7$ $\frac{22d}{22} = \frac{88m \times 7}{22}$ d =28m radius = $\frac{1}{2}$ x diameter = 1 x 28m = 14m	B_1 B_1	For 28m For 14m	Revisit finding area and circumference plus their applications.
		Area of the circle Area = πr^2 $= \frac{22}{7} \times 14m \times 14m$ = 44m x 14m = 616m² Area of unshaded region 616m² -196m² 420m²	B_1 B_1 B_1	For 616m² For 196m² For420m²	
28	P.7 a)	2 | 60 75 90 2 | 30 25 45 3 | 15 25 45 5 | 5 25 15 5 | 1 5 1 1 1 1 (2 x 2)+(3 x 3)+(5 x 5)+(4 x 9) x 25 900 seconds	M_1 A_1	For the method For the answer	Make a review on application of L.C.M

	b)	1000m = 1km 1m = $\frac{1}{1000}$ km 1000m = $\left(\frac{1}{1000} \times 1000\right)$km = $\left(\frac{1000}{1000}\right)$km 3600sec = 1hr 1sec $\frac{1}{360}$ 90sec = $\frac{1}{360} \times 90$hr = $\frac{90}{3600}$ = $\frac{1000}{1000} \div \frac{90}{3600}$ = $\frac{1000}{1500} \times \frac{3600}{90}$ 40km/h	B_1 B_1 M_1 A_1	For the substitution For the method For the answer	
29.			S_1 L_1 C_1 J_1 C_1	For the sketch For 6cm For 120^0 For joining For angle PSW	Emphasise neatness and accuracy.

30.	P.7 a)	2 7 7 -1 1 3 1 6 4km	B_1	For 164km	Make a view on time tables when its given in 24hour clock system.
	b)	6:10pm = 6 : 10pm + 12 : 00hour 18 : 10hour	M_1 A_1	For the method For the answer	
	c)	9 :45am - 9 : 00 45minutes	B_1	For 45 minutes	
	d)	Speed = D/T Distance = 277 -165 112km Time = 6:10pm -2:10pm 4 : 00 It took 4hours Speed = 112km/4hours =28km/h	B_1 B_1	For 4hours For 28km/hr	
31.	P.7	$\left(\frac{15600}{30}\right)$ trays $\left(\frac{\overset{520}{\cancel{15600}}}{\cancel{30}}\right)$ trays $\left(\frac{520}{40}\right)$ number of trips $\cancel{520}$ trips $\cancel{40}$ 13trips	M_1 M_1 A_1	For 520 trays For the method For 13 trips	Expose candidates to a variety of related questions.
32.	P.7	X | 4 | 1 | $\frac{1}{3}$ | -1 | 3 Y | 7 | -2 | -4 | -8 | 4 Y = 3x – 5 Y = (3 x x) -5 Y = (3 x 4) -5 Y = 12 – 5 Y = 7 Y = 3x – 5 -2 =3x - 5 -2 + 5 = 3x – 5 + 5 $\frac{3}{3} = \frac{3x}{3}$ x = -1 Y = 3x – 5 Y = $\left(3x\frac{1}{3}\right)$ - 5 Y = 1 – 5 Y = -4 Y = 3x – 5 -8 =3x - 5 -8 + 5 = 3x – 5 + 5 $\frac{\cancel{3}}{\cancel{3}} = \frac{\cancel{3}x}{\cancel{3}}$ x = -1	B_1 B_1 B_1 B_1 B_1	For each correct filled	Make a review on how the co-ordinates can be plotted on the grid.
		Y = 3x – 5 Y = (3 x 3) -5 Y = 9 – 5 Y = 4			