THE SIPRO PRE - PLE SET II 2024

MATHEMATICS

Time Allowed: *2 Hours 30 Minutes*

Index No.	EMIS No.						Personal No.		

Candidate's Name: _____

Candidate's Signature: _____

EMIS No. _____

District ID: _____

READ THE FOLLOWING INSTRUCTIONS CAREFULLY:

1. This paper has two sections: **A** and **B**.
2. Section **A** has **20** questions **(40 Marks)**.
3. Section **B** has **12** questions **(60 Marks)**.
4. Attempt all questions in both sections. All answers to both sections **A** and **B** must be written in the spaces provided.
5. All answers must be written in blue or black ball point pens or ***ink***. Only diagrams and graph work must be done in ***pencil***.
6. Unnecessary ***alteration*** of work will lead to loss of marks.
7. Any ***handwriting*** that cannot be easily read may lead to loss of marks.
8. Do not fill anything in the boxes indicated: **"FOR EXAMINER'S USE ONLY"**

For Examiner's Use Only;

Qn No.	MARKS	INITIALS
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Page 10		
Page 11		
Total		

Please turn over

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Dee Dan

MG CG DG G DG MG KG

SECTION A: 40 MARKS

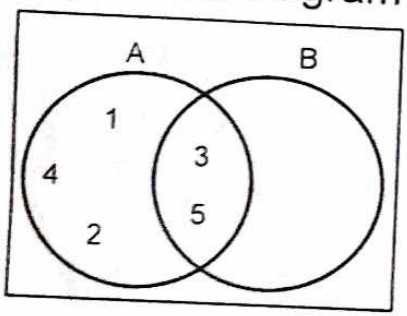
Attempt **all** questions in this section.

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

1. **Work out:** 97 – 15

2. **Simplify:** 5ab + 2ab – 3ab

3. In the venn diagram below, find n(B - A)



4. Write **CDX** in Hindu-Arabic numerals.

5. Cooking oil is sold in **25ml** sackets. Nyapendi bought **0.5 litres** of cooking oil. How many sackets did she buy?

6. Matayo took 19 days weeding his cassava garden. He completed weeding the garden on Friday. What day of the week did he start weeding his garden?

7. Express **300** as a product of its prime factors.

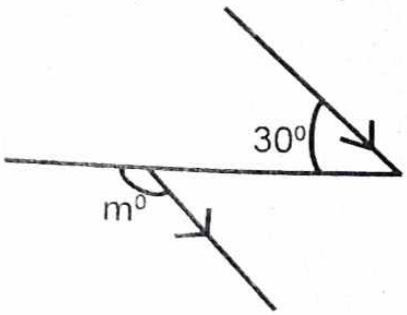
8. Using a ruler, a pencil and a pair of compasses only, construct an angle of 67.5^0.

9. Aminah is **7 years** old and Liz is **12 years** old. How old will Aminah be when Liz is 18 years?

10. Convert 320_{five} to base ten.

11. Express **40 centigrams** as a percentage of **2 grams**.

12. In the figure below, find the value of **m** in degrees.



13. Using digits 3, 8 and 4, form two, 3-digit numbers divisible by 6.

The smallest number divisible by 6	_____
The biggest number divisible by 6	_____

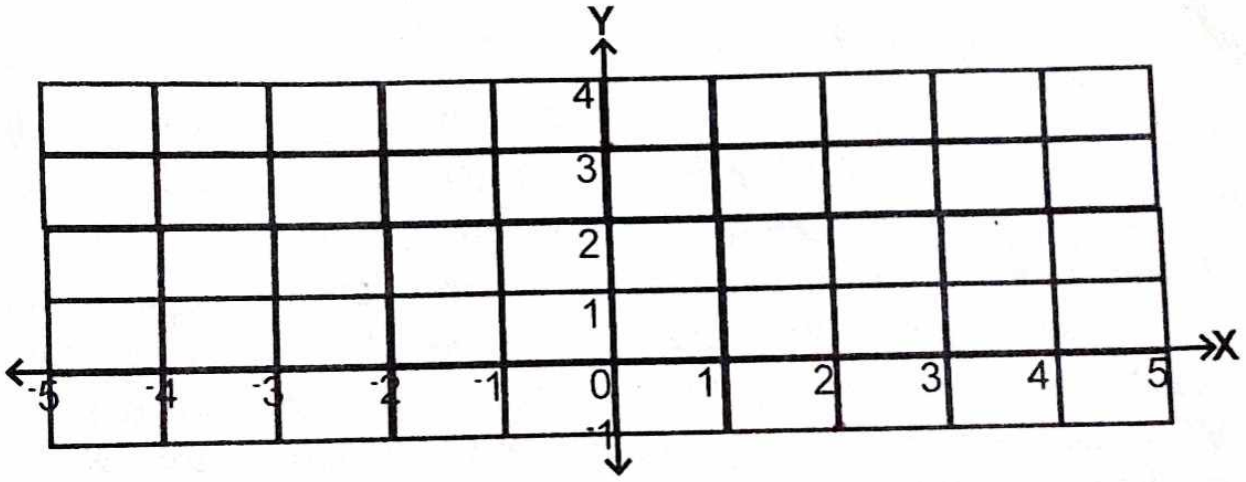
14. Solve: $2h - (3 - h) = 9$.

15. Mawa sold a shirt at sh.18,000 and made a profit of sh. 2,000. Calculate his percentage profit.

16. Aidah's watch is faulty. When the correct time is 6:40 a.m, Aidah's watch reads 7:10 a.m. What is the correct time if the time by Aidah's watch is 9:00 a.m?

6:60
7:10
6:40
30
8 60
9:00
30
8:30

17. Plot the points **B(0, +3)** and **D(+2, -1)** on the coordinate graph below;



18. The temperature of water ice was -19^{0}c. When the water was heated, the temperature rose to -5^{0}c. What was the rise in temperature?

19. **Work out:** $\frac{3}{4} + 4$.

20. The average mass of 6 boys in a group is 40kg. Two boys wh
weigh 40kg and 20kg leave the group. Find the total mass of
the remaining 4 boys.

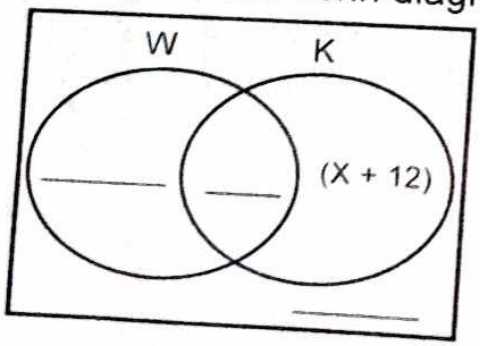
SECTION B: 60 MARKS

Attempt **all** questions in this section.

Marks for **each part** *of the question are* **indicated** *in the brackets.*

21. In a class, 30 pupils enjoy teacher Wasswa's lesson (W), 29 enjoy teacher Kato's lesson (K), 13 of the pupils who enjoy teacher Wasswa's lessons also enjoy teacher Kato's lessons, and 'x' pupils enjoy other teachers' lessons.

(a) Complete the venn diagram below. *(03 marks)*



(b) Find the value of **x**. *(02 marks)*

(c) How many pupils do not enjoy teacher Kato's lessons? *(01 mark)*

22. The table below shows how Mr. Oguti bought his items from the shop.

(a) Complete the table below. *(05 marks)*

Items	Quantity	Unit price	Total cost
Peas	$2\frac{1}{2}$ kg	Sh. 4,000 per kg	Sh. _____
Cooking oil	_____ litres	Sh. 8,000 per litre	Sh. 6,000
Sugar	$3\frac{1}{4}$ kg	Sh. _____ per kg	Sh. 13,000
Mushrooms	1,500g	Sh. 2,000 per kg	Sh. _____
Total bill			Sh. _____

(b) If he had sh. 40,000, how much did he remain with? *(01 mark)*

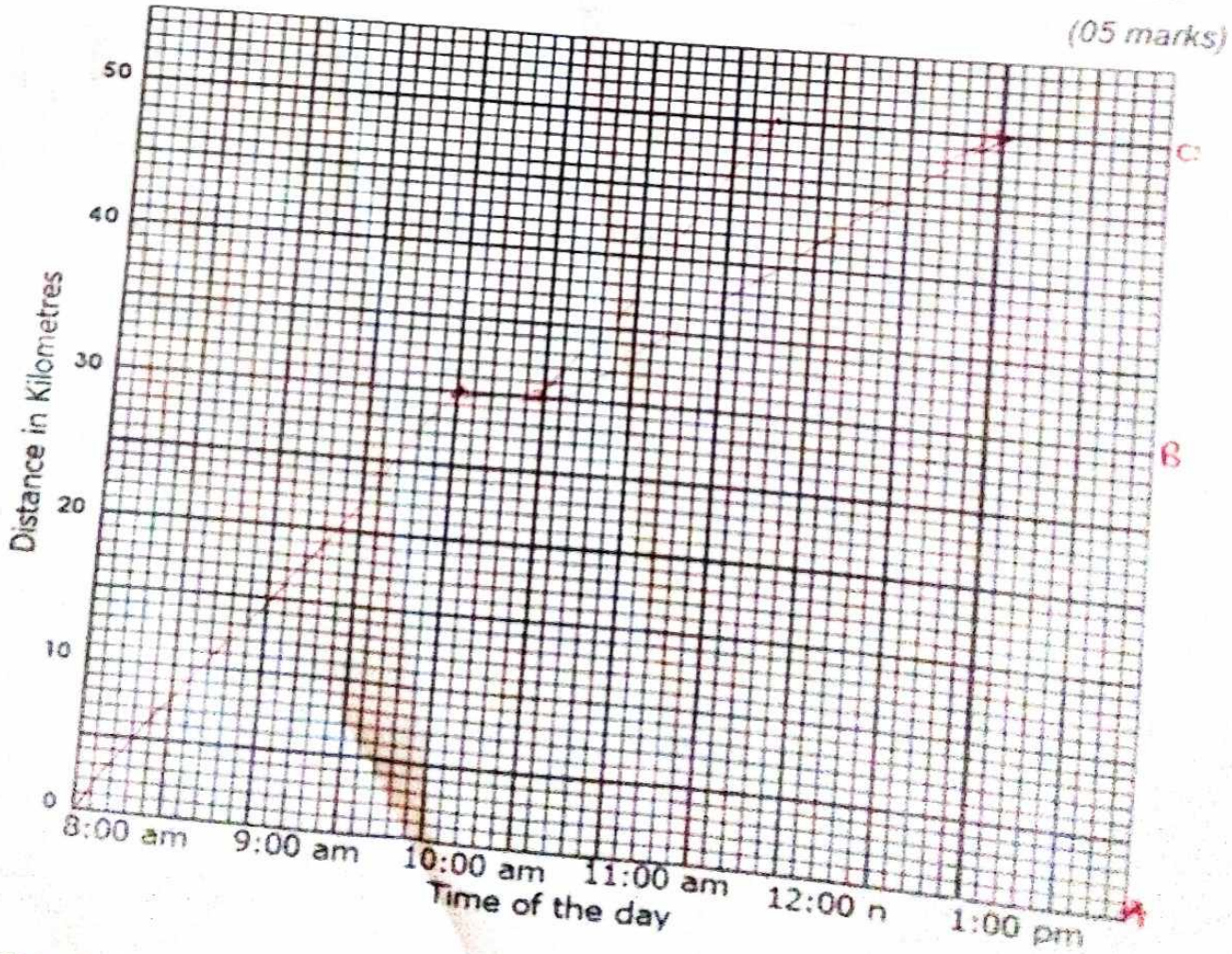
23. At the bus park, buses travelling to Arua and Bushenyi leave after every 40 minutes and 50 minutes respectively.

(a) After how long do the two buses leave together? *(03 marks)*

(b) The first buses leave together at 6:00 a.m. At what time do the buses leave together again? (03 marks)

24. Malaika started riding his bicycle from town A to town C through town B at 8:00 a.m. He rode from town A to town B at a speed of 15 km/h for 2 hours and then rested for $\frac{1}{2}$ an hour. From town B, he rode to town C a distance of 20km at a constant speed of 8km/h.

On the graph given below, draw a travel graph to show Malaika's journey. (05 marks)



A cylindrical tin of diameter 28cm and height 20cm is full of paraffin. How many litres of paraffin will remain in the tin after using 3,320 cm^3 of the paraffin? $\left(\text{Use } \pi \text{ as } \frac{27}{7}\right)$. *(04 marks)*

26. (a) Solve for m: $\frac{3m}{4} + 7 = 40$. *(02 marks)*

(b) Solve the inequality below and write the solution set.
$6(x + 3) > 12$. *(03 marks)*

27. (a) With the help of a ruler, sharp pencil and a pair of compasses only, construct a square PQRS whose diagonals measure 7cm. *(04 marks)*

(b) Measure the length QR of the square: _____ *(01 mark)*

28. The average of 60, (2p – 18), 81 and p is 75.

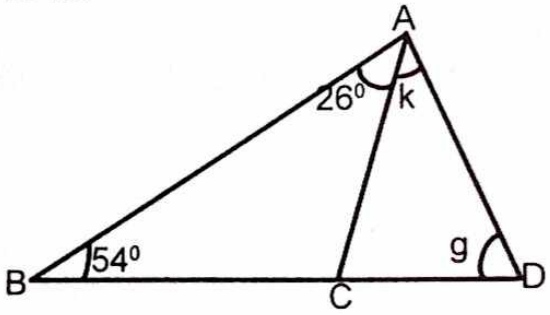
(a) Find the value of **p**.

(03 mar

(02 mar

(b) Find the range of the scores.

29. In the figure below, angle ABC = 54°, BAC = 26° and angle BCA is twice angle BAD.



Find the size of;

(a) angle marked **k**.

(03 marks)

(b) angle marked **g**.

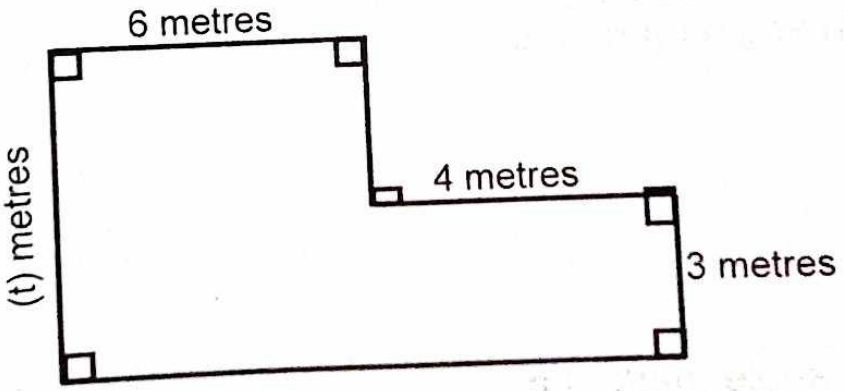
(02 marks)

30. When a shoe seller sells a pair of shoes for sh.81,000, he makes a loss of 10%.

(a) Calculate the price at which he buys the pair of shoes. *(02 marks)*

(b) At what price should he sell the pair of shoes in order to gain 5%? *(02 marks)*

31. The figure below shows Matilda's flower garden. The area of the flower garden is 60m². *Study the figure carefully and use it to answer questions (a) and (b) that follow.*



(a) Find the value of t. *(03 marks)*

(b) Find the perimeter of the flower garden.

10:30
2:30
3

(02 m...

32. **The timetable below is of a flight by a plane.** *Study and use it to answer the questions that follow.*

AIRPORT	ARRIVAL	DEPARTURE
V		3 : 15 p.m
W	3 : 30 p.m	4 : 40 p.m
X	5 : 35 p.m	6 : 10 p.m
Y	6 : 25 p.m	

(a) Express the time the plane left airport **V** to a 24-hour clock system.

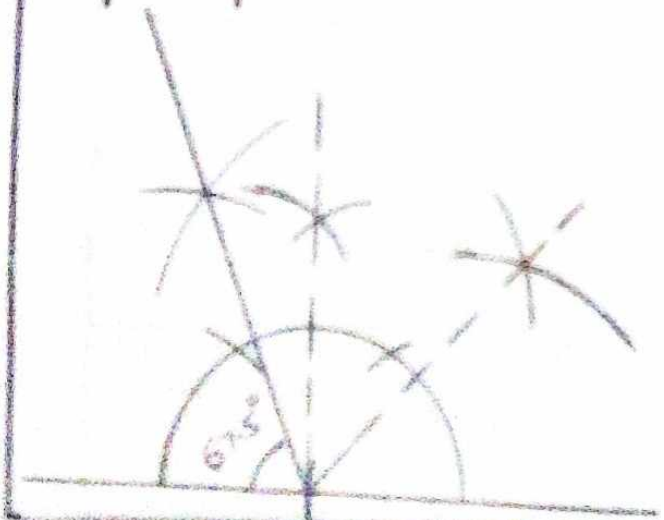
(02 marks)

(b) Chandia arrived at airport **X**, 30 minutes before the plane left airport **W**. For how long was Chandia at airport **X**, before leaving for airport **Y**?

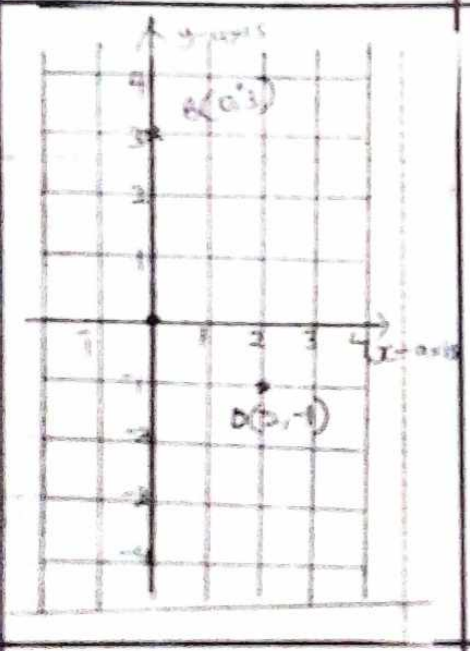
(02 marks)

(c) If the speed of the plane between airport **X** and airport **Y**, was 640 km/h, what distance did the plane cover between airport **X** and airport **Y**.

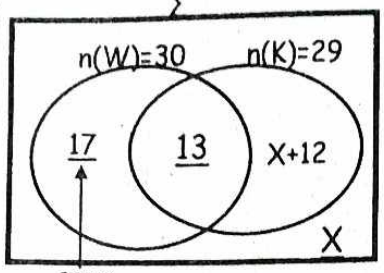
(02 marks)

QN	LEVEL	SOLUTION	MRK	REASON	COMMENT
1	P.1	9 7 - 1 5 8 2	B2	For the difference.	Operate and regroup correctly involving word statements.
2	P.6	5ab + 2ab - 3ab 7ab - 3ab 4ab	B2	For 4ab	Revisit collecting like terms.
3	P.5	B - A = {} n(B-A) = 0	B1 B1	For B-A For n(B-A)	Help the candidates to identify the regions on the venn diagram and differentiate.
4	P.6	CDX = CD X = 400 + 10 = 410	B2	For 410	Revisit conversion of hindu Arabic to Roman numerals.
5	P.5	500ml packets | 1L = 1000Ml. 25ml | 0.5L = 5X1000ML ~~500ml~~ | 10 ~~25ml~~ | 500ML 20 packets of 25ml	M1 A1	For the method. For the answer.	Make a review on related areas but with different units.
6	P.7	Days past 19 - 1 = 18 days Day - days = (finite 7) S - 18 = (finite 7) 2rem4 7\18 S - 4 = __(finite 7) 1 (finite 7) The wedding started on Monday.	M1 A1	For the method. For the answer.	Expose candidates to application of integers in different versions. Accept S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
7	P.6	2 800 2 400 2 200 2 100 2 50 5 25 5 5 1 1	M1 A1	For the method. For correct answer.	Make a review on prime factorization and assist the weak candidates.
8	P.7		B1 B1	For 135° For 67.5°	Emphasise correct labelling of angles.

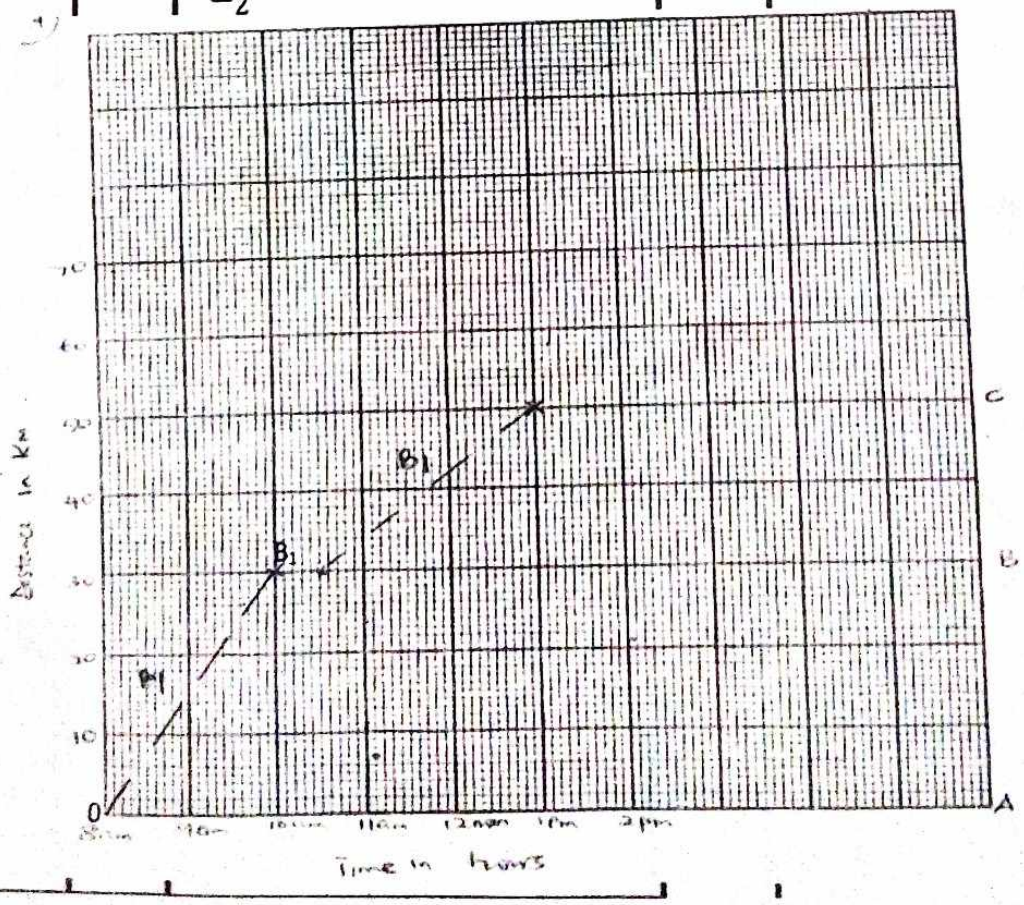
9	P.5	Aminah Liz 7 12 8 13 9 14 10 15 11 16 12 17 13 18 Aminah will be 13 years.	M_1 A_1	For the method For the correct answer.	Accept any other method leading to correct answer Accept Difference (18 – 12)years 6 years Aminah 7+6 13 years
10	P.5	3 2 0 five | | bnes | fives five fives (3x5x5)+(2x5)+(0x1) 75 + 10 + 10 85 ten	M_1 A_1	For the correct method For the correct answer	Help the candidates to operate bases and regroup where applicable.
11	P.6	1g = 100cg 2g = 2x100cg = 200cg $\frac{40}{200} \times 100\%$ $\frac{40^{20}}{200_1} \times \frac{100\%}{}$ = 20%	M_1 A_1	For correct method. For the correct answer.	Involve variety of units used in related questions.
12	P.6	$m^0 + 30^0 = 180^0$ $m^0 + 300 - 300 = 180^0 - 30^0$ $m^0 = 150^0$ $\frac{m^0}{1^0} = \frac{150^0}{1^0}$ m = 150	M_1 A_1	For the equation. For 150	- Make a review on angles involving parallel lines. - Encourage completion of diagrams.
13	P.7	3, 8, 4 - 483, 438 →843 (834) →384, (348) Smallest number is 348 Biggest number is 834	B_1 B_1	For 348 For 835	Revisit divisibility tests and help candidates on how they can be applied.
14	P.7	2h – (3 – h) = 9 2h – 3 + h = 9 2h + h – 3 = 9 3h – 3 + 3 = 9 + 3 3h = 12 $\frac{3h}{3} = \frac{12^4}{3_1}$ h = 4	M_1 A_1	For the correct method used. For the correct answer.	Expose candidates to variety of equations and practice.
15	P.5	% profits = $\frac{p}{BP} \times 100\%$ BP = sh. 18,000 sh. 2,000 sh. 16,000	M_1	For the correct method	Make a review on finding B.P, S.P, loss profit etc.

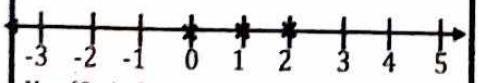
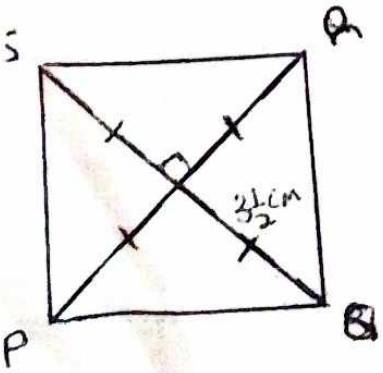
		2000 x 100% 16000 = 200 16 12½% or 12.5	A1	For the correct answer.	
16	P.7	Hours min 2 10am -6 40am 30min 9 00am 30 8 30am The correct time is 8:30am	B1 B1	For 30mins For 8:40am	Accept any other method leading to correct answer.
17	P.7		B1 B1	For the correct co-odinate.	Make a review on plotting and identifying the points on the graph.
18	P.6	R = HT - LT R = -5°c - (-19°c) R = -5°c + 19°c R = 14°c The rise in temperature was 14°c	M1 A1	For the method. For the correct answer	Revisit simplification of integers.
19	P.7	3 ÷ 4 4 3 ÷ 1 4 1 3 x 1 4 4 3 x 1 4 x 4 = 3 16	M1 A1	For the method. For the correct answer	Make a review on operation of fractions.
20	P.7	6 x 40kg = 240kg 40kg + 20kg = 60kg 240kg 60g 180kg	M1 A1	For the correct method For the answer.	Expose learners to a variety of such related questions.

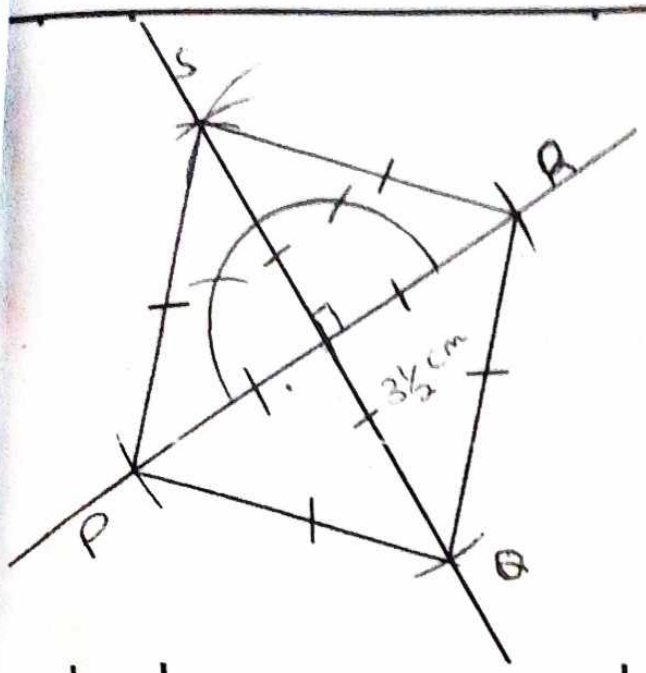
SECTION B

21a)	P.7	 $^{2}\cancel{3}10$ - 13 17	B1 B1 B1	For correct entry 13. For entry 17 For entry x.	Encourage candidates to always read the question at least 3 times for them to understand correctly.
b)		x + 12 + 13 = 29 x + 25 – 25 = 29 – 25 x = 4	M1 A1	For the correct equation formed. For correct answer.	
c)		17 + x 17 + 4 = 21 pupils	B1	For correct answer.	
22 a)	P.6	**Peas** $2\frac{1}{2}$ x sh.4000 2000 5 x sh. ~~4000~~ ~~2~~1 Sh. 10,000 **cooking oil** sh. ~~6000~~ sh. ~~8000~~ 6^{3} 8_{4} 3 4 **Sugar** Sh. 13,000 ÷ $3\frac{1}{4}$ Sh. $\frac{13,000}{1} \div \frac{13}{4}$ Sh. $\frac{\cancel{13000}^{1000}}{1} \times \frac{4}{\cancel{13}_{1}}$ Sh. 4,000 **Mushrooms** 1,500 x sh. 2,000 1000 = Sh. 3,000 **Total bill** sh. 10,000 sh. 6,000 sh. 13,000 + sh. 3,000 sh. 32,000	B1 B1 B1 B1 B1	For sh.10,000 For $\frac{3}{4}$ litres For sh. 4,000 For sh. 3,000 For the total bill.	Help candidates on how to fill the table and encourage them to show the working.
b)		sh. $^{3}\cancel{4}10,000$ - sh. 32,000 sh. 8,000	B1	For the correct answer.	
23a)	P.6	2 | 40 | 50 2 | 20 | 25 2 | 10 | 25 5 | 5 | 25 5 | 1 | 5 1 | 1	M1	For the method.	Make a review on prime factorization of numbers and expose candidates to more

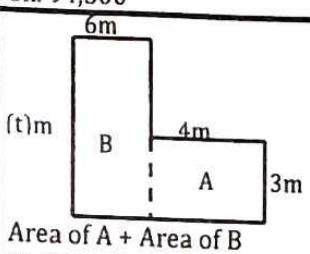
		(2x2x2)x5x5 8 x 25 200 minutes (~~200~~^{10})hours 6~~0~~$_3$ $3\frac{1}{3}$ hours	B_1 A_1	For 200 minutes For $3\frac{1}{3}$ hours	other application questions.
b)		$\frac{1}{3}$ x 60^{20} 3_1 20 munites 6 00am + 3 20 9 20am The bus will leave together at 9:20a.m	M_1 A_1	For addition For the answer.	
24a)	P.7	A to B D = SxT = 15km x 2hours 1h = 30km Resting time 1hour 2 B to C D = 20km T = D S = ^{5}~~20~~km ~~8~~$_2$km/h = $2\frac{1}{2}$hour	B_1 B_1	For 30km For $2\frac{1}{2}$hour	Encourage candidates to find the distance, time and speed if they are not given.



25	P.5	Volume = $\pi r^2 h$ = $\frac{22}{7}$ x 14cm x 14cm x 20cm $\frac{22}{7_1}$ x ^{1}14cm x (14cm x 20cm) 44cm x 280cm^2 12320cm^3 12320cm^3 - 3320cm^3 9000cm^3 No of litres = $\frac{\text{volume}}{1000\text{cm}^3}$ ($\frac{9000\ \text{cm}^3}{1000\text{cm}^3}$) Litres 9 litres	M$_1$ B$_1$ B$_1$ A$_1$	For the method For 12320cm^3 For 9000cm^3 For 9 litres	Revisit volume of all solid figures and work out the capacities.
26a)	P.7	$\frac{3m}{4} + 7 = 40$ $\frac{3m}{4} + 7 - 7 = 40 - 7$ $\frac{3m}{4} = \frac{33}{1}$ $(\frac{3m}{4} \times 4) = \frac{33}{1} \times 4$ $\frac{3m}{3} = \frac{33^{11}}{3} \times 4$ m = 44	M$_1$ A$_1$	For collecting like terms. For m = 44	Make a review on equations and involve solving inequalities. Accept other correct methods.
b)		$^{1}\frac{6(x+3)}{6} > \frac{12^{2}}{6_1}$ x + 3 > 2 x – 3 – 3 > 2 – 3 x > -1  X = {0, 1, 2, _, _, _}	M$_1$ B$_1$ B$_1$	For collecting like terms. For x> -1 For the solution set.	Accept other correct approaches.
27a)	P.7	 	S$_1$ C$_1$ C$_1$ J$_1$	For the sketch. For 90^0 For the arcs. For joining.	Make a review on construction of all quadrilateral polygons.



	b)	QR = ± 4.9cm	B_1	For the length.	
28a)	P.7	Average = $\frac{\text{sum of data}}{\text{Number of data}}$ $\frac{75}{1} = \frac{60 + 2p - 18 + 81 + p}{4}$ $\frac{75}{1} = \frac{60 + 81 - 18 + 2p + p}{4}$ $4 \times \frac{75}{1} = \frac{(123 + 3p \times 4}{4}$ $300 = 123 + 3p$ $300 - 123 = 123 - 123 + 3p$ $\frac{177^{80}}{3} = \frac{3p}{3}$ $5P = p$ $P = 59$	B_1 M_1 A_1	For the substitution For the correct method For the correct answer	Follow through and expose candidates to application of mean and other statistical terms. Accept P+2p-18+60+81=15x4 3p-18+141=75x4 3p+128=300 3p+123-123=300+123 $\frac{3p}{3} = \frac{177^{59}}{3}$ P = 59
b)		(2p – 18) (2x59) – 18 = 100 R = H - L 100 - 59 R = 41	B_1 B_1	For 142 For 41	
29a)	P.6	$2(k + 26^0) + 54^0 + 26^0 = 180^0$ $2k + 52^0 + 80^0 = 180^0$ $2k + 132^0 = 180^0$ $2k + 132^0 - 132^0 = 180^0 - 132^0$ $\frac{2k}{2_1} = \frac{48^0}{2}$ $k = 24^0$	B_1 B_1 A_1	For $2(k+26^0)$ For the equation. For $k = 24^0$	Encourage candidates to indicate and make use of the diagram by writing in it.
	b)	$g + k + 26^0 + 54^0 = 180^0$ $g + 24^0 + 80^0 = 180^0$ $g + 104^0 = 180^0$ $g + 104^0 - 104^0 = 180^0 - 104^0$ $g = 76^0$	M_1 A_1	For the equation. For the correct answer.	

30a)	P.7	100% - 10% = 90% sh. 81,000 ÷ 90% sh. 81,000 ÷ $\frac{90}{100}$ $\overset{9000}{\cancel{81000}} \times \frac{\cancel{100}}{\cancel{90}}$ Sh 90,000	M_1 A_1	For the correct method For the correct answer.	Accept other correct methods.
		100% + 5% = 105% $\frac{105}{\cancel{100}}$ x sh. 90,000 Sh. 94,500	M_1 A_1	For the correct method For correct answer.	
31a)	P.7	 Area of A + Area of B (LxW) + (LxW) = area $(4mx3m) + (6mxtm) = 60m^2$ $12m^2 + 6m^2t = 60m^2$ $12m^2 - 12m^2 + 6m^2t = (60m^2 - 12m^2)$ $6t = 48m^2$ $\frac{\cancel{6}m^2t}{\cancel{6}m^2} = \frac{48m^2}{6m^2}$ t = 8	B_1 M_1 A_1	For the correct method used. For collecting like terms. For the correct answer.	Follow through the candidates work and practical related questions.
b)		Perimeter = (10m + 10m) + (8m + 8m) = 20m + 16m = 36m	M_1 A_1	For the correct method. For correct answer.	
32 a)	P.7	3: 15pm +12: 00 15 15hour	B_2	For the correct answer.	Make a review on time table in both am and p.m.
	b)	4 : 40 p.m time taken -0 : 30 6: 10pm 4 : 10p.m - 4:10p.m 2 hours	M_1 A_1	For 4:10p.m For 2hours	
	c)	6 : 25p.m - 6 : 10 p.m 0 : 15 minutes D = SxT $D = 640\frac{km}{1\cancel{h}} \times \frac{1\cancel{h}}{4}$ $D = \frac{(640)km}{4}$ D = 160km	M_1 A_1	For the correct method. For the answer	