

THE SIPRO PRE - PLE SET III 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
1 - 5		
6 - 10		
11 - 15		
16 - 20		
21 - 22		
23 - 24		
25 - 26		
27 - 28		
29 - 30		
31 - 32		
Total		

Please turn over



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SECTION A: 40 MARKS

Attempt all questions in this section.

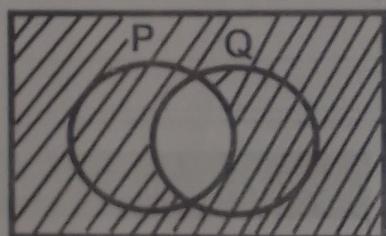
Questions 1 to 20 carry two marks each.

1. Complete the statement below;

$$4 + 4 + 4 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

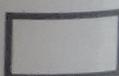
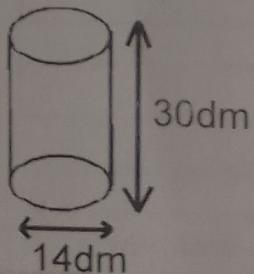
2. Simplify: $8q - 3y - 5q + 7y$

3. Describe the shaded region on the Venn diagram below.



4. Find the number whose standard form is 5.702×10^5 .

5. Find the volume of the cylinder below. (use $\pi = \frac{22}{7}$)



6. Divide; 3612 by 6.

7. Tap Q takes 3 minutes to fill the tank; tap P takes 4 minutes to draw the same tank. After how long will both taps take to fill the tank if open together at the same time?

8. Using a ruler, a pencil and a pair of compasses only, construct an angle of 105° .

9. Solve the equation: $3p + 4 = 16$.

10. Express $\frac{5}{11}$ as a recurring decimal.

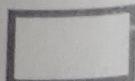
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P.7 MATHEMATICS PRE - PLE SET III EXAMINATIONS - 2024

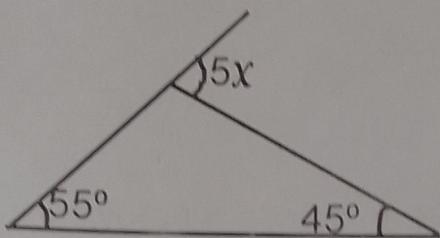
IGNITE CRITICAL THINKING AND EXPERIENCE ACTUAL LEARNING WITH THE ACTIVITY BOOKS, SEMAS, TEACHER'S GUIDES & PUPIL'S COMPANIONS.

11. Find the mean of 16 , x , $2x + 3$ and $x + 1$.
12. At a forex bureau, one USA dollar costs Ug. sh. $3,650$. A tourist has Ug. sh. $1,825,000$. Find how many dollars she will get.
13. A bus arrived at 2:40pm; If the journey took $2\frac{1}{2}$ hours, at what time did it depart?
14. Change 1101_{two} to base ten.
15. Calculate the square root of 1.44 .



16. Set **M** has 64 subsets. Find $n(M)$.

17. Find the value of x in the diagram.



18. Simplify; $x^5 \times x^3 \div x^4$

19. How **many** jumps of 4cm can a frog make to cover a distance of 2 metres?

20. Use power **notation** to expand 396.7.



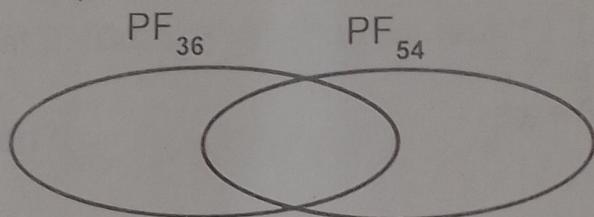
SECTION B: 60 MARKS

Attempt all questions in this section.

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

- 21.(a) Prime factorise 36 and 54 and represent the prime factors in a set notation. (02 marks)

- (b) Represent the prime factors on the venn diagram below. (03 marks)



22. A mother went shopping and bought the following items;

1 $\frac{1}{2}$ kg of meat at sh. 14,000 per kilogramme.

500ml of milk at sh. 2,000 every litre.

4 bars of soap at sh. 32,000

12 tomatoes at sh. 1,000 for every 3 tomatoes.

If she paid sh. 52,200; work out the percentage discount she got.

(05 marks)



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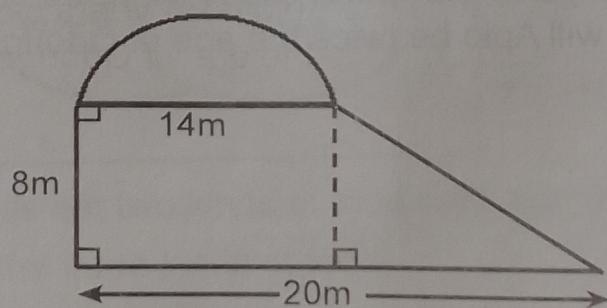
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IGNITE CRITICAL THINKING AND EXPERIENCE ACTUAL LEARNING WITH THE ACTIVITY BOOKS, SEMAS, TEACHER'S GUIDES & PUPIL'S COMPANIONS.

23. (a) With the help of a ruler, a pencil and a pair of compasses only, construct a parallelogram ABCD such that angle ABC is 120° , line AB is 8cm, and line AC is 5cm. (04 marks)

(b) Measure diagonal AC _____ cm. (01 mark)

24. Study and use the figure below to answer the questions that follow.

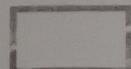


(a) Find the area of the figure above. (03 marks)



(b) Work out the distance round the figure above.

(03 marks)



25. (a) Solve the inequality: $3(1 - x) < 12$

(03 marks)

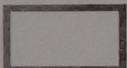
(b) Odongo is 16 years old while Apio is 34 years old. After how many years, will Apio be twice the age of Odongo?

(02 marks)

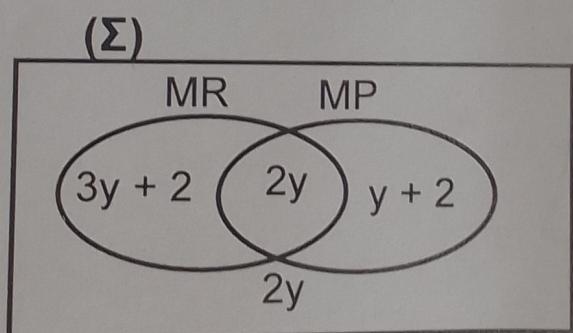


26. Suubi deposited money in the bank which offers a simple interest of 10% per year. After a period of 2 years, his account had an amount of sh. 864,000. Find the amount Suubi deposited in the bank.

(04 marks)



27. The Venn diagram below shows pupils who eat two kinds of food, Matoke and Rice (MR), Matoke and Posho (MP), three kinds of food and Matoke only. Study and use it to answer the questions that follow.



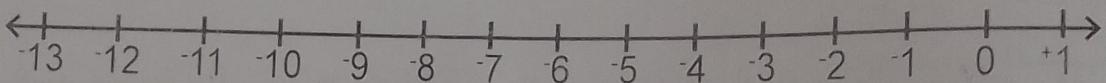
- (a) If 32 pupils eat two kinds of food only ,find the number of pupils who ate the three kinds of food.

(03 marks)



(b) Work out the number of pupils in the class. (02 marks)

28. (a) Use the number line to work out $3x - 4$. (03 marks)

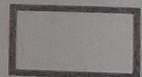


(b) If today is Friday, which day of the week was it 25 days ago?

(02 marks)

29. (a) Write 69,732 in words.

(02 marks)



(b) Calculate the quotient of the value of 9 and of the value of 3 in the above number.

(03 marks)

30. The frequency table below shows marks scored and the number of pupils who wrote the examination. **Study and use it to answer the questions that follow.**

Marks scored	55	60	70	93
Number of pupils	4	3	2	2

(a) Find the number of pupils who sat the examination. (01 mark)

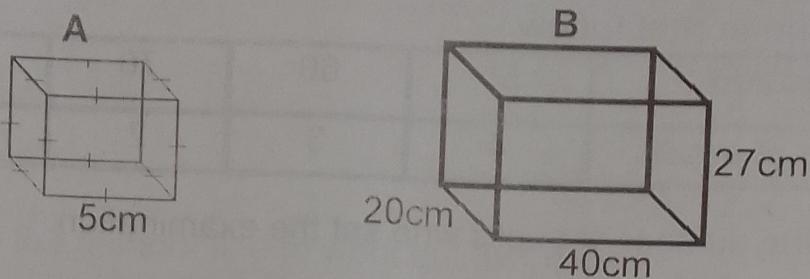
(b) How many pupils scored above the average mark? (03 marks)

31. (a) Convert 10m/sec to km/h.

(02 marks)

(b) A bus left Kampala at 8:00a.m. and arrived at Gulu at 9:45a.m. If it was travelling at a speed of 80km/h, find the distance it covered. (03 marks)

32. The cubes of type A are packed into a box of type B. Study the figures and use them to answer the questions that follow.



(a) How many cubes are packed along the bottom layer? (02 marks)

(b) How many cubes of type A will be packed in a big box B?

(02 marks)

(c) Find the volume of the space left unoccupied after packing.

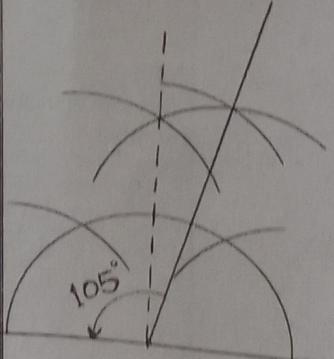
(02 marks)



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IGNITE CRITICAL THINKING AND EXPERIENCE ACTUAL LEARNING WITH THE ACTIVITY BOOKS, SEMAS, TEACHER'S GUIDES & PUPIL'S COMPANIONS.

THE SIPRO PRE -PLE SET III MATHEMATICS MARKING GUIDE

NO	LEVEL	SOLUTION	WARD	REASON	TECHNICAL ADVICE
1.	P.2	$4 + 4 + 4 = 3 \times 4$	B ₁ B ₁	For 3 For 4	Revisit number properties
2.	P.6	$8q - 5q + 7y - 3y$ $39 + 4y$	M ₁ A ₁	For collecting like terms. For correct answer.	Give more questions for practice on algebra.
3.	P.6	$(P \cap Q)^t$	B ₂	For correct answer.	Encourage learners to draw shaded region.
4.	P.7	5.702×10^5 5702×100000 1000 570200	M ₁ A ₁	For correct method. For correct answer.	Review standard forms and scientific notation
5.	P.6	$V = \pi r^2 h$ $V = \frac{22}{7} \times 7\text{dm} \times 7\text{dm} \times 30\text{dm}$ $V = (22 \times 7 \times 30)\text{dm}^3$ $V = (154 \times 30)\text{dm}^3$ $V = 4620\text{dm}^3$	M ₁ A ₁	For substitution. For correct answer.	Emphasize correct units measurement.
6.	P.4	$\begin{array}{r} 0602 \\ 6 \overline{) 3612} \\ 0 \downarrow \\ 36 \\ 6 \times 6 = \underline{-36} \downarrow \\ 01 \\ 0 \times 6 = \underline{-0} \\ 12 \\ 6 \times 2 = \underline{-12} \downarrow \\ \hline 0 \\ \hline 3612 \div 6 = 602 \end{array}$	M ₁ A ₁	For correct method. For correct answer.	Practise more operations on numbers.
7.	P.6	$\text{Tap Q in 1 minute} = \frac{1}{3}$ $\text{Tap P in 1 minute} = \frac{1}{4}$ $\frac{1}{3} + \frac{1}{4} = \frac{4+3}{12} = \frac{7}{12}$ $\frac{1}{12} \times 12 = 1$ = 12 minutes	M ₁ A ₁	For correct method. For correct answer.	Revisit application of fractions.
8.	P.6		A ₁ B ₂	For correct answer. For correct angle.	Emphasise accuracy and neatness.
9.	P.5	$3p + 4 - 4 = 16 - 4$ $3p = 12$ $p = 4$	M ₁ A ₁	For correct method. For correct answer.	Review solving simple equations.

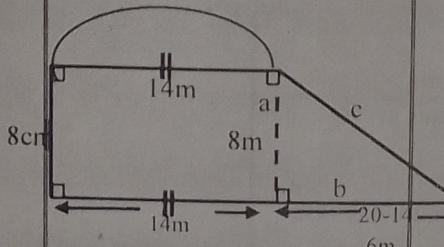
10.	P.6	$ \begin{array}{r} 0.\overline{45} \\ 11 \overline{) 5.000} \\ 0 \times 11 \quad 0 \\ \quad \quad 50 \\ 4 \times 11 \quad 44 \\ \quad \quad 60 \\ 5 \times 11 \quad 55 \\ \quad \quad 60 \\ \quad \quad 44 \\ \quad \quad 60 \\ 5 \times 11 \quad 55 \\ \quad \quad 60 \\ \quad \quad 5 \\ \quad \quad 5 \\ \quad \quad 0.45\ldots \end{array} $	M ₁	For correct method.	Review recurring decimals.
			A ₁	For correct answer.	
11.	P.7	<p>Mean sum of items Number of items Mean $(16 + 12 + 13 + 14 + 11) / 5 = 13$</p>	M ₁	For correct method.	Emphasise proper counting of terms.
		<p>Mean $13 \times 20 = 260$</p>	A ₁	For correct answer.	
12.	P.6	<p>U.p. sh $\left[\begin{array}{l} 1825000 \\ 3650 \end{array} \right]$ U.p. sh $\left[\begin{array}{l} 1825000 \\ 3650 \end{array} \right]$ $18250000 \text{ US dollars}$</p>	M ₁	For division.	Review exchange rates.
		<p>$\left[\begin{array}{l} 1825000 \\ 365 \end{array} \right] \text{ US dollars}$</p>	A ₁	For 500 US dollars.	
13.	P.7	<p>500 US dollars 2:40pm 12:00hr $\frac{14}{12} \text{ hours}$ 14:40hour $\rightarrow 2:30$ 12:10p.m</p>	M ₁	For subtraction.	Emphasise operations on time correctly.
14.	P.7	<p>$\left[\begin{array}{l} 110 \\ 13_{100} \end{array} \right]$ $(1x2^3) + (1x2^2) + (1x2^1)$ $(2x2x2) + (1x2x2) + (1x1)$ $8 + 4 + 1 = 13_{100}$</p>	M ₁	<p>For correct answer. For expanding</p>	Review bases.
15.	P.6	<p>$\sqrt{144}$ $\sqrt{100}$ $\begin{array}{r} 2 144 \\ 2 72 \\ 2 36 \\ 2 18 \\ 2 9 \\ 3 3 \\ 1 \end{array}$ $(2x2)x(2x2)$ $x(3x3)$ $2 \times 2 \times 3$ 12</p> <p>$\sqrt{144}$ $\sqrt{100}$ $\begin{array}{r} 2 144 \\ 2 50 \\ 2 25 \\ 5 5 \\ 1 \end{array}$ $(2x2)x(5x5)$ $2 \times 5 = 10$ 12</p>	M ₁	<p>For 13_{100}.</p> <p>For square root.</p>	<p>Review operations on numbers.</p> <p>Reject $\frac{12}{10} \Big/ \frac{6}{5} \Big/ \frac{11}{5}$</p>
			A ₁	For correct answer.	

16.	P.7	$2^n = 64$ $2^6 = 64$ n = 6 $\therefore n(M) = 6$	$\begin{array}{c c} 2 & 64 \\ \hline 2 & 32 \\ 2 & 16 \\ 2 & 8 \\ 2 & 4 \\ 2 & 2 \\ \hline & 1 \end{array}$	M ₁	For prime factoring 64	Review proper subsets and subsets.
17.	P.7	$5x + 55^\circ = 155^\circ$ $5x = 100^\circ$ $x = 20^\circ$		M ₁	For correct equation.	Revisit angle properties in triangles.
18.	P.6	$x^{(6)} = x^1$ $x^{(3)} = x^1$ $x^{(6)(3)} = x^1$		A ₁	For 20°	Review indices and their application.
19.	P.6	1m = 100cm 2m = (2×100) cm 2m = 200cm Jumps = 200 cm 4cm 50 jumps		B ₁	For 200cm	Review conversion of metric units.
20.	P.7	10^{-1} 396.7 $(3 \times 10^2) \times (9 \times 10^1) \times (6 \times 10^0) \times (7 \times 10^{-1})$		B ₁	For 50 Jumps Award on sight.	Accept any other correct alternative. Review whole numbers.

SECTION B

21.	P.5 a)	$\begin{array}{c c} 2 & 36 \\ \hline 2 & 18 \\ 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$ $PF_{36} = \{2_1, 2_2, 3_1, 3_2\}$		B ₁	For prime factors of 36	Revisit prime factorisation. Check through.
		$\begin{array}{c c} 2 & 36 \\ \hline 2 & 18 \\ 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$ $PF_{54} = \{2_1, 3_1, 3_2, 3_3\}$		B ₁	For prime factors of 54.	
	b)			B ₁ B ₁ B ₁	For every correct entry.	Check through.
22.	P.6	Meat $1\frac{1}{2} \times \text{sh. 14,000}$ $2 \quad 7000$ $3 \times \text{sh. 14000}$ $2\frac{1}{2}$ Sh. 21,000 Milk $500 \times \text{sh. 2000}$ 1000 Sh. 1,000 Tomatoes $\frac{1}{2} \times \text{sh. 1,000}$ $\frac{1}{2}$ Sh. 4,000 Soap Sh. 32,000		B ₁	For sh. 21,000	Review tabulated shopping bills.
				B ₁	For sh. 1,000	
				B ₁	For sh. 4,000	Follow through.

		Total Expenditure sh.32,000 sh.21,000 sh. 1,000 +sh. 4,000 <u>sh. 58,000</u>		
		Discount sh. 58,000 -sh. 52,200 <u>sh. 5,800</u>		
		$\frac{1}{\% \text{ discount}} \frac{\text{sh.} 5800}{\text{sh.} 5800} \times 100\%$	B ₁	For sh.5800
		$\frac{1}{10\%} \frac{\text{sh.} 5800}{\text{sh.} 5800}$	B ₁	For 10%
23.	P.7 a)	<p><u>Sketch</u></p> <p>Sketch</p>	S ₁	For correct sketch.
			C ₁	For 120°
			L ₁	For 8cm
			L ₁	For 5cm
		<p><u>Accurate diagram</u></p> <p>Accurate diagram</p>		Emphasise accuracy and neatness.
24.	P.7 a)	<p>b)</p> $\Delta C = 11.4 \text{ cm} \pm 0.1 \text{ cm}$ Area of semi-circle $A = \frac{1}{2}\pi r^2$ $= \frac{1}{2} \times \frac{22}{7} \times \frac{1}{2} \text{m} \times 7 \text{m}$ $= (11 \times 7) \text{m}^2$ $= 77 \text{m}^2$ Area of trapezium $A = \frac{1}{2}h(a+b)$ $= \frac{1}{2} \times 8 \text{m} (14 + 20 \text{m})$	B ₁	For 11.4cm \pm 0.1cm
			B ₁	For 77m ²
				Emphasise proper labelling, accuracy and neatness. Review area and perimeter of combined shapes.
				Emphasise units.

	A = $(4 \times 34)m^2$ A = $136m^2$ Total Area $136m^2$ $+ 77m^2$ \hline $213m^2$	B ₁	For 136m ²											
	b)													
		B ₁	For 213m ²											
	$a^2 + b^2 = C^2$ $8^2 + 6^2 = C^2$ $(8 \times 8) + (6 \times 6) = C^2$ $C^2 = 64 + 36$ $C^2 = 64 + 36$ $\sqrt{C^2} = \sqrt{100}$ $C = 10m$	B ₁	For 10m											
	$P = 8m + C + 10m + 20m$ $P = \left(38 + \frac{1}{2}\pi d\right)m$ $P = \left(38 + \frac{1}{2} \times 22 \times 14\right)m$ $P = (38 + 22)m$ $P = 60m$	M ₁	For substitution.	Emphasize units										
		A ₁	For 60m											
25.	P.7 a)	$3(1-x) < 12$ $3 - 3x < 12$ $3 - 3 - 3x < 12 - 3$ $-3x < \frac{9}{3}$ $-3 > 3$ $x > -3$	M ₁	For removing brackets correctly.	Revisit inequalities.									
		M ₁	For collecting like terms.	Emphasise change of sign at the division step.										
	b)	<table border="1"><tr><td>Names</td><td>Odongo</td><td>Apio</td></tr><tr><td>Now</td><td>16</td><td>34</td></tr><tr><td>2 years</td><td>$16+x$</td><td>$34+x$</td></tr></table>	Names	Odongo	Apio	Now	16	34	2 years	$16+x$	$34+x$	A ₁	For correct answer.	
Names	Odongo	Apio												
Now	16	34												
2 years	$16+x$	$34+x$												
					Review algebra and application question in daily life situations.									
26.	P.7	$\Delta = P + SI$ $Sh.864000 = P + (P \times R \times T)$ $Sh.864000 = P + (P \times \frac{10}{100} \times 2)$ $5 \times Sh.864000 \frac{5}{1} \times \frac{p}{1} + \frac{p}{5} \times \frac{5}{1}$ $Sh.(\frac{864000}{144000} \times 5) = 5p + p$ $Sh.(\frac{864000}{144000} \times 5) = \frac{6p}{6}$ $Sh.(144000 \times 5) = p$ $Sh.720,000 = p$	M ₁	For substitution	Review simple interest and Banking.									
			M ₁	For removing a fraction										
			M ₁	For diving										
			A ₁	For sh.720,000										

27.	P.7 a)	$n(\text{two kinds}) = 32$ $3y + 2 + y + 2 = 32$ $4y + 4 = 32$ $4y + 4 - 4 = 32 - 4$ $\underline{4y = 28}$ $y = 7$ $n(\text{three kinds}) = 2y$ 2×7 $= 14 \text{ pupils}$	M ₁	For correct answer.	com properly.
	b)	$n(\text{£}) = 32 + 2y + 2y$ $32 + 4y$ $32 + (4 \times 7)$ $32 + 28$ $n(\text{£}) = 60 \text{ pupils}$	M ₁	For substitution	
28.	P.7 a)	 $3x - 4 = 12$	B ₁	For correct movements.	Review integers.
	b)	$5 - 25$ (Finite 7) $25 \div 7 = 3 \text{ remainder } 4$ (Finite 7) $5 - 4$ (Finite 7) 1 (finite 7) Monday	M ₁	For correct method.	Reject (-4×-3)
29.	P.6 a)	Sixty-nine thousand, seven hundred thirty -two.	B ₂	Award on sight	Emphasise spelling.
	b)	Value of $9 = 9 \times 1000$ 9000 Value of $3 = 3 \times 10$ 3000 Quotient = $\begin{array}{r} 9000 \\ \overline{-30} \\ 300 \end{array}$	B ₁	For 900	Follow through.
			B ₁	For 30	
			B ₁	For 300	
30.	P.7 a)	$4 + 3 + 2 + 2 = 11 \text{ pupils}$	B ₁	For 11 pupils.	
	b)	Average = $\frac{(55 \times 4) + (60 \times 3) + (70 \times 2) + (93 \times 2)}{(4 + 3 + 2 + 2)}$ Average = $\frac{220 + 180 + 140 + 186}{11}$ Average = $\frac{726}{11}$ Average = 66marks Number of pupils = $\frac{2 + 2}{4} = 4 \text{ pupils}$	M ₁	For correct method.	Encourage candidates to read the questions more than once.
			A ₁	For 66 marks.	
			B ₁	For 4 pupils.	
31.	P.6 a)	$1\text{km} = 1000\text{m}$ $= 10\text{m}$ $\left(\frac{1}{1000} \right)\text{km}$ Ihour = 3600seconds = 1 second $\left(\frac{1}{3600} \right)$ hours $\left(\frac{10}{1000} : \frac{1}{3600} \right) \text{ km/h}$ $\left(\frac{10}{1000} \times \frac{3600}{1} \right) \text{ km/h}$ 36km/h	M ₁	For correct substitution	Review conversion of speed
			A ₁	For 36km/h.	Emphasize the units.

b)	<p>Time taken 9:45am -8:00am 1:45hours $T = 1\frac{3}{4}$ hours $D = S \times T$ $D = \frac{80 \text{ km}}{1\frac{3}{4}} \times 1\frac{3}{4}$ $D = \left(80 \times \frac{7}{4}\right) \text{ km}$ $D = (20 \times 7) \text{ km}$ $D = 140 \text{ km.}$</p>	B1	For calculating time.	Review speed, time and distance.
		M1	For substitution	Emphasize units.
		A1	For 140km	
2. P.7 a)	<p>$40 \text{ cm} \times 20 \text{ cm}$ $5 \text{ cm} \times 5 \text{ cm}$ (8×4) cubes 32 cubes</p>	M1	for proper substitution	Review application of length, mass and capacity.
b)	<p>$\left(\frac{40}{5} \times \frac{20}{5} \times \frac{27}{5}\right)$ cubes $(8 \times 4 \times 5)$ cubes (32×5) cubes 160 cubes</p>	M1	for dividing.	
c)	<p>Volume of big box B $V = L \times W \times H$ $= 40 \text{ cm} \times 20 \text{ cm} \times 27 \text{ cm}$ $V = 800 \text{ cm}^2 \times 27 \text{ cm}$ $V = 21600 \text{ cm}^3$</p> <p>Volume of cubes $V = 160 (\text{S} \times \text{S} \times \text{S})$ $V = 160 \times 5 \text{ cm} \times 5 \text{ cm} \times 5 \text{ cm}$ $V = 160 \times 125 \text{ cm}^3$ $V = 20000 \text{ cm}^3$</p> <p>volume of space unoccupied</p> <p>21600 cm^3 -20000 cm^3 <u>1600 cm^3</u></p>		Follow through	
		M1	For subtracting.	Emphasize the correct units of measurement.
		A1	For 1600 cm^3	