THE SIPRO PRE-PLE SET II 2023

MATHEMATICS

Time Allowed: *2 Hours 30 Minutes*

	Random No.						Personal No.		
Index No.									

Candidate's Name: _____

Candidate's Signature: _____

School Random No: _____

District: _____

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

THE SIPRO EDUCATIONAL SERVICES LIMITED - KAMPALA

PUBLISHERS OF THE SIPRO TEACHERS' GUIDES, LEARNER'S WORKBOOKS & HOLIDAY ASSIGNMENTS

SECTION A: 40 MARKS

Attempt **all** *questions in this section*

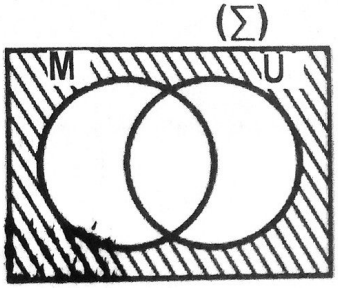
Questions **1** *to* **20** *carry* **two** *marks each*

1. A class monitor was given **two** notes of **sh. 5000**, how much money has the class monitor?

2. **Work out;**

$$\begin{array}{r} 1\,0\,1\,1_{\text{two}} \\ +\quad 1\,1\,1_{\text{two}} \\ \hline \\ \hline \end{array}$$

3. **Describe the shaded region.**



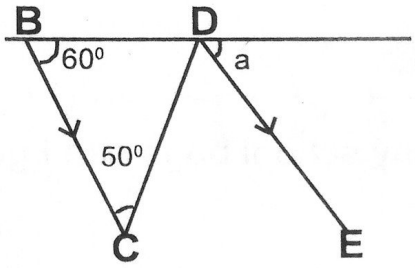
4. **Simplify;** $^{+}4 - {}^{+}9 - 2$

5. Write **in figures;** "Thirteen thousand, nine hundred four and twenty eight hundredths".

6. A school has three streams, **A** with 16 candidates, **B** with 24 candidates and **C** with 12 candidates.The head teacher plans to buy pens for the candidates. What **least** number of pens can he buy for the candidates?

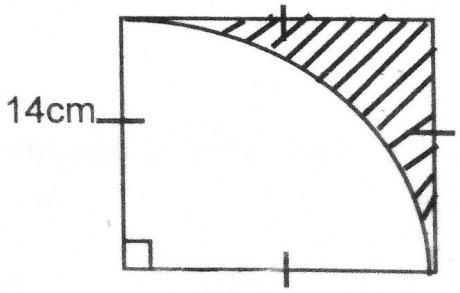
7. **Solve** the equation; $\frac{2w}{3} + 4 = 12$

8. In the diagram, line **BC** is parallel to line **DE**. Find the size of angle **a**.



9. If  represents **27** stools; **Draw** pictos for **108** stools.

10. A quadrant was cut out from the square manila piece of side **14cm**. Find the **area** of the wasted manila.



11. A tailor had **0.2m** piece of cloth. He cut it into **0.02m** pieces. How many **pieces** did he make from the cloth?

12. A test started at **2:30pm**. A candidate reached **15 minutes** late.If the test lasted for **90 minutes**, How long did the candidate take writing the test?

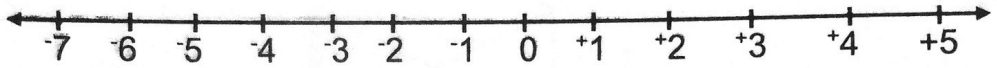
13.Seven school bags cost **sh.420,000**.How many school bags can I get with **sh.180,000**?

14. Moses planted trees in a circular garden of diameter **28 metres**. Work out the **distance** round the circular garden.(use π as $3\frac{1}{7}$)

15. Complete the **sequence** below;
2, 4, 8, 16, _____, _____

16. Expand **96,452** using **exponents**.

17. Plot $^{-}3$, $^{+}2$, and 0 on the **number line** below.



18. Find the percentage discount of an item which costed **forty-five thousand shillings** and a discount of one thousand five hundred shillings.

19. List the **proper** subsets of **set R**= {r,s,t}

20. Work out the **average** of x +2, 2x - 4, 6 and 3x + 1.

SECTION B: 60 MARKS

Attempt **all** *questions in this section*

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

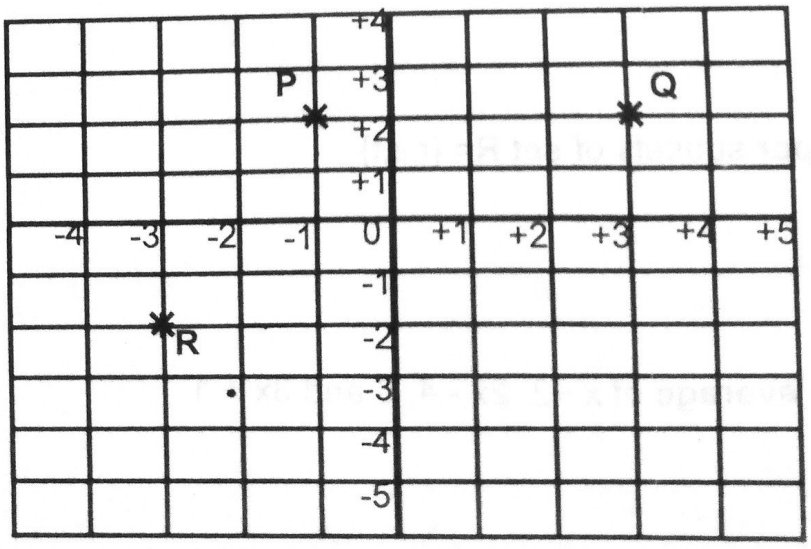
21. Using a ruler , a pencil and a pair of compasses, **draw** line AC= 4cm. Bisect AC so that the **perpendicular** bisector meets AC at O.On the bisector line OB= 2cm and OD = 6cm, **Join** BC, CD, DA and AB to form a quadrilateral ABCD.

(04 Marks)

b)Name the quadrilateral **ABCD** formed.

(01 Mark)

22. Write the co-ordinate points **P,Q** and **R**.



i) P _____

ii) Q _____

iii) R _____

(03 Marks)

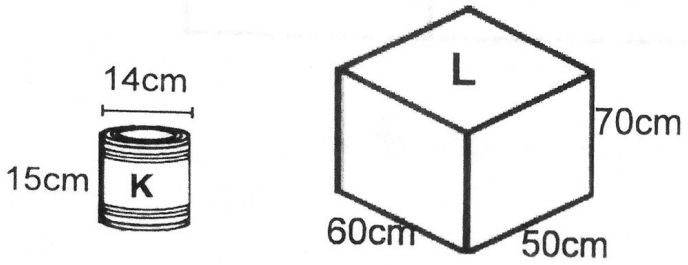
b) Plot the co-ordinates **S**(+3, -2)

(01 Mark)

c) **Join** the points to form a **figure** and find its **area**.

(02 Marks)

23. Tin **K** is packed in box **L** at a milk factory.



a) How **many** tins will fill the **first two** layers?

(02 Marks)

b) Calculate the **percentage** loss the factory made if tins on the last layer got spoilt yet each tin costed **sh.4000**.

(02 Marks)

24. A mother sent her son to a shop with the list of items to buy;
2kg of **sugar** at **sh.5500** per kg
250 gm of **salt** at **sh. 2000** per kg.
A bar of soap at **sh 6000**
$1\frac{1}{2}$ kg of **rice** at sh.9000

a) Prepare a shopping bill table for the list above.

Item	Qty	Unit cost	Amount
sugar			
salt			
soap			
rice			
Total			

(05 Marks)

b) If the boy went with **sh.20,000** and it was not enough to buy all the items, how much **more** money was needed?

(01 Mark)

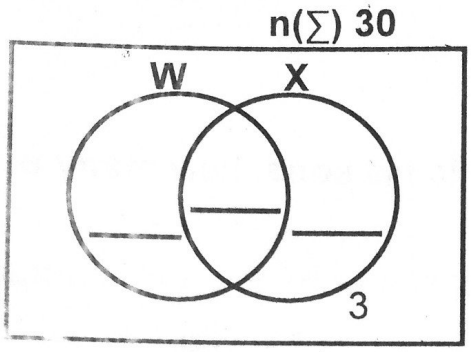
25. a) Round off **67,864** to the nearest **thousands**.

(02 Marks)

b) Malinga is **XL** years old now. In which **year** was he born?

(02 Marks)

26. a) Complete the Venn diagram with the information given:
$(W - X) = 12$, $(X - W) = 8$, $(W \cup X)^1 = 3$, $n(\sum) = 30$



(03 Marks)

b) What is the **probability** of picking a member of **X** complement?

(02 Marks)

27. a) Solve the **inequality:** $3(2 - X) \leq X + 14$

(02 Marks)

b) Give the **solution set** for X above.

(02 Marks)

28. Amon divided his land; $\frac{2}{5}$ to his **wife**, $\frac{1}{3}$ less the **remainder** to the son and the rest to the **daughters.**

a) What **fraction** did he give to his daughters?

(03 Marks)

b) If he gave 20 acres of land to his **sons**, how **many** acres did he have altogether?

(02 Marks)

29. A woman started her journey at **8:30 am** from Kampala to Kabale. As she reached Masaka, she rested for **45 minutes** after covering **180km** at **90km/h**. She continued to Kabale for 4 hours at 70km/h.

a) Find the woman's **average speed** for the whole journey.

(04 Marks)

b) At what **time** did she reach Kabale?

(01 Mark)

30. The exterior angle of a regular polygon is $\frac{1}{3}$ its **interior** angle.

a) How many sides has the polygon?

(03 Marks)

b) Find the number of **right angles** in the polygon.

(02 Marks)

31.a) Work out the **square root** of 0.0196.

(03 Marks)

b) Find the number that was prime **factorized** to give $\{2_1, 2_2, 3_1, 5_1\}$.

(02 Marks)

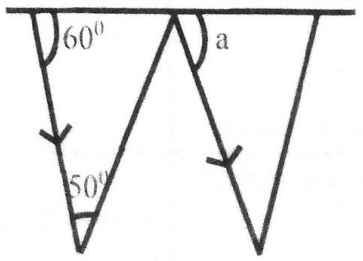
32. a) Express the product of 364 and 5 in **scientific notation**.

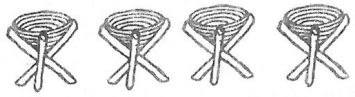
(03 Marks)

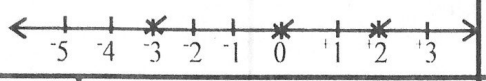
b) Given that; $3^n \div 27 = 81$. Find the value of n.

(03 Marks)

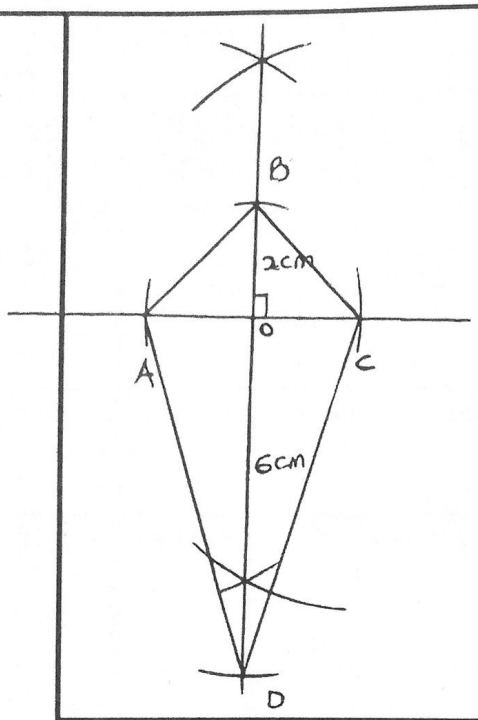
THE SIPRO PRE-PLE SET II MATHEMATICS MARKING GUIDE – 2023

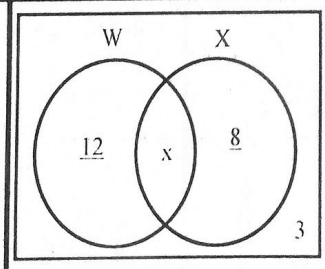
NO.	LEVEL	SOLUTION	AWARD	REASON	TECHNICAL ADVICE
1.	P.4	Sh. 5000 + Sh. 5000 **Sh. 10,000**	M_1 A_1	For correct working. For the correct answer.	Emphasise units.
2.	P.7	1011_{two} 2 : 2 1 r 0 + 111_{two} 3 : 2 1 r 1 10010_{two} 2 : 2 1 r 0	M_1 A_1	For correct working. For the correct answer.	Add in different bases.
3.	P.6	(MUU) complement.	B_2	For the correct answer.	Describe different regions.
4.	P.6	-4 – 9 – -2 -4 – (-9) – (-2) -4 – 9 + 2 -13 + 2 **-11**	M_1 A_1	For correct working. For the correct answer.	Follow proper rules of integers.
5.	P.6	13,000.00 + 904.28 **13,904.28**	M_1 A_1	For correct working. For correct answer.	Review value and place value of decimals.
6.	P.6	2 | 16 | 24 | 12 2 | 8 | 12 | 6 2 | 4 | 6 | 3 2 | 2 | 3 | 3 3 | 1 | 3 | 3 1 | 1 | 1 (2 x 2) x (2 x 2) x 3 4 x 4 x 3 48 **He will buy 48 pens.**	M_1 A_1	For correct working. For correct answer.	Teach application of LCM.
7.	P.5	$\frac{2w}{3} + 4 = 12$ $\frac{2w}{3} + 4 - 4 = 12 - 4$ $\cancel{3} \times \frac{2w}{\cancel{3}_1} = 8 \times 3$ $2w = 24$ $\frac{\cancel{2}w}{\cancel{2}} = \frac{24}{2}$ **w = 12**	M_1 A_1	For the complete collection of like terms. For the correct answer	Review equations and inequalities.
8.	P.5	 $a + 50^0 = 60^0 + 50^0$ $a + 50 - 50^0 = 110^0 - 50^0$ $a = 60^0$.	M_1 A_1	For the correct equation. For the correct answer.	Review angles on parallel lines.

9.	P.4	$\frac{108}{27} : \frac{3}{3} \quad \frac{36}{9} : \frac{3}{3} \quad \frac{12}{3}$ $= 4$ 	B_1 B_1	For division. For the correct answer.	Emphasise the concept of division.
10.	P.7	Area of the quadrant $\frac{1}{4}\pi r^2 \quad \frac{1}{4} \times \frac{22}{7} \times 14cm \times 14cm$ $1 \times 11 \times 2 \times 14cm \times 14cm$ $2 \quad 1$ $1 \times 11 \times 2 \times 14cm \times 14cm$ $2 \quad 1$ $77 \times 2cm^2$ $= \mathbf{154\ cm^2}$ **Wasted area:** $196\ cm^2$ $-\ 154\ cm^2$ $42\ cm^2$ **Square:** s x s 14cm x 14cm **$196cm^2$.**	B_1 B_1	For $154cm^2$. For the difference.	Teach parts of a circle.
11.	P.6	$\frac{0.2}{0.02} \times 100$ $\frac{20}{2} \quad 10$ The tailor will make 10 pieces.	M_1 A_1	For the correct working. For the correct answer.	Make a review on operation of decimals.
12.	P.5	90 min - 15 min 75 min Candidate took 75 min.	M_1 A_1	For the correct working. For the correct answer.	Review subtraction of time.
13.	P.6	7 bags cost sh. 420,000 1 bag costs sh. $\frac{420,000}{7}$ **= sh. 60,000** 3 Sh. 180,000 Sh. 60,000 **= 3 bags**	M_1 A_1	For the correct method. For the correct answer.	Expose learners to related questions and award accordingly.
14.	P.6	$C = \pi D$ $C = 3\frac{1}{7_1} \times 28m$ $C = \mathbf{88\ m}$	M_1 A_1	For the correct method. For 88m.	Make a review on area and perimeter on parts of a circle.

15.		2, 4, 8, 16, 32, 64 ×2 ×2 ×2 ×2 ×2	B_1 B_1	For the correct pattern. For the correct answer.	Encourage candidates to identify the patterns.
16.	P.6	96.452 10^4 | 10^3 | 10^2 | 10^1 | 10^0 9 | 6 | 4 | 5 | 2 $(9 \times 10^4) + (6 \times 10^3) + (4 \times 4^2) + (5 \times 10^1) + (2 \times 10^0)$	B_2	For the correct answer.	Make a review on expansion of place values and values.
17.	P.7	 -5 -4 -3 -2 -1 0 +1 +2 +3	B_1 B_1	For correct plotting of -3. For correct +2.	Accept if the candidate has used the ticks and circles.
18.	P.7	Percentage discount: Sh. 15000 x 10% Sh. 45000 150% 45% $3\frac{1}{3}$ %	M_1 A_1	For the correct working. For the correct answer.	Review business language.
19.	P.6	R {r, s, t} { $\emptyset$ }, {r}, {s}, {t}, {r, s} {r, t}, {s, t}.	B_2	For correct answer minus the mother set.	Teach proper subsets.
20.	P.7	Sum No. $\frac{(x+2)+(2x-4)+6+3x+1}{4}$ $\frac{(x+2x+3x)+(2+6+1)-4}{4}$ $\frac{6x+(9-4)}{4}$ $\frac{6x+5}{4}$ $\frac{6x}{4} + \frac{5}{4}$ $3x + 1\frac{1}{4}$ $1\frac{1}{2}x + 1\frac{1}{4}$	M_1 A_1	For correct working. For the correct answer.	Help the learner to know the meaning of average.

SECTION B

21.a)			L_1 L_1 L_1 L_1	For AC 4cm. For OB. For OD. For joining.	- Make a review on finding area of all quadrilaterals.
(b)		A kite.	B_1		
22.a)	P.7	R (-3, -2) P (-1, -2) Q (-3, -2)	B_1 B_1 B_1	For the correct points written. For proper plotting.	- Help learners in plotting and reading points on the grid.
(b)		Area $\frac{1}{2}b(a+b)$ $\frac{1}{2} \times 4 (4+6)$ 2 2 (10) = **20 sq units.**	B_1	For the correct area.	
23.a)	P.7	No. of layers $\frac{\text{height}}{\text{height}}$ $\frac{70\text{ cm}}{14\text{ cm}}$ 4 layers Tins on 15 layer $\frac{60}{14} \times \frac{50}{14}$ 4 x 3 12 tins 12 x 2 **24 tins on the two layers.**	B_1 B_1	For the correct working. For the correct answer.	- Assist the learners on how to work out questions with mixed up concepts.
(b)		**Total tins** 12 x 4 48 tins 1st layer 12 tins 25 $\frac{12}{48} \times 100\%$ 1 = 25%	B_1 B_1	For total tins. For the correct percentage.	

		OR 1 1 25 ~~12~~ x sh. ~~1000~~ x ~~100%~~ ~~48~~ x sh. ~~1000~~ ~~1~~ = 25%.			
24.a) P. 6 **Item** / **Qty** / **Unit cost** / **Amount** sugar / 2kg / Sh. 5500 / Sh. 11.000 rice / 1 kg / Sh. 6000 / Sh. 9.000 Salt / 250gm / Sh. 2000 / Sh. 500 soap / 1 bar / Sh. 6000 / Sh. 6.000 **Total** / **Sh. 26,500**			B_1 B_1 B_1 B_1 B_1	For each correct answer.	- Help the learners to know how to complete the bill table.
(b)		Sh. 26500 - Sh. 20000 Sh. 6500	B_1	For the correct answer.	
25. a)		TH THH T O 6 7 8 6 4 67000 + 1000 68000	M_1 A_1	For the correct method. For the correct answer.	Expose candidates to a variety of related questions.
(b)		XL 40 years 2023 - 40 1983	M_1 A_1	For the correct method. For the correct answer.	
26. a)	P.6	 x 30 – (12 + 8 + 3) x 30 – 23 **x = 7**	B_1 B_1 B_1	For each correct entry.	Review interpretation of Venn diagrams.
(b)		Prob $\frac{12 + 3}{30}$ = $\frac{\mathbf{15}}{\mathbf{30}}$	B_1	For the correct answer.	
27. a)		3 (2 – x) < x + 14 6 – 3x < x + 14 6 – 3x – x < x – x + 14 6 – 4x < 14 6 – 6 – 4x < 14 – 6	M_1	For complete correction of like terms.	- Expose candidates to a variety of inequalities with different approaches.

		$^{-}4x < 8$ $\frac{^{-}4x}{^{-}4} > \frac{8}{^{-}4}$ $x \geq {}^{-}2$	M_1 A_1	For correct change of signs. For the correct answer.	
(b)		X {$^{-}2, {}^{-}1, 0, 1,$ -----}	B_1	For the correct solution set.	2d1
28. a)		**Remainder:** $\frac{5-2}{5\ \ 5}$ $\frac{3}{5}$ **Son:** $\frac{3-1}{5\ \ 3}$ $\frac{9-5}{15}$ $\frac{4}{15}$ **Daughter:** $\frac{3-4}{5\ \ 15}$ $\frac{9-4}{15}$ $\frac{1}{3}$	B_1 B_1 B_1	For the fraction of the remainder. For the fraction of the son. For the fraction of the daughter.	- Practice application of fractions with different approaches.
(b)		20 acres : $\frac{4}{15}$ 5 ~~20~~ x $\frac{15}{4_1}$ = **75 acres.**	M_1 A_1	For the correct method used. For 75 acres.	
29. a)	P.7	AV. Speed = $\frac{\text{Total distance}}{\text{Total time taken}}$ Total distance 70 km/h x 4 280km 280km + 180km 460km Total time ~~180~~km ~~90~~km/h 4h + 2 hours. Time = 6hrs + 45 min **$6\frac{3}{4}$ hrs.**	B_1 B_1 B_1	For total distance. For total time. For $6\frac{3}{4}$ hours.	Expose learners to questions with different approach.
		AV. Speed = 460km : $6\frac{3}{4}$ 460 : $\frac{27}{4}$ $\frac{460}{1}$ x $\frac{4}{27}$ $\frac{1740}{27}$ = **64.4km/h.**	M_1 A_1	For the division. For the correct answer.	

(b)		Hours Min 1 8 30 am + 6 45 15 15 75 - 60 15 15 15 hours - 12 00 hours 3 : 15pm			
30. a)		Let the int∠ be y Int∠ + ext∠ = 180^0 Y + $\frac{1}{3}$y = 180^0 $\frac{3}{1} \times y + \frac{1}{3}y \times \frac{3}{1} = \frac{180^0}{1} \times \frac{3}{1}$ 3y + y = 180^0 x 3 4y = 180^0 x 3 4 45 y = $\frac{180^{45}}{1} \times \frac{3}{4}$ 1 y = **135^0.** EX + ∠ 180^0 - 135^0 45^0 No. of sides = $\frac{360^0}{ext\angle}$ = $\left(\frac{360}{45}\right)^0$ **= 8 sides**	B_1 B_1 B_1	For substitution. For 135^0. For 8 sides.	- Make a review on interior and exterior angles and apply words like more or less. Accept: Total ratio 1 + 3 4 Ext angle $\frac{1}{4} \times 180^0$ 450 No. of sides $\left(\frac{360}{45}\right)^0$ **8 sides**
(b)		No. of right angles 2n – 4 (2 x 8) – 4 16 – 4 **12 right angles.**	B_1 B_1	For substitution. For the correct answer.	
31. a)		$\sqrt{10000}$ = 0.0196 196 2 | 196 2 | 98 7 | 49 7 | 7 1 2 | 1000 2 | 5000 2 | 2500 2 | 1250 5 | 625 5 | 125 5 | 25 5 | 5 1	B_1 M_1	For prime factorising 196. For the correct method.	- Encourage candidates to prime factorise completely.

		$\sqrt{(2 \times 2) \times (7 \times 7)}$ $\sqrt{(2\times2) \times (2\times2) \times (5\times5) \times (5\times5)}$ $\frac{2 \times 7}{2 \times 2 \times 5 \times 5}$ = $\frac{14}{100}$ = **0.14**	B_1	For the square root obtained 0.14.	
(b)		$(2_1) \times (2_2) \times (3_1) \times (5_1)$ 4 x 15 = 60	M_1 A_1	For the correct method used. For the correct answer.	
32. a)	P.7	365 x 5 1825 1825 ÷ 10 = 182.5 182.5 ÷ 10 = 18.25 18.25 ÷ 10 = 1.825 1.825×10^3.	M_1 M_1 A_1	For 1825. For the correct method. For the correct answer.	- Make a review on operation of numbers. - Make a review on prime factorization.
(b)		$3^n \div 27 = 81$ 3 | 27; 3 | 9; 3 | 3; | 1 → 3^3 3 | 81; 3 | 27; 3 | 9; 3 | 3; | 1 → 3^4	B_1 B_1	For prime factorizing 27. For prime factorizing 81.	
		$3^n \div 27 = 81$ $3^n \div 3^3 = 3^4$ $n - 3 = 4$ $n - 3 + 3 = 4 + 3$ $n = 7$	B_1	For the value of n is 7.	
		Accept: $3^n \div 27 = 81$ $\frac{3^n}{27} \times 27 = 81 \times 27$ $3^n = 2187$ $3^n = 3^7$ $n = 7$ 3 | 2187; 3 | 729; 3 | 243; 3 | 81; 3 | 27; 3 | 9; 3 | 3; | 1	B_1 B_1 B_1	For multiplying on both sides. For prime factorizing 2187. For the value of n is 7.	