JUNE 05 PALENI 5 Examin Examiner only Arholw yn uniş only Arholwr yn unig 1. (a) Find the value of the angle marked x. (c) Find the value of the angle marked z. Diagram not drawn to scale. 42=180 72° 2=180:4 Diagram not drawn to scale.  $180 - (2 \times 72)$ --- - [2] x= <u>36</u> 0 2. When g = 4 and h = -3, find the value of [2]  $\frac{5g+2h}{2}$ (a)  $(5x4) + (2x^{-3}) = 20 - 6 = 14$ 2 Z (b) Find the value of the angle marked y. =7 120° [2] 2×4×(-3)= 8×9 =72 (b)  $2gh^2$ . 130° 40% Diagram not drawn to scale. Angles is a good add up to 360 [2] y = 110 ° [3] (T184/3) Turn over.

6 Examiner 7 Examiner only Arholwr only Arholwr yn unig yn unig 4. (a)3. A recipe for making 20 small sponge cakes has the following ingredients. 20 Small Sponge Cakes INPUT Subtract 5 Multiply by 3 OUTPUT 100 grams Butter (i) Find the output when 8 is input into the number machine. 100 grams Sugar 8-5=]x3 =9 200 grams Self Raising Flour 2 Eggs Inez is making cakes for a garden party. Calculate the quantities of these ingredients she (a)Write down the output when n is input into the number machine. (ii) needs to make 50 small sponge cakes. xz -5 times the qualities [2] ----The *n*th term of a sequence is  $n^2 + 3$ . List the first three terms of the sequence. (b) 3 0 : 2 n2+3= 4 7 12 50 Small Sponge Cakes grams Butter grams Sugar grams Self Raising Flour 500 [2] Eggs [3] 5. By measuring, find the bearing of the boat, B, from the lighthouse, L. Inez's mother offers to help make 20 small sponge cakes, but her weighing scales show (b)North ounces not grams. She knows that 1 ounce is about 25 grams. Write down the sponge cake recipe giving the quantities in ounces. 25 valitie Recipe in grams Recipe in ounces 20 Small Sponge Cakes 20 Small Sponge Cakes 100 grams Butter 4 ounces Butter 4 100 grams Sugar ounces Sugar 223 200 grams Self Raising Flour ounces Self Raising Flour 2 Eggs 2 Eggs [1] [3] (T184/3) Turn over. (T184/3)



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[1]

[2]

Express 240 as a produc	t of prime numbers in index for	orm.	
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	1		
2	30		
	$\checkmark$		
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ан -			
	······································	÷	[3]
5			[1]
$\int$	a perfect square		[1]
Explain why $3^4 \times 7^8$ is a	a perfect square.		[1]
5 Explain why $3^4 \times 7^8$ is a course of $\rho$ .	a perfect square.		[1]
$\frac{5}{2^{3}}$ Explain why $3^{4} \times 7^{8}$ is a course of point of the	a perfect square.	· · · · · · · · · · · · · · · · · · ·	[1]
Explain why $3^4 \times 7^8$ is a course of $\rho$ .	a perfect square. Swes and sven		[1]
5 Explain why $3^4 \times 7^8$ is a course of $\rho$	a perfect square.		[1]
Explain why $3^4 \times 7^8$ is a course of $\rho$	a perfect square.		[1]
5 Explain why $3^4 \times 7^8$ is a	a perfect square.		[1]
5 Explain why $3^4 \times 7^8$ is a course of $\rho$ .	a perfect square.		[1]
Explain why $3^4 \times 7^8$ is a course of point of the second point	a perfect square. wes al ser	······	[1]
5 Explain why $3^4 \times 7^8$ is a course of $p_i$	a perfect square.		[1]
5 Explain why 3 <sup>4</sup> × 7 <sup>8</sup> is a	a perfect square.		[1]
Explain why $3^4 \times 7^8$ is a course of $p_i$	a perfect square.		[1]

Examiner only Arholwr yn unig 11. Find the size of an exterior angle of a regular pentagon. 0 72 360 360- nun le Oxtorioolygon = 0 0 [2] 12. The cost of a concert ticket increases from £20 to £28. Find the percentage increase in the cost of the concert ticket. 100 actual increase ..... Original amount 100 - 80 - 40% 8 2 2 [3] 4

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[2]

17 16 Examiner Examine only Arholwr yn unig only Arholwr yn unig 16. In triangles ABC and DEF, ACB = DFE and ABC = DEF. The corresponding sides of the triangles ABC and DEF are in the ratio 2:3 respectively. The length of AC = 4 cm and the length of The side of square hand made glass tile is 40 cm, measured to the nearest cm. 40 cm EF = 7.5 cm. 40 cm (a) Write down the least and greatest possible values of the length of the side of tile. Least value <u>39.5</u> cm Greatest value <u>40.5</u> cm [2] (b) Six of these tiles are arranged in a rectangle for display. 4 cm Explain, by showing your calculation, why a length of at least 121.5 cm should be allowed 7.5 cm for the display. all twee tils were of max length F 40.5 x3 Diagrams not drawn to scale. 121.5 cm would be recessary Showing all your working, find the length of [1] (a) DF, 4 = 600 2 [2] BC. (b) BC = 2x7.5 = 15 = 5cm [2] (T184/3) Turn over.

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21. A sportswear company employs people from around the world.

The number of people employed by the company in each country is given in the following table.

Country	Number of people er	nploy	ed	]
New Zealand	6000		,	
Australia	3000	-	F	= 10,000
Italy	1000		,	× .

The company is organising a new T-shirt design launch and decides to invite exactly 25 employees to an advertising event.

Use a stratified sampling method to calculate how many people from each country should be invited to the conference.

STRATIFIED SAMPLING MEANS NO. OF DEOPLE FROM GACH COUNTRY IN SAMPL Must REPLEKT THE PROPORTION of NATIONALITIES IN COMPANY of En Zerrand = 6000 , 25 5 15 3000 ×21 = 2.5×3=7.5 10 000 LOOD 25 - 25 - 2.5 10000 So 15 Newtealander [4] 7 (or 8) Aussies 3 (or 2) Italiens

70 0 140 Diagram not drawn to scale. Four points A, B, C and D lie on the circumference of the circle centre O. Given that  $AOC = 140^\circ$ , find ABC. Give a reason for your answer. ADC = 70° (angle @ circunf is 2 angle @ centre) ABC = 180-70 =110° ( opposite angles in cylclic quedallabort add up to 180°) [2] 23. Express 0.52 as a fraction. X=0.5222 10x 5 5. 22222 - 100× =52.2222 90x=47 x= 47 20. [3]

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22 Examine only Arholwr yn unig 24. Given that y is proportional to  $x^2$ , and that y = 160 when x = 4, (a) find an expression for y in terms of x, Z YXX y = kx 180 = kx 16 when y:160, X=4 k=160=10 · . 4=10x [3] (b) find x when y = 4000.  $4000 = 10 \chi^{L}$   $400 = \chi^{L}$   $\chi = \sqrt{400^{2}} = 20$ when y 14000 [2]



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(c) The diagram shows a sketch of y = h(x). On the same diagram, sketch the curve y = -h(x). Mark clearly the coordinates of the point where the curve crosses the y-axis.



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26, Express the following as a single fraction in its simplest form.  $\frac{\frac{3}{4x+1} + \frac{2}{5x-3}}{\frac{3(5x-3)}{4x+1} + \frac{2}{5x-3}}$ = <u>15x-9+8x+2</u> (4x+1)(5x-3) = 23x-7 (4x+1)(5x-3) [4]

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sweets. Two swe	ets are selecte	ed at random f	rom the nacket	of wine our	,		
(a) C			iom uie paekei	or white guin			
<i>(a)</i> C		s s	the two sweets	selected are	yellow.		
	5 ×	<u> </u>	30				
	11	10	110				
						e	
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<i>(</i> ) 0							[2]
(b) Ca	alculate the pr	robability that i	no black sweet	is selected.	ALI	3	
-	5 P( 1"	NJE Dlack	e And	PLIM	r glace	)	
	~	~					
-	<u>= 8</u>	· v +	= 5	56	5		
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