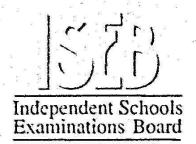
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TUNIOR SCHOOL	SENIOR SCHOO	L			



COMMON ENTRANCE EXAMINATION AT 13+

MATHEMATICS

PAPER 4

Calculator Paper

Tuesday 5 June 2007

Please read this information before the examination starts.

- This examination is 60 minutes long.
- All questions should be attempted.
- A row of dots denotes a space for your answer.
- Where answers are not exact they should be given to three significant figures, unless specified otherwise.
- The π button on your calculator should be used for calculations involving π .

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(iii) Writ	ing down all the figu	res showr	on your ca	lculator, find	the value of	
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100	60 g long grain rice 450 ml milk 200 ml whipping cream	
	(i) How much rice is needed for 12 portions of Creamy Rice Pudding?	1 (5) (F) (S)
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	Chef has 1.5 litres of whipping cream.	
	(ii) If he has enough rice and milk, how many portions of Creamy Rice Pudding can he make?	
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2. (a) A recipe to make eight portions of Creamy Rice Pudding reads:

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	(iii)	$(2a^2)$	13	8 ±6 ⊛

(iii)	$(2a^2)^3$

71. A	16a ⁸
(iv)	12a ²

6. (a) Factorise completely
$$12a^3 + 8a$$

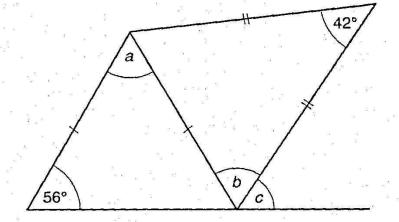
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(b) Multiply out the brackets and simplify 3(2a - b) - 2(2b + a)

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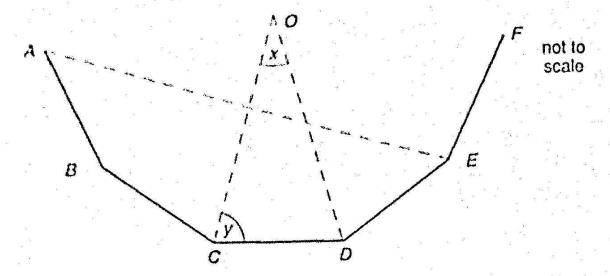
not to scale

Calculate the size of each of the angles marked a, b and c.

Answer:
$$a = \dots$$
 (2)

$$b = \dots, 0$$

8.



ABCDEF is part of a regular polygon, centre O.

The size of angles COD, x, and OCD, y, are in the ratio 1:2

(i) Calculate the size of angle COD.

- (ii) Hence calculate the size of angles
 - (a) CDE

(b) AED.

Answer: angle
$$AED = \dots$$
 (2)

9. (a) Smarty Pants is a trendy clothes shop.

The shopkeeper buys a suit from a manufacturer for £220

He sells the suit for £495

Express his profit as a percentage of the buying price.

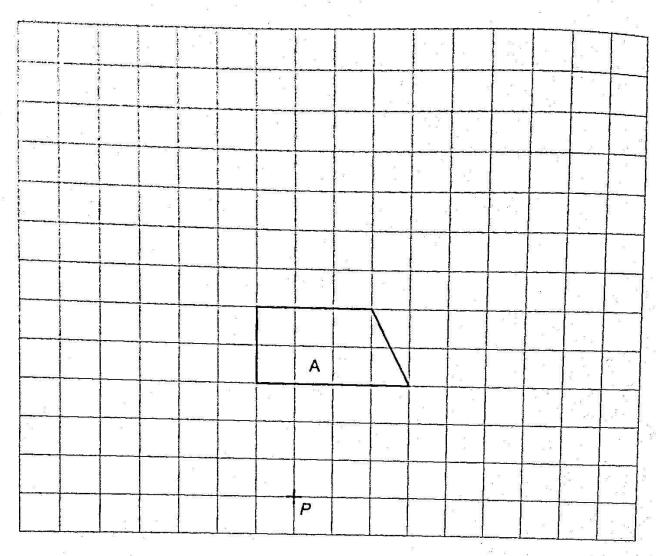


Answer:			
(b) In January 2000 a house was valued at £150 000 By December 2000 the value of the house had dropped by 12%. (i) What was the value of the house in December 2000? Answer: £			
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Answer:% (2)

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10.



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(i)	On the centimetre square grid with centre P and scale factor 2	above, dra	aw the	enlar	gemen	t of sha	pe A	
	Label the image B.	820 10	*	2.	Je	x		(2
(ii)	Find the area of shape B.		8	ng	e e	20 20 20 20 40 40 40 40 40 40 40 40 40 40 40 40 40	a ^E e	

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(iii) If instead, shape A is enlarged by scale factor 3, what would be the area of the enlarged shape?

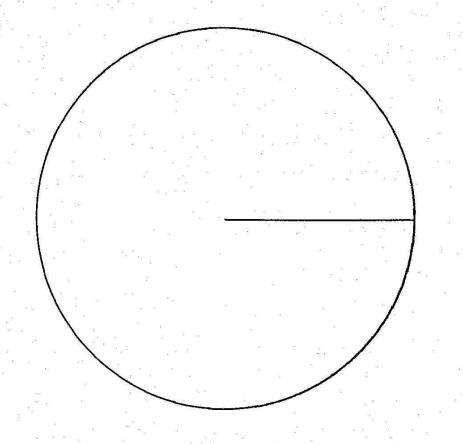
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11. Barney runs a sandwich bar at the beach.
He starts the day with 120 sandwiches with these fillings:

48 are cheese
a quarter are ham
20% are egg
and the rest are tuna.



(i) Draw a fully-labelled pie chart to show this information.



(4)

(ii) Unfortunately Barney drops all the ham sandwiches in the sand so he cannot sell them.

He redraws the pie chart without the ham sandwiches.

What angle will now represent the egg sandwiches?

			94	38		18					83
Answer:	8 92	- 108	B		3	10	8			70	
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12. (i) When $y = x^2$ complete this table of values:

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(ii) On the grid below draw the graph of $y = x^2$ (1)

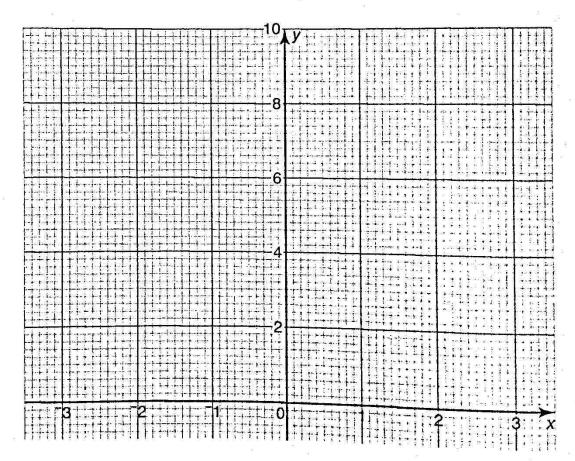
(2)

(2)

(iii) When $y = \frac{1}{2}x + 2$ complete this table of values:

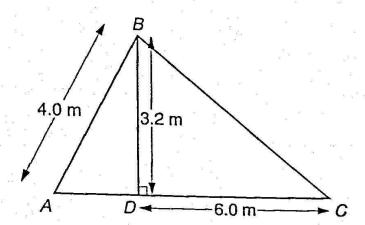
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(iv) On the grid below draw the line $y = \frac{1}{2}x + 2$



(v) Write down the x co-ordinate of each of the points where $y = x^2$ and $y = \frac{1}{2}x + 2$ intersect.

13.



not to scale

The diagram shows the cross-section of a wooden frame. AB = 4.0 metres, BD = 3.2 metres and CD = 6.0 metres.

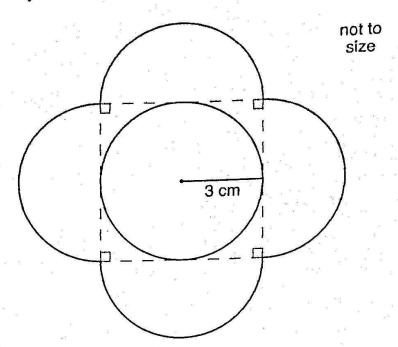
(i) Calculate the length of BC.

(ii) Calculate the length of AD.

(iii) (a) Calculate the exact area of triangle ABD.

(b) Calculate the perpendicular distance from D to AB.

14. In this question you should use the π button on your calculator.



The figure shows a 'flower' design made up of four semi-circles of radius 3 centimetres attached to a square.

A centre circle is drawn inside the square.

(i) Calculate the length of the outer edge of the design.

(ii) Calcu	late the area w	hich is painted	white.		
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		dgo of a similar	design is 100 ce	ntimetres.	
The length	y of the order e	age of a similar	the contre circle	of that design.	W at an
(iii) Calcu	ilate the length	of the radius of	the centre circle		(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c
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5. Ray sells worms to fishermen for bait.	
A lugworm costs <i>n</i> pence.	
(i) Write down the cost of 20 lugworms in terms of n	
Answer: pence	e (1)
A ragworm costs 5 pence more than a lugworm.	
(ii) (a) Write down the cost of a ragworm in terms of n	
Answer:pence	(1)
(b) Write down the cost of 12 ragworms in terms of n	
Answer: pence	(1)
(iii) Write down the total cost of 20 lugworms and 12 ragworms in terms of n	
Answer: pence	e (1)
Ray sells 20 lugworms and 12 ragworms for £4.44	
(iv) Form an equation, in terms of <i>n</i> , and solve it.	
	8 8 8 8
Answer: <i>n</i> =	. (3)
(v) What is the cost of 6 ragworms?	
Answer: £	(1)
(Total marks: 100)	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8