AQA^D MOCK TEST PAPERS Paper3 - Test3

Please write clearly in	n block capitals.
Centre number	Candidate number
Surname	
Forename(s)	
Candidate signature	I declare this is my own work.

GCSE Mathematics



Higher tier - Paper 3 - Calculator

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- · a calculator
- ·mathematical instruments
- ·the Formulae Sheet (enclosed).

Instructions

- ·Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- ·Answer all questions.
- $\mbox{-}\mbox{You must}$ answer the questions in the spaces provided. Do not write outside
- the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).

Do allrough work in this book. Cross through any work you do not want to be marked.

Information

- · The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must betagged securely to this answer book.

Advice

In all calculations, show clearly how you work out your answer.

For Exam	iner's Use
Pages	Mark
2–3	
4-5	
6–7	
8–9	
10-11	
12–13	
14–15	
16–17	
18–19	
20-21	
22–23	
24–25	
TOTAL	



	Answer all questions in the spaces provided.	
1	Write the number 32 in the form 2 ⁿ	[1 mark]
	Answer	
2	Write down a fraction equivalent to 1.3285	[1 mark]
	Answer	-
3	Solve $3x + 15 = 2x + 30$	[2 marks]
	<i>x</i> =	-

4	Here are the first five terms of a sequence.	
	-3, -7, -11, -15, -19 Work out an expression for the nth term of the sequence. [2 mark	ss]
		_
	Answer	
5	A population of birds in a forest is decreasing by 3% each year due to habitat loss. The current population is 50,000 birds. Calculate the expected population after 6 years. You must show your working.	
	[3 mark	[s]
		_
	Answer	

Do not write outside the box 6 B is 5 km due South of A and 5 km due West of C. Not drawn accurately 5 km **×** C В 5 km Work out the bearing of A from C. [2 marks]

Do not write outside the box

7 (a) Complete the table of values for

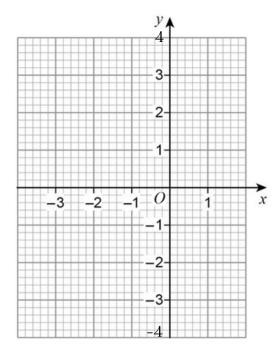
$$y = x^2 + 3x$$

X	-3	-2	-1	0	1
у	0		_2	0	

7 (b) Draw the graph of $y = x^2 + 3x$ for values of x from -3 to 1

[2 marks]

[2 marks]



Turn over for the next question

6

8	Sofia has £3600. She saves some of it and gives the rest to her three cousins.		
	money saved: money given to cousins = 3:4.		
	She gives each cousin the same amount. Does each cousin receive more than $£400$?		
	You must show your working.	[4 marks]	

9 The table gives information about the languages studied by year 10 students at school A.

Language	French	German	Spanish
Number of Students	56	37	27

Draw an accurate pie chart for this information.

[4 marks]

Turn over for the next question

8

Use trigonometry to work out the value of \boldsymbol{x} . 10 Not drawn 56 accurately 48 cm x[3 marks] cm *x* =

	[3 marks				Wri	ite 2.354 as a fraction in its simplest form.
Answer	Answer	Answer	Answer	Answer		[3 marks
Answer	Answer	Answer	Answer	Answer		
						Answer

Turn over ▶



12 A biased spinner can land on red, blue, green and yellow The table shows the probabilities that the spinner will land on red, blue and green.

Colour	Red	Blue	Green	Yellow
Probability	0.25	0.35	0.10	

(a) Complete the table.



12 (b)	Bethany is going to spin the spinner 60 times.	
	Work out an estimate for the number of times the spinner will land on blue.	
		[2 marks]
	Answer	
	Turn over for the next question	

13	Emma cycled 3.5 miles in 18 minutes and 10 seconds.	
	She assumes she can maintain the same speed.	
	Work out how long it would take Emma to cycle 6 miles.	
	Give your answer in minutes and seconds to the nearest second.	
		[4 marks]

14	Isabella	naid Income	Tax and Nationa	l Insurance on	her annual	salary
14	เงลมษแล	paid income	rax and Nationa	11 11 1801 al 106 011	ner amruai	salai y.

Income Tax

0% of the first £12 570 of her annual salary 20% of the rest of her annual salary

National Insurance

0% of the first £9 880 of her annual salary 13.25% of the rest of her annual salary

Isabella paid £4620 Income Tax.	
How much National Insurance did she pay?	
	[4 marks]
Answer £	



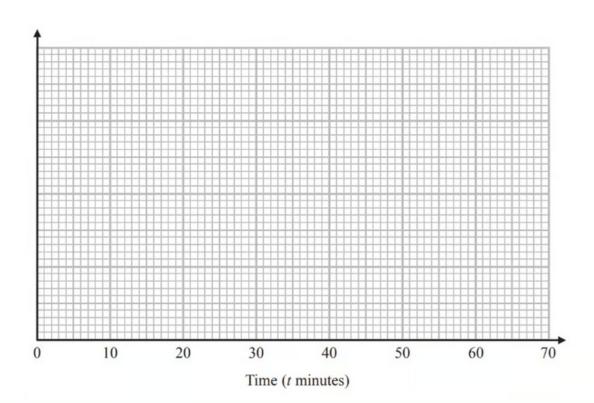
The table gives the information about the lengths of time some people were in shopping mall.

15 (a)

Time (t minutes)	Frequency
0< t ≤ 5	10
5< t ≤15	30
15< t ≤ 30	35
30 < t ≤ 40	17
40 <t≤ 60<="" td=""><td>8</td></t≤>	8

Draw a histogram for the information in the table.

[3 marks]



15 (b)	Simplify	$\frac{(5 \text{ ab}^3)^3}{25 \text{ ab}^2}$			Do not writ outside th box
		25 ab ⁻		[3 marks]	
-					
-					
			Answer		

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	10	
16		Not drawn accurately
	In this right-angled triangle, $a = 14 \text{ cm}$ $a : c = 3 : 4$	
	Work out the area of the triangle.	[4 marks]
	Answer	cm2



17	Solve $\frac{x+6}{2} + \frac{9-x}{4} = 7$	[4 marks]

Turn over for the next question

8

Turn over ▶

18	$f(x) = 3x^2 + 2x$	
	g(x) = x - 4	
18 (a)	Show that $fg(x) = 3x^2 - 22x + 40$	
10 (4)		[3 marks]
18 (b)	Solve $3 \operatorname{fg}(x) = 18$	[3 marks]
		[2 [[1][8][8]]
	Answer	

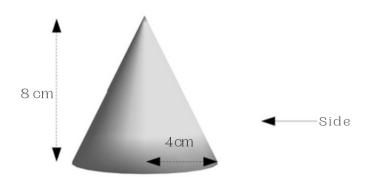
Two integers have a difference of 8	
The integers are multiplied together. 16 is then added.	
Prove algebraically that the result is always a square number.	[3 marks]
Turn over for the next question	
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20 (a)	Prove algebraically that the sum of any three consecutive even integers is always a multiple of 6.	
	[2 marks]	

A bag contains blue, yellow, and white marbles.	
There are three times as many blue marb There are half as many white marbles as	
Write down the ratio of blue marbles to yellow n	narbles to white marbles. [2 mark
Answer: :	
Turn over for the next qเ	lestion

21 The diagram shows a cone with radius $4\ \mathrm{cm}$ and perpendicular height of $8\ \mathrm{cm}$



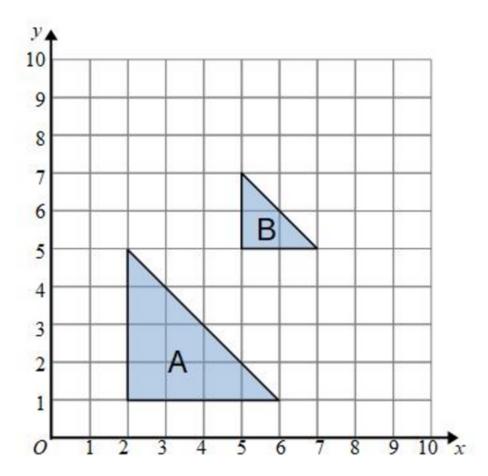
On the centimetre grid below, draw the plan and the side elevation of the cone.

[3 marks]



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22 Shape A and shape B are shown on the grid.

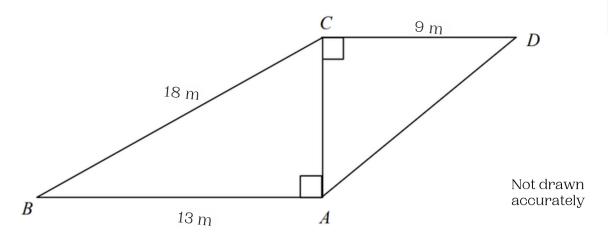


Describe the single transformation that maps shape A onto shape B.

[3 marks]

6

Calculate the length of the AD.
Give your answer to 3 significant figures.



[4 marks]

James is thinking of a number.	
He says: "My number is a prime number and it is a factor of 45."	
Write down all the possible numbers James could be thinking of.	
	[2 marks
Answer	

END OF QUESTIONS

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