Sur name	Centre Number	Candidate Number
First name(s)		0

GCSE EDUQAS

Mock Test Papers - Paper2 -Test3

MATHEMATICS – Component 2
Calculator-Allowed Mathematics
FOUNDATION TIER

2 hours 15 minutes

ADDITIONAL MATERIALS A calculator will be required for this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the additional page at the back of the booklet, taking care to number the question(s) correctly.

Take π as 3·142 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the need for good English and orderly, clear presentation in your answers.

For Examiner's Use Only		
Question	**Maximum Mark**	**Mark Awarded**
1.	4	
2.	5	
3.	6	
4.	4	
5.	4	
6.	4	
7.	3	
8.	6	
9.	3	
10.	7	
11.	6	
12.	7	
13.	2	
14.	6	
15.	5	
16.	6	
17.	3	
18.	4	
19.	4	
20.	4	
21.	3	
22.	3	
23.	5	
24.	5	
25.	5	
26.	6	
Total	120	

Formula list

Area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

Curved surface area of a cone = πrl

Surface area of a sphere = $4\pi r2$

Volume of a sphere $= \frac{4}{3}\pi r3$

Volume of a cone $= \frac{1}{3}\pi r2h$

Kinematics formulae

Where a is constant acceleration, u is initial velocity, v *is final velocity, s is displacement from the* position when $t = 0$ and t is time taken:

$$v = u + at$$

$$s = ut + \frac{1}{2}at2$$

$$v2 = u2 + 2as$$

Examiner only

1.

16	19	25	110	150	125

From the numbers in the list above, write down:

(a) a multiple of 8 [1]

.....

(b) a prime number [1]

.....

(c) the square root of 625 [1]

.....

(d) a cube number [1]

.....

Turn over.

Examiner only

2. *(a)* Use $A = \frac{4B}{6}$ to find the value of A when $B = 28$. [2]

(b) The cost to hire a boat is given by the formula:

$$\text{Cost} = £20 + £7.50 \times \text{number of whole hours hired}$$

Emily has £100 to spend.
She wants to hire the boat for as many hours as possible.
For how many whole hours can Emily afford to hire the boat?

[3]

Examiner only

3.

Pizza slice: £3.25

Soft drink: £1.50

(a) (i)) Sarah buys a pizza slice and a soft drink for herself and the same for each of her two friends.
How much does this cost altogether?

[3]

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.....

(ii) Sarah pays with a £20 note.

How much change should she get? [1]

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.....

£4.49

(b)

A 'Lunch Combo' offers a pizza slice and a soft drink for £4.49.
James buys one 'Lunch Combo'.
How much cheaper is this than buying the two items separately?

[2]

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.....

Examiner only

4. *(a)* Here are the first four shapes in a sequence:

Pattern	**1**	**2**	**3**	**4**	**5**

(i) Draw pattern 5. [1]

(ii) How many stars will be in pattern 6? [1]

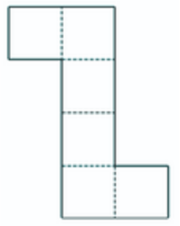
.....

(iii) Which pattern uses exactly 50 stars? [1]

.....

.....

(b) The diagram shows a 2D shape made from squares



This shape is folded along each dotted line to make a 3D shape.
Write down the name of this 3D shape. [1]

.....

Examiner only

5. *(a)*

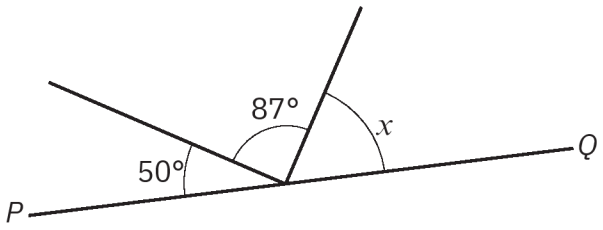


Diagram not drawn to scale

PQ is a straight line.

Calculate the size of angle *x*. [2]

.....

.....

x = ... °

(b)

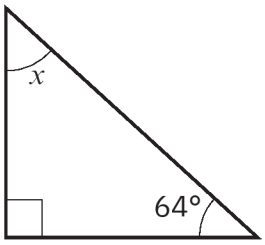


Diagram not drawn to scale

Calculate the size of angle x. [2]

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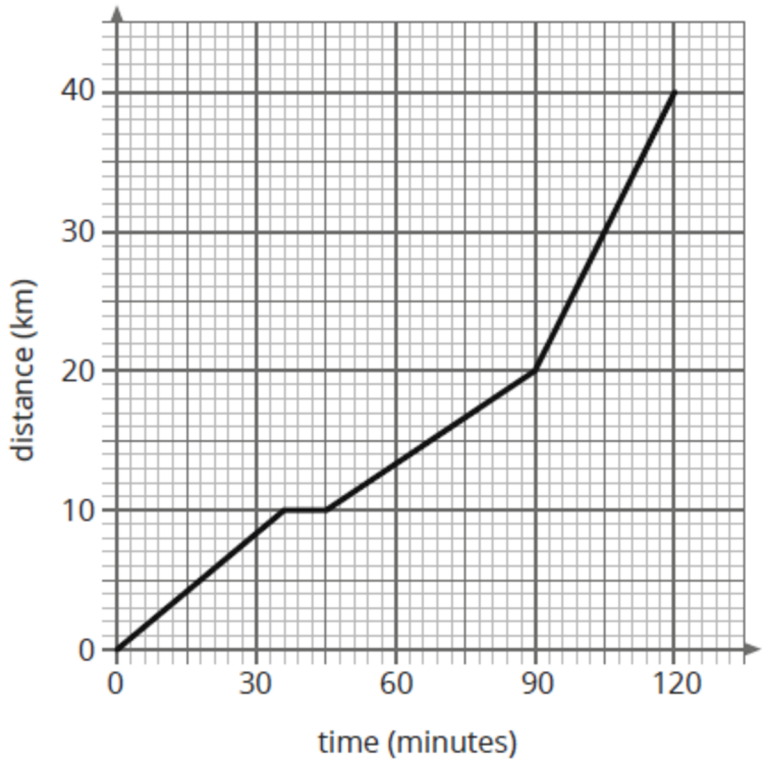
.....

x = ... °

Examiner only

6. The distance-time graph shows Ivy's journey to visit her friend.



(a) *Ivy left home at 9am. At what time did Ivy stop for a rest?* [1]

.....

(b) *Work out Ivy's average speed for the entire journey, giving your answer in kilometres per hour.* [2]

.....

[1]

(c) During which period was Ava travelling the fastest?

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Examiner only

7. *(a)* At 10 a.m., the temperature in a fridge is 18°C.
The temperature decreases by 3°C per hour.
At what time will it reach −9°C?

[2]

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(b) The area of a ceiling is 85 m².

Tom wants to paint the ceiling using paint from buckets that each cover 20 m².

He calculates 85÷20=4.25 and says, "I need to buy 4 buckets of paint."

Is Tom correct?

Yes ☐ No ☐

[1]

Explain how you decide.

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Examiner only

8. A set of raffle tickets numbered 1 to 600 are all sold at a school fundraiser.
A ticket, picked at random, wins the only prize.

(a) What is the probability that the number on the winning ticket is 45? [1]

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(b) What is the probability that the number on the winning ticket is less than 150? [1]

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(c) Sarah has bought 10 of the tickets.
She says,

"I have a 50% chance of winning because either I win or I don't win."

Is Sarah correct?

Yes ☐ No ☐

Explain your answer. [1]

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(d) The probability that Mike wins the prize is 0.02.

(i) What is the probability that Mike does **not** win the prize? [1]

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(ii) How many raffle tickets does Mike have? [2]

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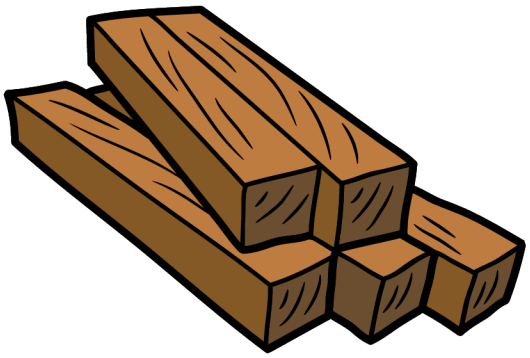
Examiner only

9. Wood is sold from planks.
All the planks are the same width.
Any length can be cut from a plank of wood.



Sara buys:
- a 2.5m length of oak wood,
- a 4.0m length of pine wood.

Oak wood costs £15.00 for one metre.
Sara spends £82.50 altogether.
Show that pine wood costs £11.25 for one metre.

[3]

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Examiner only

10. Emma sells milkshakes at a dessert shop.
Each milkshake can be made with two different toppings.

(a) The toppings can be the same or different.
There are three possible toppings to choose from:

- whipped cream (W),
- chocolate syrup (C),
- sprinkles (S).

List all the possible topping combinations for two toppings in a milkshake. [2]

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(b) Sara sells double chocolate-chip cookies at a bakery.
She gets 150 single cookies from one batch of dough.
Each batch costs £28.00.

Sara needs to bake enough batches to make 1800 double cookies (each double cookie uses two single cookies).

What is the least amount Sara will need to pay? [5]

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Examiner only

11. *(a)* The original price of a bike is £10,500.
It is sold at a 15.5% discount.
Calculate the discounted price.

[3]

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Discounted price = £ .....

(b) Liam borrows £1,200 to buy a new bike.
He pays simple interest on the loan at 5% per year for 4 years.
Calculate the total amount of interest Liam pays.

[2]

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Interest = £ .....

(c) Ben buys a watch.
He sells it for four times what he paid for it.
What percentage profit has Ben made?

[1]

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Percentage profit = ...%

Examiner only

12. *(a)* Two delivery drivers record the number of packages they deliver each day over 10 days. The results are shown in the table below.

Packages delivered		
Ben 52 54 56 57 58 60 61 63 66 68		Jack 55 58 59 60 62 65 67 68 70 75

(i) Use the data to complete this table. [2]

	Ben	Jack
Range	16	
Median		64

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(ii) Which driver delivered a more consistent number of packages each day? Give a reason for your answer. [1]

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Examiner only

(b) Ethan is a delivery driver.
Last month, he delivered 850 packages.
He says,

"That means I deliver over 10,000 packages in a year!"

(i) Show how Ethan could be correct [2]

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(ii) State one assumption Ethan has made.
Explain how this has affected the answer [2]

Assumption: .....

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Explanation: .....

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Examiner only

13. *(a)* There are:

- 28 days in February,
- 52 weeks in a year.

February						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

[2]

For this year, Isabella is given £10.50 pocket money every week.

(i) How much pocket money is Isabella given in February?

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Examiner only

14. Use:

1 yard = 0.914 meters

(a) A car travels at 50 meters per second.

Convert 50 meters per second into yards per second. [2]

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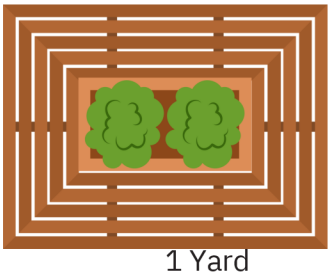
(b) (i) The diagram shows a rectangular garden. It has an area of 1 square yard.

1 Yard



1 Yard

Diagram not drawn to scale

What is the area of the garden in square meters? [2]

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(ii) The surface area of a football field is about 70,000 square yards.

Calculate the surface area of the football field in square meters. [2]

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Turn over.

Examiner only

15. Tom is going to drive from his house to a conference in Birmingham.

Scale: 1 cm represents 40 miles

His route can be approximated using a straight line.

He plans to leave home at 7 a.m.
He wants to arrive in Birmingham at 12:30 p.m.

What must Tom's average speed be for him to get to Birmingham on time?

Give your answer in miles per hour.

[5]

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Examiner only

16. *(a)* In a study, 160 children and 140 adults were asked to complete a questionnaire.

45 of the children completed the questionnaire.
35% of the adults completed the questionnaire.

Which of the following statements is correct? [3]
You must show all your working

A greater proportion of adults than children completed the questionnaire. ☐

A greater proportion of children than adults completed the questionnaire. ☐

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(b) 300 people took part in a different survey.
30% were adults.
25% of the adults were over 60 years of age.
How many adults over 60 years of age took part in this survey?

[3]

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Turn over.

Examiner only

17.

250ml	500 ml	1 L
£1.50	£2.80	£5.00

Which size of shampoo bottle offers the best value for money?

250 ml ☐ 500 ml ☐ 1 L ☐

Show how you decide. [3]

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Examiner only

18. *(a)* Alex and Jamie share £480 in the ratio 2 : 5.

How much money does Jamie get? [2]

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Jamie gets £ .....

(b) Lucy is 6 years old.
She is one-third of Mark's age.
What will be the ratio of their ages in 3 years' time?
Give your answer in its simplest form [2]

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Lucy's age : Mark's age will be .....: .....

19. *(a)* m is a whole number where $-3 \times 3^{m} < 12$
Write down all the possible values of m [2]

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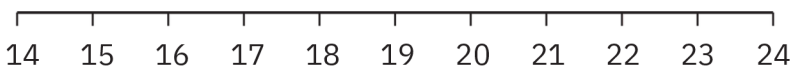
(b) Represent the inequality $15 < x \leq 22$ on this number line. [2]



Turn over.

Examiner only

20. Solve each of the following.

(i) $x + 8 = 25$ [1]

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(ii) $\frac{y}{9} = 9$ [1]

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(iii) Simplify $(9a - 7 - 5a + 9)$ [2]

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Examiner only

21. Two fair spinners are spun.

Numbers on spinner A:
3, 5, 7, 9, 11, 13

Numbers on spinner
4, 5, 6, 7, 8, 9

Both spinners are spun simultaneously and the results are multiplied together.

What is the probability that the result will give a product greater than 40?

[3]

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22. A cylindrical tank contains 800 cm^3 of oil.

The tank has an internal radius of 4 cm.
Calculate the height of the oil in the tank.

You must show all your working.

[3]

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Turn over.

Examiner only

23.

(a) Amelia has eaten 55% of her bag of crisps.

She has 18g left.

What mass of crisps did she have to begin with? [3]

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(b) Charlie bought a tin containing 450g of sweets.
After eating 215g of the sweets, what percentage of his sweets has he eaten?
Give your answer correct to 1 decimal place.

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[2]

Examiner only

24. *ABCD* is a parallelogram.

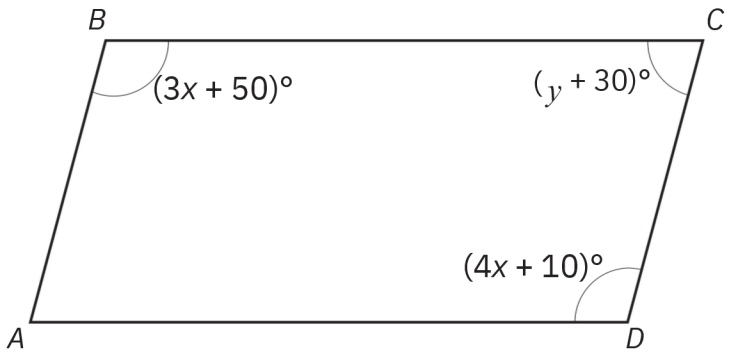


Diagram not drawn to scale

Work out the value of x and the value of y.
You must show all your working. [5]

x = ... y = ...

Turn over.

Examiner only

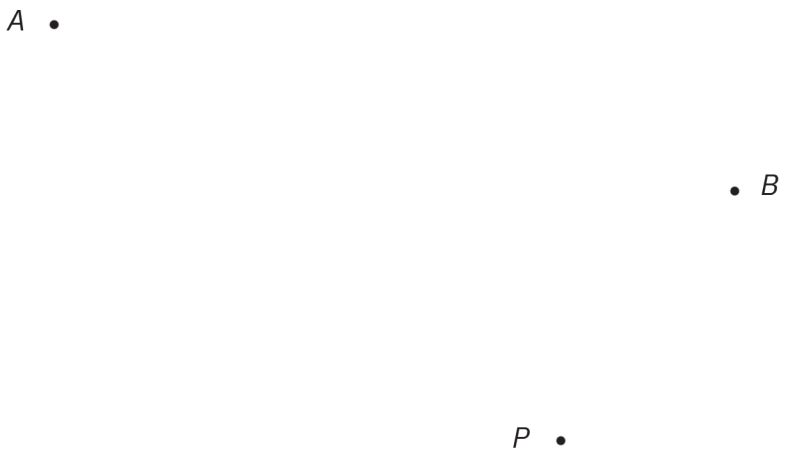
25. Liam stands at P and rolls a marble along the horizontal ground.

The marble stops at point Q, which:

- is equidistant from A and B,
- lies on the bisector of angle APB.

Use a ruler and a pair of compasses to construct suitable lines and arcs to show the position of point Q.
Construction arcs must be clearly shown.

[5]



Examiner only

26. The diagram shows two right-angled triangles.

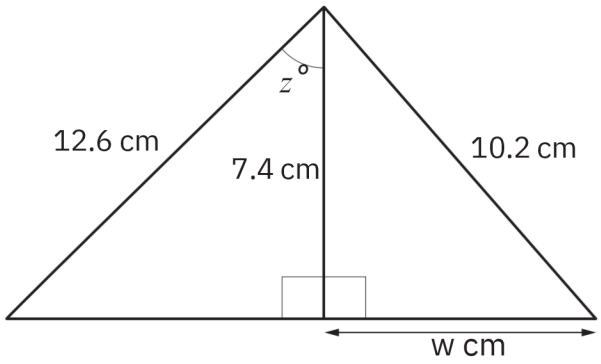


Diagram not drawn to scale

(a) Calculate the value of *w* [3]

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(b) Calculate the value of z [3]

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END OF PAPER