

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

GCSE EDUQAS

Mock Test Papers- Paper1 -Test3

MATHEMATICS – Component 1

Non-Calculator Mathematics

FOUNDATION TIER

2 hours 15 minutes

ADDITIONAL MATERIALS The use of a calculator is not permitted in 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.

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.	8	
2.	5	
3.	2	
4.	5	
5.	4	
6.	4	
7.	3	
8.	4	
9.	4	
10.	4	
11.	4	
12.	11	
13.	9	
14.	7	
15.	7	
16.	4	
17.	4	
18.	2	
19.	4	
20.	5	
21.	4	
22.	4	
23.	4	
24.	5	
25.	3	
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:

$$\text{Curved surface area of a cone} = \pi r l$$

$$\text{Surface area of a sphere} = 4\pi r^2$$

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

$$\text{Volume of a cone} = \frac{1}{3}\pi r^2 h$$

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:

$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

$$v^2 = u^2 + 2as$$

1. (a) 4 8 16 17 24 29

From the numbers in the list above, write down

- (i) a square number, [1]

- (ii) the smallest prime number. [1]

- (b) (i) Work out $510 + 55$. [1]

- (ii) Work out 0.039×1000 . [1]

- (c) Write 29% as a fraction. [1]

- (d) Write the following values in order.
Start with the largest. [1]

-1 0 -9 0.6

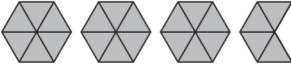
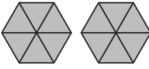

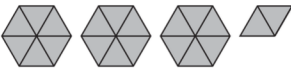
.....
Largest

- (e) Work out $\frac{8 \times 20}{16}$. [2]

2. Alex asks a group of 60 basketball fans the following question:

"What type of football matches do you enjoy watching most?"

The pictogram shows his results.

NBA	
College	
Olympics	
World Cup	

Key	 represents 6 fans
-----	---

- (a) How many more basketball fans answered NBA than answered College? [1]

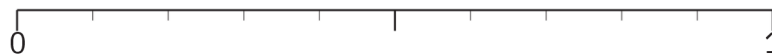
.....

.....

.....

- (b) A basketball fan is chosen at random from Alex's group of 60.

- (i) On the probability scale below, mark with an arrow the probability that this basketball fan answered Olympics. [2]



.....

.....

.....

- (ii) Work out the probability that the basketball fan answered World Cup.
Give your answer as a fraction in its simplest form.

[2]

.....

.....

.....

.....

.....

.....

.....

3. (a) Circle the equation.

[1]

$4x > 19$

$2x = 8$

$x \leq 9$

$x \neq 5$

$7x + 7$

- (b) Circle the expression that means '5 lots of n '.

[1]

$5 + n$

$n \times n \times n \times n \times n$

$n = 5$

$n \div 5$

$5n$

5. The diagram shows an **equilateral** triangle, PQR , inside a rectangle, $PSTU$. Q is on side PS of the rectangle.

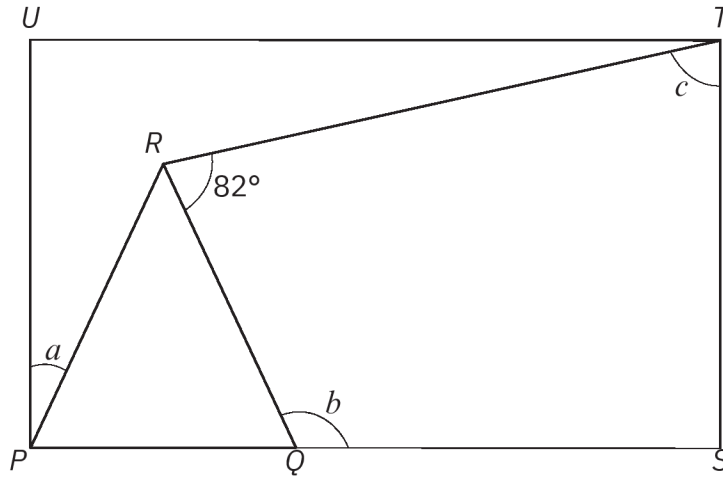


Diagram not drawn to scale

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

[4]

.....

.....

.....

.....

.....

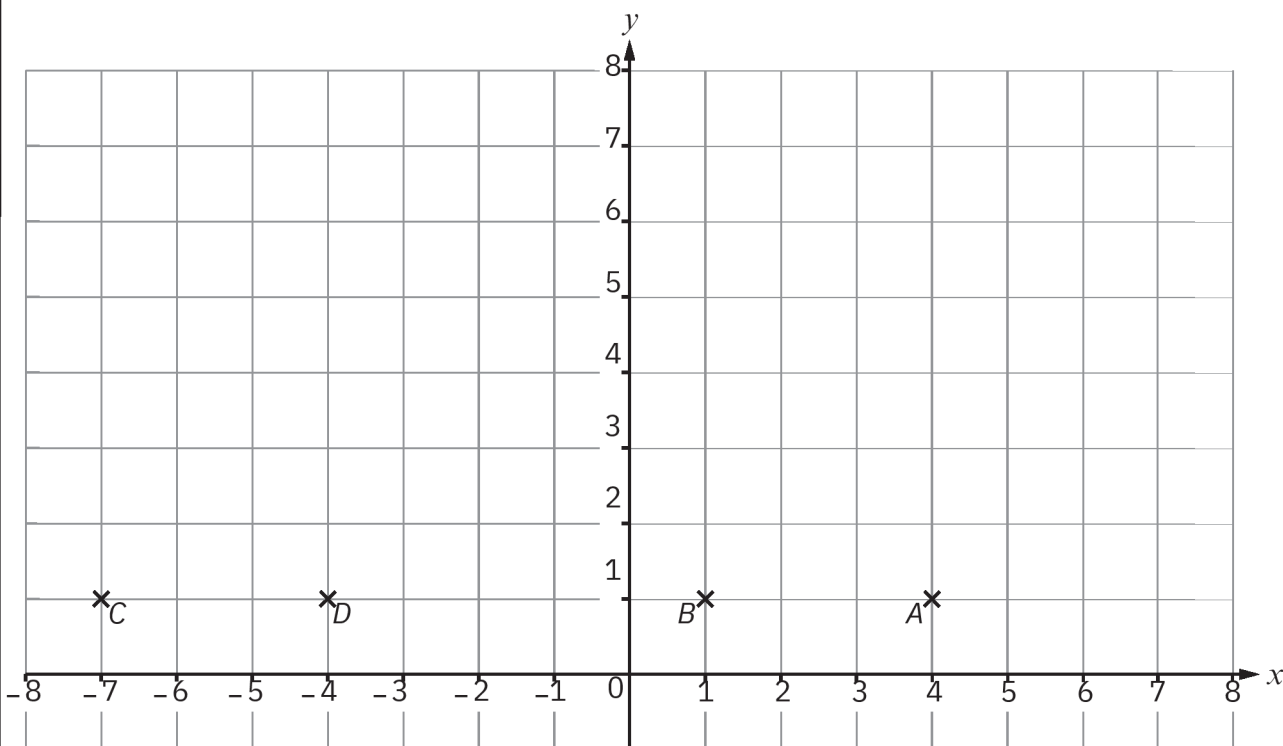
.....

.....

.....

$a = \dots\dots\dots^\circ$; $b = \dots\dots\dots^\circ$; $c = \dots\dots\dots^\circ$

6. The points A , B , C and D have been marked on the 1 cm grid below.



(a) Write down the coordinates of C .

[1]

C (..... ,)

(b) (i) ABE is a triangle with the following properties.

- Angle ABE is a right angle.
- The length of BE is twice the length of AB .

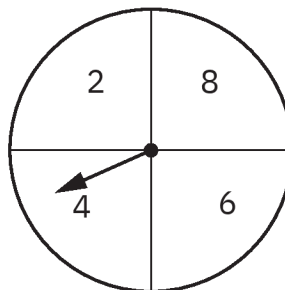
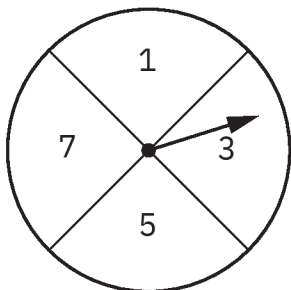
Mark and label the position of E on the grid.

[2]

(ii) C and D are two vertices of a triangle CDF .
Triangle CDF is congruent to triangle ABE .
Mark and label the position of F on the grid.

[1]

7. Emily is playing a game with two fair spinners. She spins each spinner once.



She adds the two scores together.

- (a) Complete the diagram to show all the possible totals.

[1]

		Spinner 2			
		+	2	4	6
Spinner 1	1	3			
	3	5			
	5	7			
	7	9			

.....

.....

- (b) Emily wins the game when the total is 9 or less.

What is the probability that Emily does not win the game?

[2]

.....

.....

.....

.....

8. (a) Put one pair of brackets in each calculation to make it correct.

(i) $5 + 2 \times 3 \times 4 = 41$ [1]

.....

(ii) $60 \div 5 + 3 \times 5 = 15$ [1]

.....

.....

(b) Mia is working out $(50+30) \div 10$
She estimates the answer to be 8.
Is Mia's answer a good estimate?

Yes No

Show how you decide. [2]

.....

.....

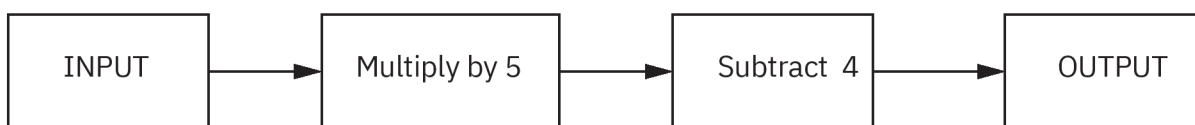
.....

.....

.....

.....

9. (a) Here is a number machine.



- (i) The input is 10.
What is the output?

[1]

.....

.....

.....

- (ii) The input is $3x$.
Write an expression for the output.
Simplify your answer.

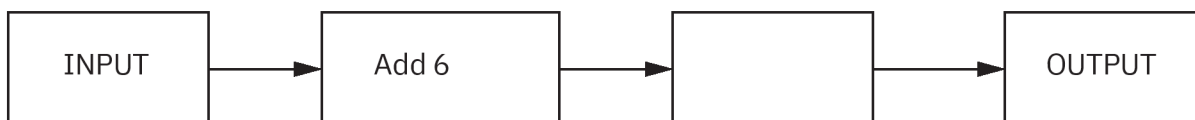
[2]

.....

.....

.....

- (b) Here is a different number machine.



When the input is 5 the output is 11.
Complete the number machine.
You must use multiplication or division.

[1]

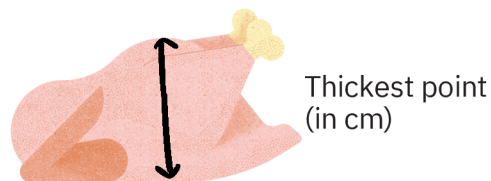
.....

.....

.....

10. (a) Ben uses the following rule for cooking frozen chicken:

- Measure the chicken in cm at its thickest point.
- Cook frozen chicken for 10 minutes per cm.
- Turn the chicken over halfway through the cooking time.



Ben cooks a piece of frozen chicken that measures 4 cm at its thickest point.

After how many minutes should Ben turn his piece of chicken over? [2]

.....

.....

.....

.....

(b) Emma uses the following rule for cooking fresh chicken:

- Measure the chicken in cm at its thickest point.
- Cook fresh chicken for 6 minutes per cm.
- Add an extra 7 minutes to the cooking time for chicken marinated in sauce.

Emma cooks a piece of fresh chicken that she has marinated in sauce. She uses the rule and cooks her chicken for a total of 43 minutes. How thick was Emma's chicken at its thickest point before she cooked it?

[2]

.....

.....

.....

.....

11. (a) £200 is invested at a fixed percentage rate of simple interest.
In 4 years, it earns £16 simple interest.

How many years in total will it take to earn £48 simple interest? [1]

.....
.....
.....

.....years

(b) Rachel invested £15,000 in Tom's business.
Tom agreed to pay Rachel a fixed percentage rate of simple interest each year on her investment.
At the end of 4 years, Tom had paid Rachel a total of £3,600 in interest payments.

What yearly rate of simple interest did Tom agree to pay? [3]

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

.....%

(b) The Johnson family went on holiday to Sydney, Australia, in December 2022.

(i) When their flight took off from London, it was 15:30 in Sydney.

The duration of the flight was 10 hours 25 minutes.

[2]

What was the time in Sydney when their flight arrived?

.....
.....
.....
.....

(ii) Flights from Sydney back to London take a different route.

The Johnson family's flight was due to take off from Sydney at 12:15, Sydney time, on 15th December.

It was due to arrive in London at 20:00, London time, on 15th December.

Sydney time is 11 hours ahead of London time.

What was the duration of their flight?

You may assume the flight took off and landed on time.

[3]

.....
.....
.....
.....
.....
.....
.....
.....

Duration of flight

(iii) The assumption in part (ii) was incorrect.

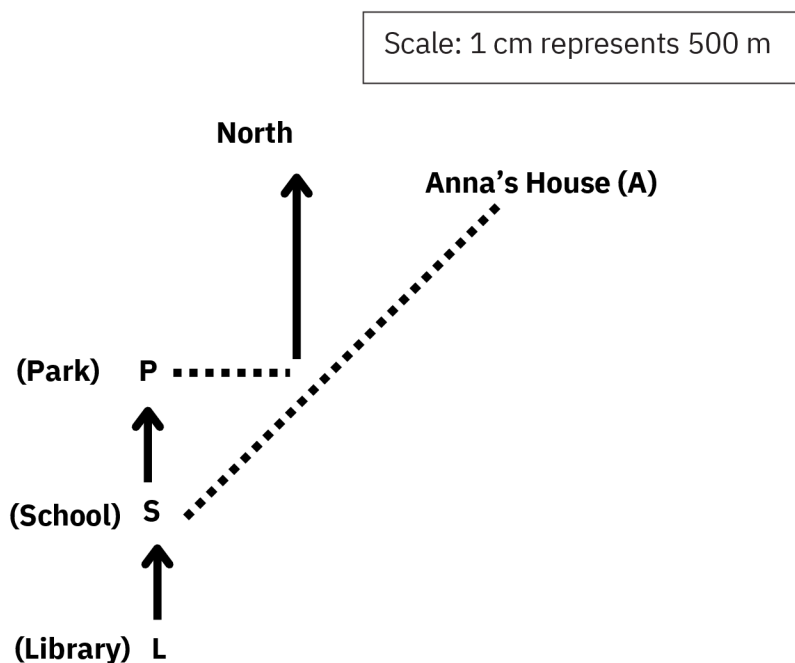
The flight took off 15 minutes late and landed in London before 20:00.

How does this affect your answer to part (ii)?

[1]

.....
.....

13. (a) The scale drawing shows the positions of a park (P), a school (S), and a library (L) in a town.



Anna's house is on a bearing of 045° from the school (S) and on a bearing of 210° from the library (L).

(i) Mark the position of Anna's house (A) on the diagram. [3]

(ii) Work out the shortest distance in metres from Anna's house (A) to the park (P). [2]

.....

.....

.....

.....metres

(b) During the summer festival, a shuttle bus brings visitors to a central park.

The shuttle bus has seats for 20 passengers.

The driver makes 4 trips every 3 hours from the pickup point to the park.

He starts work at the pickup point at 9 a.m. and finishes at 6 p.m.

His lunchtime lasts for 1 hour.

What is the greatest number of visitors the driver can take from the pickup point to the park each day?

You must show all your working.

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

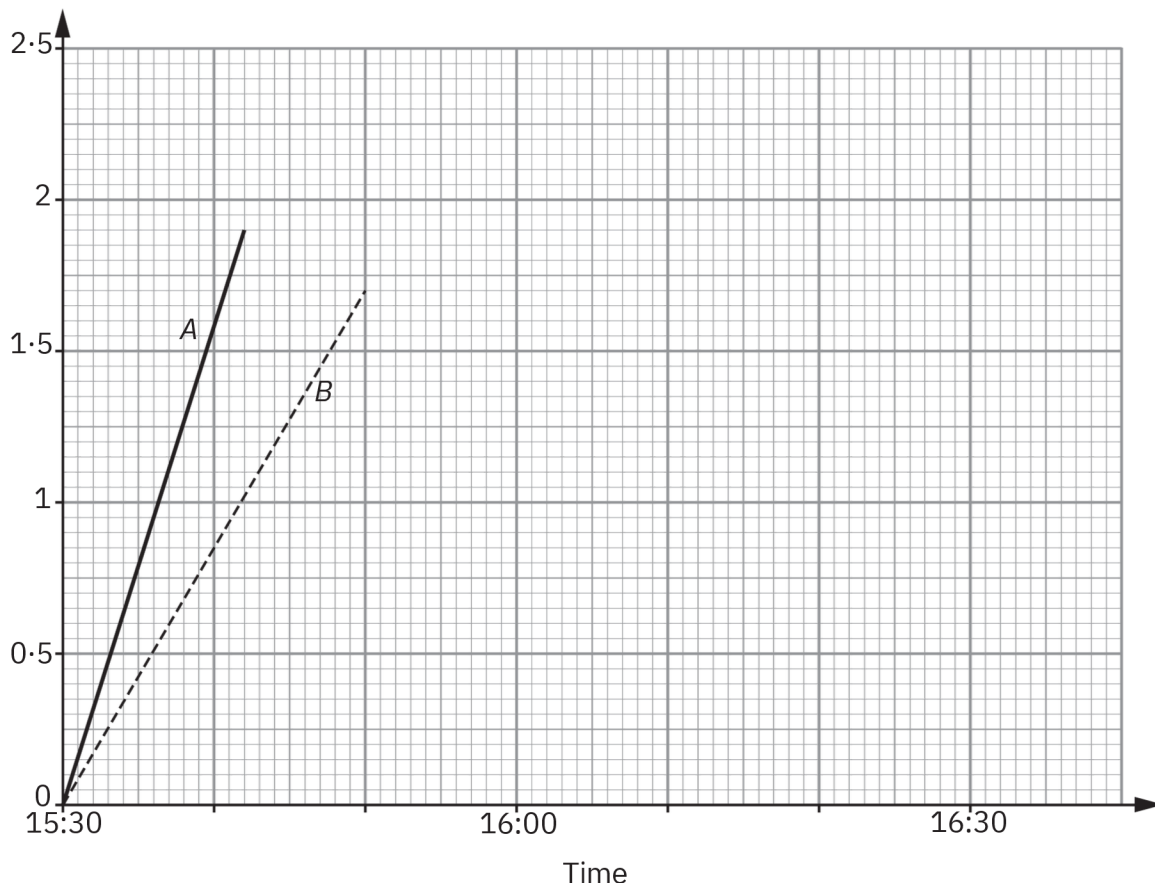
.....

.....

14. Three workmates, Ali, Charlie and Bennet, took part in a first aid training course at the local medical centre.
The course ended at 15:30.

After the course, they all travelled home to the same village.
The distance-time graph shows Ali's journey and Charlie's journey.

Distance travelled from medical centre (km)



(a) Ali rode his bicycle and Charlie walked home. Which of the two lines on the graph, *P* or *Q*, is more likely to represent Charlie's journey home?

A

B

Explain how you decide.

[1]

.....

.....

.....

(b) Bennet waited 10 minutes at a bus stop outside the medical centre and then caught the bus home.
After 5 minutes, the bus stopped in a traffic jam 0.5 km from the medical centre for 12 minutes.
The bus then travelled directly to Bennet's village.
Bennet got off the bus at a stop in his village 1.5 km from the medical centre.
Bennet was on the bus for a total of 20 minutes.

(i) Draw Bennet's bus journey on the distance-time graph. [3]

.....
.....

(ii) Bennet got off the bus and then walked 0.5 km to his house.
He walked at a speed of 2 km per hour.
How many minutes did it take Bennet to walk home from the bus stop? [2]

.....
.....
.....
.....

..... minutes

(iii) Bennet lives further from the medical centre than Ali and Charlie.
Complete Bennet's journey home on the distance-time graph. [1]

.....
.....

15. When they were students, Liam and Ava had part-time jobs.

(a) One week, Liam earned £68.25 at a rate of £9.00 per hour.

For how many hours did Liam work?

[2]

.....

.....

.....

.....

(b) Ava worked as a tutor during the weekdays.
Her rate of pay for the daytime was £15 per hour.
Her rate of pay for the evening was £10 per hour.

(i) How much did Ava earn for working 15 daytime hours and 8 evening hours?

[2]

.....

.....

.....

.....

(ii) Last month, her total daytime pay and her total evening pay were in the ratio:

$$\text{total daytime pay} : \text{total evening pay} = 3 : 2.$$

She earned a total of £500.

How many evening hours did she work last month?

[3]

.....

.....

.....

.....

.....

.....

.....

.....

16. One evening, all the members of a sports club either play football, basketball, or swim.
Each member takes part in only one activity.

- $\frac{1}{4}$ of the members play football.
- $\frac{1}{3}$ of the members play basketball.
- The remaining members all swim.

That evening, 42 of the members either played football or basketball.

How many members does the sports club have in total?

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

17. Twenty people aged between 30 and 50 take part in a hearing test as part of an experiment.

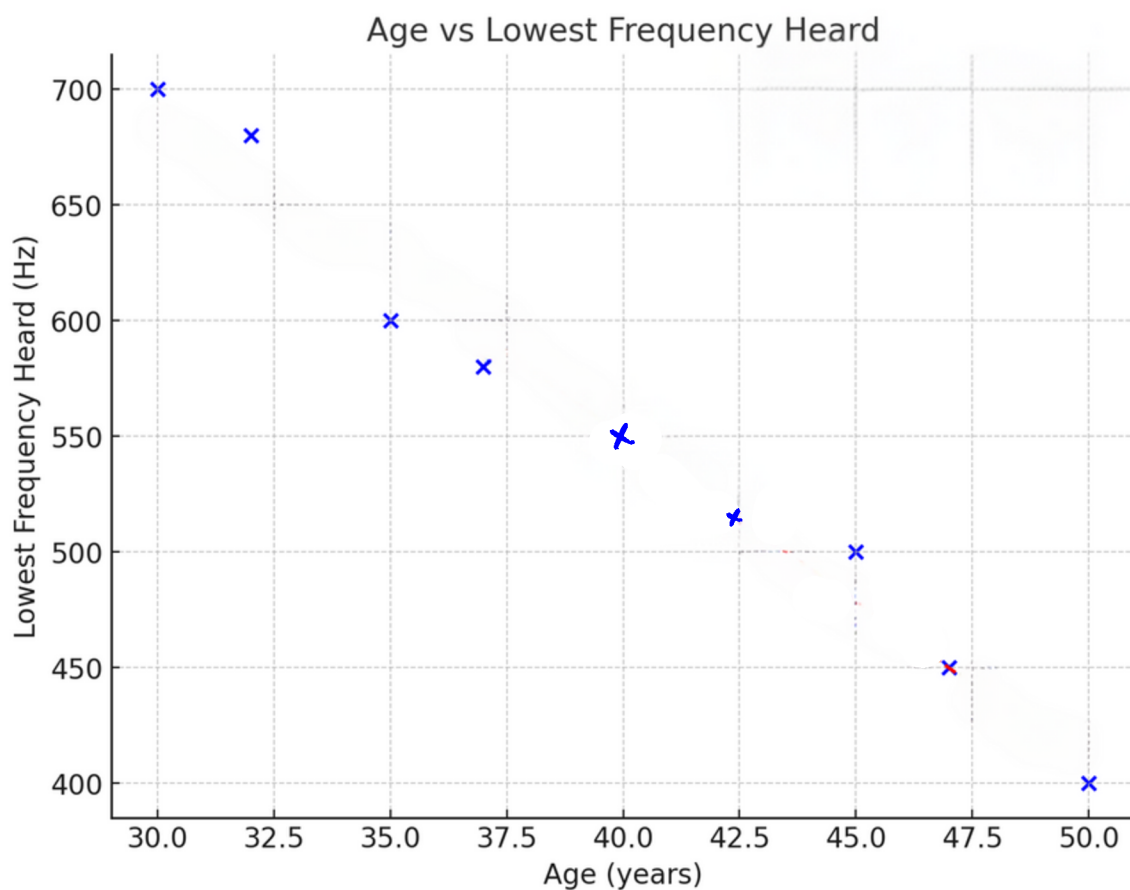
The test involves listening to sounds at different frequencies.

Each frequency is lower than the previous one.

Sound frequency is measured in hertz (Hz).

The scatter graph below shows the age of each person and the lowest frequency they could hear.

Age (years) is on the x-axis, and the lowest frequency heard (Hz)



(a) The scatter graph shows the relationship between a person's age (in years) and the lowest frequency (in Hz) they can hear. [2]

The mean age of these individuals is 40 years.

The mean lowest frequency heard is 600 Hz.

(i) Using this information, draw a line of best fit on the scatter graph.

(b) (i) Estimate the lowest frequency a person aged 45 would be able to hear. [1]

.....

.....

.....

(ii) Emma is 25 years old. Should the scatter graph be used to estimate the lowest frequency Emma can hear? [1]

Yes

No

Give a reason for your answer.

.....

.....

.....

- 18.** Abby is carrying out a survey to find out how people learn about national sporting events?
Here is her question.

How do you usually learn about recent national sporting events?
Tick (✓) one box.

Social media

Newspaper

TV

Write a better version of Abby's question in the box below.
You must include response boxes.

[2]

19. (a) Simplify $5\sqrt{3} + 2\sqrt{3}$

[1]

.....

.....

(b) Work out the value of $4 + \sqrt[4]{160000}$.

[1]

.....

.....

(c) Work out the value of $6^9 \div 6^3$.

[2]

.....

.....

.....

.....

20. A sports club has 200 members.
 Each member is either a swimmer, a cyclist, or a runner.

120 members are seniors.
 70 members are cyclists, and 10 of these are juniors.
 40 members are senior runners.
 There are 5 more junior swimmers than senior swimmers.

A person is selected at random from the club.

Find the probability that this person is a junior cyclist.
 Use the table below to help you.

[5]

	Swimmer	Cyclist	Runner	Total
Senior				
Junior				
Total				

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

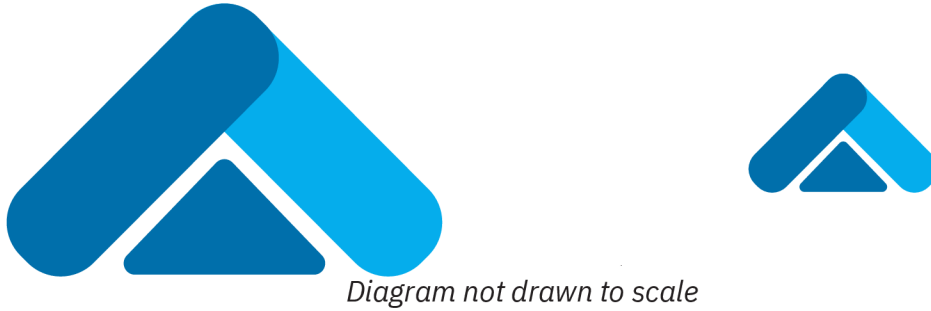
.....

.....

.....

Probability

21. A company logo is printed on cards and letters.



Each line in the larger sign has a corresponding line in the smaller one.
The lengths of the corresponding lines are all in the ratio 4:1.

(a) (i) Complete the following statement with a single mathematical word. [1]

'The two signs are because corresponding lines are in the same proportion.'

(ii) Complete the following statement with a number. [1]

"The larger sign is an enlargement of the smaller sign using a scale factor of" .'

(b) One of the lines on the larger sign is 12 cm long.

How long is the corresponding line on the smaller sign? [2]

.....

.....

.....

.....

.....

.....

22. (a) Find an expression for the n th term of this sequence. [2]

2, 5, 8, 11, 14.

.....

.....

.....

.....

.....

(b) (i) The n th term of a different sequence is $4n - 3$
Find the 12th term of this sequence. [1]

.....

.....

.....

.....

(ii) Explain why 29 cannot be a term of this sequence.
Do not find any more terms. [1]

.....

.....

.....

.....

- 23.** A bakery prepared 60 boxes of pastries for a charity event. Each box contained the same number of pastries. They made boxes of chocolate, fruit, and cream pastries in the ratio
chocolate : fruit : cream = 2 : 5 : 3.

At the end of the event, 30% of the chocolate pastries, 20% of the fruit pastries, and 10% of the cream pastries were left uneaten. How many boxes of pastries were uneaten?

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

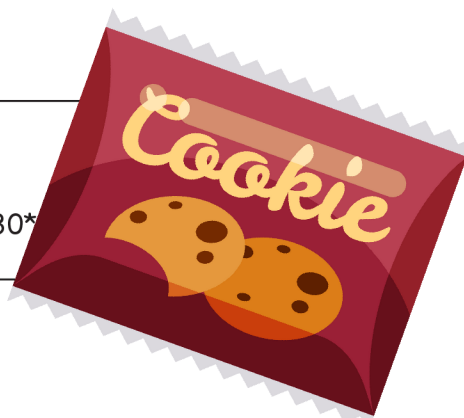
.....

.....

.....

24. Emily's online bakery has a special offer.

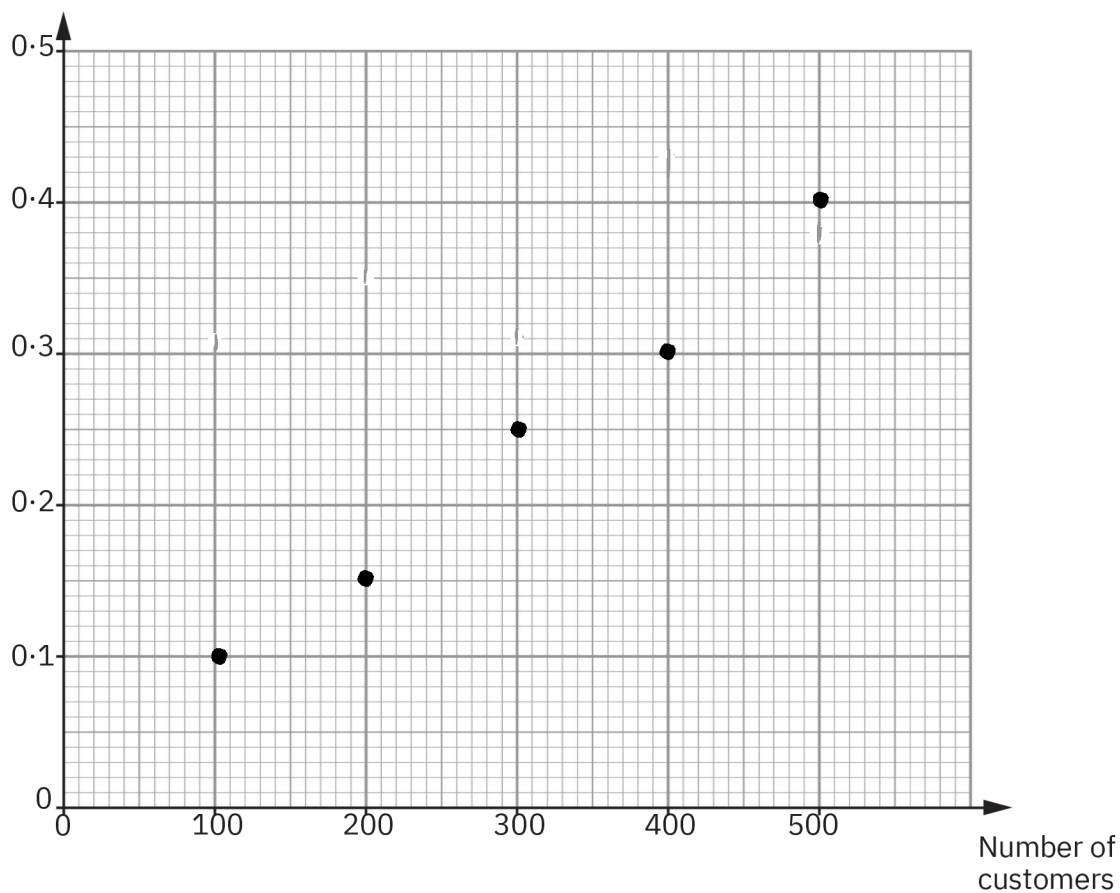
Special Offer
Free cookie box worth £5*
* requires a minimum spend of £30*



Emily records the number of free cookie boxes she sends to her customers.

The graph below shows the relative frequency that a customer has received a free cookie box after 100, 200, 300, 400, and 500 customer orders.

Relative frequency of
a customer being sent
a free sample box



(a) What is the total value of the free cookie boxes that Emily sent her first 400 customers?

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Total value of free cookie boxes is £

(b) Emily says

The most accurate estimate of the probability that a customer will be sent a free cookie box is 0.4.

Is she correct?

Yes No

Explain how you decide.

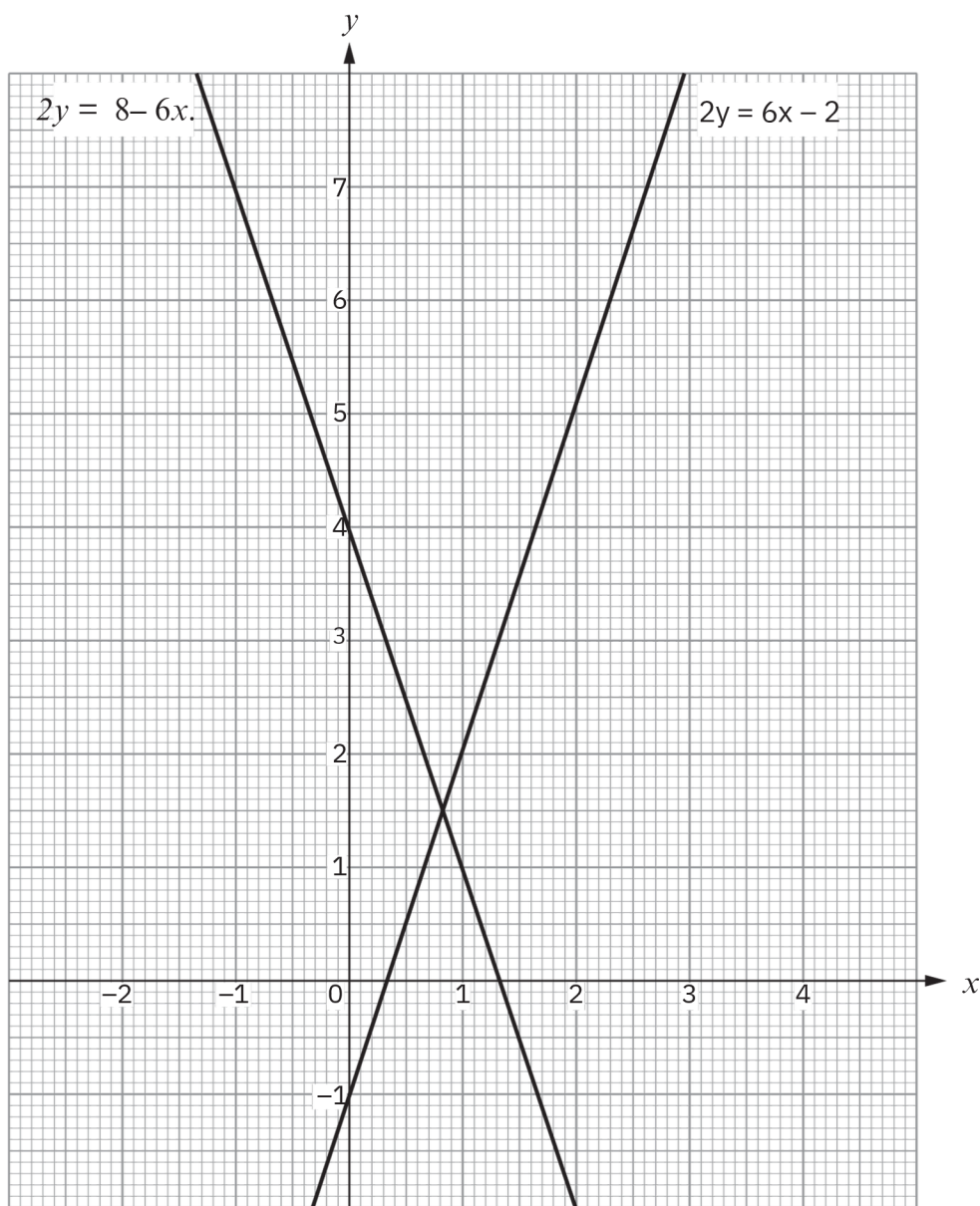
[1]

.....

.....

.....

25. (a) The diagram shows the graphs of $2y = 6x - 2$ and $2y = 8 - 6x$.



- (i) Use the graphs to write down an **approximate** solution of the equation $6x - 2 = 8 - 6x$

[1]

.....

$x =$

(ii) Circle the equation that represents a line parallel to $2y = 6x - 2$ [1]

$y = 3 - x$

$3y = x - 1$

$y = 3x + 2$

$y = 3x + 1$

.....
.....

(b) Circle the equation where y is directly proportional to x . [1]

$y = \frac{x}{5}$

$x + y = 1$

$7 = xy$

$y = 3x^2$

$y = 4x$

END OF PAPER