Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | | | | | |

Candidate Number | | | | |

EDEXCEL Mock Test Papers

paper3 -Test3

Mathematics
PAPER 3 (Calculator)
Higher Tier

3H

Morning (Time: 1 hour 30 minutes)

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator, Formulae Sheet (enclosed). Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – there may be more space than you need.
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – use this as a guide as to how much time to spend on each question.

Advice

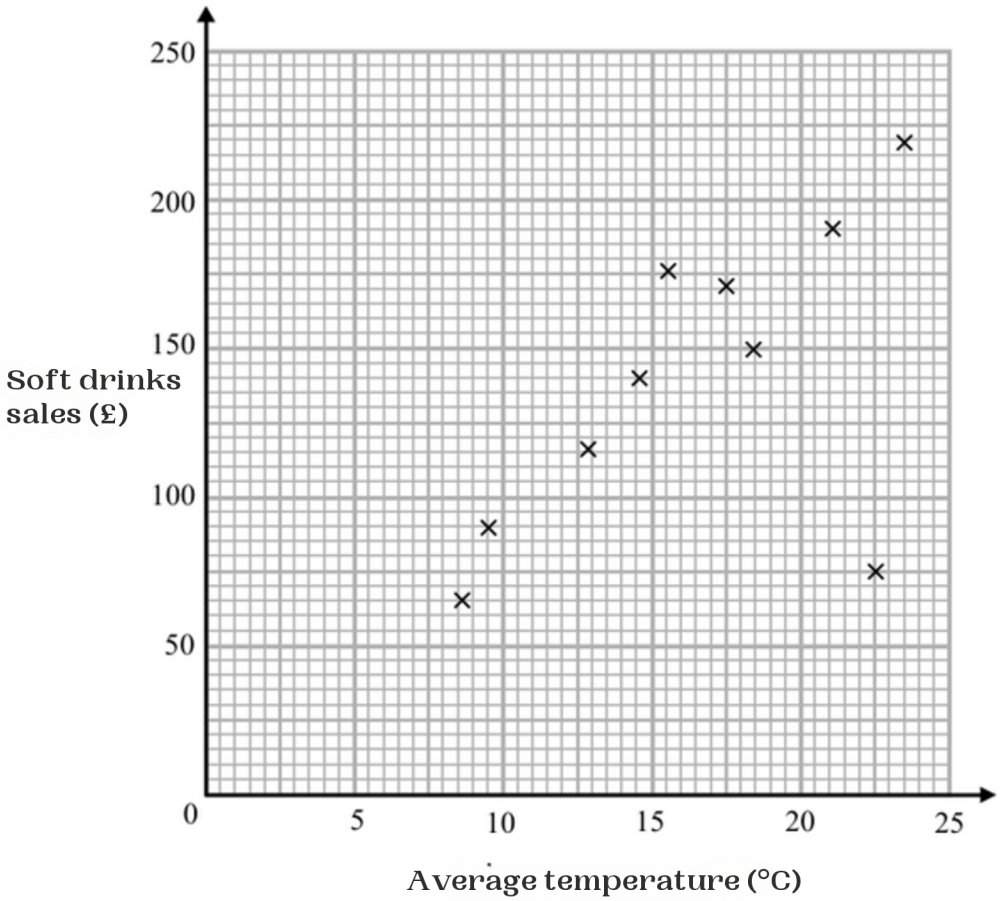
- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The average daytime temperature for 10 days is recorded.
A shop also records its soft drinks sales for each of the 10 days.
The scatter graph shows this information.



(a) What type of correlation does the scatter graph show?

.....

(1)

(b) One of the points is an outlier.
Write down the coordinates for this point.

(.....) , (.....)

(1)

(c) On another day the temperature was 12°.
Estimate the soft drinks sales on this day.

£ .....

(2)

(Total for Question 1 is 4 marks)

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2 Tom is preparing fruit salad for a restaurant .

He mixes apples, bananas, and oranges in the ratio of

weight of apples : weight of bananas : weight of oranges = 5 : 3 : 2.

Tom needs to make 8,000 g of fruit salad.

Bananas cost £1.80 for 200 g.

Work out the cost of the bananas needed to make 8,000 g of fruit salad.

£.....

(Total for Question 2 is 4 marks)

3 (a) Write 2.5×10^4 as an ordinary number.

.....

(1)

(b) Write 0.009 in standard form.

.....

(1)

(c) Work out $3.2 \times 10^4 + 4.3 \times 10^2$
Give your answer in standard form.

.....

(2)

(Total for Question 3 is 4 marks)

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4 A water tank is empty.
Marcus needs to fill the tank with 3600 litres of water.
Company A supplies water at a rate of 5 litres in 1 minute 10 seconds.
Company B supplies water at a rate of 2.5 gallons per minute.
1 gallon = 4.54 litres
Company A would take more time to fill the tank than Company B would take to fill the tank.
How much more time?
Give your answer in minutes correct to the nearest minute.

..... minutes

(Total for Question 4 is 4 marks)

5 The first four terms of a Fibonacci sequence are

a 3a 4a 7a

This sequence follows the Fibonacci rule, where each term is the sum of the two preceding terms.
The sum of the first five terms is 345.
Work out the value of a.

.....

(Total for Question 5 is 3 marks)

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6 In a box, there are only yellow balls, purple balls, orange balls, and black balls.
A ball is going to be taken at random from the box.
The table below shows the probabilities of taking a yellow ball or a purple ball:

Colour	Yellow	Purple	Orange	Black
Probability	0.1	0.2	.....	.....

The probability of taking an orange ball is 0.25 more than the probability of taking a black ball.

(a) Complete the table.

(2)

There are 30 purple balls in the box.

(b) Work out the total number of balls in the box.

.....

(2)

(Total for Question 6 is 4 marks)

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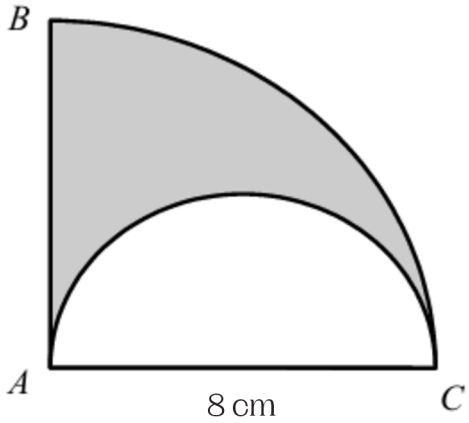
7 BAC is a sector of a circle, centre A.
AC is the diameter of a semi circle.
AC is 8 cm.



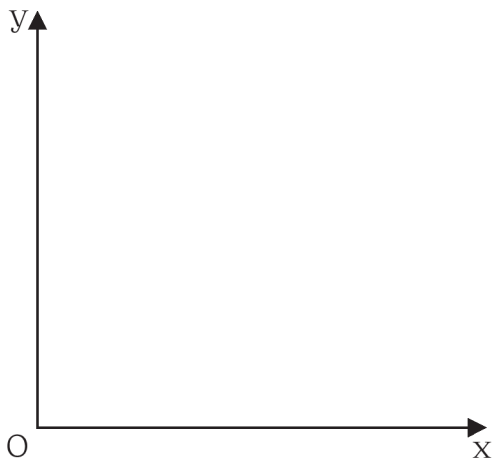
Find the area of the shaded region.
Give your answer in terms of π

.....

(Total for Question 7 is 4 marks)

8 (a) Using the axes below, sketch a graph to represent the statement

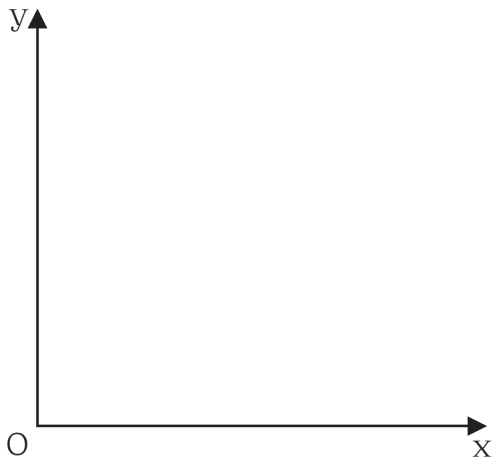
y is directly proportional to x



(1)

(b) Using the axes below, sketch a graph to represent the statement

y is inversely proportional to x^2



(1)

(Total for Question 8 is 2 marks)

9 On Monday, 8 people took 6 hours to paint a fence.
On Tuesday, 10 people painted the same fence.
Assuming that all the people worked at the same rate,
(a) Work out how many hours the 10 people took to paint the fence.

..... hours
(2)

The assumption is wrong.

(b) How might this affect the time taken for the 10 people to paint the fence?

.....

.....

.....

(1)

(Total for Question 9 is 3 marks)

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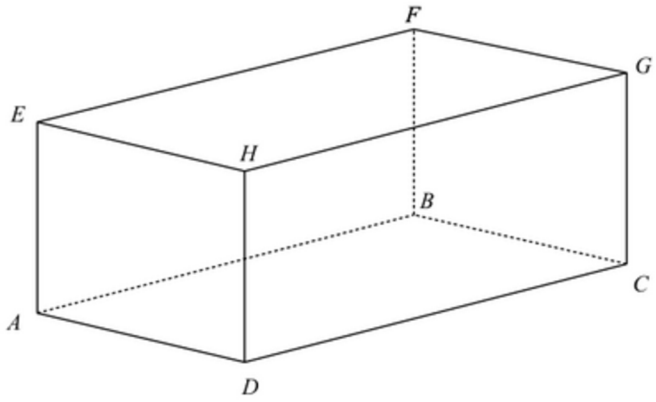
10 The diagram shows a cuboid ABCDEFGH.

AE = 4 cm
AD = 5 cm
DC = 8 cm



Calculate the size of angle ECA.
Give your answer correct to 3 significant figures.

.....°

(Total for Question 10 is 4 marks)

11 Eeshu writes down the value of x, correct to 1 decimal place.

She writes $x = 8.2$

Complete the error interval for x.

..... $x <$ .....

(Total for Question 11 is 2 marks)

12 $(ax^4)^{\frac{1}{n}} = 5x^2$

Work out the value of a and the value of n.

a = ...

n = ...

(Total for Question 12 is 2 marks)

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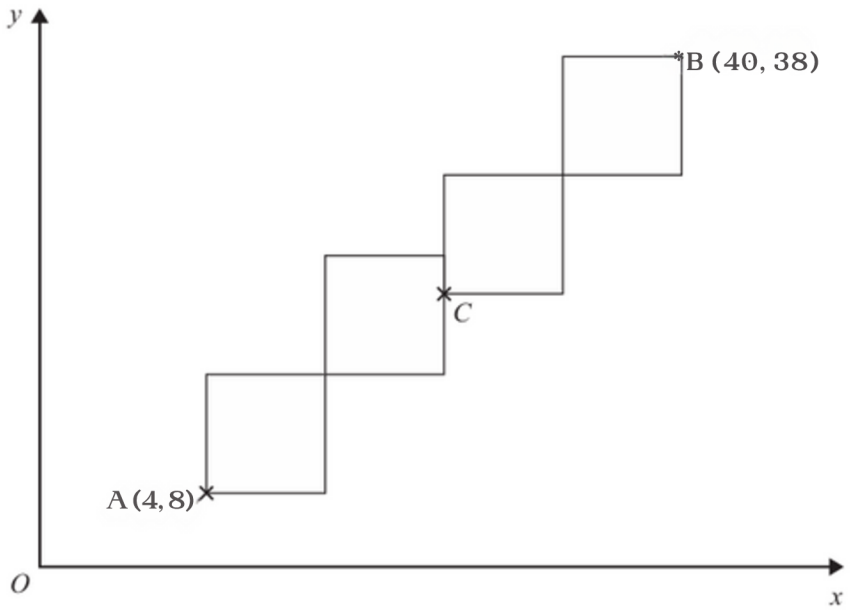
13 A pattern is made from four identical rectangles.

The sides of the rectangles are parallel to the axes.



Point A has coordinates (4, 8)
Point B has coordinates (40 , 38)
Point C is marked on the diagram.
Work out the coordinates of C.

(..... , ...)

(Total for Question 13 is 5 marks)

14 Emma, Ryan, and Olivia share €3600.
The ratio of the amount Emma gets to the amount Ryan gets is 3:2.
Olivia gets twice the amount Ryan gets.

Work out the amount Ryan gets.

.....

(Total for Question 14 is 4 marks)

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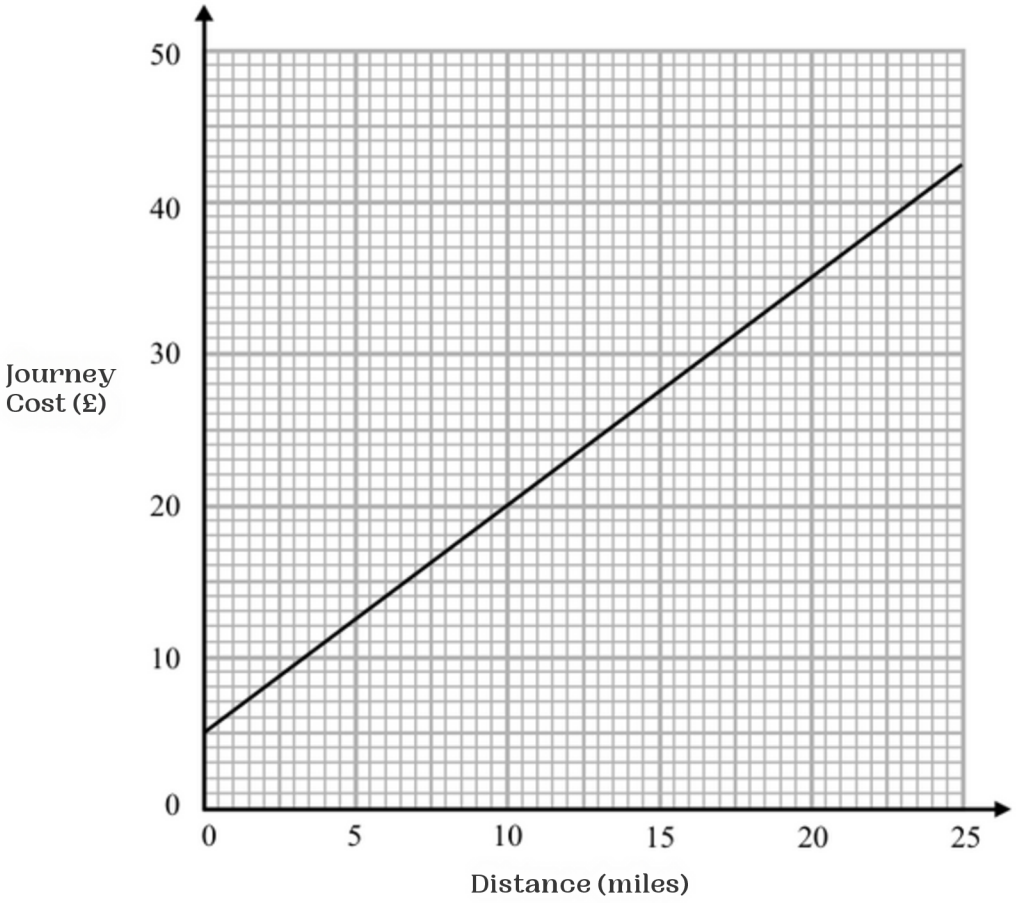
15 John is a taxi driver.
You can use this graph to find the cost of a taxi for different distances.



For each journey there is a fixed charge plus a charge for the distance.

(a) How much is the fixed charge?

£.....

(1)

John makes two journeys.

The distance of one journey is 10 miles further than the other journey.

(b) Work out the difference between the two journey costs.

£.....

(2)

(Total for Question 15 is 3 marks)

16 Solve the simultaneous equations

$$x^2 + y^2 = 20$$

$$3x = 2 - y$$

x = ...

y = ...

(Total for Question 16 is 5 marks)

17 x is directly proportional to the square of y.
y is directly proportional to the cube of z.

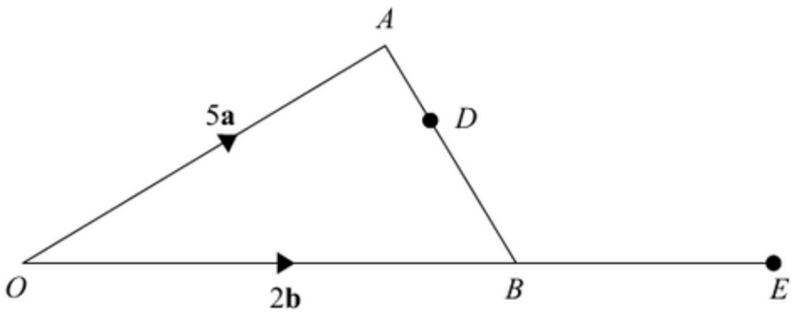
z = 2 when x = 128

Find a formula for x in terms of z.

.....

(Total for Question 17 is 4 marks)

18



$\overrightarrow{OA} = 5a$

$\overrightarrow{OB} = 2b$

C is the point on OA such that OC:CA = 4:1
D is the point such that AD:DB = 1:2
The line OB is extended to point E

Given that C, D and E are on the same straight line find $\overrightarrow{BE}$

.....

(Total for Question 18 is 5 marks)

19 Here are the first 5 terms of a quadratic sequence.

6 10 16 24 34

Show that the nth term is $n^2 + n + 4$

.....

(Total for Question 19 is 4 marks)

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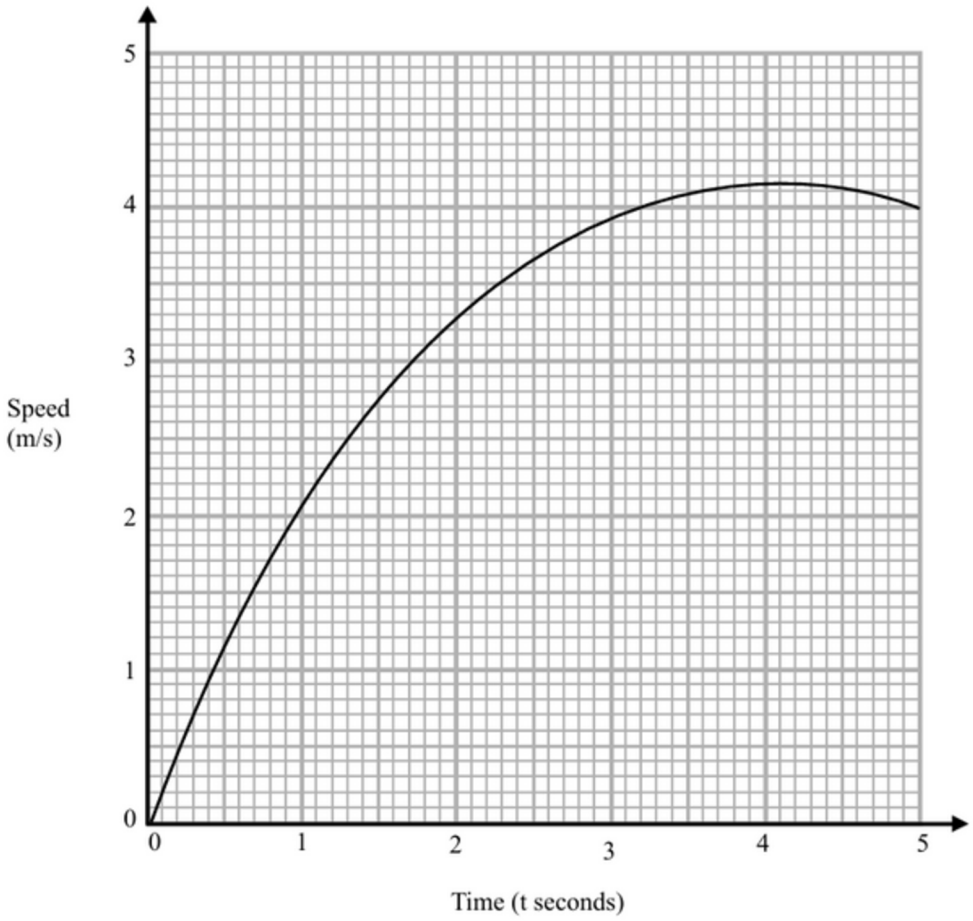
20 Here is a speed-time graph



(a) Use 3 strips of equal width to find an estimate for the area under the graph for the first 3 seconds.

.....

(3)

(b) Describe what your answer to part a represents.

.....

.....

(1)

(Total for Question 20 is 4 marks)

21 Simplify fully $\frac{2x-2}{x+5} \div \frac{2x^2-4x+3}{2x^2+13x+15}$

.....

(Total for Question 21 is 3 marks)

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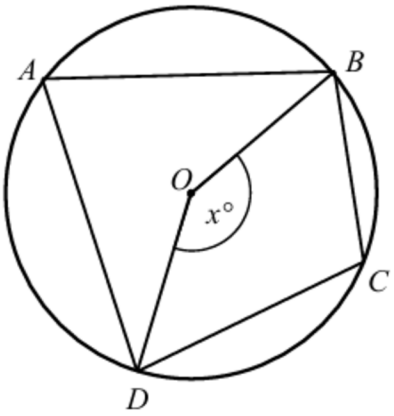
22



A, B, C and D are points on the circumference of a circle, centre O.

Angle BOD = x°

Find the size of angle BCD, in terms of x.
Give reasons for each stage of your working.

(Total for Question 22 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS