EDEXCEL Mock Test Papers
paper3 -Test2

Mathematics
PAPER 3 (Calculator)
Higher Tier

Morning (Time: 1 hour 30 minutes)

3H

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   Make a the subject of the formula p   = 6a – 8

....

(Total for Question 1 is 2 marks)

2   Marcus has been asked to divide 150 in the ratio 2 : 3

    Here is his working.

$$150 \div 2 = 75 \qquad 150 \div 3 = 50$$

Marcus's working is not correct.

Describe what Marcus has done wrong.

....

....

....

(Total for Question 2 is 1 mark)

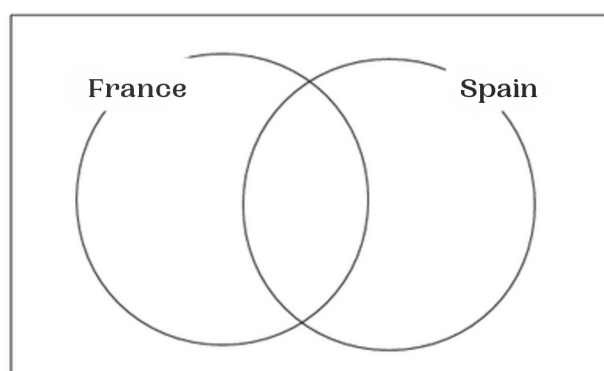Prepare 4 GCSEs

3   40 students were surveyed:

     20 have visited France
     15 have visited Spain
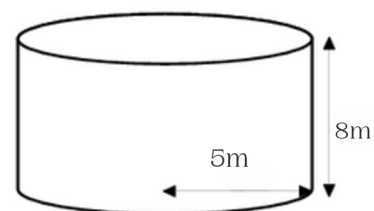   10 have visited both France and Spain.

   Use this information to complete the Venn Diagram

France   Spain

(Total for Question 3 is 3 marks)

4   A solid cylinder has a radius of 5 m and a height of 8 m.
     Work out the total surface area of the cylinder.
     Give your answer in terms of π.
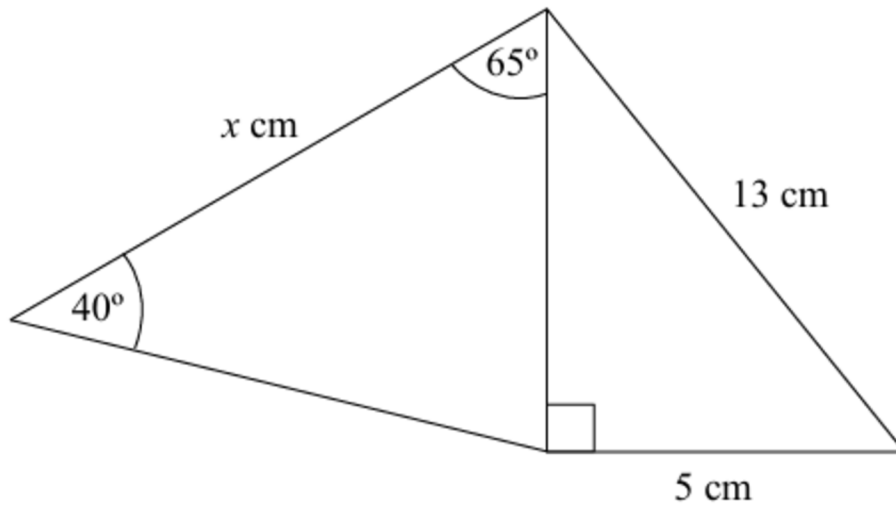

8m

5m

(Total for Question 4 is 4 marks)

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5

65°

x cm

13 cm

40°

5 cm

Work out the value of x.

Give your answer to 1 decimal place.
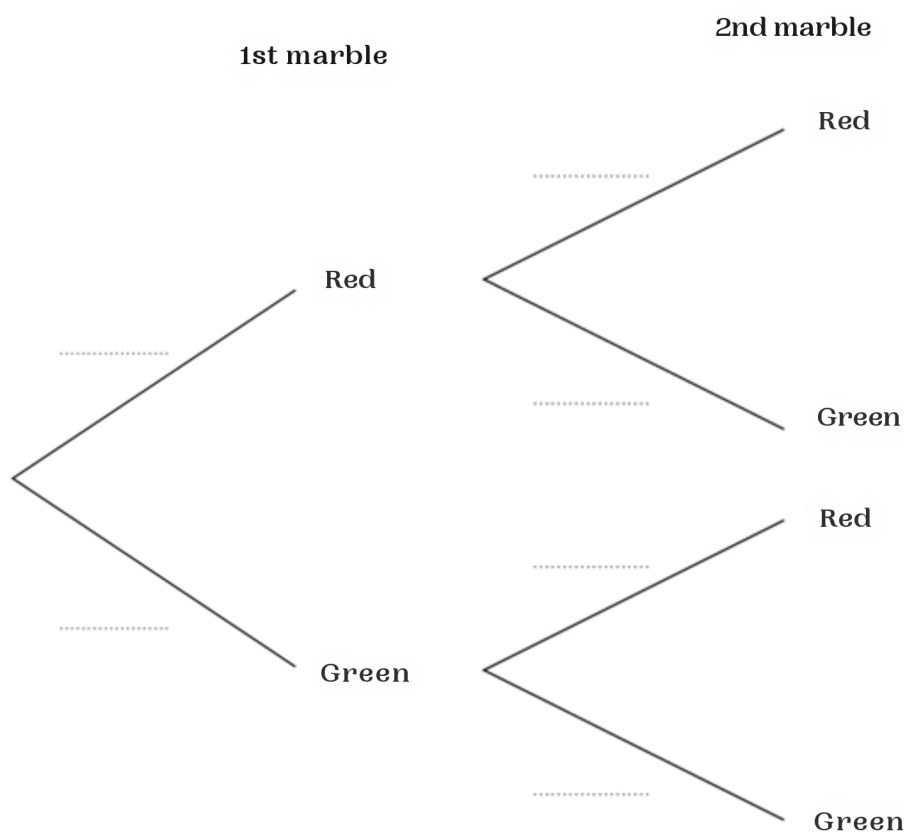
....
(5)

(Total for Question 5 is 5 marks)

6 There are 6 red marbles and 4 green marbles.
   Charlie takes at random a marble from the bag.

   He does not put the marble back in the bag.
   Charlie takes at random a second marble from the bag.

   (a) Complete the probability tree diagram.

2nd marble

1st marble

Red

Red

Green

Red

Green

Green

(2)

   (b) Work out the probability that Charlie takes two marbles the same colour.

....

(2)

(Total for Question 6 is 4 marks)

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7   (a) Change 9000 cm^3 to m^3

.... m^3

(1)

(b) Change a speed of 240 km per hour to metres per second.

.... metres per second

(3)

(Total for Question 7 is 4 marks)

8   The mean of eight numbers is 42.

The mean of two of the numbers is 24.

Work out the mean of the other six numbers.

....

(Total for Question 8 is 3 marks)

9 (a) Write 5.47×10^{-4} as an ordinary number.

....

(b) Work out $\dfrac{3.84 \times 10^{9} \times 9.12 \times 10^{-4}}{4.2 \times 10^{-4}}$

Give your answer in standard form.

....

(Total for Question 9 is 3 marks)

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10 Isaac has to subtract $(x^2 - 3x - 6)$ from $(x^2 + 4x + 8)$

Here is his working

$$(x^2 + 4x + 8) - (x^2 - 3x - 6) = x^2 + 4x + 8 - x^2 - 3x - 6 = x + 2$$

Explain what is wrong with Isaac's working.

....

....

....

(Total for Question 10 is 1 mark)

11 n is an integer such that $-2 \leq n < 3$

Write down all the possible values of n.

.

....

(Total for Question 11 is 2 marks)

12 A number x is rounded to 3 significant figures.
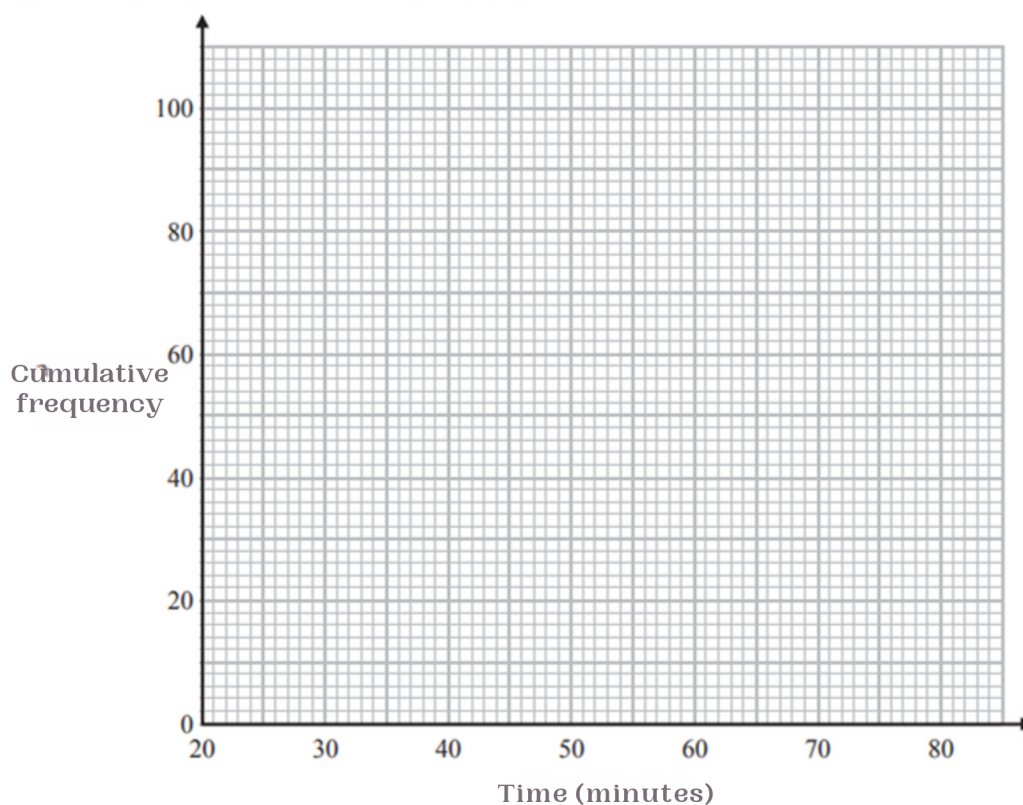The result is 4.67
Write down the error interval for x.

.... $\leq$ X $<$ ....

(Total for Question 12 is 2 marks)

Turn over ▶

13 The frequency table shows the time taken for 100 people to travel to an event.

Time (minutes)	Frequency
$20 < t \leqslant 30$	9
$30 < t \leqslant 40$	16
$40 < t \leqslant 50$	20
$50 < t \leqslant 60$	29
$60 < t \leqslant 70$	15
$70 < t \leqslant 80$	11

(a) On the grid, plot a cumulative frequency graph for this information.

(2)

(b) Find an estimate for the median time taken.

............................minutes

(1)

(Total for Question 13 is 3 marks)

14 (a) Simplify fully $(5\,x^5 y^6\, z\,)^3$
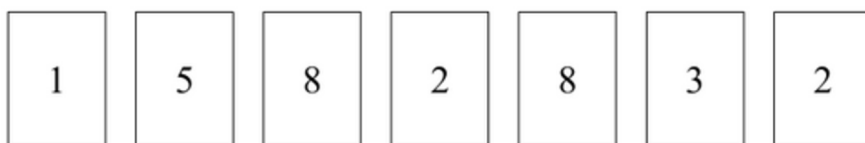
(b) Expand and simplify $(x + 6)(x - 2)(x + 5)$

(Total for Question 14 is 5 marks)

15   Here are some number cards.

| 1 | 5 | 8 | 2 | 8 | 3 | 2 |

One of the cards is selected at random.
(a) Write down the probability that card has the number 8 on it.

....
(1)

(b) Find the probability the card has an odd number on it.

....
(1)

(Total for Question 15 is 2 marks)

16
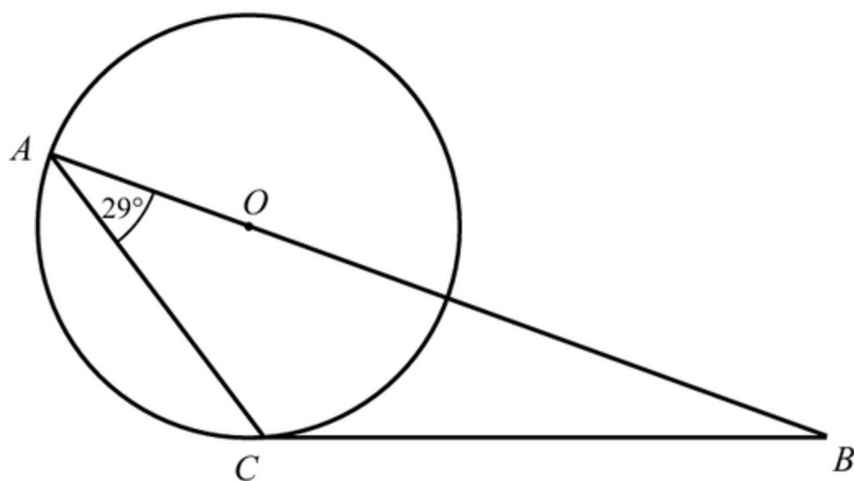
A and C are points on the circumference of a circle, centre O.
BC is a tangent to the circle.
Angle CAB = 29°
Find the size of angle ABC.
You must show all your working.

.... °

(Total for Question 16 is 4 marks)

17 A shop sells small chocolate bars and large chocolate bars.
There are
        small chocolate bars are sold in packs of 4
        large chocolate bars are sold in packs of 9
On one day
        the number of packs of   : the number of packs of = 5 : 2
        small chocolate bars sold   large chocolate bars sold

A total of 190 chocolate bars were sold.
Work out the number of small chocolate bars sold.

....

(Total for Question 17 is 4 marks)

18   Shape **P** is reflected in the line with equation $x = 3$ to give Shape **Q**.
      Shape **Q** is then reflected in the line with equation $x = 7$ to give Shape **R**.
      Describe fully the single transformation that maps Shape **P** onto Shape **R.**

....

....

....
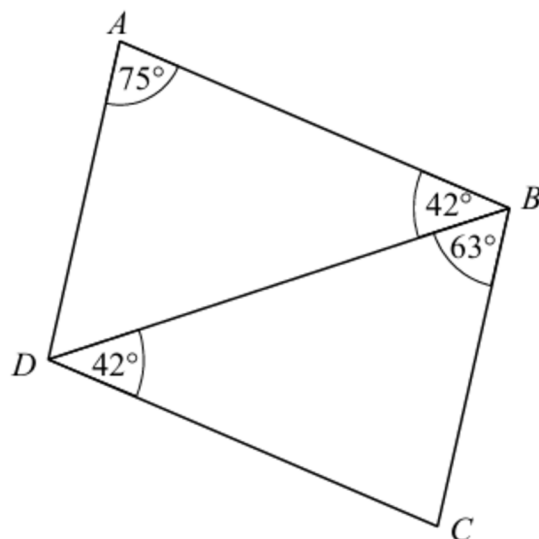
(Total for Question 18 is 2 marks)

19   There are 10 counters in a bag.
       5 of the counters are red.
       3 of the counters are blue.
      2 of the counters are green.
      Ali takes two counters are taken at random from the bag.
      Work out the probability that both of the counters Ali takes are the same colour.
      You must show your working.

....
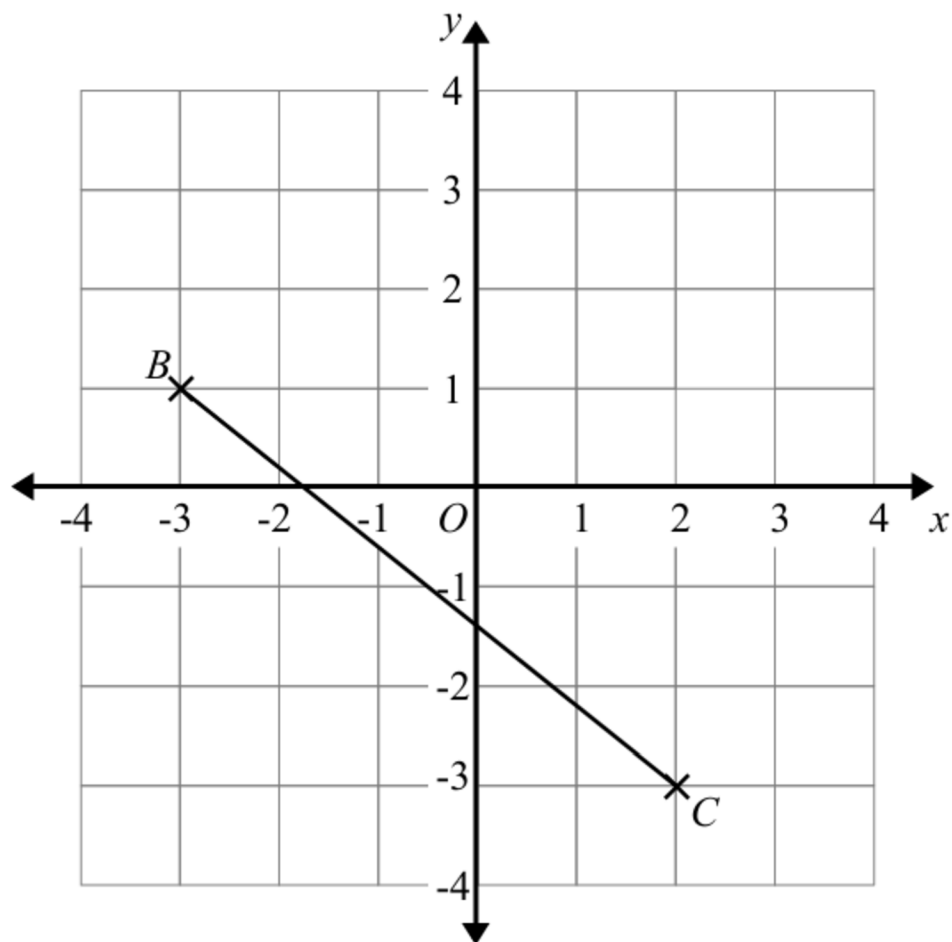
(Total for Question 19 is 4 marks)

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20   The diagram shows two triangles, ABD and BCD.

Prove that triangle ABD is congruent to triangle BCD.

(Total for Question 20 is 3 marks)

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21

(a) Plot the point with coordinates (3, –1). Label this point A.

(1)

(b) Write down the coordinates of the midpoint of BC.

(............. , ...)
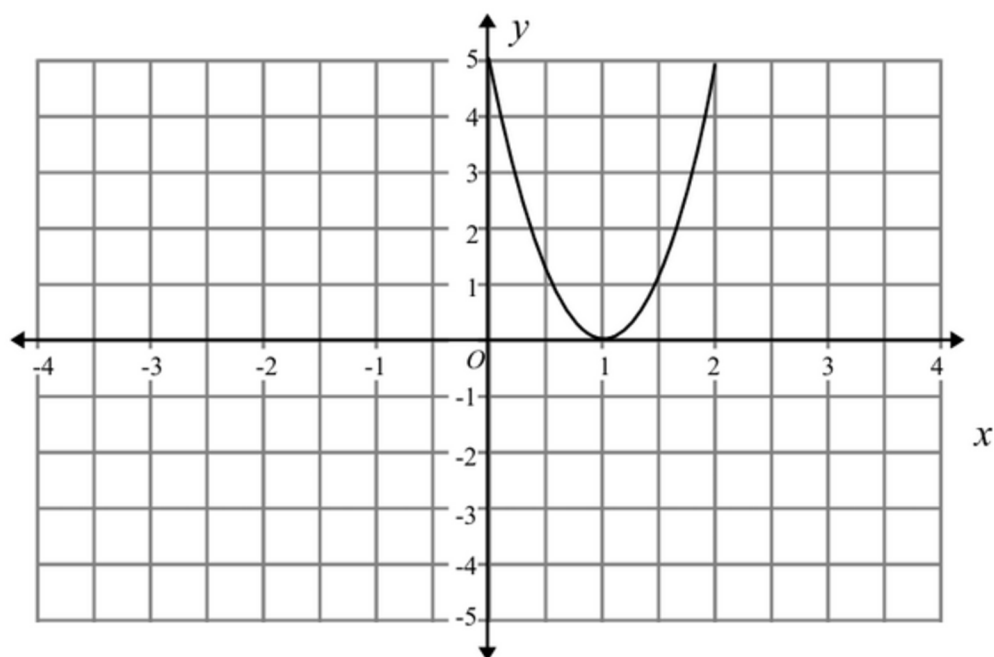
(1)

(Total for Question 21 is 2 marks)

22 Given that

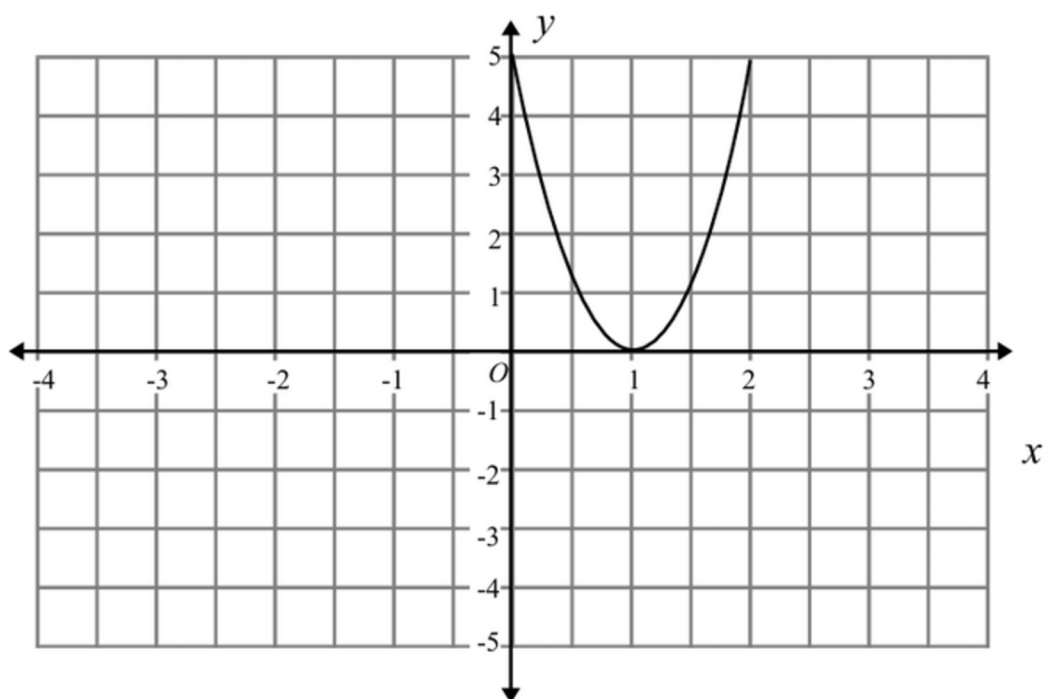$$2x + 1 : x + 2 = x + 8 : 3x - 4$$

Find the possible values of x.

(Total for Question 22 is 4 marks)

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23   The graph of y = f(x) is shown on both grids below.

(2)

(a) On the grid above, sketch the graph of y = –f(x).
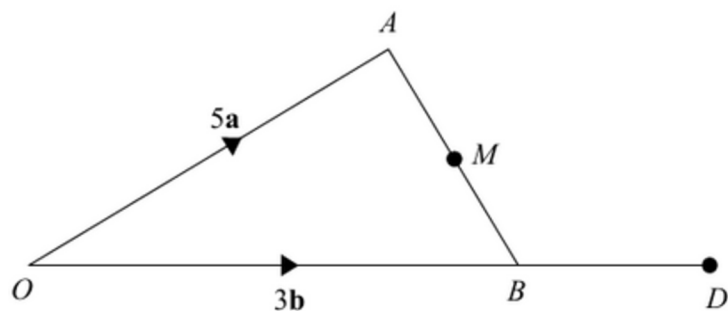

(b) On the grid above, sketch the graph of y = f(x + 2)

(2)

(Total for Question 23 is 4 marks)

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$\vec{O}A = 5a$
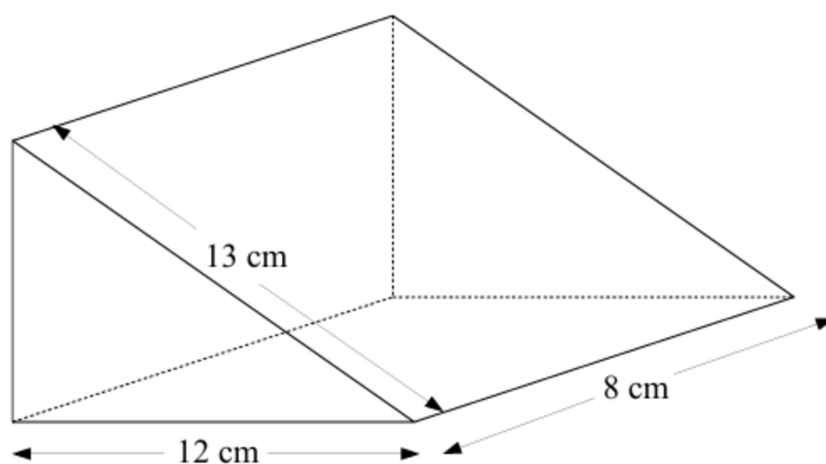
$\vec{O}B = 3b$

C is the point such that OC:CA = 4:1
M is the midpoint of AB
D is the point such that OB:OD = 3:4

Show that C, M and D are on the same straight line.

(Total for Question 24 is 5 marks)

25   Here is a triangular prism.

The diagram shows a triangular prism.

The cross-section of the prism is a right angled triangle.

Calculate the volume of the prism.

....cm3

(Total for Question 25 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS