Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

2440412193

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/33**

Paper 3 (Core) **October/November 2018**

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments
Graphics Calculator

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
Unless instructed otherwise, give your answers exactly or correct to three significant figures as appropriate.
Answers in degrees should be given to one decimal place.
For π, use your calculator value.
You must show all the relevant working to gain full marks and you will be given marks for correct methods, including sketches, even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 96.

This document consists of **16** printed pages.

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Formula List

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle, radius r.	$A = \pi r^2$
Circumference, C, of circle, radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Curved surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

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Answer **all** the questions.

1 **(a)** Here is a list of numbers.

8 10 14 17 20 25

From this list, write down

(i) an odd number,

..... [1]

(ii) a multiple of 7,

..... [1]

(iii) a square number.

..... [1]

(b) Here are the first four numbers in a sequence.

8 11 14 17

Write down the next two terms in this sequence.

..... , ... [2]

(c) Write 3658 correct to the nearest 100.

..... [1]

(d) Write 68.437

(i) correct to 2 decimal places,

..... [1]

(ii) correct to 3 significant figures.

..... [1]

(e) $s = 2m + 3n$

Find the value of s when $m = 4.8$ and $n = 1.6$.

$s =$ ..... [2]

(f) Change 2.3 kilometres into metres.

..... m [1]

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2 A school shop sells the following.

	Cost (cents)
Pencil	12
Sharpener	25
Eraser	10
Ruler	30

(a) Gigue buys 3 pencils and 1 sharpener.

Work out how much he spends.

..... cents [2]

(b) The cost of a ruler is increased by 20%.

Work out the new cost of a ruler.

..... cents [2]

(c) In a sale, the cost of a sharpener is reduced to 19 cents.

Work out the percentage reduction.

.....% [2]

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3 Some students were asked to choose their favourite colour of candy.

All their choices are shown in the table.

Favourite colour	Red	Blue	Yellow	Green	Orange
Number of students	6	5	2	2	3

(a) Find the number of students that were asked.

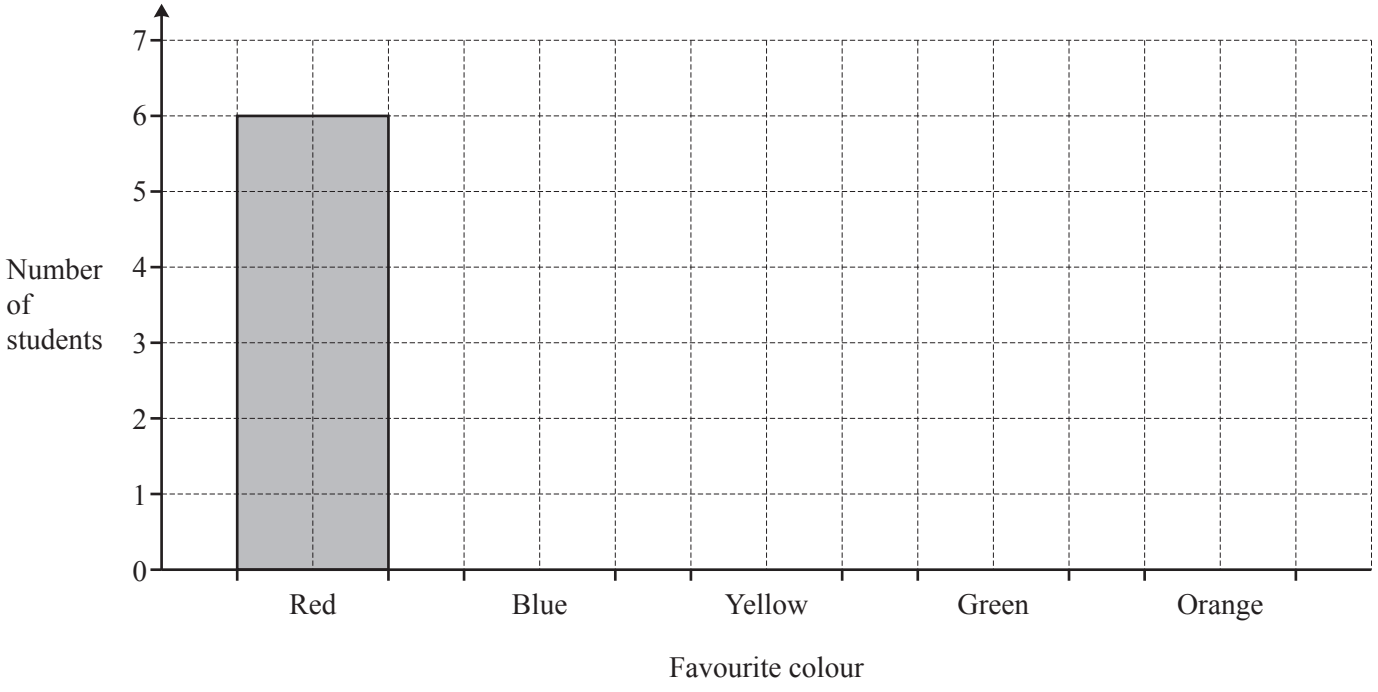
.....[1]

(b) One of these students is chosen at random.

Find the probability that their favourite colour of candy is blue.

.....[1]

(c) Complete the bar chart.



[2]

4 There are 36 cars altogether in a car park.
There are 11 black cars, 10 red cars and the rest of the cars are blue.

(a) Work out the number of blue cars.

..... [1]

(b) Write down the fraction of cars in the car park that are black.

..... [1]

(c) The information is to be shown in a pie chart.

Work out the sector angle for red cars.

..... [2]

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5 (a)

VRIEND

From the letters above, write down **all** the letters that have

(i) line symmetry,

..... [2]

(ii) rotational symmetry,

..... [2]

(iii) both line symmetry and rotational symmetry,

..... [1]

(iv) neither line symmetry nor rotational symmetry.

..... [1]

(b) On a poster, the letter **I** is a rectangle of width 2 cm and height 11 cm.

(i) Work out the perimeter of the letter **I**.

..... cm [1]

(ii) Work out the area of the letter **I**.

..... cm^2 [1]

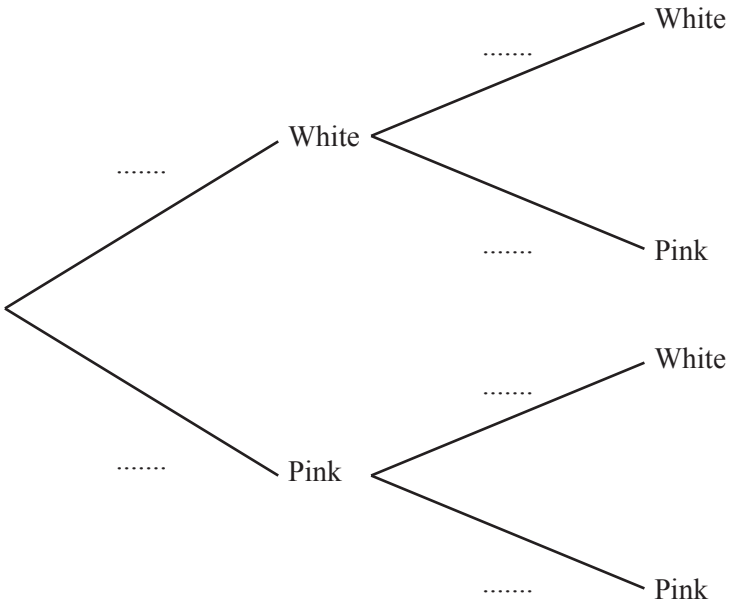
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[Turn over

6 A bag contains 15 marshmallows. 8 of these are white and 7 are pink.

Terry picks a marshmallow at random from the bag and eats it.
He then picks a second marshmallow at random from the bag and eats it.

(a) Complete the probability tree diagram.

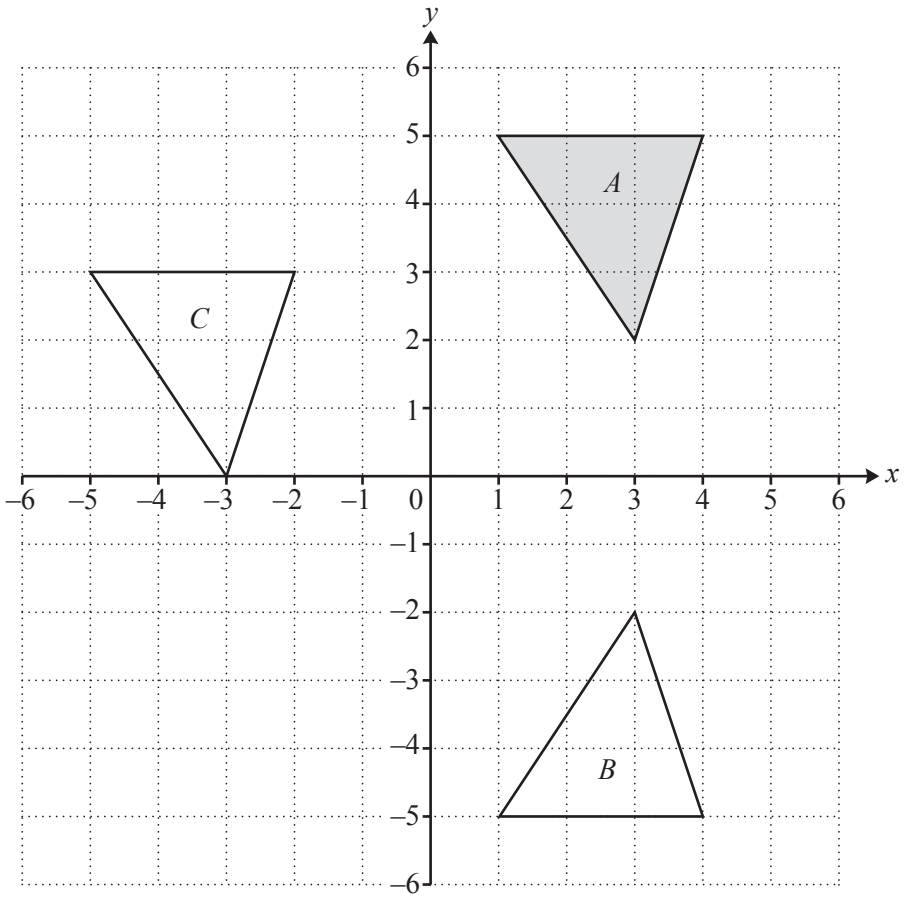


[3]

(b) Find the probability that both marshmallows were white.

..... [2]

7



(a) Describe fully the **single** transformation that maps triangle *A* onto triangle *B*.

.....

..... [2]

(b) Describe fully the **single** transformation that maps triangle *A* onto triangle *C*.

.....

..... [2]

(c) On the grid, draw the image of triangle *A* after a rotation of 180° about the origin.
Label this image *D*. [2]

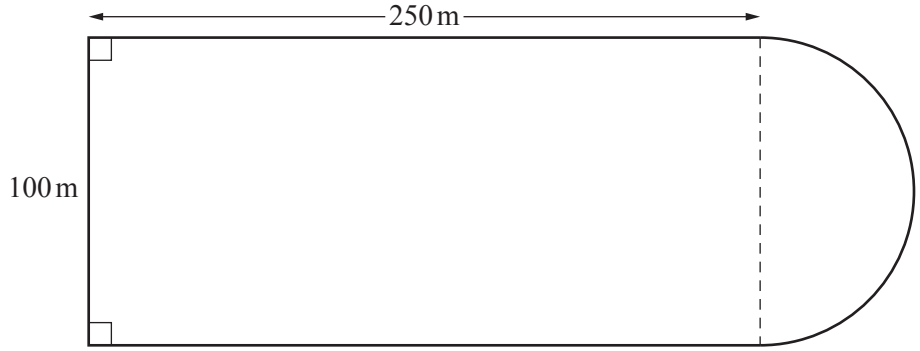
(d) Describe fully the **single** transformation that maps triangle *C* onto triangle *D*.

.....

..... [2]

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8



NOT TO SCALE

The diagram shows a rectangle joined to a semicircle.
There is a path along the perimeter of this shape.

(a) Show that the length of the path is 757 m, correct to the nearest metre.

[3]

(b) Maggie runs around the path at a speed of 220 metres per minute.

Work out how long it takes Maggie to run around the path.
Give your answer in minutes.

..... min [1]

(c) Jack takes 10 minutes to walk around the path.

Work out his average speed in km/h.

..... km/h [3]

(d) Work out the **total** area enclosed by the path.

.....m^2 [3]

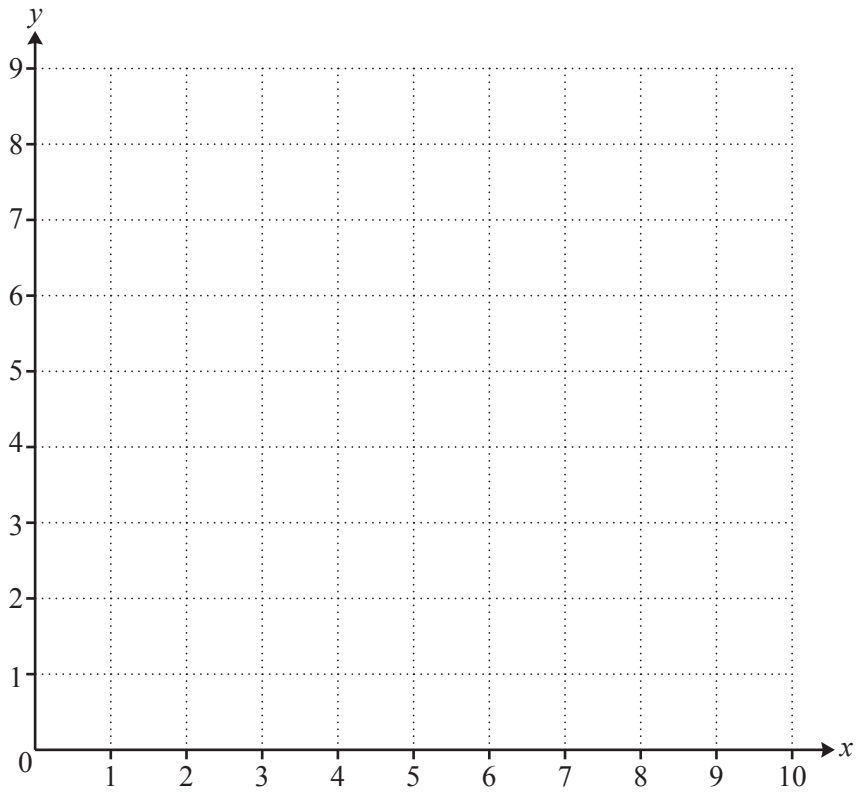
(e) The area inside the path is covered with grass.
Grass cost \$0.29 for one square metre.

Work out the **total** cost for the grass.

\$..... [1]

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9 The diagram shows a 1cm^2 grid.



(a) On the grid, plot the points $R(2, 2)$, $S(8, 2)$ and $T(8, 8)$.
Join these points to form a right-angled triangle. [2]

(b) Find

(i) the length of RS,

..... cm [1]

(ii) the area of the triangle,

.....cm^2 [1]

(iii) the gradient of RT.

..... [2]

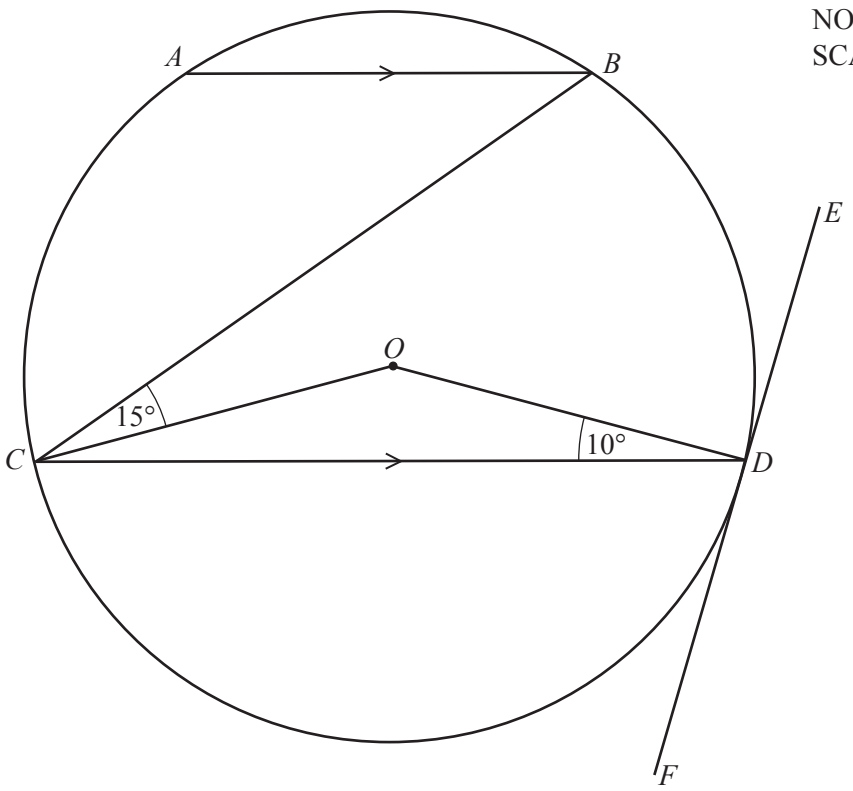
(c) Find the co-ordinates of the midpoint of RT.

(..... , ...) [1]

(d) Write down the equation of the line ST.

..... [1]

10 (a)



The diagram shows a circle, centre O.
AB and CD are parallel chords and the line EDF is a tangent to the circle at D.
Angle $ODC = 10°$ and angle $OCB = 15°$.

Find the size of

(i) angle ODE,

Angle $ODE =$ ..... [1]

(ii) angle CDF,

Angle $CDF =$ ..... [1]

(iii) angle COD,

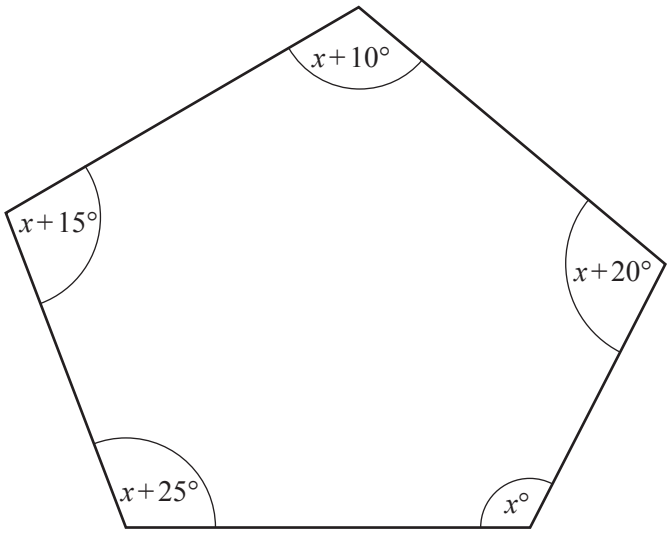
Angle $COD =$ ..... [2]

(iv) angle CBA.

Angle $CBA =$ ..... [1]

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(b)



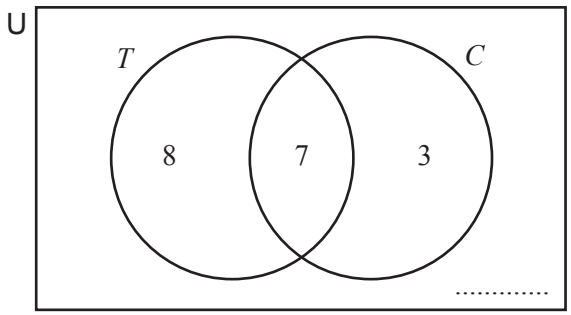
NOT TO SCALE

The diagram shows a pentagon.

Find the value of x.

$x =$ ..... [3]

11 The Venn diagram shows the number of students in a class wearing a T-shirt, T, or a cardigan, C.



(a) There are 20 students in total in the class.

Complete the Venn diagram. [1]

(b) Find the probability that one of these students, chosen at random, wears

(i) both a T-shirt and a cardigan,

..... [1]

(ii) a T-shirt but not a cardigan.

..... [1]

(c) Find n(T).

..... [1]

(d) On the Venn diagram, shade $C \cap T'$. [1]

12 **(a)** $T = 5R - S$

Find the value of T when $R = 3$ and $S = 4$.

$T =$ ..... [2]

(b) Simplify fully.

(i) $3a - 6b + 2a - b$

..... [2]

(ii) $\frac{10x}{5x}$

..... [1]

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(c) Solve.

(i) $\frac{x}{2} = 5$

$x =$ ..... [1]

(ii) $7x + 2 = 51$

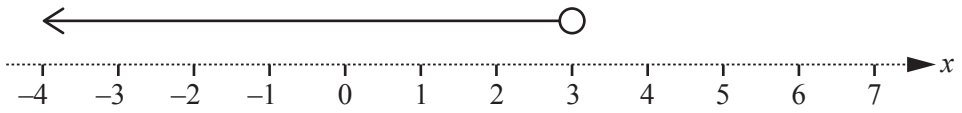
$x =$ ..... [2]

(d) Expand the brackets and simplify.

$$4(x + 2) + 2(2x + 1)$$

..... [2]

(e) Write down the inequality shown by this number line.



..... [1]

(f) Solve these simultaneous equations.
You must show all your working.

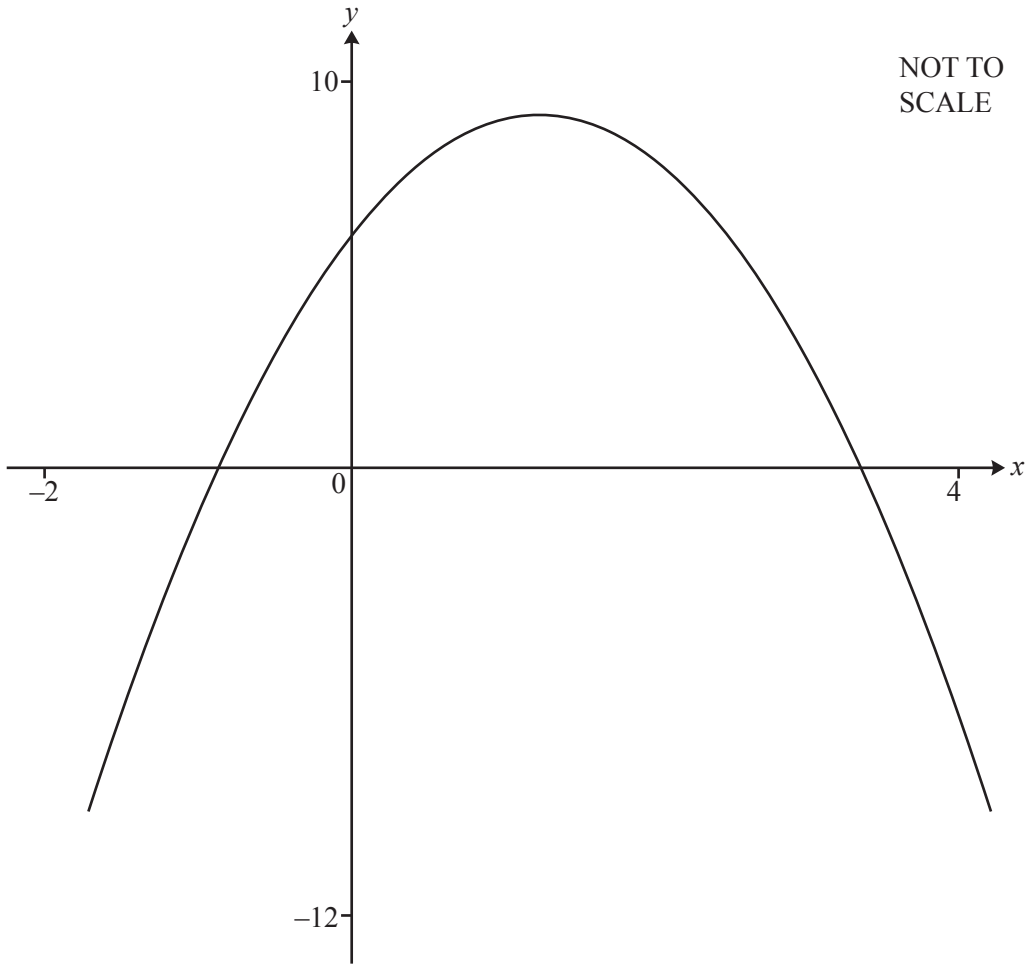
$$2x - y = 9$$
$$3x + y = 16$$

$x =$ .....

$y =$ ..... [2]

Question 13 is printed on the next page.

13



The diagram shows the graph of $y = f(x)$ where $f(x) = -2x^2 + 5x + 6$ for $-2 \leqslant x \leqslant 4$.

(a) Use your calculator to find the zeros of $f(x)$.

..... and ..... [2]

(b) Use your calculator to find the co-ordinates of the local maximum.

(..... , ...) [2]

(c) Write down the equation of the line of symmetry.

..... [1]

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