GCSE Grade 7

Maths Booklet 1

Paper 2H
Calculator

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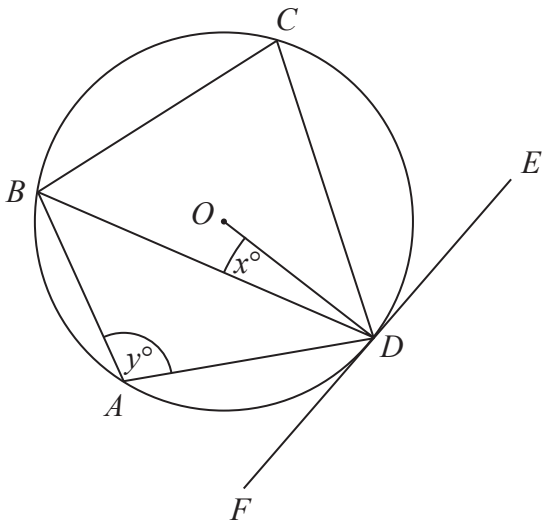
1



A, *B*, *C* and *D* are points on the circumference of a circle, centre *O*.
FDE is a tangent to the circle.

(a) Show that $y - x = 90$
You must give a reason for each stage of your working.

(3)

Dylan was asked to give some possible values for x and y.

He said,

"y could be 200 and x could be 110, because $200 - 110 = 90$"

(b) Is Dylan correct?
You must give a reason for your answer.

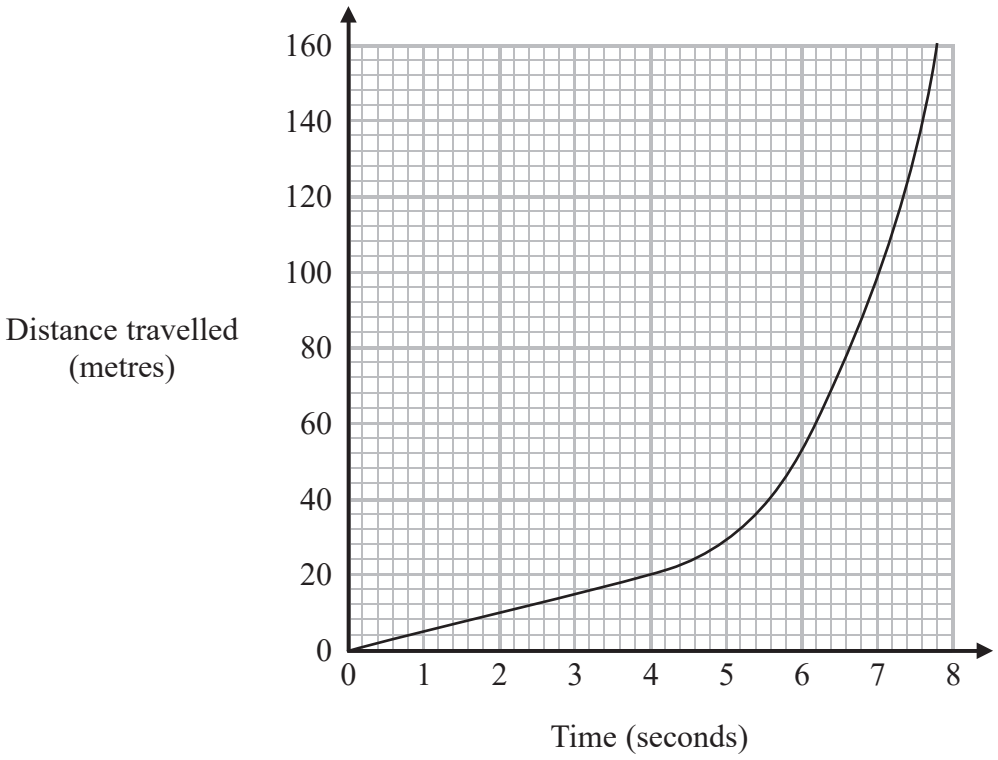
.....

.....

(1)

(Total for Question 1 is 4 marks)

2 The distance-time graph shows information about part of a car journey.



Use the graph to estimate the speed of the car at time 5 seconds.

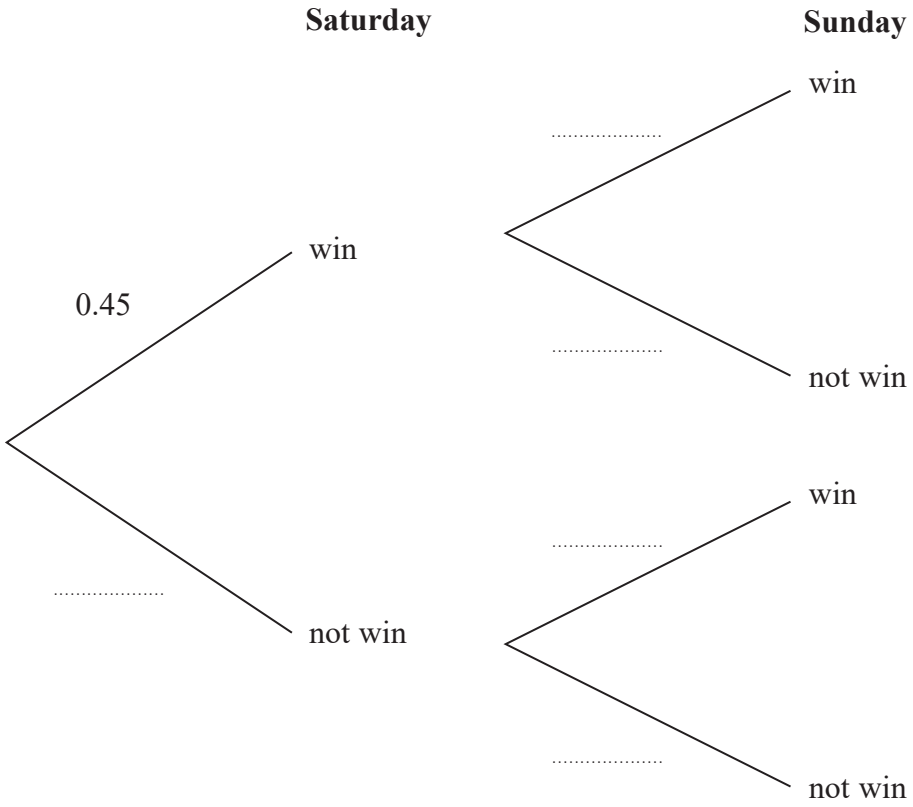
..... m/s

(Total for Question 2 is 3 marks)

3 A darts team is going to play a match on Saturday and on Sunday.
The probability that the team will win on Saturday is 0.45

If they win on Saturday, the probability that they will win on Sunday is 0.67
If they do **not** win on Saturday, the probability that they will win on Sunday is 0.35

(a) Complete the probability tree diagram.



(2)

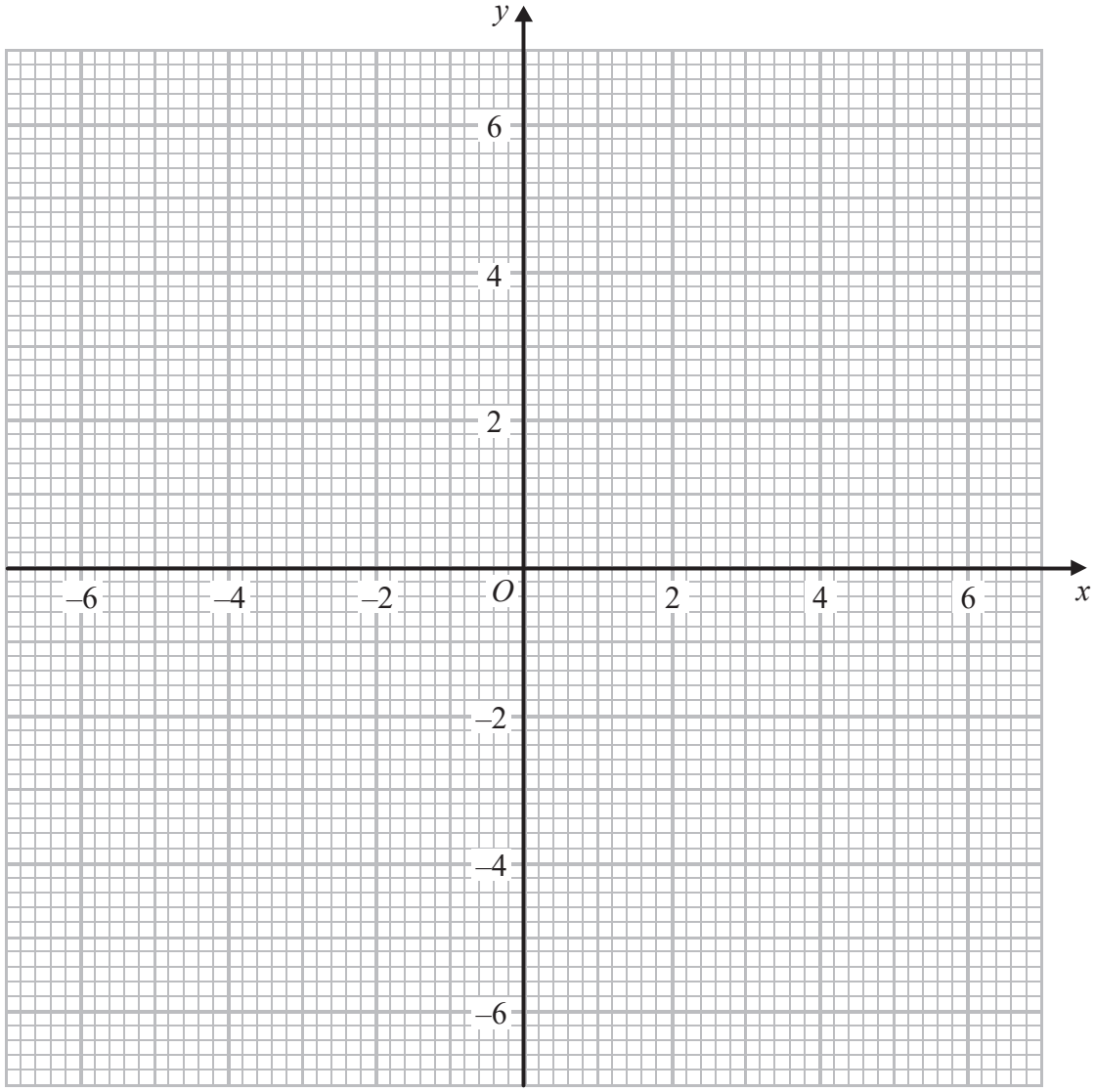
(b) Find the probability that the team will win exactly one of the two matches.

.....

(3)

(Total for Question 3 is 5 marks)

4 (a) On the grid, draw the graph of $x^2 + y^2 = 12.25$



(2)

(b) Hence find estimates for the solutions of the simultaneous equations

$$x^2 + y^2 = 12.25$$
$$2x + y = 1$$

.....

(3)

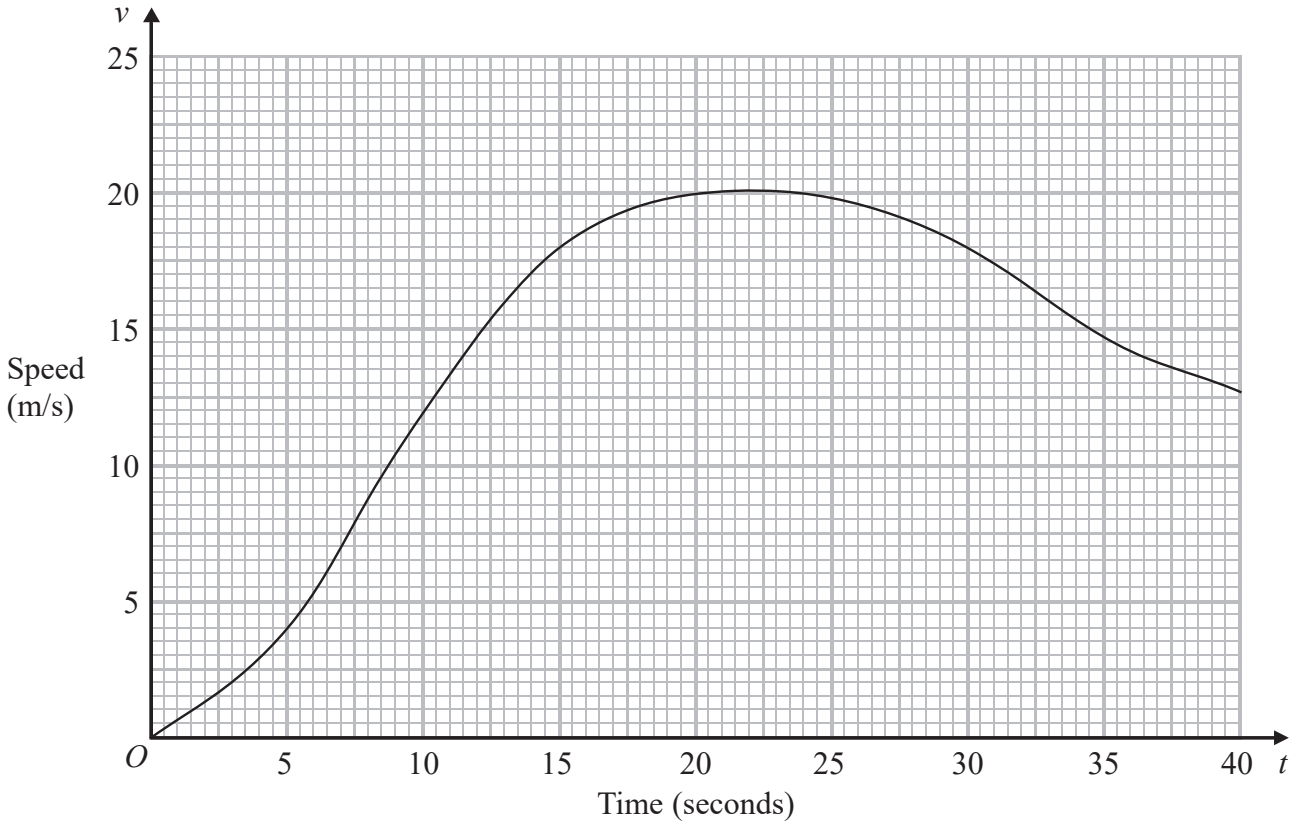
(Total for Question 4 is 5 marks)

5 Show that $6 + \left[(x + 5) \div \frac{x^2 + 3x - 10}{x - 1}\right]$ simplifies to $\frac{ax - b}{cx - d}$ where a, b, c and d are integers.

(Total for Question 5 is 4 marks)

6 A car moves from rest.

The graph gives information about the speed, v metres per second, of the car t seconds after it starts to move.



(a) (i) Calculate an estimate of the gradient of the graph at $t = 15$

.....

(3)

(ii) Describe what your answer to part (i) represents.

.....

(1)

(b) Work out an estimate for the distance the car travels in the first 20 seconds of its journey.
Use 4 strips of equal width.

.....m

(3)

(Total for Question 6 is 7 marks)

7 Make m the subject of the formula $f = \dfrac{3m + 4}{m - 1}$

.....

(Total for Question 7 is 3 marks)

8 The straight line **L** has the equation $3y = 4x + 7$
The point A has coordinates $(3, -5)$

Find an equation of the straight line that is perpendicular to **L** and passes through A.

.....

(Total for Question 8 is 3 marks)