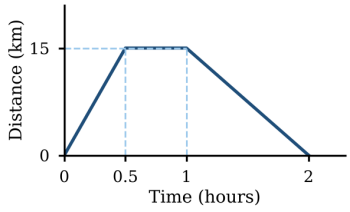
Day 364 **IGCSE 10-a-day**

1 The curve $y = x^3 + ax^2 + bx$ has gradient 21 when $x = 1$ and gradient 8 when $x = 0$.
Find the values of a and b.

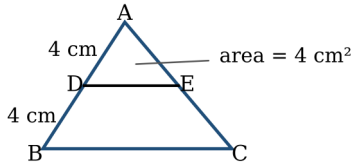
2 A rectangle has length $(2x + 6)$ cm and width $(x + 3)$ cm.
The area of the rectangle is 162 cm^2.
(a) Show that $2x^2 + 12x - 144 = 0$
(b) Work out the perimeter of the rectangle.

3 The graph shows Tariq's cycle ride to a café and back.
(a) Work out Tariq's speed on the way back.
(b) Work out Tariq's average speed for the whole ride, including the stop.



4 $y = -x^3 + 9x^2 - 24x - 5$
Find the range of values of x for which y is increasing.

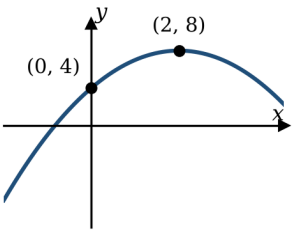
5 In the diagram, DE is parallel to BC. AD = 4 cm, DB = 4 cm and the area of triangle ADE is 4 cm^2.
Work out the area of the trapezium DBCE.
The diagram is not drawn accurately.



Day 364 **IGCSE 10-a-day**

6 A right-angled triangle has base $(6 + \sqrt{3})$ cm and height $(6 - \sqrt{3})$ cm.
Show that the area of the triangle is a rational number.
Work out the area.

7 The diagram shows a sketch of a quadratic curve with a turning point at (2, 8).
The curve crosses the y-axis at (0, 4).
Find an equation of the curve.
Give your answer in the form $y = ax^2 + bx + c$.

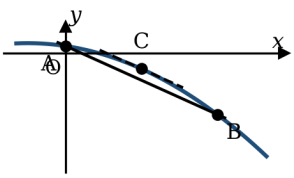


8 The probability that it rains is $\frac{4}{5}$.

If it rains, the probability that Sam is late is $\frac{1}{2}$. If it does not rain, the probability is $\frac{5}{6}$.

(a) Work out the probability that Sam is late.
(b) Given that Sam is late, work out the probability that it rained.

9 The diagram shows part of the curve $y = -2x^2 - 4x + 5$. A and B are the points on the curve with x coordinates 0 and 4.
C is the point on the curve between A and B at which the tangent is parallel to AB. Find the coordinates of C.



10 P is directly proportional to the square of t.
t is decreased by 50%.
Work out the percentage change in P.