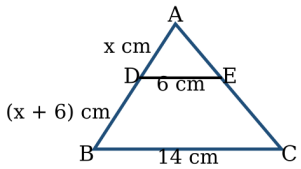
Day 81	IGCSE 10-a-day

1 E is directly proportional to the square root of v.
When v = 25, E = 35.
(a) Find a formula for E in terms of v.
(b) Find the value of v when E = 49.

2 The mean of 9 numbers is 61.
One number is removed and the mean of the remaining 8 numbers is 65.
Work out the number that was removed.

3 In the diagram, DE is parallel to BC.
AD = x cm, DB = (x + 6) cm, DE = 6 cm and BC = 14 cm.
(a) Find the value of x.
(b) Work out the length of AB.
The diagram is not drawn accurately.



4 A cylinder has radius r cm and fixed height 5 cm. Its volume is $V = 5\pi r^2$ cm^3.
(a) Find $\frac{dV}{dr}$ when r = 7.
(b) Find the value of r when $\frac{dV}{dr} = 80\pi$.

5 Jamal sets off at 9:00 and cycles at 14 km/h along a path.
Hassan sets off from the same place at 9:45 and cycles at 32 km/h along the same path.
At what time does Hassan catch up with Jamal?

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6 $y = x^4 + 32x$
Find the coordinates of the stationary point and determine its nature.

7 Solve $2x^2 + 7x - 2 = 0$
Give your answers in surd form.

8 The table shows the masses of 129 parcels.
(a) Work out the frequency density for the class $5 < x \leq 15$.
(b) Estimate how many were greater than 49 kg.

Mass (kg)	Frequency
$0 < x \leq 5$	22
$5 < x \leq 15$	11
$15 < x \leq 30$	44
$30 < x \leq 45$	32
$45 < x \leq 50$	20

9 A particle moves in a straight line. After t seconds, its displacement from a fixed point O is s metres, where
$s = -2t^3 + 30t^2 + 10t$ for $t \geq 0$
Find the greatest speed of the particle, and the value of t at which it occurs.

10 Given that $6\sqrt{5} = \sqrt{n}$,
find the value of n.