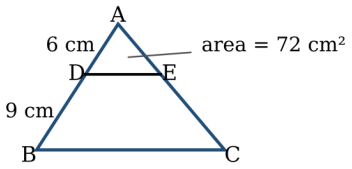
| Day 132 | IGCSE 10-a-day |
|---|---|

**1** A bag contains counters.
$\frac{1}{5}$ of the counters are red and $\frac{1}{4}$ of the counters are blue.
The rest of the counters, 55 of them, are green.
How many counters are in the bag?

**2** In the diagram, DE is parallel to BC. AD = 6 cm, DB = 9 cm and the area of triangle ADE is 72 $cm^2$.
Work out the area of the trapezium DBCE.
The diagram is not drawn accurately.




**3** a = 0.78 and b = 0.16,
both correct to 2 decimal places.
Work out the upper bound of a − b.

**4** (a) Show that the equation $x^3 - x - 20 = 0$ has a solution between x = 2 and x = 3.
(b) Show that the equation can be rearranged to give $x = \sqrt[3]{x + 20}$

**5** The curves $y = -x^2 + 5x - 2$ and $y = -2x^2 + 9x - 6$ touch at one point.
Find the coordinates of this point and the equation of the common tangent.

| Day 132 | IGCSE 10-a-day |
|---|---|
| **6** £2,500 is invested for 3 years at r% per year compound interest.<br>At the end of 3 years the investment is worth £3,327.50.<br>Work out the value of r. (Calculator) | |
| **7** The probability that the 8:15 train is late on any day is $\frac{1}{5}$.<br>Events on different occasions are independent.<br>Work out the probability that this happens at least once in 6 days.<br>Give your answer correct to 3 significant figures. (Calculator) | |
| **8** A particle P moves on a straight line. At time t seconds (t > 0), its distance from a point O is s metres, where<br>$s = 2t^2 + \frac{256}{t}$<br>Show that P is at its minimum distance from O when t = 4, and find this minimum distance. | |
| **9** A sequence is defined by $u_{n+2} = u_{n+1} + u_n$.<br>$u_1 = 8$ and $u_2 = x$.<br>(a) Show that $u_5 = 3x + 16$.<br>(b) Given that $u_5 = 28$, find x and hence work out $u_8$. | |
| **10** $y = (3x - 2)^2$<br>Find $\frac{dy}{dx}$. | |