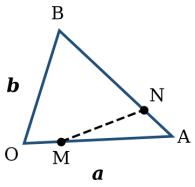
Day 75	S Tier 10-a-day
1 80 deer in a forest are caught, marked and put back. Later, a second sample of 30 deer is caught. 10 of these are marked. (a) Work out an estimate for the number of deer in a forest. (b) State one assumption you have made.	
2 OAB is a triangle. OA = **a** and OB = **b**. M is on OA with OM : MA = 1 : 3. N is on AB with AN : NB = 1 : 3. (a) Find ON in terms of **a** and **b**. (b) Find MN in terms of **a** and **b**. The diagram is not drawn accurately. 	
3 (a) Solve $3 - 4x \geq -13$ (b) n is an integer. Write down all the values of n that satisfy $-1 \leq 2n - 5 \leq 11$	
4 The price of a sofa is increased by 25%. Later the new price is reduced by 10% in a sale. The sale price is £540. Work out the price before the increase. (Calculator)	
5 In one country, income tax is worked out like this: The first £12,570 of income is not taxed. The next £30,000 is taxed at 20%. All income above that is taxed at 40%. Ivan earns £72,570 in a year. Work out how much income tax Ivan pays.	

Day 75 **S Tier 10-a-day**

6 Triangle T has vertices A(3, 0), B(3, −1), C(5, −1).
T is enlarged with scale factor −3 and centre (4, 0).
(a) Write down the coordinates of the image of A.
(b) The area of T is 24 square units. Work out the area of the image of T.

7 Show that $\frac{4}{3x + 1} - \frac{x + 1}{x - 5}$ can be written as $\frac{-3x^2 - 21}{(3x + 1)(x - 5)}$

8 The table gives information about 104 lengths.
Work out an estimate for the median.
Assume the values in each class are evenly spread.

Length, l (cm)	Frequency
$10 < l \leq 20$	23
$20 < l \leq 30$	18
$30 < l \leq 40$	25
$40 < l \leq 50$	14
$50 < l \leq 60$	24

9 The volume of a cube is 700 cm^3, correct to the nearest cm^3.
Work out the upper bound of the edge length of the cube.
Give your answer correct to 3 significant figures. (Calculator)

10 A is the point (5, −3) and B is the point (9, −5).
Find an equation of the perpendicular bisector of AB.
Give your answer in the form y = mx + c.