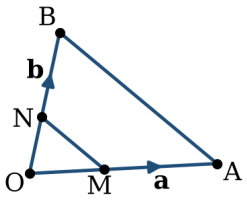
Day 105	IGCSE 10-a-day
1 A curve has equation $y = -2x^3 + 12x^2 - 18x + 9$. The point A (0, k) lies on the curve. Work out the value of k and the gradient of the curve at A.	
2 Each interior angle of a regular polygon is 171°. Work out the number of sides of the polygon.	
3 $y = (x - 4)(x - 3)$ Find $\frac{dy}{dx}$.	
4 A car travels the first half of a journey at 20 km/h. It travels the second half of the same journey at 80 km/h. Work out the average speed for the whole journey.	
5 The price of a camera is decreased by 30%. The new price is then decreased by 10%. The final price is £516.60. Work out the original price of the camera.	

Day 105 **IGCSE 10-a-day**

6 In triangle OAB, $\mathbf{OA} = \mathbf{a}$ and $\mathbf{OB} = \mathbf{b}$.
M is on OA and N is on OB, with OM : MA = ON : NB = 2 : 3.
(a) Show that MN is parallel to AB.
(b) Write down the ratio MN : AB.



7 (a) Show that the equation $x^3 + 7x - 30 = 0$ can be rearranged to give $x = \sqrt[3]{30 - 7x}$
(Calculator)
(b) Use the iteration formula $x_{n+1} = \sqrt[3]{30 - 7x_n}$ with $x_0 = 2$ to work out x_1 and x_2. Give each answer correct to 3 decimal places.

8 A curve has equation $y = x^3 - 4x^2 + 7x + 6$.
The tangent to the curve at the point A, where $x = 2$, meets the curve again at the point B.
Find the coordinates of B.

9 p = 8.8 and r = 5.2, each correct to 1 decimal place.
q = 1.48, correct to 2 decimal places.
Work out the lower bound of $\frac{p - q}{r}$. Give your answer correct to 3 significant figures.
(Calculator)

10 $N = 2^5 \times 7$
How many factors does N have?
Include 1 and N.