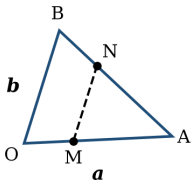
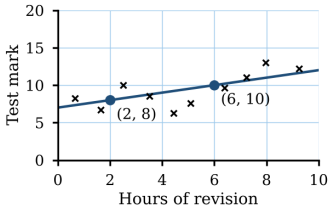
Day 298 **IGCSE 10-a-day**

1 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 1 : 2. N is on AB with AN : NB = 2 : 1.
(a) Find ON in terms of **a** and **b**.
(b) Show that MN is parallel to OB.
The diagram is not drawn accurately.



2 $f(x) = 5x^3 - 4x^2 + 8x$
(a) Find $f'(x)$.
(b) Work out the value of $f'(-3)$.

3 The scatter graph shows hours of revision (x) and test mark (y).
The line of best fit passes through (2, 8) and (6, 10).
(a) Find its equation in the form y = mx + c.
(b) Explain what its gradient tells you.



4 A particle moves in a straight line. After t seconds its displacement from O is s metres, where

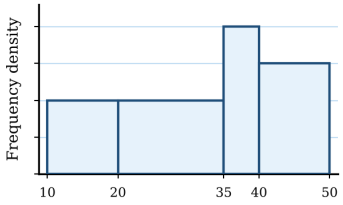
$s = 16t^{\frac{3}{2}} + t^2$ $(t \geq 0)$

Find the velocity and the acceleration of the particle when t = 16.

5 A metal pipe is a hollow cylinder of length 20 cm. (Calculator)
The outer radius is 6 cm and the inner radius is 4 cm.
The density of the metal is 8.9 g/cm^3.
Work out the mass of the pipe. Give your answer in kilograms correct to 3 significant figures.

Day 298 **IGCSE 10-a-day**

6 The histogram shows the ages, in years, of some visitors.
The bar for 10 to 20 represents 20 visitors.
(a) Work out the frequency of the class 20 to 35.
(b) Work out the total frequency.



7 The tangent at the point P on the curve $y = 2x^2 + 6x - 2$ is perpendicular to the line $x - 6y = -4$.
Find the coordinates of P.

8 P is directly proportional to r and directly proportional to t.
When r = 4 and t = 4, P = 160.
Find P when r = 5 and t = 6.

9 Solve $\frac{3}{x-2} + \frac{1}{x-3} = \frac{3}{2}$

10 A rectangle has area $(12 + 10\sqrt{2})$ cm^2 and length $(4 + 2\sqrt{2})$ cm.
Find the width of the rectangle.
Give your answer in the form $a + b\sqrt{2}$