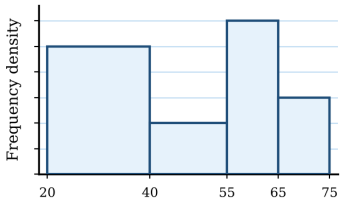
Day 303 **IGCSE 10-a-day**

1 The price of a laptop is increased by 12%.
The new price is then increased by 40%.
The final price is £156.80.
Work out the original price of the laptop.

2 $f(x) = -3x^2 + 18x + 4$
Use differentiation to find the coordinates of the turning point of the graph of y = f(x). State whether it is a maximum or a minimum.

3 The ratio of boys to girls in a school is 4 : 1.
40% of the boys and 45% of the girls walk to school.
What percentage of all of these students walk to school?

4 The histogram shows the masses, in kg, of some parcels.
The bar for 65 to 75 represents 9 parcels.
Estimate the number of parcels with a value greater than 60.



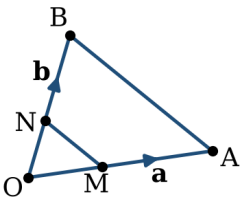
5 A curve has equation $y = (x - 1)(x - 2)(x - 3)$.
Find the equation of the tangent to the curve at the point where x = 2.

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6 Simplify fully $\frac{2x^2 - 32}{x^2 + 4x - 32}$

7 Here are five numbers: $2x - 1$, $3x + 5$, $2x + 2$, $x + 2$, $2x - 3$.
The mean of the five numbers is 15.
(a) Work out the value of x.
(b) Work out the range of the five numbers.

8 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.



9 OA = **a** and OB = **b**.
OP = $-2\mathbf{a} + 3\mathbf{b}$, OQ = $7\mathbf{a} + 9\mathbf{b}$ and OR = $13\mathbf{a} + 13\mathbf{b}$.
(a) Show that P, Q and R lie on a straight line.
(b) Work out the ratio PQ : QR in its simplest form.

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