Day 185 **IGCSE 10-a-day**

1 Write these numbers in order of size, starting with the smallest.

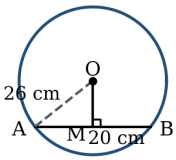
$\frac{7}{9}$, 0.56, 87%, 0.85

2 AB is a chord of a circle, centre O. M is the midpoint of AB. (Calculator)

(a) Work out the length OM.

(b) Work out angle AOB, to 1 decimal place.

The diagram is not drawn accurately.



3 A metal crate in the shape of a cuboid weighs 420 N.

Its smallest face has area 200 cm^2. Its largest face has area 800 cm^2.

Pressure = force ÷ area

Work out (a) the greatest pressure and (b) the least pressure the metal crate can exert on the ground, in N/m^2.

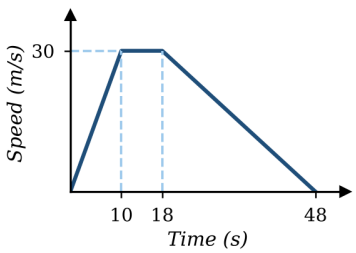
4 $f(x) = 2x^{1/2} + 4x^{-1/2}$

Find $f'(x)$ and work out the value of $f'(9)$.

5 The graph shows the speed of a train between two stations.

(a) Work out the acceleration in the first 10 seconds.

(b) Work out the total distance.



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6 $A = \begin{pmatrix} 1 & 1 \\ 4 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} 5 \\ 24 \end{pmatrix}$.

AX = B, where X is a 2 × 1 matrix.

Find X.

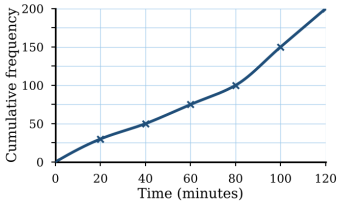
7 A curve has equation y = (x + 2)(x + 1)(x − 3).

Work out the gradient of the curve at each point where it crosses the x-axis.

8 The cumulative frequency graph shows the times, in minutes, taken by 200 runners to finish a race.

(a) Find the median. (b) Find the interquartile range.

(c) How many runners took more than 80?



9 Carlos and Beth share some money in the ratio 2 : 7.

Carlos gives Beth £10.

The ratio of their money is now 1 : 5.

How much money do they have altogether?

10 A curve has equation $y = -2x - \frac{108}{\sqrt{x}}$ for x > 0.

Find the coordinates of the stationary point and determine its nature.