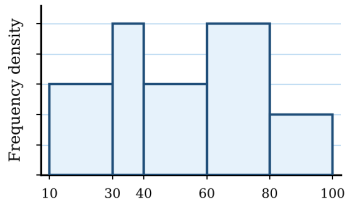
| Day 168 | IGCSE 10-a-day |
|---|---|
| **1** $y = 6x^3 - 7x^2 - 3$<br>Find $\frac{dy}{dx}$ | |
| **2** Here are five numbers: $2x + 4$, $x$, $3x + 2$, $x + 6$, $3x - 2$.<br>The mean of the five numbers is 18.<br>(a) Work out the value of $x$.<br>(b) Work out the median of the five numbers. | |
| **3** A particle P moves in a straight line. After t seconds its displacement from a fixed point O is s metres, where<br>$s = 2t^3 + 2t^2 + 5t + 1$ $(t > 0)$<br>Find (a) the velocity of P, (b) the acceleration of P, when $t = 3$. | |
| **4** The diagram shows a running track made from a rectangle and two semicircles. (Calculator)<br>An athlete runs 5 complete laps around the track.<br>Work out the total distance run, to the nearest 10 metres.<br>The diagram is not drawn accurately.<br> | |
| **5** $y = -2x^3 + 12x^2 - 18x - 2$<br>Use the second derivative to show that the curve has a minimum at $x = 1$. | |

**Day 168** **IGCSE 10-a-day**

**6** P is inversely proportional to t.
When t = 6, P = 2.
(a) Find a formula for P in terms of t.
(b) Find the value of t when P = 4.

**7** The histogram shows the masses, in kg, of some parcels.
The bar for 10 to 30 represents 6 parcels.
(a) Work out the frequency of the class 80 to 100.
(b) Work out the total frequency.




**8** Simplify fully $\frac{x^2 - x - 20}{x - 3} \div \frac{x - 5}{x^2 - 4x + 3}$

**9** Given that $(a + \sqrt{6})(b + \sqrt{6}) = 51 + 14\sqrt{6}$, where a and b are positive integers with a < b, find the values of a and b.

**10** A bag contains x white beads and 5 green beads.
Two beads are taken at random without replacement.
The probability that both are white is $\frac{1}{6}$.
(a) Show that $x^2 - 3x - 4 = 0$.
(b) Hence work out the number of beads in the bag.