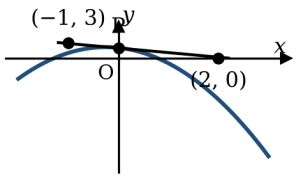
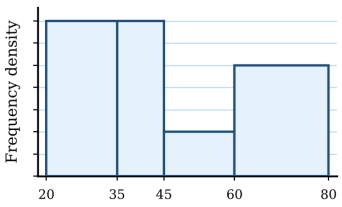
Day 302 **IGCSE 10-a-day**

1 The diagram shows part of the curve $y = -2x^2 - x + 2$. The line shown is the tangent to the curve at the point P. (Not drawn accurately.)
(a) Use the two marked points on the tangent to work out its gradient.
(b) Use differentiation to find the x coordinate of P.



2 A shop buys a watch and adds a 60% mark-up to get the selling price.
In a sale the selling price is reduced by 20% to £230.40.
Work out how much the shop paid for a watch.

3 The histogram shows the times, in minutes, taken to finish a task.
The bar for 45 to 60 represents 6 people.
(a) Work out the frequency of the class 20 to 35.
(b) Work out the total frequency.

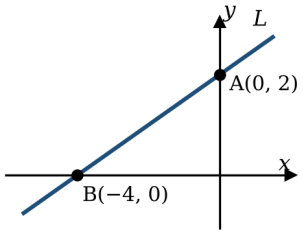


4 A ship leaves a port P and travels 77 km on a bearing of 330° to Q. (Calculator)
It then travels 70 km on a bearing of 300° to R.
(a) Work out the distance PR.
(b) Work out the bearing of R from P.
Give distances to 1 decimal place and the bearing to the nearest degree.

5 Solve $x^2 \leq 36$

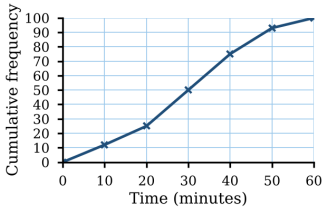
Day 302 **IGCSE 10-a-day**

6 The diagram shows the straight line L, which passes through the points A and B.
The line M is perpendicular to L and passes through B.
Find the equation of M in the form y = mx + c.



7 Differentiate $-x^2 - \frac{2}{x^2}$ with respect to x.

8 The cumulative frequency graph gives information about the times of 100 students to complete a puzzle.
(a) Find an estimate for the median and the interquartile range.
(b) Estimate how many of the 100 had a time greater than 45.



9 The tangent to the curve $y = x^3 + 2x^2 + 5x - 8$ at the point P where x = 0 meets the curve again at Q.
Find the coordinates of Q.

10 Show that the line $y = -3x - 10$ is a tangent to the circle $x^2 + y^2 = 10$.
Find the coordinates of the point where the line touches the circle.