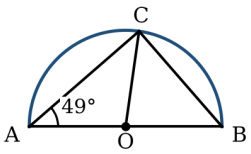
Day 140 **IGCSE 10-a-day**

1 Describe fully the single transformation that maps the graph of $y = f(x)$ onto the graph of
(a) $y = f(x) + 2$
(b) $y = f(2x)$

2 $y = \dfrac{2x^4 - 7x^3 - 5x^2}{x^3}$

Find $\dfrac{dy}{dx}$.

3 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 49°.
(a) Work out the size of angle ACB.
(b) Work out the size of angle COB.
The diagram is not drawn accurately.



4 Expand and simplify $(3 - 3\sqrt{10})^2$
Give your answer in the form $p + q\sqrt{10}$

5 A circle has equation $(x - 1)^2 + (y + 3)^2 = 65$.
The point P(2, −11) lies on the circle.
Find an equation of the tangent to the circle at P.
Give your answer in the form $ax + by = c$, where a, b and c are integers.

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6 A fair 6-sided dice and a spinner numbered 1 to 5 are each thrown once. The first score and the second score are recorded. (a) Work out the probability that the product is even. (b) Given that at least one number is 3, work out the probability that the product is even.	
7 A = (2, 2), B = (5, 4) and C = (0, 5). Show that triangle ABC is isosceles and right-angled.	
8 A rectangular enclosure is x metres wide and y metres long. It is fenced all round and divided into three equal parts by two fences each of length x metres, parallel to the width. The total length of fencing used is 48 m. (a) Show that the area of the enclosure is $A = -2x^2 + 24x$. (b) Find the maximum possible area, justifying that it is a maximum.	
9 The price of a share is increased by x%. The new price is then decreased by x%. The final price is 16% less than the original price. Work out the value of x.	
10 The tangent to the curve $y = x^3 - 3x^2 - 4x + 3$ at the point P where x = 2 meets the curve again at Q. Find the coordinates of Q.	