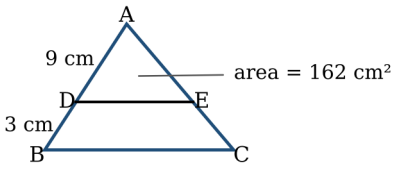
**Day 149** **IGCSE 10-a-day**

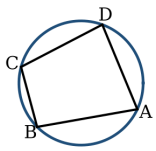
**1** Work out the gradient of the curve $y = -2x^4 - 3x + 6$ at the point where $x = 3$.

**2** In the diagram, DE is parallel to BC. AD = 9 cm, DB = 3 cm and the area of triangle ADE is 162 $cm^2$.
Work out the area of the trapezium DBCE.
The diagram is not drawn accurately.




**3** A rectangle has length (x + 6) cm and width (x + 3) cm.
The area of the rectangle is 70 $cm^2$.
(a) Show that $x^2 + 9x - 52 = 0$
(b) Work out the perimeter of the rectangle.

**4** A, B, C and D are points on a circle. Angle DAB = (2x + 20)°, angle BCD = (5x − 36)° and angle ABC = (3x − 30)°.
(a) Work out the value of x.
(b) Work out the size of angle ADC.
The diagram is not drawn accurately.




**5** $y = 8x^{3/2} - 2\sqrt{x}$
Find $\frac{dy}{dx}$. Give each term of your answer in the form $ax^n$.

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|---|---|
| **6** y is inversely proportional to the square root of x.<br>When x = 25, y = 14.4.<br>(a) Find a formula for y in terms of x.<br>(b) Find y when x = 9. | |
| **7** Without using a calculator, work out $0.\dot{4} \times 0.\dot{1}\dot{3}$<br>Give your answer as a fraction in its simplest form. | |
| **8** $y = \frac{(2x + 2)(3x - 2)}{x}$ $(x \neq 0)$<br>(a) Show that $\frac{dy}{dx} = \frac{6x^2 + 4}{x^2}$.<br>(b) Work out the gradient of the curve when $x = -1$. | |
| **9** P is directly proportional to the square of v and inversely proportional to t.<br>When v = 2 and t = 1, P = 20.<br>Work out the value of P when v = 4 and t = 5. | |
| **10** x is an acute angle and $\sin x = \frac{4}{7}$.<br>Find the exact value of (a) cos x (b) tan x.<br>Give each answer as a fraction, rationalising any denominator. | |