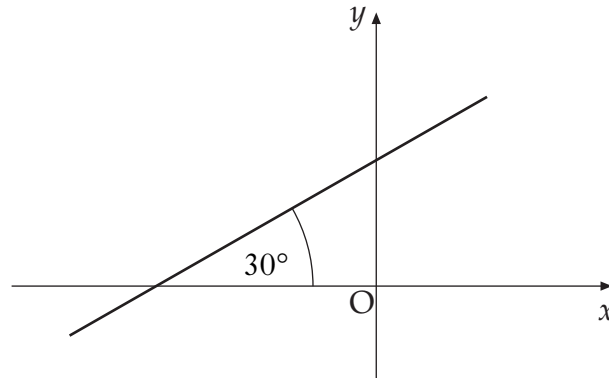# October

1. A line makes an angle of $30°$ with the positive direction of the $x$-axis as shown.



   What is the gradient of the line?

   A. $\frac{1}{\sqrt{3}}$

   B. $\frac{1}{\sqrt{2}}$

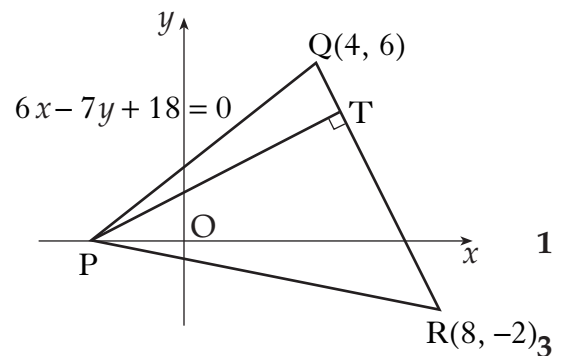   C. $\frac{1}{2}$

   D. $\frac{\sqrt{3}}{2}$ **2**

[SQA] 2. Triangle PQR has vertex P on the $x$-axis, as shown in the diagram.

   Q and R are the points $(4, 6)$ and $(8, -2)$ respectively.

   The equation of PQ is $6x - 7y + 18 = 0$.

   (a) State the coordinates of P. **1**

   (b) Find the equation of the altitude of the triangle from P. **3**

   (c) The altitude from P meets the line QR at T. Find the coordinates of T. **4**
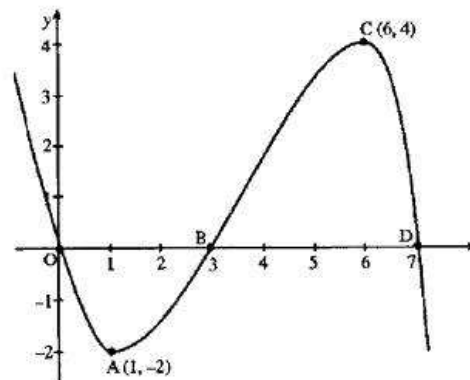


[SQA] 3. $f(x) = 3 - x$ and $g(x) = \frac{3}{x}, x \neq 0$.

   (a) Find $p(x)$ where $p(x) = f(g(x))$. **2**

   (b) If $q(x) = \frac{3}{3-x}, x \neq 3$, find $p(q(x))$ in its simplest form. **3**

[SQA] 4. Part of the graph of $y = f(x)$ is shown in the diagram.
On separate diagrams sketch the graphs of

(a) $y = f(x+1)$

(b) $y = -2f(x)$.

Indicate on each graph the images of O, A, B, C and D.

**1**



[SQA] 5. Solve $2\sin 3x° - 1 = 0$ for $0 \leq x \leq 180$.

**4**

*[END OF QUESTIONS]*