Dr Oliver Mathematics
Mathematics: National Qualifications N5
2025 Paper 1: Non-Calculator
1 hour

The total number of marks available is 40.
To earn full marks you must show your working in your answers.

1. Evaluate (2)

$$2\tfrac{4}{5} \times \tfrac{2}{7}.$$

Give your answer in its simplest form.

2. Expand and simplify (3)

$$(x+3)(x+5)+4(x-2).$$

3. Ten pupils record the length of time, in minutes, it takes them to walk to school one morning: (2)

3 11 13 15 15 16 17 18 19 22

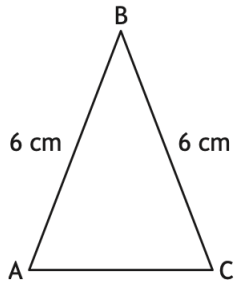
Calculate the interquartile range of these times.

4. In a sale, the price of a wedding dress is reduced by 20%. (3)

The sale price of the dress is £720.

Calculate the price of the dress before the sale.

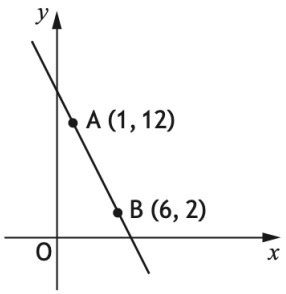
5. Triangle ABC is shown in the diagram. (2)



- $AB = BC = 6$ centimetres.
- $\sin ABC = \frac{2}{3}$.

Calculate the area of the triangle.

6. The diagram shows the straight line passing through points A and B. (3)



Find the equation of the line AB.
Give the equation in its simplest form.

7. A function is defined as

$$\mathrm{f}(x) = 3x + 7.$$

(a) Evaluate f(6). (1)

(b) Given that (2)

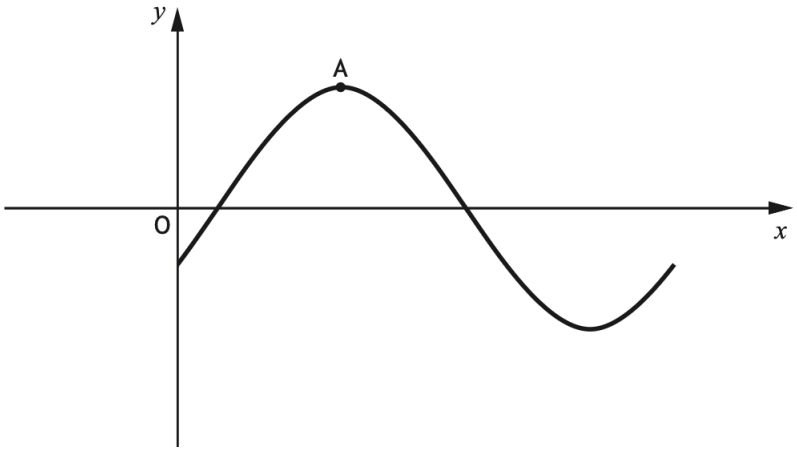
$$\mathrm{f}(p) = 19,$$

find the value of p.

8. Part of the graph of (2)

$$y = 2\sin(x - 30)^\circ$$

is shown in the diagram.

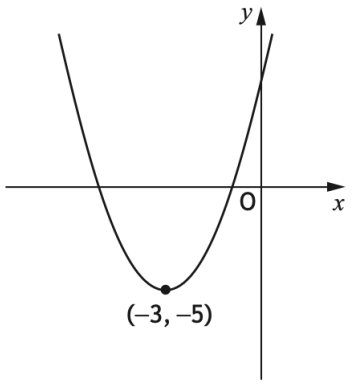


The graph has a maximum turning point at A.

State the coordinates of A.

9. The diagram shows a parabola with equation of the form

$$y = (x + a)^2 + b.$$



(a) State the value of a. (1)

(b) State the value of b. (1)

10. Simplify (3)

$$\frac{n^7 \times (n^3)^2}{n^4}.$$

11. Determine the nature of the roots of the function (2)

$$\mathrm{f}(x) = 3x^2 + 2x + 1.$$

12. Express (2)

$$\frac{6}{\sqrt{10}}$$

with a rational denominator.
Give your answer in its simplest form.

13. Vectors $\mathbf{p}$ and $\mathbf{q}$ have components (2)

$$\mathbf{p} = \begin{pmatrix} 5 \\ 2 \end{pmatrix} \text{ and } \mathbf{q} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}.$$

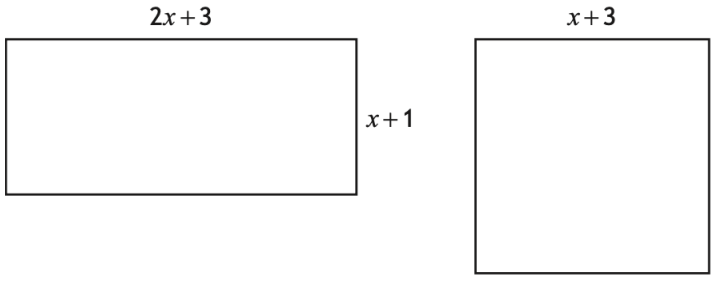
Draw the resultant vector $\mathbf{p} + \mathbf{q}$ on the grid.

14. Express (3)

$$\frac{5}{x-1} - \frac{4}{x},\ x \neq 1,\ x \neq 0,$$

as a single fraction in its simplest form.

15. The diagrams of a rectangle and square are shown below.
All measurements are in centimetres.



(a) Find an expression for the area of the **rectangle**. (1)

(b) Given that the area of the rectangle is equal to the area of the square, show that (2)

$$x^2 - x - 6 = 0.$$

(c) Hence find, algebraically, the length and breadth of the rectangle. (3)