You must write down all the stages in your working.

The quadratic equation

The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Q1

Solve $3(2x - 5) = \frac{9 - x}{2}$

Show clear algebraic working.

$x =$ .....

(4)

Q2

Given that $(8 - \sqrt{x})(5 + \sqrt{x}) = y\sqrt{x} + 21$ where x is a prime number and y is an integer,

find the value of x and the value of y.
Show each stage of your working clearly.

$x =$ .....

$y =$ ..... **(3)**

Q3

Solve $3(2 - 4x) = 5 - 8x$
Show clear algebraic working.

(3)

Q4

Solve the simultaneous equations

$$x^2 - 9y - x = 2y^2 - 12$$
$$x + 2y - 1 = 0$$

Show clear algebraic working.

(5)

Q5

Solve the simultaneous equations

$$3x^2 + y^2 - xy = 5$$
$$y = 2x - 3$$

Show clear algebraic working.

(3)

Q6

Solve the simultaneous equations

$$4x + 5y = 4$$
$$2x - y = 9$$

Show clear algebraic working.

(3)

Q7

The diagram shows a trapezium.

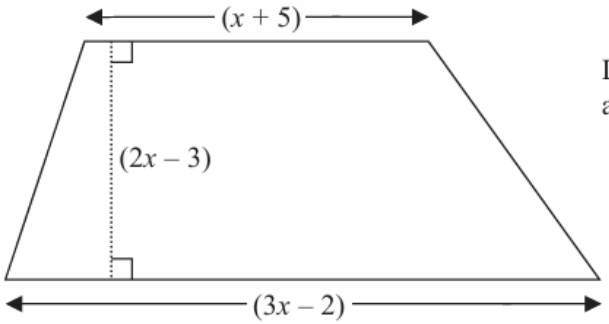


Diagram **NOT** accurately drawn

All measurements shown on the diagram are in centimetres.

The area of the trapezium is 133 cm^2

(a) Show that $8x^2 - 6x - 275 = 0$

(3)

(b) Find the value of x.
Show your working clearly.

$x =$ .....

(3)

Q8

Solve $\frac{9a - 7}{5} - \frac{3a - 7}{4} = 4.55$

Show clear algebraic working.

$a =$ .....

(3)

Q9

Solve the simultaneous equations

$$3x + 5y = 3.1$$
$$6x + 3y = 3.75$$

Show clear algebraic working.

(3)

Q10

The diagram shows rectangle $ABCD$

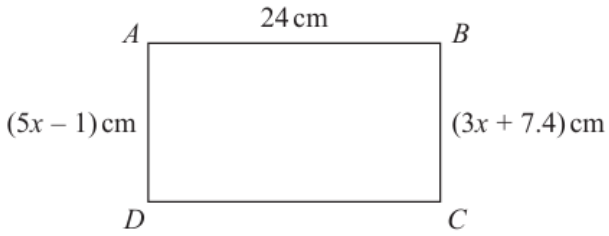


Diagram **NOT** accurately drawn

Work out the perimeter of the rectangle.
Show your working clearly.

(4)

Q11

Solve the simultaneous equations

$$5x + 4y = -2$$
$$2x - y = 4.4$$

Show clear algebraic working.

(3)

Q12

Solve $\frac{x+3}{4} - \frac{7-x}{5} = 4.3$

Show clear algebraic working.

(3)

Q13

Solve the simultaneous equations

$$y = 7 - 2x$$
$$x^2 + y^2 = 34$$

Show clear algebraic working.

(5)

Q14

Solve the simultaneous equations

$$3x + 5y = 8$$
$$4x + y = -3.5$$

Show clear algebraic working.

(3)

Q15

The line with equation $x + 2y = 5$ intersects the curve with equation $x^2 + 3y^2 = 13$ at the points A and B

Find the coordinates of A and the coordinates of B
Show clear algebraic working.

(..... , ...)

(..... , ...) **(5)**

Q16

Solve $\dfrac{45x^3 - 80x}{3x^2 + x - 4} \times \left(\dfrac{1}{3x - 4} + \dfrac{1}{x} \right) = \dfrac{4(x + 2)}{5x - 8}$

Show clear algebraic working.

(5)

Q17

Solve $\frac{2x+3}{5} + \frac{6x-5}{4} = \frac{163}{100}$

Show clear algebraic working.

.....(4)

Q18

The straight line **L** has equation $x + y = 5$

The curve **C** has equation $2x^2 + 3y^2 = 210$

Find the coordinates of the points where **L** and **C** intersect.
Show clear algebraic working.

(.....,.....) (.....,.....) **(5)**

Q19

Here is a quadratic equation.

$$ax^2 + 4x + c = 0$$

The solutions of this equation are given by $x = \dfrac{-4 \pm 2\sqrt{39}}{10}$

Find the value of a and the value of c
Show your working clearly.

$a =$ .....

$c =$ .....