Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Linear equations

Time allowed: 1 hour

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2, Paper 3 and Paper 4

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 47

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 47 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 Solve the equation $4x - 2 = 7$.

Answer $x =$ ..... [2]

Solving linear equations Click for more variations

2 The cost of hiring a bicycle, $\$C$, for y hours is given by the formula $C = 12 + 3.5y$.
Maria pays \$36.50 to hire this bicycle.

Work out the number of hours she hires the bicycle for.

..... hours [2]

Forming equations from words Click for more variations

3 Anna thinks of a number, she multiplies it by 2 and then finds the square root.
The answer is 12.

What number did Anna think of?

..... [2]

Problem solving with equations Click for more variations

4 Joe thinks of a number, n, trebles it, and subtracts 5.
The result is 22.

Write this as an equation in terms of n, and solve the equation.

$n =$ ..... [3]

Solving linear equations Click for more variations

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5 Solve the equation.

$$3(x + 4) = 2(4x - 1)$$

Answer $x =$ ..... [3]

Solving linear equations Click for more variations

6 A group of 12 adults and 9 children travel on a bus.

The cost of an adult ticket is $\$n$.
The cost of a child ticket is $\$(n - 10)$.

The total cost of the tickets is \$277.50 .

Find the cost of one adult ticket.

\$ ..... [3]

Forming equations from words Click for more variations

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7 These expressions are all equal in value.

$$\frac{5x-2}{3} \qquad 10-x \qquad y+11$$

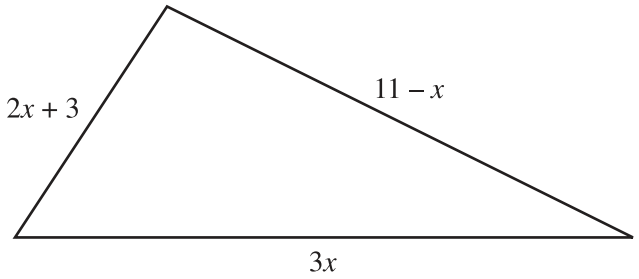
Find the value of y.

$y =$ ..... [5]

Solving linear equations Click for more variations

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8 In this question all the measurements are in centimetres.



NOT TO SCALE

The diagram shows a triangle with sides of length $2x + 3$, $11 - x$ and $3x$.

(a) Explain why x must be less than 11.

Answer(a) .....

..... [1]

(b) Write down an expression, in terms of x, for the perimeter of the triangle.
Give your answer in its simplest possible form.

Answer(b) ..... [2]

(c) The perimeter of the triangle is 32 cm.

(i) Write down an equation in terms of x and solve it.

Answer(c)(i) x = ... [3]

(ii) Work out the length of the shortest side of the triangle.

Answer(c)(ii) ..... cm [2]

(a) Forming equations from shapes (b) Collecting like terms (c)(i) Forming equations from shapes (c)(ii) Forming equations from shapes Click for more variations

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9 Solve.

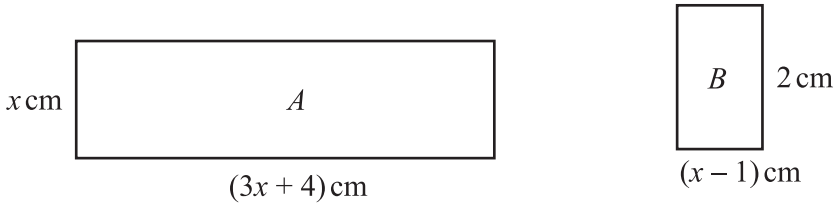
$$\frac{1}{x+1}+\frac{9}{x+9}=1$$

$x =$ ..... or $x =$ ..... [5]

Solving equations with algebraic fractions Click for more variations

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10 (a)



NOT TO SCALE

The total of the areas of rectangles A and B is $20\,\text{cm}^2$.

(i) Show that $3x^2 + 6x - 22 = 0$.

[2]

(ii) Solve the equation $3x^2 + 6x - 22 = 0$, giving your answers correct to 4 significant figures. You must show all your working.

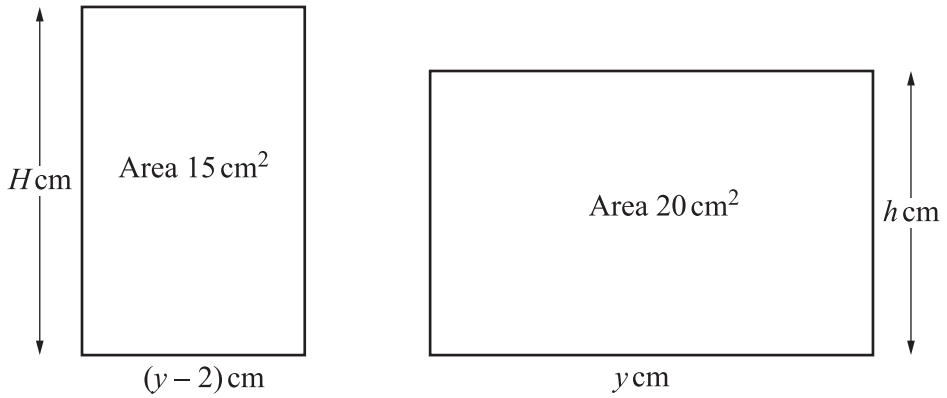
$x =$ ..... or $x =$ ..... [4]

(iii) Find the perimeter of rectangle B.

..... cm [1]

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(b)



The diagram shows two rectangles where $H - h = 1$.

By forming a quadratic equation and factorising, find the value of y.

$y =$ ..... [7]

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(a)(i) Forming equations from shapes (a)(ii) The quadratic formula (a)(iii) Problem solving with equations

(b) Solving equations with algebraic fractions Click for more variations