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

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Factorising and completing the square

Time allowed: 35 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 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

/ 29

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 29 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 Factorise completely.

(a) $10 + 16w$

..... [1]

(b) $12tx - 8t^2$

..... [2]

(a) Factorising out a common factor (b) Factorising out a common factor Click for more variations

2 Factorise completely.

$$4x^2y - 5xy^2$$

..... [2]

Factorising out a common factor Click for more variations

3 Factorise completely.

$$15k^2m - 20m^4$$

..... [2]

Factorising out a common factor Click for more variations

4 Factorise completely.

$$xy + 2y + 3x + 6$$

..... [2]

Factorising by grouping Click for more variations

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5 Factorise $2x^2 - 5x - 3$.

Answer ..... [2]

Factorising harder quadratics Click for more variations

6 $x^2 - 16x + a$ can be written in the form $(x + b)^2$.

Find the value of a and the value of b.

$a =$ .....

$b =$ ..... [2]

Completing the square Click for more variations

7 **(a)** Factorise $p^2 - q^2$.

..... [1]

(b) $p^2 - q^2 = 7$ and $p - q = 2$.

Find the value of $p + q$.

..... [2]

(a) Difference of two squares (b) Difference of two squares Click for more variations

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8 $2x^2 + 12x - 2$ can be written in the form $a(x+b)^2 - c$.

Find the values of a, b and c.

$a =$ ..... , $b =$ ..... , $c =$ ..... [3]

Completing the square Click for more variations

9 Simplify.

$$\frac{pt - p - t + 1}{1 - t^2}$$

..... [4]

Simplifying algebraic fractions Click for more variations

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10 **(a)** Write down **all** the factors of 18.

..... [2]

(b) Factorise.

$3y - xy + 15 - 5x$

..... [2]

(c) $3y - xy + 15 - 5x = 18$

where x and y are positive integers.

Using your answers to **part (a)** and **part (b)**, find one possible value of x and the corresponding value of y.

$x =$ ..... , $y =$ ..... [2]

(a) Types of number (b) Factorising by grouping (c) Factorising harder quadratics Click for more variations

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