

Identities and Comparing Coefficients

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **24**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

1 Tick **one** box for each row.

[2 marks]

	Identity	Not an identity
$(x + 5)^2 - 25 \equiv x(x + 10)$	☐	☐
$(2x - 1)^2 \equiv 4x^2 - 1$	☐	☐
$x(x - 4) - 2(x - 4) \equiv (x - 2)(x - 4)$	☐	☐
$(x + 1)^3 \equiv x^3 + 1$	☐	☐

2 $2(x + a) - 3(x - 1) \equiv 9 - x$

What is the value of a ?

Circle your answer.

[1 mark]

3 $a(2x + 3) - 2(x - b) \equiv 8x + 1$

Work out the values of a and b .

[3 marks]

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}}$$

4 $(2x - a)(bx + 3) \equiv 8x^2 + cx - 15$

Work out the values of a , b and c .

[3 marks]

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

5 The coefficient of x in the expansion of $(x + k)(3x - 2)(x + 5)$ is 16

Work out the value of k .

[3 marks]

$$k = \underline{\hspace{2cm}}$$

6 $(2x - 1)(x + a)^2 \equiv 2x^3 + bx^2 + cx - 9$ where a is a positive constant.

Work out the values of a , b and c .

[3 marks]

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{4cm}}$$

7 $p(x + 2)(x - 3) + q(x - 1)(x + 4) \equiv 7x^2 + 9x + r$

Work out the values of p , q and r .

[4 marks]

$$p = \underline{\hspace{2cm}} \quad q = \underline{\hspace{2cm}} \quad r = \underline{\hspace{4cm}}$$

8 $(2x + a)(x + b) \equiv 2x^2 + 9x + 3a - 2$

There are two possible values of a , each with its own value of b .
Work out these values.

Do not use trial and improvement. You must show your working.

[5 marks]

$a = \rule{1cm}{0.4pt}, b = \rule{1cm}{0.4pt}$ and $a = \rule{1cm}{0.4pt}, b = \rule{3cm}{0.4pt}$