GCSE HIGHER · REVISION MAT 3

Simplifying, expanding & factorising

1 Simplify

$3a^2b \times 4ab^3$

2 Expand and simplify

$(x + 5)(x - 3)$

3 Show that

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

4 A rectangle has area

$(x^2 + 9x + 20)$ cm^2

Its length and width are both of the form $(x + k)$.

Find an expression for its perimeter.

5 Hannah factorises $6x^2 - 24$ as

$6(x^2 - 4)$

(a) Explain why this is not fully factorised.

(b) Factorise $6x^2 - 24$ fully.

6 Use factorising to work out

$97^2 - 3^2$

without a calculator.
Show your method.

7 Show that

$(x + 1)^3 = x^3 + 3x^2 + 3x + 1$

8 Given that

$$\frac{x^2 - x - 6}{x^2 - 9} = \frac{4}{5}$$

find the value of x.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 3

Simplifying, expanding & factorising

1 $12a^3b^4$

2 $x^2 - 3x + 5x - 15$

$= x^2 + 2x - 15$

3 $8x + 12 - 3x - 12$

$= 5x$

4 $x^2 + 9x + 20 = (x + 4)(x + 5)$

$2(x + 4) + 2(x + 5)$

Perimeter = $(4x + 18)$ cm

5 (a) $x^2 - 4$ is a difference of two squares, so it factorises further.

(b) $6(x - 2)(x + 2)$

6 $97^2 - 3^2 = (97 - 3)(97 + 3)$

$= 94 \times 100$

$= 9400$

7 $(x + 1)^2 = x^2 + 2x + 1$

$(x^2 + 2x + 1)(x + 1)$

$= x^3 + x^2 + 2x^2 + 2x + x + 1$

$= x^3 + 3x^2 + 3x + 1$

8 $\frac{(x - 3)(x + 2)}{(x - 3)(x + 3)} = \frac{x + 2}{x + 3}$

$5(x + 2) = 4(x + 3)$

$5x + 10 = 4x + 12$

$x = 2$