

Difference of Two Squares

Starter

1. **(Review of last lesson)** Factorise $6x^2 - 5x - 4$.

Working: $6 \times -4 = -24 \Rightarrow$ Multiply: $-24 = -8 \times 3$
 Add: $-5 = -8 + 3$
Split $-5x$ into $-8x + 3x$: $6x^2 - 5x - 4 = 6x^2 - 8x + 3x - 4$
N.B. The -4 remains the same.
Factorise by grouping: $6x^2 - 5x - 4 = 2x(3x - 4) + 1(3x - 4)$
 $= (3x - 4)(2x + 1)$
N.B. $-14x$ could also be split into $-15x + x$.

2. **(Review of Y9 material)**

Expand and simplify these brackets. Write down what you notice.

(a) $(x - 3)(x + 3)$ (b) $(x + 6)(x - 6)$ (c) $(a - b)(a + b)$

Working: (a) $(x - 3)(x + 3) = x^2 + 3x - 3x - 9 = x^2 - 9$
 (b) $(x + 6)(x - 6) = x^2 - 6x + 6x - 36 = x^2 - 36$
 (c) $(a - b)(a + b) = a^2 + ab - ab - b^2 = a^2 - b^2$

3. Hence, **without showing any working**, factorise:

(a) $x^2 - 16$ (b) $x^2 - 25$ (c) $x^2 - \frac{1}{16}$

Working: (a) $x^2 - 16 = (x - 4)(x + 4)$
 (b) $x^2 - 25 = (x + 5)(x - 5)$
 (c) $x^2 - \frac{1}{16} = \left(x - \frac{1}{4}\right)\left(x + \frac{1}{4}\right)$

- E.g. 1** Factorise $x^2 - 49$.

Working: $x^2 - 49 = x^2 - 7^2 = (x - 7)(x + 7)$

- E.g. 2** Factorise $64 - x^2$.

Working: $64 - x^2 = 8^2 - x^2 = (8 - x)(8 + x)$

- E.g. 3** Factorise $9x^2 - 100$.

Working: $9x^2 - 100 = (3x)^2 - 10^2 = (3x - 10)(3x + 10)$

E.g. 4 Factorise $16a^2 - 49$.

Working: $16a^2 - 49 = (4a)^2 - 7^2 = (4a - 7)(4a + 7)$

E.g. 5 Find the value of $101^2 - 99^2$.

Working: $101^2 - 99^2 = (101 + 99)(101 - 99) = 200 \times 2 = 400$

E.g. 6 Find the value of $105^2 - 95^2$.

Working: $105^2 - 95^2 = (105 + 95)(105 - 95) = 200 \times 10 = 2000$

E.g. 7 Find the value of $57^2 - 43^2$.

Working: $57^2 - 43^2 = (57 + 43)(57 - 43) = 100 \times 14 = 1400$

Video: [Difference between two squares](#)

[Solutions to Starter and E.g.s](#)

Exercise

9-1 class textbook:

p110 M4.9 Qu 1-26 (even), 27-38

A*-G class textbook:

p100 E4.1 Qu 1-26 (even), 27-38

9-1 homework book:

p39 M4.9 Qu 1-12 (odd), 13-15, 16-37 (odd)

A*-G homework book:

p29 E4.1 Qu 1-12 (odd), 13-15, 16-27 (odd)

[Homework book answers \(only available during a lockdown\)](#)