

Outcome 1 - Simplifying Algebraic Fractions

Bronze examples

Examples...

Express these fractions in their simplest form...

$$\frac{(x+6)(x-4)}{(x-7)(x+6)} = \frac{x-4}{x-7}$$

$$\frac{(x+2)(x-5)}{1(x+2)} = x-5$$

$$\frac{1(x-3)}{(x-3)(x+2)} = \frac{1}{x+2}$$

Silver examples

Examples...

Express these fractions in their simplest form...

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

$$\frac{(x-9)^2(x+1)}{1(x-9)} = (x-9)(x+1)$$

Gold example

Examples...

- Factorise the top.
- Factorise the bottom.
- Simplify.

Express this fraction in its simplest form...

$$\frac{4x+24}{x^2-36} = \frac{4(x+6)}{(x+6)(x-6)} = \frac{4}{x-6}$$

Bronze Questions

Express these fractions in their simplest form...

$$\frac{(x+8)(x-2)}{(x-5)(x+8)}$$

$$\frac{(x-3)(x+9)}{(x-3)(x+2)}$$

$$\frac{(x+4)(x-5)}{(x-5)(x-1)}$$

$$\frac{(x+1)(x-8)}{(x+2)(x+1)}$$

$$\frac{(x+2)(x-2)}{(x+2)}$$

$$\frac{(x+4)(x-10)}{(x-10)}$$

$$\frac{(x+4)}{(x-1)(x+4)}$$

$$\frac{(x-6)}{(x-6)(x+2)}$$

Silver Questions

Express these fractions in their simplest form...

$$\frac{(x-2)(x+5)}{(x-2)^2}$$

$$\frac{(x-1)(x+7)^2}{(x+7)}$$

$$\frac{(x-9)}{(x-9)^2}$$

$$\frac{6(x+4)}{(x-5)(x+4)^2}$$

$$\frac{(x-1)(x+15)}{(x-1)^3}$$

$$\frac{(x-2)^3(x+6)}{(x-2)}$$

$$\frac{(x-3)^9(x-5)}{(x-3)^7}$$

$$\frac{(x+1)(x+10)^4}{(x+10)^5}$$

Gold Questions

Express these fractions in their simplest form...

$$\frac{6x+42}{5x+35}$$

$$\frac{8x-24}{x^2-9}$$

$$\frac{6x+27}{4x^2-81}$$

$$\frac{5x+15}{x^2-9}$$

$$\frac{7x+7}{x^2+5x+4}$$

$$\frac{8x+24}{x^2+x-6}$$

$$\frac{2x-8}{x^2-x-12}$$

$$\frac{x^2-36}{x^2+3x-18}$$

Bronze Answers

- | | |
|------------------|------------------|
| 1. $x - 2/x - 5$ | 2. $x + 9/x + 2$ |
| 3. $x + 4/x - 1$ | 4. $x - 8/x + 2$ |
| 5. $x - 2$ | 6. $x + 4$ |
| 7. $1/x - 1$ | 8. $1/x + 2$ |

Silver Answers

- | | |
|-----------------------|-----------------------|
| 1. $x + 5/x - 2$ | 2. $(x - 1)(x + 7)$ |
| 3. $1/x - 9$ | 4. $6/(x - 5)(x + 4)$ |
| 5. $x + 15/(x - 1)^2$ | 6. $(x - 2)^2(x + 6)$ |
| 7. $(x - 3)^2(x - 5)$ | 8. $x + 1/x + 10$ |

Gold Answers

- | | |
|---------------|------------------|
| 1. $6/5$ | 2. $8/x + 3$ |
| 3. $3/2x - 9$ | 4. $5/x - 3$ |
| 5. $7/x + 4$ | 6. $8/x - 2$ |
| 7. $2/x + 3$ | 8. $x - 6/x - 3$ |