

# Outcome 2 - By factorising

## Bronze examples

Examples...

Solve the following quadratic equations...

$$(x-1)(x+2) = 0$$

$$x-1=0 \quad \text{or} \quad x+2=0$$

$$x=1 \quad \text{or} \quad x=-2$$

$$(x+4)(x-3) = 0 \quad x=-4 \quad x=3$$

$$x(x+8) = 0 \quad x=0 \quad x=-8$$

## Silver examples

Examples...

Solve the following quadratic equations...

$$x^2 + 2x - 8 = 0$$

$$(x+4)(x-2) = 0$$

$$x+4=0 \quad \text{or} \quad x-2=0$$

$$x=-4 \quad \text{or} \quad x=2$$

$$x^2 + 5x - 24 = 0 \quad x=-8 \quad x=3$$

$$(x+8)(x-3) = 0 \quad x=-8 \quad x=3$$

$$x^2 + 3x = 0 \quad x=0 \quad x=-3$$

$$x(x+3) = 0 \quad x=0 \quad x=-3$$

## Gold examples

Examples...

Solve the following quadratic equations...

$$2x^2 - 13x - 7 = 0$$

$$(2x+1)(x-7) = 0$$

$$2x+1=0 \quad \text{or} \quad x-7=0$$

$$x = -\frac{1}{2} \quad \text{or} \quad x=7$$

$$3x^2 + 10x - 8 = 0$$

$$(3x-2)(x+4) = 0$$

$$3x-2=0 \quad \text{or} \quad x+4=0$$



$$x = \frac{2}{3} \quad \text{or} \quad x=-4$$

## Bronze Questions

Solve the following quadratic equations...

  $(x+6)(x-2) = 0$    $(x-3)(x-1) = 0$

  $(x+9)(x+11) = 0$    $(x+8)(x-12) = 0$

  $(x-1)(x+10) = 0$    $(x+5)(x-5) = 0$

  $x(x-6) = 0$    $x(x+14) = 0$


  $4x(x+7) = 0$    $6x(x-2) = 0$



## Gold Questions

Solve the following quadratic equations...

  $2x^2 + 5x + 2 = 0$    $2x^2 + 7x - 15 = 0$

  $5x^2 + 3x - 2 = 0$    $7x^2 - 20x - 3 = 0$



  $2x^2 - 9x + 7 = 0$    $3x^2 - 8x + 4 = 0$



  $15x^2 - 17x - 4 = 0$    $4x^2 - 8x + 3 = 0$



  $4x^2 - 28x + 49 = 0$    $9x^2 - 12x + 4 = 0$

## Silver Questions

Solve the following quadratic equations...

  $x^2 + 5x + 4 = 0$    $x^2 - 8x + 7 = 0$

  $x^2 + 4x - 60 = 0$    $x^2 - 4x - 32 = 0$

  $x^2 + 3x - 10 = 0$    $x^2 - 49 = 0$

  $x^2 - 4x = 0$    $x^2 + 10x = 0$

  $2x^2 + 6x = 0$    $9x^2 - 54x = 0$

## Bronze Answers

- |                           |                          |
|---------------------------|--------------------------|
| 1. $x = -6$ and $x = 2$   | 2. $x = 3$ and $x = 1$   |
| 3. $x = -9$ and $x = -11$ | 4. $x = -8$ and $x = 12$ |
| 5. $x = 1$ and $x = -10$  | 6. $x = 5$ and $x = -5$  |
| 7. $x = 0$ and $x = 6$    | 8. $x = 0$ and $x = -14$ |
| 9. $x = 0$ and $x = -7$   | 10. $x = 0$ and $x = 2$  |

## Silver Answers

- |                          |                          |
|--------------------------|--------------------------|
| 1. $x = -4$ and $x = -1$ | 2. $x = 1$ and $x = 7$   |
| 3. $x = -10$ and $x = 6$ | 4. $x = -4$ and $x = 8$  |
| 5. $x = -5$ and $x = 2$  | 6. $x = 7$ and $x = -7$  |
| 7. $x = 0$ and $x = 4$   | 8. $x = 0$ and $x = -10$ |
| 9. $x = 0$ and $x = -3$  | 10. $x = 0$ and $x = 6$  |

## Gold Answers

- |                          |                         |
|--------------------------|-------------------------|
| $x = -1/2$ and $x = -2$  | $x = 3/2$ and $x = -5$  |
| $x = 2/5$ and $x = -1$   | $x = -1/7$ and $x = 3$  |
| $x = 7/2$ and $x = 1$    | $x = 2/3$ and $x = 2$   |
| $x = 4/3$ and $x = -1/5$ | $x = 3/2$ and $x = 1/2$ |
| $x = 7/2$                | $x = 2/3$               |