

Outcome 1 - Solving Simultaneous Equations by elimination

Bronze example

Examples... Solve the following equations by elimination...

$$\begin{array}{r} 9x + y = 38 \\ 3x + y = 14 \\ \hline 6x = 24 \\ x = 4 \end{array}$$

** Take equations away **

Find x

$$\begin{array}{r} 36 + y = 38 \\ -36 \quad -36 \\ \hline y = 2 \end{array}$$

Sub in to get y

Answer Question

$x = 4, y = 2$

Silver example

Examples... Solve the following equations by elimination...

$$\begin{array}{r} 3x + y = 18 \\ 4x - y = 3 \\ \hline 7x = 21 \\ x = 3 \end{array}$$

** Add equations together **

Find x

$$\begin{array}{r} 9 + y = 18 \\ -9 \quad -9 \\ \hline y = 9 \end{array}$$

Sub in to get y

Answer Question

$x = 3, y = 9$

Gold example

Examples... Solve the following equations by elimination...

$$\begin{array}{r} 4x + 5y = 7 \times 3 \\ 2x + 3y = 1 \times 5 \\ \hline 12x + 15y = 21 \\ 10x + 15y = 5 \\ \hline 2x = 16 \\ x = 8 \end{array}$$

Scale equations!

** Take equations away **

Find x

$$\begin{array}{r} 32 + 5y = 7 \\ -32 \quad -32 \\ \hline 5y = -25 \\ +5 \quad +5 \\ \hline y = -5 \end{array}$$

Sub in to get y

Answer Question

$x = 8, y = -5$

Bronze Questions

Solve the following sets of simultaneous equations...

- | | |
|---|---|
|  $2x + y = 11$ |  $4x + y = 22$ |
| $x + y = 6$ | $2x + y = 12$ |
|  $7x + y = 24$ |  $4x + y = 14$ |
| $3x + y = 12$ | $x + y = 5$ |
|  $6x + y = 26$ |  $6x + y = 14$ |
| $x + y = 6$ | $2x + y = 6$ |
|  $2x + y = 9$ |  $7x + y = 39$ |
| $x + y = 5$ | $3x + y = 19$ |
|  $3x + y = 11$ |  $4x + y = 13$ |
| $x + y = 5$ | $x + y = 4$ |

Silver Questions

Solve the following sets of simultaneous equations...

- | | |
|---|---|
|  $3x + y = 18$ |  $4x + y = 13$ |
| $3x - y = 18$ | $4x - y = 11$ |
|  $4x + y = 25$ |  $2x + y = 11$ |
| $3x - y = 3$ | $7x - y = 25$ |
|  $2x + y = 8$ |  $6x + y = 32$ |
| $5x - y = 20$ | $2x - y = 0$ |
|  $3x + y = 12$ |  $4x + y = 29$ |
| $x - y = 0$ | $3x - y = 6$ |
|  $3x + y = 20$ |  $3x + y = 19$ |
| $3x - y = 4$ | $4x - y = 16$ |

Gold Questions

Solve the following sets of simultaneous equations...

- | | |
|--|--|
|  $5x + 2y = 2$ |  $7x + 2y = 9$ |
| $9x + 4y = 2$ | $8x + 3y = 1$ |
|  $3x + 2y = 10$ |  $5x + 2y = 9$ |
| $2x - 3y = 11$ | $4x + 3y = 3$ |
|  $3x + 2y = 1$ |  $4x + 3y = 5$ |
| $5x - 3y = 84$ | $3x + 5y = 1$ |
|  $3x + 2y = 14$ |  $2x + 3y = 11$ |
| $2x + 3y = 1$ | $5x - 2y = 18$ |
|  $5x + 3y = 21$ |  $5x + 4y = 23$ |
| $3x - 2y = 5$ | $2x + 3y = 5$ |

Bronze Answers

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

Silver Answers

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

Gold Answers

- | | |
|---------------------|---------------------|
| 1. $x = 2, y = -4$ | 2. $x = 5, y = -13$ |
| 3. $x = 4, y = -1$ | 4. $x = 3, y = -3$ |
| 5. $x = 9, y = -13$ | 6. $x = 2, y = -1$ |
| 7. $x = 8, y = -5$ | 8. $x = 4, y = 1$ |
| 9. $x = 3, y = 2$ | 10. $x = 7, y = -3$ |