Solving Simultaneous Equations by Elimination

Example A: $3x + y = 9$ (eqn 1)
$7x - y = 11$ (eqn 2)

$3x + y = 9$ +
$7x - y = 11$
$10x = 20$ ($\div 2$)
$x = 2$

sub. $x = 2$ in eqn 1: $3 \times 2 + y = 9$
$6 + y = 9$ (-6)
$y = 3$

Check in eqn 2: $7 \times 2 - 3 = 11$ **ü**

Exercise A: Solve the following simultaneous equations. Don't forget to show all your working out, and to check by substitution at the end.

1) $x + y = 7$
$x - y = 1$

2) $5x + y = 23$
$2x + y = 11$

3) $2x + 3y = 3$
$5x + 3y = 12$

4) $3m - 4n = -18$
$5m - 4n = -22$

5) $4x + 3y = 1$
$x - 3y = -11$

6) $2n - 5m = 3$
$5m + n = 9$

Example B: $3x + 2y = 26$ (eqn 1)
$4x + y = 28$ (eqn 2)

eqn 2×2 : $8x + 2y = 56$ (eqn 3)

eqn 3 – eqn 1: $8x + 2y = 56$ –
$3x + 2y = 26$
$5x = 30$ ($\div 5$)
$x = 6$

sub. $x = 6$ in eqn 1: $3 \times 6 + 2y = 26$
$18 + 2y = 26$ (-18)
$2y = 8$ ($\div 2$)
$y = 4$

check in eqn 2: $4 \times 6 + 4 = 28$
$24 + 4 = 28$ **ü**

Exercise B: Solve the following simultaneous equations. Don't forget to show all your working out, and to check by substitution at the end.

1. $3x + 2y = 7$
$4x - y = 13$

2. $4a - 3b = -6$
$a + 2b = 1$

3. $3x + 5y = 13$
$7x - 2y = 3$

4. $4x + 3y = 11$
$3x + 2y = 8$

5. $7a - 3b = 10$
$3a - 7b = 10$

6. $4a + 3b = 10$
$4b + 3a = 11$

Homework: Solving Simultaneous Equations by Elimination

Exercise 1:

Solve these simultaneous equations by elimination. You must show all working.

1. $3p + q = 7$
   $2p - q = 3$

2. $2x + 3y = 8$
   $2x - 3y = 2$

3. $5x + 2y = 16$
   $3x + 2y = 8$

4. $7x - 3y = 13$
   $4x - 3y = 7$

5. $4p + 3q = 6$
   $2p - 3q = 12$

6. $4p - q = 15$
   $2p - q = 9$

Exercise 2:

Solve these simultaneous equations by elimination. You must show all working.

1. $3x + 4y = 9$
   $3x + y = 7$

2. $3x + 2y = 2$
   $x + y = 2$

3. $4x - y = 9$
   $2x + 3y = 1$

4. $4d - 3e = 26$
   $d - 3e = 11$

5. $4x + 3y = 11$
   $3x - 2y = 21$

6. $5m - 4n = 17$
   $2m - 3n = 18$

Homework: Solving Simultaneous Equations by Elimination

Exercise 1:

Solve these simultaneous equations by elimination. You must show all working.

1. $3p + q = 7$
   $2p - q = 3$

2. $2x + 3y = 8$
   $2x - 3y = 2$

3. $5x + 2y = 16$
   $3x + 2y = 8$

4. $7x - 3y = 13$
   $4x - 3y = 7$

5. $4p + 3q = 6$
   $2p - 3q = 12$

6. $4p - q = 15$
   $2p - q = 9$

Exercise 2:

Solve these simultaneous equations by elimination. You must show all working.

1. $3x + 4y = 9$
   $3x + y = 7$

2. $3x + 2y = 2$
   $x + y = 2$

3. $4x - y = 9$
   $2x + 3y = 1$

4. $4d - 3e = 26$
   $d - 3e = 11$

5. $4x + 3y = 11$
   $3x - 2y = 21$

6. $5m - 4n = 17$
   $2m - 3n = 18$