



# Using algebra to find the point of intersection of two lines

Mana Maths

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# Te reo Māori terms



**pūtahi**

intersection

[Open in Te Aka](#)

**whārite**

equation

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**taurangi**

variable

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**whakaoti**

solve

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# Using algebra to find the point of intersection of two lines – Foundation

Solve each pair of equations. Then write the intersection as  $(x, y)$ .

**1.** Solve  $y = x + 2$   
and  $y = 5 - x$ .

Intersection

( , )

**2.** Solve  $y = x + 1$   
and  $y = 7 - x$ .

Intersection

( , )

**3.** Solve  $y = x - 3$   
and  $y = 3x - 7$ .

Intersection

( , )

**4.** Solve  $y = 2x + 1$   
and  $y = 10 - x$ .

Intersection

( , )

**5.** Solve  $y = 2x - 4$   
and  $y = x + 1$ .

Intersection

( , )

**6.** Solve  $y = 3x + 2$   
and  $y = x + 8$ .

Intersection

( , )

**7.** Solve  $y = 4x - 5$   
and  $y = x + 4$ .

Intersection

( , )

**8.** Solve  $y = 2x + 6$   
and  $y = 14 - 2x$ .

Intersection

( , )

- 9.** Solve  $y = 5x - 9$  and  $y = x + 3$ .  
Intersection  
( , )
- 10.** Solve  $y = 3x - 1$  and  $y = 11 - x$ .  
Intersection  
( , )
- 11.** Solve  $y = 4x + 2$  and  $y = 20 - 2x$ .  
Intersection  
( , )
- 12.** Solve  $y = 6x - 7$  and  $y = 2x + 5$ .  
Intersection  
( , )

- 13.** Solve  $y = 3x + 7$  and  $y = 19 - x$ .  
Intersection  
( , )
- 14.** Solve  $y = 5x + 1$  and  $y = 25 - 3x$ .  
Intersection  
( , )

# Using algebra to find the point of intersection of two lines – Proficient

Use substitution or elimination to solve each pair of equations. Give the intersection as  $(x, y)$ .

1. Solve  $y = 2x + 3$  and  $y = -x + 12$ .  
Intersection  
( , )
2. Solve  $y = 3x - 4$  and  $y = x + 6$ .  
Intersection  
( , )
3. Solve  $2x + y = 11$  and  $x - y = 1$ .  
Intersection  
( , )
4. Solve  $x + y = 9$  and  $y = 2x$ .  
Intersection  
( , )

5. Solve  $3x + y = 14$  and  $y = x + 2$ .  
Intersection  
( , )
6. Solve  $2x - y = -4$  and  $y = x + 5$ .  
Intersection  
( , )
7. Solve  $4x + y = 18$  and  $y = 2x$ .  
Intersection  
( , )
8. Solve  $3x - 2y = 2$  and  $y = x - 1$ .  
Intersection  
( , )

- 9.** Solve  $x + 2y = 13$  and  $y = x + 1$ .  
Intersection  
( , )
- 10.** Solve  $5x + y = 7$  and  $y = 3x - 9$ .  
Intersection  
( , )
- 11.** Solve  $2x + 3y = 19$  and  $y = x + 1$ .  
Intersection  
( , )
- 12.** Solve  $4x - y = 10$  and  $2x + y = 8$ .  
Intersection  
( , )

# Using algebra to find the point of intersection of two lines – Excellence

Solve each system algebraically. Give the point of intersection as  $(x, y)$ .

1. Solve  $2x + y = 7$  and  $x - y = 2$ .

2. Solve  $3x + y = 17$  and  $y = 2x - 3$ .

3. Solve  $4x - y = 5$  and  $x + 2y = 10$ .

4. Solve  $2x + 3y = 4$  and  $x - y = -5$ .

5. Solve  $5x + 2y = 18$  and  $y = x - 3$ .

6. Solve  $3x - 2y = 11$  and  $x + y = 1$ .

7. Solve  $2x - y = 8$  and  $4x + y = 7$ .

8. Solve  $3x + 2y = 1$  and  $x - 2y = 9$ .

9. Solve  $y = 4x - 7$  and  $2x + y = 14$ .

10. Solve  $y = \frac{1}{2}x + 4$  and  $y = -x + 10$ .

11. Solve  $y = \frac{3}{2}x - 1$  and  $y = -\frac{1}{2}x + 7$ .

12. Solve  $y = \frac{2}{3}x + 5$  and  $y = -\frac{1}{3}x + 1$ .

**13.** A concert charges  $C = 4t + 11$ .  
A second concert charges  
 $C = 6t + 6$ . Find the  
intersection.

**14.** Two phone plans are  
 $y = 0.4x + 12$  and  $y = 0.7x + 3$ .  
Find the intersection  
and explain what it means.

**15.** A taxi model is  $y = 3x + 5$ .  
A shuttle model is  $y = 2x + 1$ .  
Find the intersection  
and the common cost.

**16.** Solve  $2x + y = 13$  and  
 $y = 9 - x$ .