

# Boost Free Lessons - Year 9 Maths

## Lesson 3: Equations with Brackets

Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

### Worked Example 1

**Solve  $3(2x - 5) = 21$**

1. Expand the bracket:  $3 \times 2x = 6x$  and  $3 \times -5 = -15$ , giving  $6x - 15 = 21$ .
2. Add 15 to both sides:  $6x = 36$ .
3. Divide both sides by 6.
4. Because every term is divisible by 3, you could instead divide both sides by 3 first, giving  $2x - 5 = 7$ .

**$x = 6$**

### Worked Example 2

**Solve  $2(x + 4) - 3(x - 1) = 5$**

1. Expand the first bracket:  $2x + 8$ .
2. Expand the second, watching the signs.  $-3 \times x = -3x$  and  $-3 \times -1 = +3$ .
3. The equation becomes  $2x + 8 - 3x + 3 = 5$ , which collects to  $-x + 11 = 5$ .
4. Subtract 11 from both sides to get  $-x = -6$ , then divide both sides by  $-1$ .

**$x = 6$**

**Remember:** Expand every bracket first, remembering that a minus outside changes the sign of **every** term inside. Then collect the variables on one side.



**Question 1:** Solve the following equations.

1.  $2(x + 5) = 18$

2.  $4(y - 3) = 8$

3.  $5(a + 1) = 35$

4.  $3(2k - 1) = 21$

5.  $6(p + 2) = 6$

6.  $2(4t + 3) = 30$

7.  $7(w - 4) = 0$

8.  $5(3c + 2) = 55$

9.  $-2(d + 5) = 4$

10.  $4(2n - 7) = -4$



**Question 2:** Solve the following equations.

1.  $2(x + 3) + 3(x - 1) = 18$

2.  $4(m - 2) - 2(m - 5) = 10$

3.  $3(y + 4) - (y + 2) = 14$

4.  $5(k + 1) = 2(k + 7)$

5.  $2(3a - 1) - 4(a + 2) = 0$

6.  $6(t - 2) = 3(t + 4)$

7.  $4(2p + 1) - 3(p - 2) = 25$

8.  $3(w - 5) + 2(w + 10) = 20$



**Question 3:** Answer the following questions.

1. A rectangle has length  $2(x + 3)$  and width 5. Its perimeter is 46 cm. Write an equation and find  $x$ .
2. Solve  $5(2x - 3) - 2(3x + 1) = 7$ .
3. The sum of  $3(n - 2)$  and  $2(n + 8)$  is 35. Write an equation and find  $n$ .
4. A triangle has angles of  $3(x + 10)^\circ$ ,  $2x^\circ$  and  $x^\circ$ . Write an equation and find  $x$ .
5. Solve  $4(x + 2) = 2(x + 9)$ .





Every student has gaps. The hard part is knowing exactly where they are.  
That is what a Boost assessment is for.

## **Book a Free Assessment**

Normally valued at \$199, free for new families

- A friendly skills check aligned to the NSW syllabus
- Face to face with our qualified tutors
- A clear picture of your child's strengths and gaps
- A weekly plan built around what they actually need

**Book a Free Assessment →**

**[boosttutoring.com.au/contact](https://boosttutoring.com.au/contact)**



**Answers:** Equations with Brackets**Question 1**

1.  $x = 4$

2.  $y = 5$

3.  $a = 6$

4.  $k = 4$

5.  $p = -1$

6.  $t = 3$

7.  $w = 4$

8.  $c = 3$

9.  $d = -7$

10.  $n = 3$

**Question 2**

1.  $x = 3$

2.  $m = 4$

3.  $y = 2$

4.  $k = 3$

5.  $a = 5$

6.  $t = 8$

7.  $p = 3$

8.  $w = 3$

**Question 3**

1.  $4x + 22 = 46$ , so  $x = 6$

2.  $x = 6$

3.  $5n + 10 = 35$ , so  $n = 5$

4.  $6x + 30 = 180$ , so  $x = 25$

5.  $x = 5$

