

GCSE Maths: Equations with brackets (Higher): answers

GCSE Maths - Linear Equations - Higher - Lesson 9.5

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch09-linear-equations/higher/equations-with-brackets/

Exercise 9E Equations with brackets Non-calculator

1 Solve these equations. Each bracket has a plus sign.

(a) $2(x + 3) = 14$

Answer: $x = 4$

(b) $3(x + 1) = 18$

Answer: $x = 5$

(c) $5(x + 2) = 35$

Answer: $x = 5$

(d) $4(x + 5) = 36$

Answer: $x = 4$

(e) $6(x + 1) = 30$

Answer: $x = 4$

(f) $2(x + 9) = 30$

Answer: $x = 6$

2 Solve these equations. Each bracket has a minus sign.

(a) $3(x - 2) = 15$

Answer: $x = 7$

(b) $2(x - 4) = 10$

Answer: $x = 9$

(c) $5(x - 1) = 20$

Answer: $x = 5$

(d) $4(x - 3) = 8$

Answer: $x = 5$

(e) $3(2x + 1) = 21$

Answer: $x = 3$

(f) $2(3x - 4) = 22$

Answer: $x = 5$

3 Solve these equations. Expand the bracket first.

(a) $3(x + 2) + 4 = 19$

Answer: $x = 3$

(b) $2(x + 5) - 3 = 19$

Answer: $x = 6$

(c) $4(x - 1) + 7 = 23$

Answer: $x = 5$

(d) $5(x + 2) - 8 = 27$

Answer: $x = 5$

(e) $2(2x + 1) + 5 = 19$

Answer: $x = 3$

(f) $3(x - 4) + 2 = 8$

Answer: $x = 6$

4 Solve these equations. There is a bracket on one side and x on the other.

(a) $3(x + 2) = 2x + 9$

Answer: $x = 3$

(b) $4(x - 1) = 2x + 8$

Answer: $x = 6$

(c) $2(x + 5) = x + 14$

Answer: $x = 4$

(d) $5(x - 3) = 3x + 1$

Answer: $x = 8$

(e) $3(2x + 1) = 4x + 11$

Answer: $x = 4$

(f) $2(3x - 2) = 5x + 3$

Answer: $x = 7$

5 Solve these equations. There are brackets on both sides.

(a) $5(x - 2) = 3(x + 4)$

Answer: $x = 11$

(b) $2(x + 7) = 4(x + 1)$

Answer: $x = 5$

(c) $4(x - 1) = 3(x + 2)$

Answer: $x = 10$

(d) $4(x + 3) = 3(x + 6)$

Answer: $x = 6$

(e) $6(x - 2) = 2(x + 8)$

Answer: $x = 7$

(f) $5(2x - 1) = 3(3x + 1)$

Answer: $x = 8$

6 Solve these equations. Be careful with the minus signs in front of the brackets.

(a) $10 - (x + 2) = 5$

Answer: $x = 3$

(b) $7 - 2(x - 1) = 3$

Answer: $x = 3$

(c) $20 - 3(x + 1) = 2$

Answer: $x = 5$

(d) $5 - (x - 3) = 1$

Answer: $x = 7$

(e) $12 - 2(x + 3) = 4$

Answer: $x = 1$

(f) $9 - 3(x - 2) = 6$

Answer: $x = 3$

7 Jo expands $3(x - 4)$ and gets $3x - 4$. Explain her mistake. Then solve $3(x - 4) = 15$.

Answer: She only multiplied the x ; the correct expansion is $3x - 12$. $x = 9$

8 I think of a number, add 4 and then multiply the result by 3. My answer is 33. What number did I think of?

Answer: 7

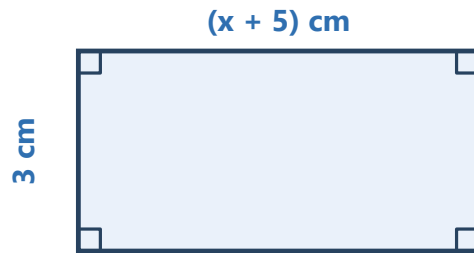
9 At a museum, a child ticket costs £3 less than an adult ticket. Two adult tickets and three child tickets cost £41 altogether. Work out the cost of an adult ticket.

Answer: £10

10 Show that $x = 4$ is the solution of $2(3x - 5) = 5x - 6$.

Answer: Both sides equal 14

11 The area of this rectangle is 36 cm^2 . Work out the value of x .



Answer: $x = 7$

12 Solve $4(3x - 1) - 2(5x - 3) = 3(x + 2) - 7$

Answer: $x = 3$

13 Solve $5(2x - 3) = 2(3x + 1) + 11$

Answer: $x = 7$

14 Show that the equation $2(x + 3) - x = x + 5$ has no solution.

Answer: It simplifies to $6 = 5$, which is never true.

15 The equation $3(x + k) = 5x - 4$ has the solution $x = 5$. Work out the value of k .

Answer: $k = 2$