Solving Quadratics by Factorising

ANSWERS

1 one of the brackets must be 0

Solve $x^2 + 9x + 20 = 0$

×	x	$+4$
x	x^2	$+4x$
$+5$	$+5x$	$+20$

$(x + 5)(x + 4) = 0$

$x + 5 = 0$ $\quad$ $x + 4 = 0$

$x =$ -5 $\quad$ $x =$ -4

2

Solve $x^2 + 11x + 18 = 0$

×	x	$+2$
x	x^2	$+2x$
$+9$	$+9x$	$+18$

$(x + 9)(x + 2) = 0$

$x + 9 = 0$ $\quad$ $x + 2 = 0$

$x =$ -9 $\quad$ $x =$ -2

3

Solve $x^2 + 4x - 12 = 0$

×	x	-2
x	x^2	$-2x$
$+6$	$+6x$	-12

$(x + 6)(x - 2) = 0$

$x + 6 = 0$ $\quad$ $x - 2 = 0$

$x =$ -6 $\quad$ $x =$ 2

4 *Notice the change!*

Solve $x^2 - 10x + 16 = 0$

×	x	-8
x	x^2	$-8x$
-2	$-2x$	$+16$

$(x - 2)(x - 8) = 0$

$x - 2 = 0$ $\quad$ $x - 8 = 0$

$x =$ 2 $\quad$ $x =$ 8

5 make it = 0 first

Solve $x^2 = 3x + 28$

$x^2 - 3x - 28 = 0$

×	x	-7
x	x^2	$-7x$
$+4$	$+4x$	-28

$(x + 4)(x - 7) = 0$

$x + 4 = 0$ $\quad$ $x - 7 = 0$

$x =$ -4 $\quad$ $x =$ 7

6 make it = 0 first

Solve $x^2 - 6x + 5 = 21$

$x^2 - 6x - 16 = 0$

×	x	-8
x	x^2	$-8x$
$+2$	$+2x$	-16

$(x + 2)(x - 8) = 0$

$x + 2 = 0$ $\quad$ $x - 8 = 0$

$x =$ -2 $\quad$ $x =$ 8

7

Priya solves $x^2 - 2x - 35 = 0$.
She writes $(x + 5)(x - 7) = 0$, so $x = -7$ or $x = 5$. Explain her mistake.
Then write the right answers.

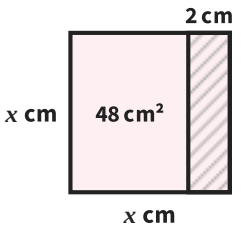
$x + 5 = 0$ means $x = -5$, not 5

$x - 7 = 0$ means $x = 7$

Answer $x = -5$ or $x = 7$

8

A square tile has sides of x cm. A 2 cm strip is cut off one side. The piece that is left has an area of 48 cm^2. Find x.



$x(x - 2) = 48$, so $x^2 - 2x - 48 = 0$

$(x - 8)(x + 6) = 0$, and a length is positive

Answer $x = 8$

Solving Quadratics by Factorising *further practice*

ANSWERS

9

Solve $x^2 - 10x + 21 = 0$

$(x - 3)(x - 7) = 0$

Answer $x = 3$ or $x = 7$

10

Solve $x^2 + 4x = 32$

$x^2 + 4x - 32 = 0$

$(x + 8)(x - 4) = 0$

Answer $x = -8$ or $x = 4$

11

Solve $x^2 = 9x - 20$

$x^2 - 9x + 20 = 0$

$(x - 4)(x - 5) = 0$

Answer $x = 4$ or $x = 5$

12

Show that $x = 6$ is a solution of $x^2 + x - 42 = 0$. Then find the other solution.

$6^2 + 6 - 42 = 36 + 6 - 42 = 0$

$(x - 6)(x + 7) = 0$

Answer $x = -7$

13

Two positive numbers have a difference of 4. They multiply to make 96. Find the two numbers.

$x(x + 4) = 96$, so $x^2 + 4x - 96 = 0$

$(x + 12)(x - 8) = 0$, so $x = 8$

Answer 8 and 12

14

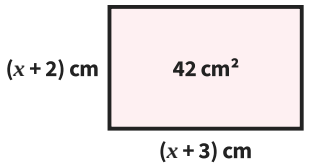
A quadratic equation has solutions $x = 3$ and $x = -8$. Write it in the form $x^2 + bx + c = 0$.

$(x - 3)(x + 8) = 0$

Answer $x^2 + 5x - 24 = 0$

15

The rectangle has an area of 42 cm^2. Find x, then the length of each side.



$x^2 + 5x - 36 = 0$

$(x + 9)(x - 4) = 0$, so $x = 4$

Answer 7 cm and 6 cm

16

Jo solves $x^2 + 2x = 15$.

She writes $x(x + 2) = 15$, so $x = 15$ or $x + 2 = 15$. Explain her mistake. Then solve it.

It must be = 0 first: $x^2 + 2x - 15 = 0$

$(x + 5)(x - 3) = 0$

Answer $x = -5$ or $x = 3$