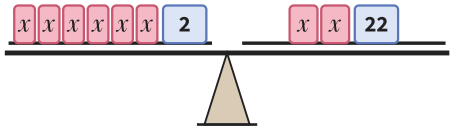
Equations with the unknown on both sides

ANSWERS

1

Solve

$6x + 2 = 2x + 22$



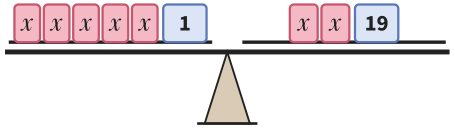
− 2x both sides	$4x + 2 = 22$
− 2 both sides	$4x = 20$
÷ 4 both sides	$x = 5$

Answer $x = 5$

2

Solve

$5x + 1 = 2x + 19$



− 2x both sides	$3x + 1 = 19$
− 1 both sides	$3x = 18$
÷ 3 both sides	$x = 6$

Answer $x = 6$

3

Solve

$6x - 3 = 2x + 9$

− 2x both sides	$4x - 3 = 9$
+ 3 both sides	$4x = 12$
÷ 4 both sides	$x = 3$

Answer $x = 3$

4

Solve

$2x + 25 = 7x + 5$

− 2x both sides	$25 = 5x + 5$
− 5 both sides	$20 = 5x$
÷ 5 both sides	$x = 4$

Answer $x = 4$

5

Solve

$5x + 18 = 2x + 3$

− 2x both sides	$3x + 18 = 3$
− 18 both sides	$3x = -15$
÷ 3 both sides	$x = -5$

Answer $x = -5$

6

Priya solves $5x + 4 = 3x + 20$.

Her first line is $8x + 4 = 20$.

What has she done wrong?

Find the right answer.

She added 3x: take it away instead

$2x + 4 = 20$, so $2x = 16$

Answer $x = 8$

7

Solve

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

expand	$4x + 4 = 2x + 16$
− 2x both sides	$2x + 4 = 16$
− 4 both sides	$2x = 12$
÷ 2 both sides	$x = 6$

Answer $x = 6$

8

A sunflower is $(3x + 10)$ cm tall.

A tomato plant is $(5x + 2)$ cm tall.

They are the same height. Find x, then their height.

− 3x both sides	$10 = 2x + 2$
− 2 both sides	$8 = 2x$
÷ 2 both sides	$x = 4$

Answer $x = 4$, height 22 cm

Equations with the unknown on both sides *further practice*

ANSWERS

9

Solve

$8x - 5 = 3x + 20$

– 3x both sides	5x – 5 = 20
+ 5 both sides	5x = 25
÷ 5 both sides	x = 5

Answer x = 5

10

Solve

$x + 17 = 4x - 1$

– x both sides	17 = 3x – 1
+ 1 both sides	18 = 3x
÷ 3 both sides	x = 6

Answer x = 6

11

Solve

$3x - 8 = 7x + 12$

– 3x both sides	–8 = 4x + 12
– 12 both sides	–20 = 4x
÷ 4 both sides	x = –5

Answer x = –5

12

Solve

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

5x – 10 = 3x + 4

2x – 10 = 4

2x = 14

Answer x = 7

13

Solve

$2(3x - 4) = 2(x + 6)$

6x – 8 = 2x + 12

4x – 8 = 12

4x = 20

Answer x = 5

14

Zak says $x = 3$ is the solution of $4x + 7 = 2x + 15$. Check his answer in both sides. Is he right? If not, find the right answer.

4 × 3 + 7 = 19, 2 × 3 + 15 = 21

19 and 21 are different, so no

2x + 7 = 15, 2x = 8

Answer No, x = 4

15

The same number goes into two machines. Machine A multiplies by 6, then subtracts 4. Machine B multiplies by 2, then adds 24. Both machines give the same answer. What number went in?

6x – 4 = 2x + 24

4x – 4 = 24, 4x = 28

check: 38 and 38

Answer 7

16

Kai solves $9x + 2 = 5x - 10$.

His working is $4x + 2 = -10$, $4x = -8$, $x = -2$. Find his mistake.

Write the right answer.

–10 – 2 is –12, not –8

4x = –12

Answer x = –3