MATHEMATICS · GRADES 4-6

One-step equations

Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you find a missing number in one quick step, like how many more points you need to reach a target score in a game. A player who knows the target and the score so far can work out the gap in one move, and a saver who knows the goal and the balance so far can do the same. You use it when you work out how many laps are left in a run, or how many dollars short you are for something you want to buy. One step is all it takes when only one number is missing.



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Rule

To solve a one-step equation, undo the operation on x by doing the opposite operation to both sides.

Addition is undone by subtraction, subtraction by addition, multiplication by division, and division by multiplication. Then check the answer in the original equation.

Worked examples

EXAMPLE 1

Q Solve $x + 8 = 20$

SOLUTION

$x + 8 = 20$

Undo the addition by subtracting 8 from both sides: $x = 20 - 8$

Work it out: $20 - 8 = 12$

So $x = 12$. Check: $12 + 8 = 20$

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EXAMPLE 2

Q Solve $5x = 35$ $(5 \times x)$

SOLUTION

$5 \times x = 35$

Undo the multiplication by dividing both sides by 5: $x = 35 \div 5$

Work it out: $35 \div 5 = 7$

So $x = 7$. Check: $5 \times 7 = 35$

Practice questions

1 Solve $x + 5 = 27$

- **A** $x = 32$
- **B** $x = 17$
- **C** $x = 22$
- **D** $x = 27$

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2

Solve $4x = 52$

A x = 13

B x = 16

C x = 12

D x = 14

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3

Solve $x - 6 = 13$

A x = 7

B x = 25

C x = 13

D x = 19

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4 Solve $x \div 4 = 9$

- **A** x = 13
- **B** x = 36
- **C** x = 45
- **D** x = 27

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5 Maya has some stickers. She gets 15 more and now has 42. How many did she start with?

- **A** x = 57
- **B** x = 17
- **C** x = 27
- **D** x = 37

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6 Tickets cost $3 each. You pay $27 for some tickets. How many tickets do you buy?

- **A** x = 6
- **B** x = 8
- **C** x = 9
- **D** x = 12

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7 Tom had some money. He spends $17 and has $25 left. How much did he start with?

- **A** x = 8
- **B** x = 42
- **C** x = 25
- **D** x = 59

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8

Solve $48 \div x = 6$

A $x = 8$

B $x = 6$

C $x = 48$

D $x = 14$

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9

Solve $x + 9 = 4$

A $x = -5$

B $x = 5$

C $x = 13$

D $x = -13$

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10

Solve $7x = -56$

A x = -8

B x = 8

C x = -7

D x = 7

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ANSWER KEY

1. x = 22

2. x = 13

3. x = 19

4. x = 36

5. x = 27

6. x = 9

7. x = 42

8. x = 8

9. x = -5

10. x = -8

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