MATHEMATICS · GRADES 4-6

Understanding equality

Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you see that the equals sign means both sides balance exactly, like a level scale, so whatever you do to one side of an equation you must do to the other. An equation is a balance, not just a place to write an answer. If you add or take away from one side, the balance tips, unless you do the same to the other side. Keeping that balance is the rule behind every equation you will ever solve.



Rule

Equality: the equals sign means both sides are the same value, like a level scale.

Whatever you do to one side of an equation, you must do to the other, or the balance tips.

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Worked examples

EXAMPLE 1

Q Find the missing number $8 + 5 = 10 + ?$

SOLUTION

This is a balancing question, so remember: the equals sign means the two sides match in value, like a level scale. Work out the side you know first, then make the other side match it.

The left side is 8 + 5 = 13, so the right side has to make 13 as well.

10 + 3 = 13, so the missing number is 3.

EXAMPLE 2

Q Find the missing number $24 - ? = 18 - 6$.

SOLUTION

This is the same question type with the missing number on the left: work out the side you know first, then undo to find the missing piece.

The right side is 18 – 6 = 12, so the left side has to make 12 as well.

24 – 12 = 12, so the missing number is 12.

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Practice questions

1 What number makes this true $7 + 6 = 9 + \square$

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2 Complete the number sentence $15 = 7 + \square$

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3 True or false $6 \times 4 = 3 \times 8$

A True

B False

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4 A balance scale balances when $? + 65 = 67 + 33$. What is the missing number?

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5 What number makes both sides equal $36 \div 6 = 24 \div ?$

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6 Which symbol goes in the circle to make the statement true $12 + 15 \bigcirc 18 + 9$? Use $=$, $<$ or $>$.

A) $=$

B) $<$

C) $>$

D) $\neq$

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7 Complete the number sentence $42 + 38 = \square + 39$

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8 What number makes this true $(4 + 6) \times 2 = 5 + \square$

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9 A balance scale has 10 cubes on one side and $4 + \square$ cubes on the other side. The scale balances. What is the missing number?

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10 A balance scale balances when $105 - 56 = 103 - ?$. What is the missing number?

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ANSWER KEY

1. 4

2. 8

3. True

4. 35

5. 4

6. =

7. 41

8. 15

9. 6

10. 54

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