MATHEMATICS · GRADES 7-9

Absolute value

Difficulty level: Intermediate

Mathematics: Grades 7-9

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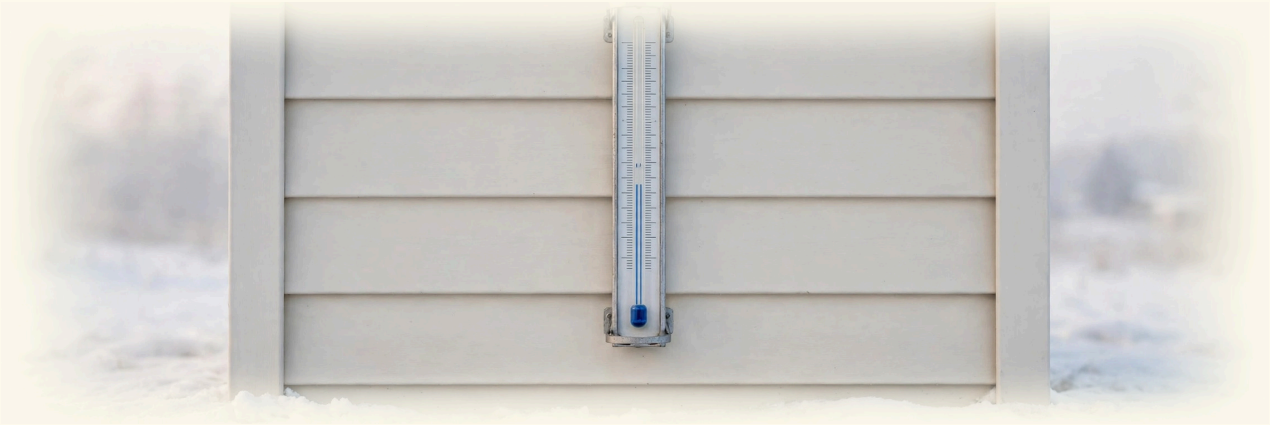
Overview of the concept

This is how you measure how far something is from zero, no matter which side of zero it sits on. A temperature of -10 and a temperature of +10 are both 10 degrees away from freezing, just in opposite directions. The same idea tells you how far into overdraft a bank balance has gone, or how far off your guess was in a game, without worrying about the ± sign.



Rule

Absolute value: the distance from zero on a number line.

The absolute value of a number is how far it is from zero, no matter which side of zero it sits on. Distance is never negative, so an absolute value is always zero or positive.

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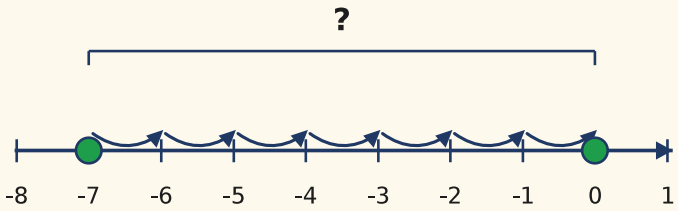
Worked examples

EXAMPLE 1

Q Find $|-7|$



SOLUTION

Picture it

Find $|-7|$

Work it one step at a time, top to bottom.

Absolute value asks: how far is this number from zero?

$-7, -6, -5, -4, -3, -2, -1, 0$
7 steps

Distance is never negative, so $|-7| = 7$

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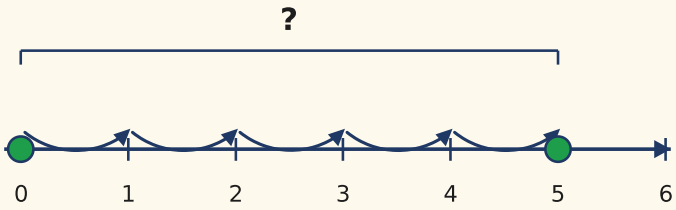
EXAMPLE 2

Q Find |5|



SOLUTION

Picture it

Find |5|

Work it one step at a time, top to bottom.

Absolute value asks: how far is this number from zero?

5, 4, 3, 2, 1, 0
5 steps

So |5| = 5

Practice questions

1 A scuba diver is 9 m below the surface. How far is the diver from sea level?

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2 The temperature is 4 degrees above zero. How far is it from zero?

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3 What is $|-8|$?

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4 A dart lands exactly on the bullseye, 0 cm from the centre. How far from the centre is it?

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5 What is $|-12| + |5|$?

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6 How far from zero is the further of -11 and 9?

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7 What is $|3 - 8|$?

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8 The temperature falls from 5 degrees to −4 degrees. By how many degrees did it fall?

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9 Which is further from zero, a debt of 6 dollars or a credit of 5 dollars?

A The debt of 6 dollars

B The credit of 5 dollars

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10 A diver is 3 m below the surface and a snorkeller is 2 m above it. How far apart are they?

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ANSWER KEY

1. 9 m

2. 4

3. 8

4. 0

5. 17

6. 11

7. 5

8. 9

9. The debt of 6 dollars

10. 5 m

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