# Integers and Their Opposites

Spot mistakes, reason, and work backward

**Name** _____ **Date** _____ **Score** _____ / 10

**QUICK REVIEW**

Opposites are the same distance from zero on different sides. The opposite of $-2$ is $2$, and $-2 + 2 = 0$. Absolute value is nonnegative distance: $|-2| = 2$. Zero is its own opposite.

**Worked example**

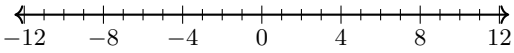
A lift is on floor $-3$. Which floor is opposite it across floor $0$, and how many floors apart are they?

**1.** Negate the floor number: $-(-3) = 3$.
**2.** Both floors are $3$ levels from zero: $|-3| = |3| = 3$.
**3.** Their separation is $3 - (-3) = 6$ levels.
**Answer:** Floor $3$; $6$ levels apart.

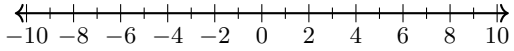
## Practice Problems

Show your thinking.

**1.** Rae says the opposite of $-9$ is $-9$. Correct Rae and check the sum.



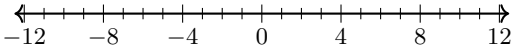

**2.** Find $x$ if its opposite is $5$. Then locate $x$ on the number line.




**3.** A student says $|-9| = -9$. Repair the statement and state the opposite of the original integer.

**4.** A student claims $x = -14$ solves $x + (-14) = 0$. Show why that fails, then find $x$ and its distance from zero.

**5.** A student lists $-9, 0, 5, -5$ in that order from least to greatest. Repair the order.




**6.** A claim to test: find two opposite integers with distance $10$ between them.

**7.** Signal record: a student says the opposite of $-13$ is also $-13$. Correct the claim using a zero-sum check.

**8.** Distance marker: two opposite integers are $34$ units apart. Recover both integers, naming the positive one first.

**9.** Balance check: evaluate $-|-19|$ and distinguish it from the opposite of $-19$.

**10.** Reference scale: find $x$ in $x + (23) = 0$ and verify the cancellation.

# Answer Key

1. The opposite is $9$.
2. $x = -5$.
3. $|-9| = 9$; opposite $9$.
4. $x = 14$; distance $14$.
5. $-9 < -5 < 0 < 5$.
6. $-5$ and $5$.
7. The opposite is $13$.
8. $17$ and $-17$.
9. $-|-19| = -19$; opposite of $-19$ is $19$.
10. $x = -23$.

## Step-by-Step Solutions

Follow each calculation, then check your own work.

### Problem 1

1. The given integer is $-9$.
2. Its additive inverse is $9$ because $-9 + 9 = 0$.
3. Two copies give $-9 + (-9) = -18 \neq 0$.

### Problem 2

1. $-x = 5$.
2. Multiply by $-1$: $x = -5$.
3. Mark $-5$ by moving 5 unit ticks left from zero. Check $-(-5) = 5$.

### Problem 3

1. Absolute value is distance from $0$: $9$ units.
2. The opposite of $-9$ is $9$.
3. $-9 + 9 = 0$ checks the opposite.

### Problem 4

1. The proposed value gives $-14 + (-14) = -28$, not $0$.
2. $x = -(-14) = 14$.
3. Check $14 + (-14) = 0$; $|14| = 14$.

### Problem 5

1. Because $9 > 5$, reversing signs gives $-9 < -5$.
2. Both are negative: $-9 < 0$ and $-5 < 0$.
3. $5 > 0$, so the ordered list is $-9, -5, 0, 5$.

### Problem 6

1. Each distance from zero must be $10 \div 2 = 5$.
2. The two signed integers are $-5$ and $5$.
3. Check separation $5 - (-5) = 10$ and sum $0$.

### Problem 7

1. The claim gives $-13 + (-13) = -26 \neq 0$, so it cannot be the opposite.
2. Opposite $= -(-13) = 13$.
3. Zero-sum check: $-13 + (13) = 0$.

### Problem 8

1. Each distance from zero is $34/2 = 17$.
2. The integers are $17$ and $-17$.
3. Check sum $0$ and separation $17 - (-17) = 34$.

### Problem 9

1. Absolute value $|-19| = 19$.
2. Opposite $= -(-19) = 19$.
3. Negating the distance gives $-19 = -19$; negating the original value gives $19$.

### Problem 10

1. Undo addition: $x = 0 - (23) = -23$.
2. Opposite $= -(23) = -23$.
3. Zero-sum check: $23 + (-23) = 0$.

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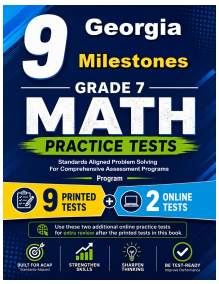


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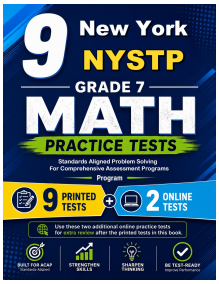


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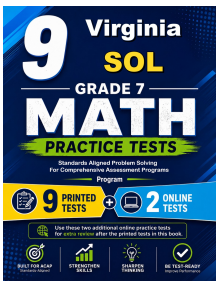


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