Adding Integers

Explore ideas and representations

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

QUICK REVIEW

Add numbers with the same sign by adding magnitudes and keeping the sign. With opposite signs, subtract magnitudes and keep the sign of the larger magnitude. $-8+5=-3$. For fractions, first use a common denominator: $-3/10+1/2=1/5$.

Worked example

Evaluate $(-3)+(2)$. Show an exact fraction or integer.

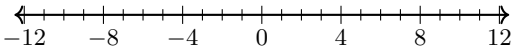
1. Use denominator 1: $-3=-3/1$ and $2=2/1$.
2. Combine the signed numerators: $-3+(2)=-1$.
3. The value is $-1/1=-1$.
Answer: -1.

Practice Problems

Show your thinking.

1. Evaluate $(-7)+(3)$. Show an exact fraction or integer.

2. Model $(5)+(-9)$ with moves on the numbered line, then evaluate.



3. Find the missing number: $(-6)+x=-8$.

4. Find $(8)+(-4)$ and its opposite. Which is greater, or are they equal?

5. Evaluate $[(-3)+(7)]+(-3)$. Keep the intermediate result visible.

6. Predict whether $(4)+(-6)$ is positive, negative, or zero. Then compute to justify the prediction.

7. A check for $(-8)+(5)$ uses the result -3. Write a numerical inverse-operation check.

8. Find $(9)+(-3)$, then write the number that must be added to that result to make 0.

9. Evaluate $[(-14)+(9)]+(-14)$. Keep the intermediate result visible.

10. Reconstruct x from $x+(-8)=9$. Check by substitution.

Answer Key

1. -4.
2. -4.
3. $x = -2$.
4. 4 and -4; greater 4.
5. 1.
6. -2, negative.
7. $(-3) - (5) = -8$.
8. Result 6; add -6.
9. -19.
10. $x = 17$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Use denominator 1: $-7 = -7/1$ and $3 = 3/1$.
2. Combine the signed numerators: $-7 + (3) = -4$.
3. The value is $-4/1 = -4$.

Problem 2

1. Start at 5. The move is -9, ending at -4.
2. Use denominator 1: $5 = 5/1$ and $-9 = -9/1$.
3. Combine the signed numerators: $5 + (-9) = -4$.
4. The value is $-4/1 = -4$.

Problem 3

1. Subtract the known addend from the sum.
2. $x = (-8) - (-6) = -2$.
3. Check in the original: $(-6) + (-2) = -8$.

Problem 4

1. Use denominator 1: $8 = 8/1$ and $-4 = -4/1$.
2. Combine the signed numerators: $8 + (-4) = 4$.
3. The value is $4/1 = 4$.
4. The opposite of 4 is -4; 4 is farther right on the number line.

Problem 5

1. Use denominator 1: $-3 = -3/1$ and $7 = 7/1$.
2. Combine the signed numerators: $-3 + (7) = 4$.
3. The value is $4/1 = 4$.
4. Now add (-3): $4 + (-3) = 1$.

Problem 6

1. $|-6| > |4|$, so the negative addend determines the sign.
2. Use denominator 1: $4 = 4/1$ and $-6 = -6/1$.
3. Combine the signed numerators: $4 + (-6) = -2$.
4. The value is $-2/1 = -2$.

Problem 7

1. Use denominator 1: $-8 = -8/1$ and $5 = 5/1$.
2. Combine the signed numerators: $-8 + (5) = -3$.
3. The value is $-3/1 = -3$.
4. Inverse check: $(-3) - (5) = -8$.

Problem 8

1. Use denominator 1: $9 = 9/1$ and $-3 = -3/1$.
2. Combine the signed numerators: $9 + (-3) = 6$.
3. The value is $6/1 = 6$.
4. $6 + (-6) = 0$, so the additive inverse is -6.

Problem 9

1. Use denominator 1: $-14 = -14/1$ and $9 = 9/1$.
2. Combine the signed numerators: $-14 + (9) = -5$.
3. The value is $-5/1 = -5$.
4. Now add (-14): $-5 + (-14) = -19$.

Problem 10

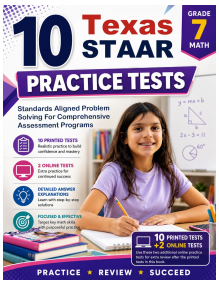
1. Subtract the known addend from the sum.
2. $x = (9) - (-8) = 17$.
3. Check in the original: $(17) + (-8) = 9$.

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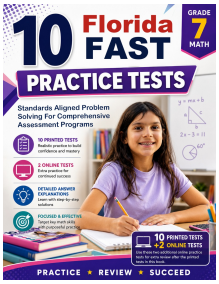
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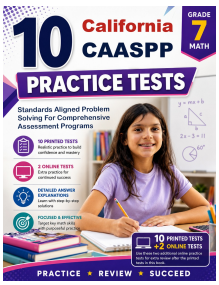
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