Integer Addition and Subtraction

Integer addition and subtraction: Mistakes and missing information

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QUICK REVIEW

Adding same signs: add sizes and keep the sign, so $-4+(-3)=-7$. Adding opposite signs: subtract sizes and keep the sign of the larger size, so $-8+5=-3$. Subtracting means adding the opposite: $3-(-4)=3+4=7$.

Worked example

Find $-6+9$.

1. Write as addition: $(-6)+(9)=(-6)+(9)$.
2. Opposite signs: subtract sizes $|6-9|=3$; the larger size is positive.
3. The result is 3; check $3-(9)=-6$.
Answer: 3.

Practice Problems

Show your thinking.

1. Correct $5-(-9)=-4$.

2. A student changes both signs in $-4+(-6)$ to positive. Correct the sum.

3. Find x in $x+11=3$.

4. Find x in $x+(-5)=-12$.

5. Correct the claim that $-2+7$ must be negative because it starts negative.

6. A student says subtracting -8 always makes a number smaller. Use $-6-(-8)$ to test it.

7. A student claims $-5-13=8$. Correct the result.

8. Find x in $x+(-8)=4$.

Answer Key

1. 14.
2. -10.
3. $x = -8$.
4. $x = -7$.
5. 5.
6. False. $-6 - (-8) = 2$, and $2 > -6$.
7. -18.
8. $x = 12$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Write as addition: $(5) - (-9) = (5) + (9)$.
2. Same signs: add sizes $5 + 9 = 14$ and keep the positive sign.
3. The result is 14; check $14 - (9) = 5$.

Problem 2

1. Write as addition: $(-4) + (-6) = (-4) + (-6)$.
2. Same signs: add sizes $4 + 6 = 10$ and keep the negative sign.
3. The result is -10; check $-10 - (-6) = -4$.

Problem 3

1. The unknown satisfies $x + (11) = 3$.
2. Subtract the known addend from both sides: $x = 3 - (11) = -8$.
3. Check: $-8 + (11) = 3$.

Problem 4

1. The unknown satisfies $x + (-5) = -12$.
2. Subtract the known addend from both sides: $x = -12 - (-5) = -7$.
3. Check: $-7 + (-5) = -12$.

Problem 5

1. Write as addition: $(-2) + (7) = (-2) + (7)$.
2. Opposite signs: subtract sizes $|2 - 7| = 5$; the larger size is positive.
3. The result is 5; check $5 - (7) = -2$.

Problem 6

1. Write as addition: $(-6) - (-8) = (-6) + (8)$.
2. Opposite signs: subtract sizes $|6 - 8| = 2$; the larger size is positive.
3. $2 > -6$, so the number became larger. Subtracting -8 has the same effect as adding 8.

Problem 7

1. Write as addition: $(-5) - (13) = (-5) + (-13)$.
2. Same signs: add sizes $5 + 13 = 18$ and keep the negative sign.
3. The result is -18; check $-18 - (-13) = -5$.

Problem 8

1. The unknown satisfies $x + (-8) = 4$.
2. Subtract the known addend from both sides: $x = 4 - (-8) = 12$.
3. Check: $12 + (-8) = 4$.

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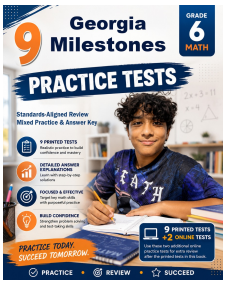

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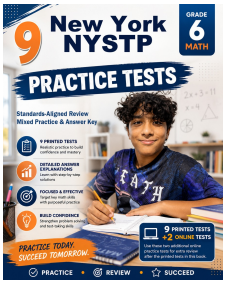

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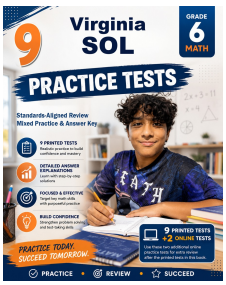

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