Operations on Integers

Objectives:

…to add, subtract, multiply, and divide integers

Assessment Anchor:

7.A.3.2 – Compute accurately with and without use of a calculator.

**ADDING INTEGER NOTES**

Start at zero. A positive number will make you move forward, and a negative number will make you move backwards. Your ending location is the answer!

Example 1) \(-4 + 7 = 3\) (Start at zero. Move backward 4, then forward 7.)

Example 2) \(6 + -8 = -2\) (Start at zero. Move forward 6, then backward 8.)

Example 3) \(-3 + -4 = -7\) (Start at zero. Move backward 3, then backward 4.)

4) \(-4 + -5 = _____\)  
5) \(-6 + -2 = _____\)  
6) \(-5 + -5 = _____\)  
7) \(-9 + -3 = _____\)  
8) \(-2 + -7 = _____\)  
9) \(6 + -7 = _____\)  
10) \(5 + -3 = _____\)  
11) \(-2 + 7 = _____\)  
12) \(-6 + 3 = _____\)  
13) \(-4 + 9 = _____\)

other strategies to consider

vertical number line  
money  
piles of stuff
Operations on Integers

A) When adding ONE POSITIVE AND ONE NEGATIVE, ignore the signs and subtract the numbers. The sign of the number with the larger absolute value is the sign of the answer.

B) When adding TWO NEGATIVE NUMBERS, ignore the signs and add the numbers. The answer should still be negative.

“Same sign, add, same sign…different signs subtract; further from zero gets the sign, and then you’ll be correct!”

Example 14)  
-19 + -30 = -49  
(signs are the same, add 19 and 30 to get 49, answer is still negative)

Example 15)  
45 + -23 = 22  
(signs are different, subtract 45 and 23 to get 22, answer is positive because 45 has a larger absolute value)

Example 16)  
-35 + 29 = -6  
(signs are different, subtract 35 and 29 to get 6, answer is negative because -35 has a larger absolute value)

17)  
-47 + 20 = ____  
20)  
-28 + 51 = ____

18)  
48 + -33 = ____  
21)  
54 + -37 = ____

19)  
-29 + -42 = ____  
22)  
-48 + 72 = ____

other strategies to consider

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**SUBTRACTING INTEGER NOTES**

(**First, show how using the number line for subtraction can be confusing!)**

Subtraction Means Add The Opposite…So, change the subtraction sign to an addition sign, then change the second number to its opposite. Now, follow the rules for adding integers.

Example 23) \(7 - 10\)  
Change the subtraction!  
\(7 + -10 = -3\)

Example 24) \(-3 - -8\)  
Change the subtraction!  
\(-3 + 8 = 5\)

Example 25) \(-9 - 11\)  
Change the subtraction!  
\(-9 + -11 = -20\)

******THINK TWO LINES!!

26) \(4 - 12 = \)  
30) \(-7 - 2 = \)

27) \(-5 - 8 = \)  
31) \(12 - -3 = \)

28) \(-11 - -16 = \)  
32) \(-4 - -3 = \)

29) \(3 - -4 = \)  
33) \(5 - 13 = \)

Sometimes, parenthesis are used to simply “hold” a negative number…you can proceed as if he wasn’t even there!

34) \(18 - (-4) = \)  
36) \(-7 - (-27) = \)

35) \(-5 - (-13) = \)  
37) \(6 - (-6) = \)
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38) \(34 - 41 + 38 = \) _____  
40) \(19 + 30 - (-11) = \) _____  

39) \(-12 + 30 + 21 - 34 = \) _____  
41) \(8 - 12 - 18 + 45 = \) _____

Rewrite each problem so that it does NOT contain a double sign. (A single sign or operator is preferred.)

\[
\begin{align*}
7 + -9 &= \quad -5 + -3 &= \quad 8 - (-3) &= \quad -4 - (-2) = \\
7 - 9 &= \quad -5 - 3 &= \quad 8 + 3 &= \quad -4 + 2 = \\
2 + -11 &= \quad -7 - -2 &= \quad 7 - (-6) &= \quad -5 + -4 =
\end{align*}
\]

MULTIPLYING/DIVIDING INTEGER NOTES

Using the rules!

(\text{in words}) \hspace{1cm} (\text{in symbols})

\begin{align*}
\text{NEGATIVE times NEGATIVE} &= \text{POSITIVE} & (-) \cdot (-) &= + \\
\text{POSITIVE times NEGATIVE} &= \text{NEGATIVE} & (+) \cdot (-) &= - \\
\text{NEGATIVE times POSITIVE} &= \text{NEGATIVE} & (-) \cdot (+) &= -
\end{align*}

42) \(-4 \cdot -5 = 20\)  
45) \(-30 \div 6 =\)  
48) \(-36 \div -9 =\)

43) \(9 \div -3 = -3\)  
46) \(6 \cdot -7 =\)  
49) \(-12 \cdot 2 =\)

44) \(-50 \div -10 =\)  
47) \(-3 \cdot 8 =\)  
50) \(-5 \cdot -8 =\)