Lesson 48: Addition and Subtraction of Signed Numbers

Purpose of lesson: You will learn how to add and subtract numbers with signs.

The study of algebra begins with signed numbers. There are some rules to follow when adding and subtracting signed numbers (which can include fractions and decimals).

Rules for Addition:

1) In an addition problem, if the signed numbers have the same sign, add the numbers, keeping the same sign.

2) In an addition problem, if the signed numbers are different, find the difference, keeping the sign of the larger number.

Examples:

1) Add (+3) + (+4) =

Use rule # 1 since both numbers have a positive sign (+); adding the two numbers, the answer will be +7.

2) Add (-5) + (-3) =

Use rule # 1 since both numbers have a negative sign (-); adding the two numbers, the answer will be -8.

3) Add (-2) + (+5) =

In this addition problem, the signs are different. Look to rule #2. Check the sign of the two numbers to add to find the signed number which has the highest number. In this case 5 is greater than 2. Since the sign is +5, we keep the + sign and then determine the difference between the two numbers, which is 3. The final answer is +3.

4) Add (-7) + (+2) =

In this addition problem, we are adding two numbers with different signs. Look to rule #2. Check the sign of the two numbers to add to find the signed number which has the

highest number. In this problem, 7 is greater than 2. Since the sign is -7, we keep the – sign and then determine the difference between the two numbers, which is 5. The final answer is -5.

5) Add $(-\frac{1}{4}) + (\frac{3}{4}) =$

In this addition problem, we are adding two numbers with different signs. Look to rule #2. Check the sign of the two numbers to add to find the signed number which has the highest number. In this problem $\frac{3}{4}$, is greater than $\frac{1}{4}$. Since the sign is $+\frac{3}{4}$, we keep the + sign and then determine the difference between the fractions which is $\frac{2}{4}$. The final answer is $\frac{2}{4} = \frac{1}{2}$(in lowest terms).

Take Lesson 48 Quiz 1

To *subtract*, you must remember the rules of *addition*, you will need them here, too.

Rules for Subtraction:

1) Keep the sign of the first number.

2) Change the sign of the operation to a plus sign. Then,

3) Change the sign of the second number to the opposite sign.

4) Now, **follow the rules for addition!**

(In other words, change the second 2 signs, then ADD!)

Examples:

1) Subtract (-5) - (+6) =

In this subtraction problem, change the sign of the operation to + and change the sign of the second number to a - sign. The equation now looks like
(-5) + (-6) =. Following the rules for addition, since the numbers have the same sign, adding the two numbers gives us an answer of **-11**.

2) Subtract (+9) - (-3) =

In this subtraction problem, change the sign of the operation to + and change the sign of the second number to a + sign. The equation now looks like (+9) + (+3) =. Following the rules for addition, since the numbers have the same sign, adding the two numbers gives us an answer of **+12**.

3) Subtract (-10) - (-11) =

In this subtraction problem, change the sign of the operation to + and change the sign of the second number to a + sign. The equation now looks like (-10) + (+11) =. Following the rules for addition, since the numbers have a different sign, find the difference and keep the sign of the larger number which gives us an answer of **+1**.

In a problem written in this way: Subtract (+9) from (-6), you will need to set the problem up so that the number you are subtracting from comes first, (-6) - (+9). Then follow the Rules for Subtraction. The answer to this problem is -15.

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