1.03 Signed Numbers; Absolute Value

Basic Algebra: One Step at a Time. **Page 13 - 20:   #107, 109, 110, 111, 114, 115, 116, 117, 118.**

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ADDITION RULES

RULE	SIGN OF ANSWER	WHAT TO DO	EXAMPLE
(+)+(+)	+	Add the numbers	(+8)+(+4) = +12
(-)+(-)	-	Add the numbers	(-8)+(-4) = -12
(+)+(-)	Sign of the larger	Subtract the numbers	(+12)+(-8) = +4
(-)+(+)	Sign of the larger	Subtract the numbers	(-12)+(+8) = -4

p. 20:

107. $\left|-4\right|+3\left|-3\right|$

 Well, that's what it looks like in black and white. Let's color it up a bit.

$$\left|-4\right|+3\left|-3\right|$$

Remember that $\left|-4\right|=4$ **and** $\left|-3\right|=3$

$$\left|-4\right|+3\left|-3\right|$$

$$4+3\bullet 3$$

$$4+9$$

$$13$$

1

109. $\quad -|-8| + 3|-9|$

$$-|-8| + 3|-9|$$

Remember that $|-8| = 8$ **and** $|-9| = 9$

$$-|-8| + 3|-9|$$

$$-8 + 3 \bullet 9$$

$$-8 + 27$$

$$19$$

110. $\quad -3|-5| - 5|-6|$

Well, that was in black and white. Here it is in color.

$$-3|-5| - 5|-6|$$

Remember that $|-5| = 5$ **and** $|-6| = 6$

$$-3|-5| - 5|-6|$$

$$-3 \bullet 5 - 5 \bullet 6$$

$$-15 - 30$$

$$-45$$

111. $\quad -4|4 - 6| - 8|-8 + 3|$

Absolute value symbols are considered to be symbols of grouping, so they are treated as parentheses within the order of operations. In other words, you have to do what is within the absolute value bars first, as if they were parentheses.

$$-4|4 - 6| - 8|-8 + 3|$$

$$-4|-2| - 8|-5|$$

$$-4 * 2 - 8 * 5$$

$$-8 - 40$$

$$-48$$

114. $\left|-5-3\right|^2 - 4\left|7-2\right|$

The first step is to combine the numbers inside each absolute value, as if these

had been parentheses: $\left|-5-3\right|^2 - 4\left|7-2\right|$

$$\left|-8\right|^2 - 4\left|5\right|$$

$$8^2 - 4 * 5$$

$$64 - 20$$

$$44$$

115. $\left|-8-5\right|^2 + \left|3-12\right|^2$

As before, the first step is to combine the numbers inside each absolute value.

$$\left|-13\right|^2 + \left|-9\right|^2$$

$$13^2 + 9^2$$

$$169 + 81$$

$$250$$

116. $\left|-8^2-5\right| + \left|3^2-12\right|$

Notice that when I "colorized" the problem above, I deliberately did NOT color

the negative before the 8 to match the 8^2. It is very important to know that,

since there were no parentheses around the -8, the only thing that gets squared

is the 8! The negative is NOT squared!

$$\left|-8^2-5\right| + \left|3^2-12\right|$$

$$\left|-64-5\right| + \left|9-12\right|$$

$$\left|-69\right| + \left|-3\right|$$

$$69 + 3$$

$$72$$

117. $\left|-8^2 - 5\right| - \left|3^2 - 12\right|$

This is exactly the same as #116, except that it is a subtraction instead of an addition problem. You can finish that one yourself, right??

<p style="text-align:center; color:blue">Answer = 69 - 3 or 66</p>

118. $-\left|-5^2 - 3^2\right|$

In color perhaps it should look like this:

$-\left|-5^2 - 3^2\right|$

Notice that when I "colorized" the problem above, I deliberately did NOT color the negatives before the 5 and the 3 to match the 5 and the 3. It is very important to know that, since there were no parentheses around these negatives, these negatives are NOT to be squared!

$-\left|-5^2 - 3^2\right|$

$-\left|-25 - 9\right|$

$-\left|-34\right|$

-34