

Pre-Core Mathematics Program

Checking Your Answers

MOTTO: Let's Do The Math!

Class #20 in the Pre-Core Mathematics Program

When you are in the Learning Mode of ALEKS, the 'doing of the math' with the Explanation button available, ALEKS can check your answers when you click the NEXT button. But you don't have this luxury when you are taking an assessment. So, let's discuss how you can check the answers of many of the math problems that you have been working this semester.

Subtract.
 $9 - (-5) = \square$
 $-3 - (-1) = \square$
Answers? 14 and -2

Evaluate.
 $-9^2 = \square$
 $-(-2)^3 = \square$
Answers? -81 and 8

Evaluate.
 $(1 - 2^3)^2 + 5 \cdot 4$
Answer? 69

Arithmetic Problems

For the problems which are arithmetic problems without any algebra involved, the calculator can be handy to ensure you are correct. For some of the problems, the calculator will simply find the answer for you...but be sure you know how to get the answer without a calculator. Understanding the arithmetic process is necessary for later topics. And honestly, you will be much quicker at many of these problems without using a calculator. So, let's take a look at a few problems and use the calculator to 'check the answer'.

Again, you must be able to work these problems without a calculator. The calculator should only be used to check the answer. When you use the calculator, you can enter the problems just like you see them...using parentheses.

Subtract. Write your answer as a mixed number in simplest form.

$$4\frac{1}{3} - 1\frac{7}{8} \quad \text{Answer? } 2\frac{11}{24}$$

Evaluate. Write your answers as fractions.

$$\left(-\frac{3}{2}\right)^2 = \quad \text{Answers? } \frac{9}{4}$$
$$\frac{5}{4^3} = \quad \frac{5}{64}$$

Answers? $-4\sqrt{3}$

Simplify.

$$\sqrt{75} - 3\sqrt{27}$$

Arithmetic Problems

The calculator will not find the answer to all arithmetic problems. But it can be used to 'check your answer.' The ALEKS calculator can be used to enter fractions (because a fraction bar is a division operation), but the answer will be given to you as a decimal. So, the key is to look at the decimal value of your answer and see if it equals the decimal value of the answer for the original problem.

Similarly, the calculator has a square root button to check arithmetic problems involving square roots.

Calculate.

$$\frac{-6 \times 10^6}{4 \times 10^{10}} \quad \text{Answer?} \quad -1.5 \times 10^{-4}$$

Write your answer in scientific notation.

Write 0.0005941 in scientific notation.

$$\text{Answer?} \quad 5.941 \times 10^{-4}$$

Arithmetic Problems

Again, the calculator will not give an answer in scientific notation. But you can check using the calculator.

Classify each number below as a rational number or an irrational number.

	rational	irrational
$60.\overline{12}$	X	<input type="radio"/>
$-\sqrt{7}$	<input type="radio"/>	X
3π	<input type="radio"/>	X
$\sqrt{49}$	X	<input type="radio"/>
$\frac{17}{11}$	X	<input type="radio"/>

Rational = repeating or ending decimal

Irrational = non-repeating, non-ending decimal

Arithmetic Problems

For this type of problem, using the calculator can help you if you know the definition of rational and irrational numbers in terms of the decimal form of a number...which the calculator can tell you.

Simplify.

$$(-3w^4x^{-2})^2$$

Write your answer using only positive exponents.

Answer? $\frac{9w^8}{x^4}$ Let $w = 3, x = 4$.

Use the distributive property to remove the parentheses.

$$-5(-y - 4w + 3)$$

Answer? $5y + 20w - 15$ Let $y = 4, w = 3$.

Expressions

Even when I'm working with expressions, I can use the calculator to give me an idea if the given expression is the same as the answer expression I worked out. The key is to evaluate both for "unusual values" for the variables. So, let $x = 3$ and $w = 4$. Evaluate the given expression with the calculator...write down the decimal answer. Then evaluate the answer expression...does it match?

Solve for v .

$$-4v + \frac{7}{4} = -\frac{3}{4}v - \frac{2}{3}$$

Simplify your answer as much as possible.

Answer? $v = \frac{29}{39}$

Solve for u .

$$u^2 - 10u + 21 = 0$$

Answer? $u = 3$ or $u = 7$

Equations

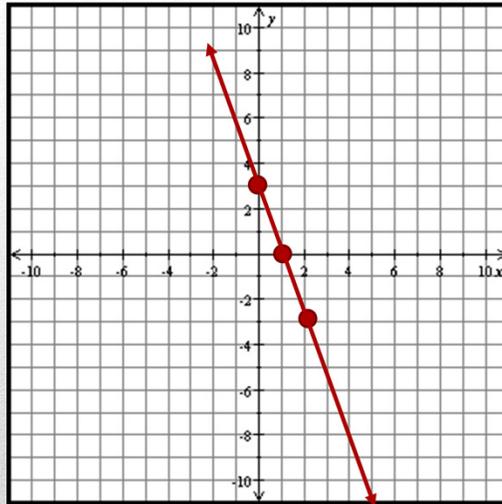
Don't forget that solving an equation, any equation, means you are finding the value for the variable that makes it true. So, you can use this value to see if the two sides of the original equation are equal...and hence, checking your answer.

Graph the line.

$$y = -3x + 3$$

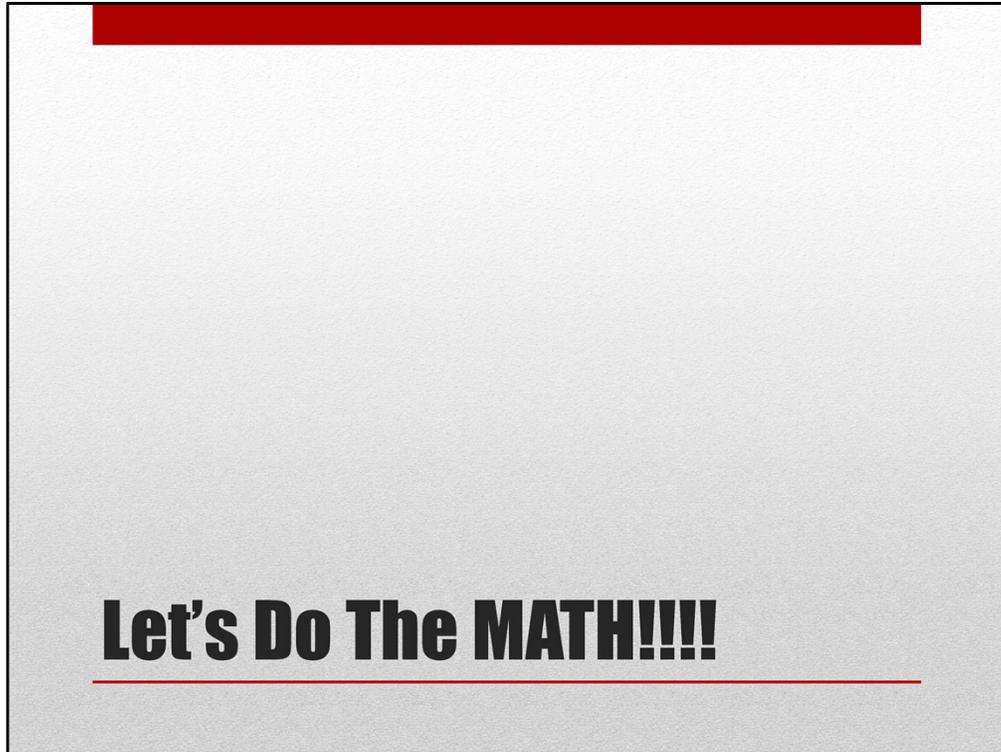
PLOT THREE points, even though you only need 2 to draw the line...the third one should be on the line!

(0,3) (1,0) (2,-3)



Graphing a Line

When you graph a line, ALEKS only requires you to plot two points to use the ruler tool to draw the line. BUT it would be wise to have a third point handy to be sure it falls on the line you have drawn.



Well, I guess that's all that I have for you today. Again, when you are in the learning mode, ALEKS can check your answers. But during an assessment, checking your own answers can help you discover a mistake that you made in working out a problem.

Now, it's time to "Do the Math!"