You have a Test this Friday on Chapters 1 & 2.
Topics: set notation, number sets, properties of numbers, distributive property, order of operations, combining like terms, evaluating expressions, writing numerical expressions from verbal expressions, solving linear equations, solving linear inequalities and compound inequalities, setting up and solving word problems in one variable
(I copied the above list from http://www.asms.net/brewer/intermediatealgebrasyllabus.html)

I have **office hours** today (Wednesday) at 3:45 (after 8th period).

Go to the **Math Lab**.
Wednesday, Thursday 7-9pm in S201.

Attain mastery in all topics from Ch 1 and 2 on **Khan Academy** before you take the test on Friday.

I. Translate into a variable expression, but do not simplify.

1. one-half the total of twenty-two times a number and six

$\frac{1}{2}(22x+6)$ $\frac{22x+6}{2}$

2. The sum of two numbers is 33. Using x to represent the *larger* of the two numbers, translate "the difference between six more than twice the larger number and three more than the smaller number" into an expression with a single variable.

(x) ($33-x$)

$6+2x-(3+33-x)$

II. Fill in the blank with one of the following three terms: identity, contradiction, conditional

3. An equation that is only true for some instances of the variable is called conditional

4. An equation that is true for all instances of the variable is called identity

5. An equation that is not true for any instances of the variable is called contradiction

III. Show all of your work for **ONE** of the following word problems. Please circle/box your final answer.

6. The sum of 2 consecutive odd numbers is 128. What is the second number in this sequence?

7. A coffee blend was made from 20 pounds of coffee that costs \$6.00 per pound and 80 pounds of coffee that costs \$2.30 per pound. Find the cost per pound of the coffee blend.

6. $x, x+2$

$x+x+2=128$

$2x=126$

$x=63$

$+2=65$

$6(20)+2.3(80)=100x$

$120+184=100x$

$304=100x$

$\$3.04=x$

7.

\$6	20	6	6(20)
\$2.30	80	2.3	2.3(80)
mixture	100	x	100x

15. Simplify. $-|-16|-|24|$

$-16-24$

-40

$\frac{3}{8}+\frac{5}{6}$

$\frac{9}{24}+\frac{20}{24}$

16. Simplify. $\frac{2}{3}-\left[\frac{3}{8}+\frac{5}{6}\right]\div\frac{3}{5}$

$\frac{2}{3}-\frac{29}{24}\div\frac{3}{5}$

$\frac{24}{24}\cdot\frac{2}{3}-\frac{29}{24}\cdot\frac{5}{3}=\frac{24(2)-29(5)}{24(3)}$

$=\frac{48-145}{72}=-\frac{97}{72}$

17. Evaluate the variable expression when $a = 2, b = 3, c = -1, and\ d = -4$.

$-3d \div \left|\frac{ab - 4c}{2b + c}\right| = -3(-4) \div \left|\frac{2(3) - 4(-1)}{2(3) + (-1)}\right|$

$= 12 \div \left|\frac{6 + 4}{6 - 1}\right| = 12 \div \left|\frac{10}{5}\right| = 12 \div |2|$

$= 12 \div 2 = 6$

18. Translate into a variable expression. Do not simplify.

the difference between the square of a number and the total of twelve and three times the number

$(x^2) - (12 + 3x)$

19. Solve for x. $5 - 6[2x - 2(x + 3)] = 8 - x$

$5-6[2x-2x-6]=8-x$

$5-6[-6]=8-x$

$5+36=8-x$

$41=8-x$

$x=8-41$

$x=-33$

$41-8=-x$

$33=-x$

$-33=x$

20. Solve for x. $2[3(x + 4) - 2(x + 1)] = 5x + 3(1 - x)$

$2[3x+12-2x-2]=5x+3-3x$

$2[x+10]=2x+3$

$2x+20=2x+3$

$20=3$ ↯

no solution

$\varnothing$

21. Find three consecutive even integers such that twice the sum of the first and third integers is twenty more than the second integer.

$x, x+2, x+4$

$2(x + x + 4) = 20 + x + 2$

$2(2x + 4) = 22 + x$

$4x + 8 = 22 + x$

$3x = 14$

$x = \frac{14}{3}$

no solution

22. Fifty liters of pure maple syrup that costs \$10 per liter are mixed with imitation maple syrup that costs \$4 per liter. How much imitation maple syrup is needed to make a mixture that costs \$5 per liter?

\$10 pure	10	50	10(50)
\$4 imitation	4	x	4x
\$5 mixture	5	50+x	5(50+x)

$10(50) + 4x = 5(50 + x)$

23. Two airplanes start from the same point and fly in opposite directions. The first plane is flying 50 mph slower than the second plane. In 4 h, the planes are 1800 mi apart. Find the rate of each plane.

plane	rate	x time	= distance
1	$x-50$	4	$4(x-50)$
2	$x+50$	4	$4x$

$\frac{mi}{h} \cdot \frac{h}{1} = mi$

$4(x-50)+4x=1800$

$4x-200+4x=1800$

$8x=2000$

$x=\frac{2000}{8}$

$8\overline{)2000}$ 250, -16, 40

plane 2 goes 250 mph

plane 1 goes 200 mph

24. How many quarts of water must be added to 5 qt of an 80% antifreeze solution to make a 50% antifreeze solution?

5 qts	.80	$5(.8)$
x	0	0
$5+x$	.50	$(5+x)(.5)$

$5(.8)=(5+x)(.5)$

$4=2.5+0.5x$

$4-2.5=0.5x$

$1.5=0.5x$

$\frac{1.5}{0.5}=x$

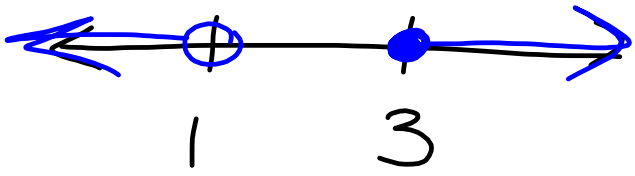
$3=x$

3 quarts of water

25. Solve. Write the solution set in interval notation. $3x + 7 < 10$ *or* $2x - 1 \geq 5$

$3x < 3$ $2x \geq 6$

$x < 1$ $\cup$ $x \geq 3$



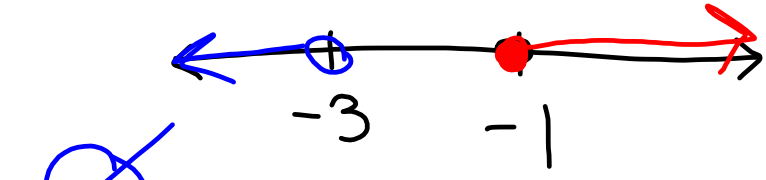
$(-\infty, 1) \cup [3, \infty)$

$\{x \mid x < 1 \text{ or } x \geq 3\}$

$5x - 2 \geq -7$ and $3 - 2x > 9$

$5x \geq -5$ $-2x > 6$

$x \geq -1$ $\cap$ $x < -3$



$\emptyset$

$7x+2<12$ **or** $x+29\geq -\frac{3}{2}$

$7x<10$

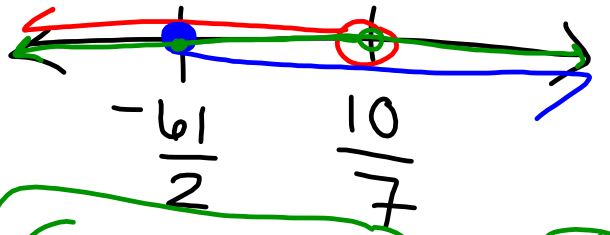
$x<\frac{10}{7}$

$\cup$

$x\geq -\frac{3}{2}-\frac{29}{1}\cdot\frac{2}{2}$

$x\geq -\frac{3}{2}-\frac{58}{2}$

$x\geq \frac{-61}{2}$



$(-\infty,\infty)=\mathbb{R}$

$5, 15, 21, 3, 35$

$5 \quad 3\cdot 5 \quad 3\cdot 7 \quad 3 \quad 5\cdot 7$

$LCM = 3\cdot 5\cdot 7 = 105$

$16, 10, 25, 8, 20$

$2\cdot 2\cdot 2\cdot 2 \quad 2\cdot 5 \quad 5\cdot 5 \quad 2\cdot 2\cdot 2 \quad 2\cdot 2\cdot 5$

$8\cdot 2 \quad\quad 4\cdot 2 \quad\quad 4\cdot 5$

$4\cdot 2\cdot 2$

$2\cdot 2\cdot 2\cdot 2$

$LCM = 2\cdot 2\cdot 2\cdot 2\cdot 5\cdot 5 = 400$

The sum of two integers is 96.

5 times one integer is 6 less than the other integer.

What are the integers?

x ; $96-x$ //

$5x = 96 - x - 6$

$5(96-x) = x - 6$

$5x+6$; x

$6x = 90$

$x = 15$ & 81

The sum of three consecutive odd integers is -251. What is the largest of the three?

$x, x+2, x+4$

$x + x+2 + x+4 = -251$

$3x + 6 = -251$

$3x = -251 - 6$

$3x = -257$

$x = -\frac{257}{3}$

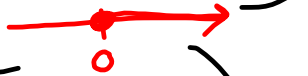
no solution

I am 15 years older than Elizabeth. Elizabeth acts like she is 10 years younger than she is. ~~How old will Elizabeth be when in how many years will~~ she acts like she is half my age?

Let e = elizabeth's age
I am $e+15$ years old.
elizabeth acts like she is $e-10$.

$$e-10=\frac{1}{2}(e+15)$$
$$e-10=\frac{1}{2}e+\frac{15}{2}$$
$$e-\frac{1}{2}e=\frac{15}{2}+10$$
$$\frac{1}{2}e=\frac{15}{2}+\frac{20}{2}$$
$$2\cdot\left(\frac{1}{2}e\right)=\left(\frac{35}{2}\right)\cdot 2$$
$$e=35$$

$A=\{x \mid x\geq 0\}$



$B=[-5,4)$

$C=\{1,2,3,4,5\}$

$D=\{-4,-3,\frac{1}{2},\frac{2}{3}\}$

$E=\{-\sqrt{2},\pi\}$

$\mathbb{R},\mathbb{Q},\mathbb{Z},\mathbb{N},\emptyset$

$\mathbb{Z}\cap A=\{0\}\cup\mathbb{N}$
$=\{0,1,2,\ldots\}$

$C/B=C-B$
$=\{4,5\}$

$D\cup\mathbb{Q}=\mathbb{Q}$

$E\cap A=\{\pi\}$

$A = \{x \mid x \geq 0\}$

$B = [-5, 4)$

$C = \{1, 2, 3, 4, 5\}$

$D = \{-4, -3, \frac{1}{2}, \frac{2}{3}\}$

$E = \{-\sqrt{2}, \pi\}$

$\mathbb{R}, \mathbb{Q}, \mathbb{Z}, \mathbb{N}, \emptyset$

$B \cap \mathbb{N} = \{1, 2, 3\}$

$D / A = \{-4, -3\}$

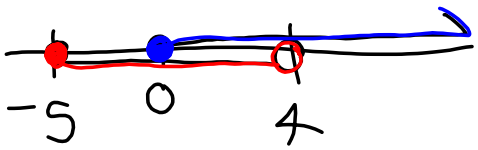
$B \cup E = B$

$A \cup C = A$

$E / \mathbb{Q} = E$

$C \cap \mathbb{Z} = C$

$B \cap A = [0, 4)$



The sum of three consecutive odd integers is 99.

Find the 2nd one.

$-9, -7, -5$

$27, 29, 31$

$x, x+2, x+4$

$x + x + 2 + x + 4 = 99$

$3x + 6 = 99$

$3x = 93$

$x = 31$

$+2 = \boxed{33}$

	% conc. sugar	Amount of tea	amount of sugar
sweet tea 10%	.10	8 oz	.10(8)
unsweet tea	0	x	0
32	.03	8+x	.03(8+x)

$$.10(8)+0=.03(8+x)$$

$$0.8=0.24+.03x$$

$$\frac{0.56}{.03}=\frac{.03x}{.03}$$

$$\frac{56}{3}=x$$

$$3\overline{)56}\quad 18\tfrac{2}{3}$$