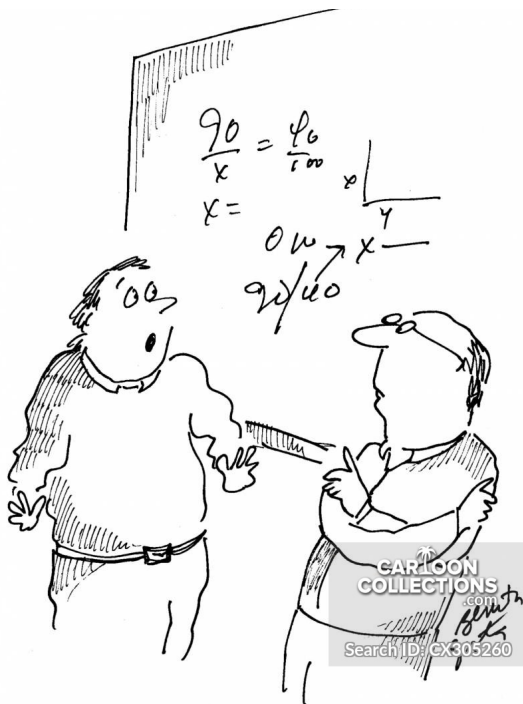


Good morning!

1. "Here"

2. Go over some more practice with word problems ✓

3. Go over the review for our Unit 1 Test  
(odd) you do evens 😊



"I can't solve for X. I have a fear of the unknown!"

Algebra Translate and Solve Extra Practice Name: \_\_\_\_\_

1. The sum of 38 and twice a number is 124. Find the number.

$38 + 2x = 124$   
 $-38 \quad -38$   
 $\underline{\quad\quad\quad}$   
 $2x = 86$   
 $\frac{2x}{2} = \frac{86}{2}$   
 $x = 43$

2. The sum of two consecutive integers is less than 83. Find the pair of integers with the greatest sum.

$x + (x+1) < 83$   
 $2x + 1 < 83$   
 $\frac{2x + 1}{2} < \frac{83}{2}$   
 $x + 0.5 < 41.5$   
 $x < 41$

3. A rectangle is 12 m longer than it is wide. Its perimeter is 68 m. Find its length and width.

$l = x + 12$   
 $w = x$   
 $P = 2l + 2w$   
 $68 = 2(x + 12) + 2x$   
 $68 = 2x + 24 + 2x$   
 $68 = 4x + 24$   
 $44 = 4x$   
 $x = 11$   
 $l = 23$

4. The length of a rectangle is 4 cm more than the width and the perimeter is at least 48 cm. What are the smallest possible dimensions for the rectangle?

$w = x$   
 $l = x + 4$   
 $P = 2w + 2l$   
 $2x + 2(x + 4) \geq 48$   
 $2x + 2x + 8 \geq 48$   
 $4x + 8 \geq 48$   
 $4x \geq 40$   
 $x \geq 10$

5. Find three consecutive integers whose sum is 171.

6. Find four consecutive even integers whose sum is 244.

$2x + 2(x+2) + 2(x+4) + 2(x+6) = 244$   
 $2x + 2x + 4 + 2x + 8 + 2x + 12 = 244$   
 $8x + 24 = 244$   
 $8x = 220$   
 $x = 27.5$

58  
 60  
 62  
 64

7. Alex has twice as much money as Jennifer. Jennifer has \$6 less than Shannon. Together they have \$54. How much does each have?

8. A student received grades of 75 and 81 on two exams. What grade must the student earn on the third to maintain an 80 average?

$(75 + 81 + x) = 80 \cdot 3$   
 $156 + x = 240$   
 $-156 \quad -156$   
 $\underline{\quad\quad\quad}$   
 $x = 84$

S ✓  
 A ✓  
 D ✓  
 M ✓  
 E ✓  
 P ✓

$$\begin{array}{r} 8x + 12 = 244 \\ -12 \quad -12 \\ \hline 8x = 232 \\ \frac{8x}{8} = \frac{232}{8} \end{array}$$

$$x = 29$$

$$\begin{array}{l} \swarrow \\ 2x + 2(x+1) + 2(x+2) + 2(x+3) = 244 \\ \underline{58} + \underline{60} + \underline{62} + \underline{64} = 244 \end{array}$$

$$2x + 2(x+4) \geq 48$$

$$2x + 2x + 8 \geq 48$$

$$4x + 8 \geq 48$$

$$\begin{array}{r} -8 \quad -8 \\ \hline 4x \geq 40 \end{array}$$

$$\begin{array}{r} \frac{4x}{4} \geq \frac{40}{4} \end{array}$$

$$x \geq 10$$

Smallest

$$w = x = 10 \text{ cm}$$

$$l = x + 4 = 10 + 4 = 14 \text{ cm}$$

S  
A  
D  
D  
E  
M  
P  
✓  
✓

$$68 = 2(x + 12) + 2x$$

$$68 = 2x + 24 + 2x$$

$$68 = 4x + 24$$

$$\begin{array}{r} -24 \\ \hline 44 = 4x \end{array}$$

$$\frac{44}{4} = \frac{4x}{4}$$

$$x = 11$$

$$w = x = 11 \text{ m}$$

$$l = x + 12 = 11 + 12 = 23 \text{ m}$$

S ✓  
A ✓  
D ✓  
M  
E  
P

## Math Protocols

- ① Draw a picture ✓
  - ② Highlight Information ✓ ✓ ✓
  - ③ Choose a formula ✓ ✓ ✓
  - ④ Solve the question ✓ ✓ ✓
- 2

<b>Addition (+):</b>	<b>Subtraction (-):</b>	<b>Multiplication (x):</b>	<b>Division (÷):</b>
<ul style="list-style-type: none"> <li>• More</li> <li>• <b>Sum → (and)</b></li> <li>• Increase</li> <li>• Plus</li> <li>• Total → (and)</li> <li>• Added to</li> <li>• Combined</li> <li>• Include</li> </ul>	<ul style="list-style-type: none"> <li>• Less</li> <li>• <b>Difference → (and)</b></li> <li>• Decrease</li> <li>• Minus</li> <li>• Diminished</li> <li>• Exclude</li> <li>• Remove</li> <li>• Take away</li> <li>• Reduced</li> </ul>	<ul style="list-style-type: none"> <li>• Times</li> <li>• <b>Product → (and)</b></li> <li>• Twice (*2)</li> <li>• Doubled (*2)</li> <li>• Triple (*3)</li> <li>• Of</li> <li>• Multiple</li> </ul>	<ul style="list-style-type: none"> <li>• Divided By</li> <li>• <b>Quotient → (and)</b></li> <li>• Separated</li> <li>• Split</li> <li>• Cut</li> <li>• <i>half</i></li> </ul>

**Tricky:** Than → "less than" ← From → taken from ← To

reverse the order! →



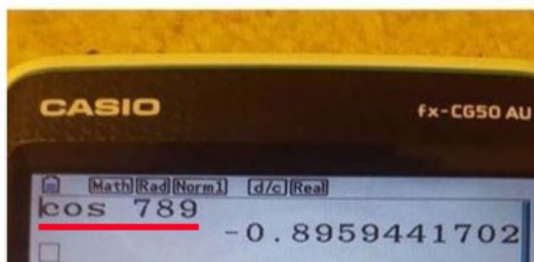
Go over the review for our Unit 1 Test  
(odd) you do evens 😊

Me: Why was 6 scared of 7

Person: Why?

Me: Approximatley  
-0.8959441702

Person: ?



**How I see math word problems:**



**If you have 4 pencils and I  
have 7 apples, how many  
pancakes will fit on the roof?  
Purple, because aliens don't  
wear hats.**

Linear Test 1 Study Guide  
GSE Algebra I

Name: \_\_\_\_\_

What you need to know and be able to do	Things to Remember	Problem											
Identify parts of an expression	<p><b>Terms:</b> Monomial Binomial Trinomial Polynomial</p> <p><b>Degree:</b> Constant 0 Linear 1 ✓ Quadratic 2 ✓ Cubic 3</p> <p><b>Coefficient:</b> Number in front of the variable</p> <p><b>Constant:</b> Number that stands alone</p>	<p>1) <math>2x^3 - x^2 + 3x - 5</math></p> <p>Name by Term: <u>Polynomial</u> Name by Degree: <u>Cubic</u> Coefficients: <u>2, -1, 3</u> Constants: <u>-5</u></p>	<p>2) <math>3x + 2</math></p> <p>Name by Term: <u>Binomial</u> Name by Degree: <u>Linear</u> Coefficients: <u>3</u> Constants: <u>2</u></p>										
Operations with polynomials	<p><b>Addition:</b> Combine Like Terms</p> <p><b>Subtraction:</b> Distribute the subtraction sign and combine like terms</p> <p><b>Multiplying:</b> Distribute Double Distribution When multiplying variables add exponents</p>	<p>3) Simplify and Identify</p> <p><math>1x^3 - 2x + 3x^2 + 14 - 5x + 1</math></p> <p><math>4x^2 - 7x + 15</math></p> <p>Name by Term: <u>trinomial</u> Name by Degree: <u>Quadratic</u> Coefficients: <u>4, -7</u> Constants: <u>15</u></p>	<p>4) Simplify and Identify</p> <p><math>-x^3 - 4x - 3x^3 + 6 - 5x</math></p> <p><math>-4x^3 - 9x + 6</math></p> <p>Name by Term: <u>trinomial</u> Name by Degree: <u>Cubic</u> Coefficients: <u>-4, -9</u> Constants: <u>6</u></p>										
		<p>5) <math>(7k^3 + 3k - 2) + (k^3 - k + 3)</math></p> <p><math>8k^3 + 2k + 1</math></p>	<p>6) <math>(2x - 5 + 3x^2) - (6 + 8x - 5x^2)</math></p> <p><math>8x^2 - 6x - 11</math></p>										
		<p>7) <math>(6x + 7x^3 - 5) - (5x - 3x^3 - 5x^2) + (5x^2 + 5 + 7x^3)</math></p> <p><math>6x + 7x^3 - 5 - 5x + 3x^3 + 5x^2 + 5 + 7x^3</math></p> <p><math>17x^3 + 10x^2 + x</math></p>	<p>8) <math>(x^3 - 8 - 3x) + (6 - 7x^3 - 3x^2) - (5x + 5 - 6x^4)</math></p> <p><math>6x^4 - 6x^3 - 3x^2 - 8x - 7</math></p>										
		<p>9) <math>4x(2x + 6)</math></p> <p><math>8x^2 + 24x</math></p>	<p>10) <math>(3x + 2)(8x - 1)</math></p> <p><math>24x^2 + 13x - 2</math></p>										
	<p><b>Box Method</b></p> <p><math>6x + 6</math></p> <p><math>3x</math></p> <p><math>+6</math></p> <table border="1" style="display: inline-table;"> <tr> <td><math>18x^2</math></td> <td><math>18x</math></td> </tr> <tr> <td><math>36x</math></td> <td><math>36</math></td> </tr> </table> <p><math>18x^2 + 54x + 36</math></p>	$18x^2$	$18x$	$36x$	$36$	<p>11) <math>(6x + 6)(3x + 6)</math> <b>Distribute</b></p> <p><math>18x^2 + 36x + 18x + 36</math></p> <p><math>18x^2 + 54x + 36</math></p>	<p>12) <math>(5x - 5)(3x^2 - x - 6)</math></p> <table border="1" style="display: inline-table;"> <tr> <td><math>15x^3</math></td> <td><math>-5x^2</math></td> <td><math>-30x</math></td> </tr> <tr> <td><math>15x^2</math></td> <td><math>-5x</math></td> <td><math>30</math></td> </tr> </table> <p><math>15x^3 - 20x^2 - 25x + 30</math></p>	$15x^3$	$-5x^2$	$-30x$	$15x^2$	$-5x$	$30$
$18x^2$	$18x$												
$36x$	$36$												
$15x^3$	$-5x^2$	$-30x$											
$15x^2$	$-5x$	$30$											



$$2x = \frac{320}{8}$$

$$\frac{2x}{2} = \frac{40}{2}$$

$$x = 20 \text{ mph}$$

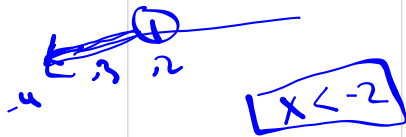
☺

S  
A  
D  
M  
E  
P

Solve multi-  
ep equations  
nd inequalities

left with false statement  
(4 = 6), then no solution.  
If true statement (4=4)  
then infinitely many  
solutions.

Flip the < > sign when  
multiplying or dividing by  
a negative



13) 
$$\frac{-5(7x-2)}{-5} = \frac{115}{-5}$$

$$7x-2 = -23$$

$$\frac{7x-2}{+2} = \frac{-23}{+2}$$

$$\frac{7x}{7} = \frac{-21}{7} \quad \boxed{x = -3}$$

14) *variables on both sides*  

$$-4(2x-3) = -6x-12$$

$$-8x+12 = -6x-12$$

$$\frac{+8x}{+8x} \quad \frac{+8x}{+8x}$$

$$12 = 2x-12$$

$$\frac{+12}{+12} \quad \frac{+12}{+12}$$

$$\frac{24}{2} = \frac{2x}{2} \quad \boxed{x = 12}$$

15) 
$$3x+12 = 44x+12+3x$$

$$\frac{3x+12}{-3x} = \frac{47x+12}{-3x}$$

$$\frac{12}{-12} = \frac{44x+12}{-12}$$

$$\frac{0}{44} = \frac{44x}{44} \quad \boxed{x = 0}$$

16) 
$$8b-3+21b = 4(b-7)$$

$$29b-3 = 4b-28$$

$$\frac{-4b}{-4b} \quad \frac{-4b}{-4b}$$

$$25b-3 = -28$$

$$\frac{+3}{+3} \quad \frac{+3}{+3}$$

$$\frac{25b}{25} = \frac{-25}{25} \quad \boxed{b = -1}$$

17) 
$$-4x-(2x+12) > 3x+6$$

$$\frac{-4x-2x-12}{-6x-12} > \frac{3x+6}{-3x}$$

$$\frac{-9x-12}{-9x-12} > \frac{6}{-12}$$

$$\frac{+12}{+12} \quad \frac{+12}{+12}$$

$$\frac{-9x}{-9} > \frac{18}{-9}$$

$$\boxed{x < -2}$$

18) 
$$x-7x-4 \geq 10$$

$$\frac{-6x-4}{-6x-4} \geq \frac{10}{-6x-4}$$

$$\frac{+14}{+14} \quad \frac{+14}{+14}$$

$$\frac{-6x}{-6} \geq \frac{14}{-6}$$

$$\frac{-6}{-6} \quad \frac{-6}{-6} \quad \text{FLIP!}$$

$$\boxed{x \leq -\frac{7}{3}}$$

Solve literal  
equations  
& arrange  
formulas)

Isolate the variable  
  
Multiply by the  
denominator when there  
is a fraction

S  
T  
O  
P  
P  
E  
R

19) Solve for P if  $N = \frac{P}{m}$   

$$\boxed{P = mN}$$

20) Solve for W if  $P = 2(L+W)$   

$$\frac{P}{2} = \frac{L+W}{2}$$

$$\frac{P}{2} = \frac{L}{2} + \frac{W}{2}$$

$$\frac{-L}{-L} \quad \frac{-L}{-L}$$

$$\boxed{W = \frac{P}{2} - L}$$

21) Solve for y if  $2x + 4y = 8$   

$$\frac{2x+4y}{-2x} = \frac{8}{-2x}$$

$$\frac{4y}{4} = \frac{-2x+8}{4}$$

$$\boxed{y = -\frac{1}{2}x + 2}$$

22) Solve for C if  $F = \frac{9}{5}C + 32$   

$$\frac{F-32}{\frac{9}{5}} = \frac{9C+32-32}{\frac{9}{5}}$$

$$\frac{5}{9}(F-32) = \frac{9C}{9}$$

$$\boxed{C = \frac{5}{9}F - \frac{160}{9}}$$

Linear Word  
problems

Consecutive integer: use  
x, x+1, x+2, etc  
Consecutive even **AND**  
odd: use x, x+2, x+4, etc

Perimeter: draw rectangle  
and label sides (let x  
equal shortest side)

Average: add all numbers  
plus x and divide by  
number you have

23) find 3 consecutive odd integers  
that add up to 309. Find the  
integers.  

$$x + (x+2) + (x+4) = 309$$

$$\frac{3x+6}{-6} = \frac{309}{-6}$$

$$\frac{3x}{3} = \frac{303}{3}$$

$$\boxed{x = 101}$$

$$\boxed{103}$$

$$\boxed{105}$$

24) find 4 consecutive integers  
that add up to 130.  

$$x + (x+1) + (x+2) + (x+3) = 130$$

$$\frac{4x+6}{-6} = \frac{130}{-6}$$

$$\frac{4x}{4} = \frac{124}{4}$$

$$\boxed{x = 31}$$

$$\boxed{32}$$

$$\boxed{33}$$

$$\boxed{34}$$

25) The length of a rectangle is  
more than twice the width. Find  
length and width if the perimeter is  
48.  

$$2l + 2w = 48$$

$$2(2w+3) + 2w = 48$$

$$4w+6+2w = 48$$

$$6w+6 = 48$$

$$\frac{-6}{-6} \quad \frac{-6}{-6}$$

$$\frac{6w}{6} = \frac{42}{6}$$

$$\boxed{w = 7}$$

$$\boxed{l = 17}$$

26) Susie needs to figure out what  
she needs on her 5<sup>th</sup> test to make  
an A in Algebra. Her first four tests  
were 95, 80, 85, and 90. What  
does Susie need to make on the  
5<sup>th</sup> test to have at least a 90 in  
Algebra?  

$$x + 95 + 80 + 85 + 90 \geq 90 \cdot 5$$

$$\frac{x+350}{5} \geq \frac{450}{5}$$

$$x+350 \geq 450$$

$$\frac{-350}{-350} \quad \frac{-350}{-350}$$

$$\boxed{x \geq 100}$$

Wow!

$w = x$   
 $l = 2x + 3$   
 $P = 2l + 2w$   
 $48 = 2(2x+3) + 2x$   
 $48 = 4x+6 + 2x$   
 $48 = 6x+6$   
 $\frac{-6}{-6} \quad \frac{-6}{-6}$   
 $\frac{42}{6} = \frac{6x}{6}$   
 $x = 7$   
 $l = 2(7)+3 = 17$   
 $w = x = 7$   
 $l = 2x+3 = 17$

$x + 95 + 80 + 85 + 90 \geq 90$   
 $\frac{x+350}{5} \geq \frac{450}{5}$   
 $x+350 \geq 450$   
 $\frac{-350}{-350} \quad \frac{-350}{-350}$   
 $x \geq 100$   
 Wow!