



Welcome to Honors Algebra I

Your Summer assignment:

Please complete all the problems in this packet. If you need extra paper, attach it to the packet. *Make sure answers are circled, neat, and easily readable.*

Make sure that you read and follow all the instructions!!

Make sure you use pencil-USE PEN & LOSE 10!!!

Your summer assignment will count for 5 homework grades and will be collected on the first day of class.

Within the first week of school there will be a test on the summer assignment material. It is your responsibility to come to school on the first day with the questions that you could not work out on your own.

For the first day of class:

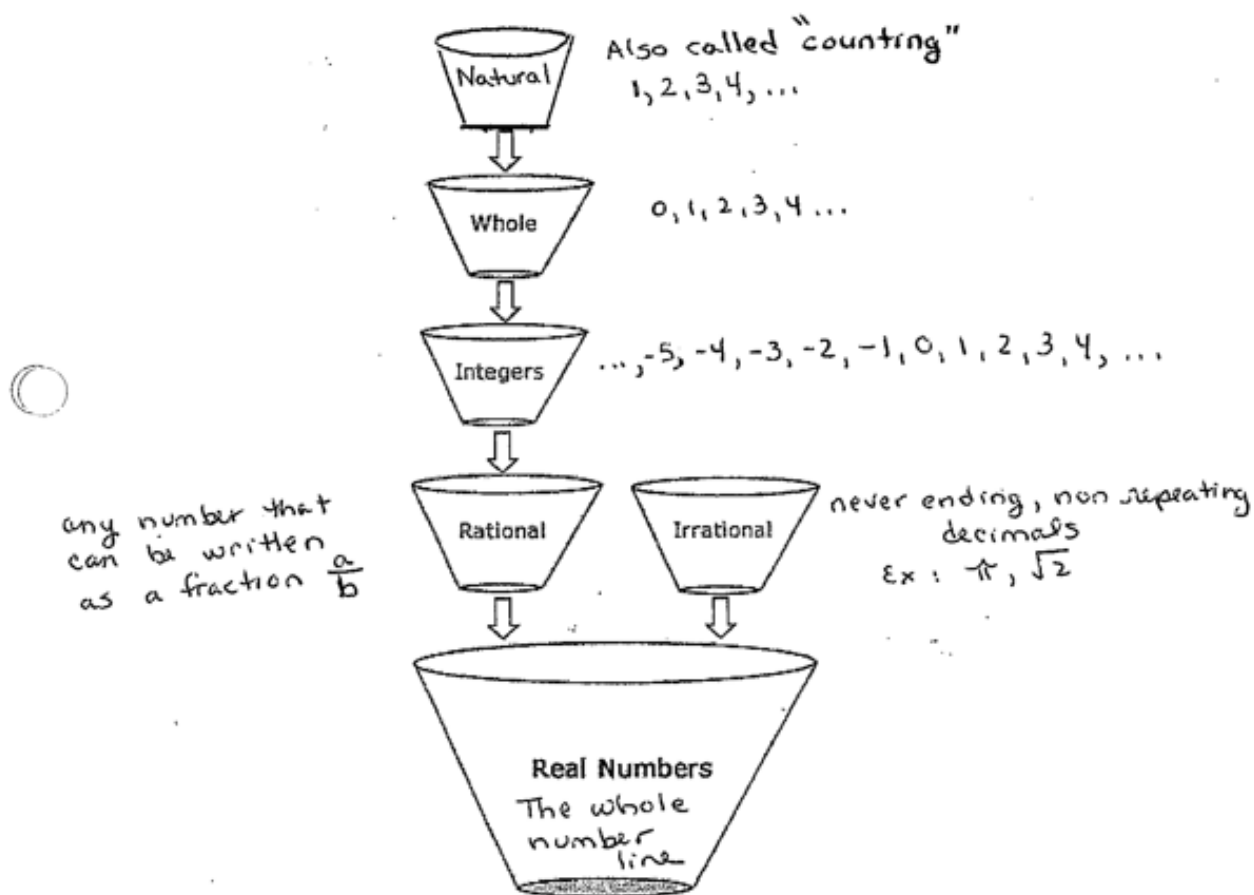
Have your summer assignment in order, stapled and ready to turn in.

Have an Honors Algebra 1 three ring binder ready with dividers, white lined paper and graph paper.

Bring your graphing calculator. We recommend the ti-84 or ti-84plus.

Bring your pencils and a ruler. You also must have an eraser!!

Sets of Numbers



Classify each real number into the appropriate sets. (Refer to the diagram on page 2: Natural, Whole, Integer, Rational, Irrational, Real)

1) -15

2) 11

3) $\sqrt{30}$

4) $\frac{17}{3}$

5) 6

6) 0

7) -13

8) 3

9) $\frac{10}{11}$

10) 14

11) -13

12) π

Find the reciprocal of the number

1.) $\frac{1}{4}$

2.) 26

3.) $7\frac{4}{5}$

Find the sum or difference of these fractions without a calculator then reduce to simplest form. (Improper fractions are OK)

1. $\frac{1}{2} + \frac{2}{3} =$ _____ 2. $\frac{8}{12} + \frac{8}{11} =$ _____

3. $\frac{2}{7} + \frac{6}{10} =$ _____ 4. $\frac{1}{6} + \frac{6}{11} =$ _____

1. $\frac{5}{7} - \frac{2}{3} =$ _____ 2. $\frac{2}{3} - \frac{3}{8} =$ _____

3. $\frac{6}{7} - \frac{2}{6} =$ _____ 4. $\frac{4}{6} - \frac{4}{8} =$ _____

Multiply or divide. (No calculator, give answer in simplest form)

1. $\frac{1}{4} \div \frac{9}{10} =$ _____

2. $\frac{5}{9} \div \frac{1}{2} =$ _____

1. $\frac{6}{8} \times \frac{3}{12} =$ _____ 2. $\frac{1}{2} \times \frac{4}{5} =$ _____

3. $\frac{2}{4} \times \frac{7}{8} =$ _____ 4. $\frac{2}{7} \times \frac{7}{9} =$ _____

Evaluate each expression with the given values using correct order of operations. Simplify.

1) $n^2 - m$; use $m = 7$, and $n = 8$

2) $8(x - y)$; use $x = 5$, and $y = 2$

3) $yx \div 2$; use $x = 7$, and $y = 2$

4) $m - n \div 4$; use $m = 5$, and $n = 8$

5) $x - y + 6$; use $x = 6$, and $y = 1$

6) $z + x^3$; use $x = 1$, and $z = 19$

7) $y + yx$; use $x = 15$, and $y = 8$

8) $q \div 6 + p$; use $p = 10$, and $q = 12$

Simplify each expression (no calculator).

1) $3(6 + 7)$

2) $5 \times 3 \times 2$

3) $72 \div 9 + 7$

4) $2 + 7 \times 5$

Simplify each expression. (no calculator)

5) $9 + 8 - 7$

6) $9 - 32 \div 4$

7) $5(10 - 1)$

8) $48 \div (4 + 4)$

9) $20 \div (4 - (10 - 8))$

10) $40 \div 4 - (5 - 3)$

Combine like terms:

1) $-6k + 7k$

2) $12r - 8 - 12$

3) $n - 10 + 9n - 3$

4) $-4x - 10x$

5) $-r - 10r$

6) $-2x + 11 + 6x$

Combine like terms.

1) $10x + 3y + 5x =$ _____

2) $2x^2 + 7y + 4x + 6x^2 =$ _____

3) $9y + 3y + 5x =$ _____

4) $2y^2 + 7y + 4y + 6y^2 =$ _____

5) $8x + y - 2x =$ _____

6) $x^2 + 7y - 4y + 9x^2 =$ _____

7) $14x - 3x + 2y - y + 3x =$ _____

8) $5y^2 + 5y + 5y + 5x^2 =$ _____

9) $23x + 3y - 5x =$ _____

10) $18x^2 + 3y + x + 6x^2 =$ _____

Distribute and Simplify each expression.

21) $-4 + 7(1 - 3m)$

22) $-5n + 3(6 + 7n)$

23) $-2n - (9 - 10n)$

24) $10 - 5(9n - 9)$

25) $9a + 10(6a - 1)$

26) $-9(6m - 3) + 6(1 + 4m)$

27) $-10(1 - 9x) + 6(x - 10)$

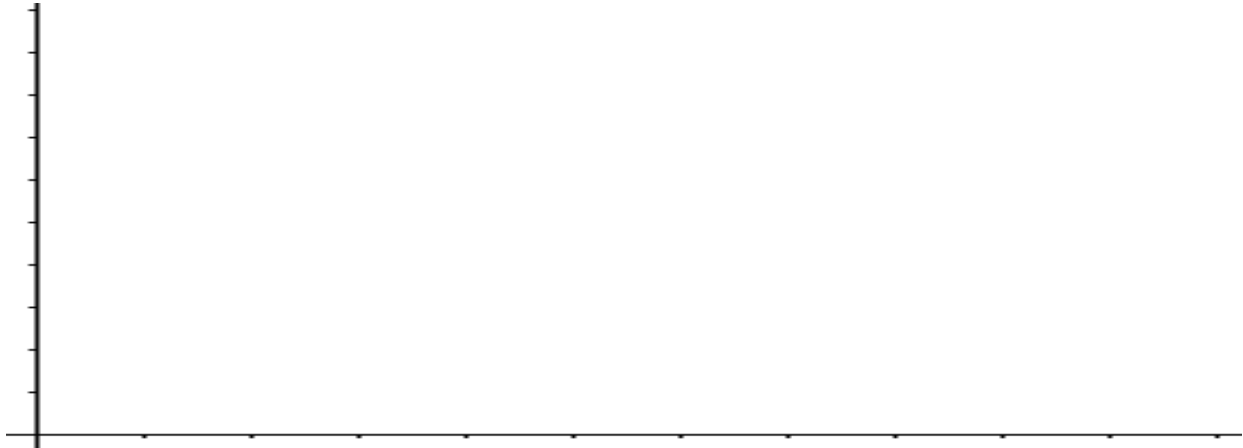
28) $5(-2n + 4) + 2(n + 3)$

29) $-3(10b + 10) + 5(b + 2)$

30) $-7(n + 3) - 8(1 + 8n)$

Eye Color	Blue	Brown	Green	Hazel	Other
# of Students with Characteristic	4	12	0	0	2

Make a **bar graph** of the eye colors in this classroom using the graph below:



1. Which eye color is *most* popular (the maximum) in our classroom? _____
2. Which eye color is *least* popular (the minimum) in our classroom? _____
3. What is the *range* of this data? In other words, how many more students have the most popular eye color rather than the least popular eye color?

Shoe Size	5	6	7	8	9	10	11	12
# of Students with Characteristic	1	1	1	0	5	4	3	1

Make a **dot plot** of the shoe size comparisons of this classroom using the graph below:



A **dot plot** is useful to...

1. What is the *maximum* of this data?
2. What is the *minimum* of this data?
3. What is the *range* of the given data?

4. Complete the following questions regarding measures of center:

5.

1) The heights (in cm) of 9 students of a class are as follows:

155, 160, 145, 149, 150, 147, 152, 144, 148

Find the median of this data.



2) Find the mode and range of the following quiz scores (out of 10) obtained by 10 students.

4, 6, 5, 9, 3, 2, 7, 7, 1, 8

3) The following number of goals were scored by a team in a series of 10 matches.

2, 3, 4, 5, 0, 1, 13, 23, 4, 3

Find the mean and median of these scores.

4) On a mathematics test given to 15 students, the following scores(out of 100) were recorded:

41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40,
42, 52, 60,

Find the mean, median and mode of this data.

6.

7.

8.

9.

Complete all

Restaurant Menu
Statistics, Probability & Discrete Mathematics

7. Restaurant Menu

A restaurant offers a dinner special on its menu as shown below.

Three-Course Dinner Special \$9.95 (Choose one dish from each group)		
<u>Salad</u>	<u>Main Dish</u>	<u>Dessert</u>
Mixed Greens Salad	Eggplant Parmigiana	Chocolate Mousse
Waldorf Salad	Grilled Salmon	Pecan Pie
Caesar Salad	Pork Roast	
	Chicken Piccata	

- a. How many different three-course meals are possible that consist of one salad, one main dish, and one dessert? Show your work or explain how you found your answer.
- b. The manager wants to add one item to the menu that will increase the number of possible three-course meals. Which should be added: one salad, one main dish, or one dessert to give the greatest number of possible choices of three-course meals? Show your work or write an explanation to justify your answer.

Remember to show your work and write your answer in your answer booklet.

Complete all

Carnival Spinner

Statistics, Probability, and Discrete Mathematics

2. Carnival Spinner

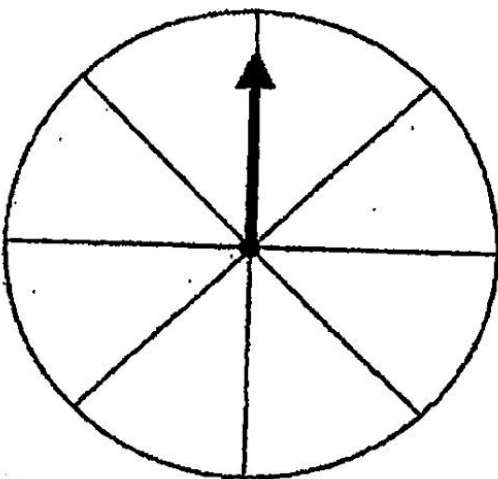
At a carnival booth, contestants pick a color on a large spinner. A prize is won if the arrow stops on the color they pick. The spinner is divided into 8 equal sections, as shown in your answer booklet. Each section is colored green, yellow, red, or blue.

The results for a sample of spins are shown in the chart below.

Result	Number of Spins
Green	38
Yellow	58
Red	35
Blue	19

Use the results to predict the color of each of the sections on the spinner, and label each section of the spinner with the letter of a color: (G) green, (Y) yellow, (R) red, or (B) blue. Show the mathematics you used or explain how you decided how many sections should be labeled with each letter.

Remember to show your work and write your answer in your answer booklet.



Show all steps to solve these equations:

1.) $-20 = -4x - 6x$

2.) $22 = -1 + 2n - 5$

3) $8x - 2 = -9 + 7x$

4) $a + 5 = -5a + 5$

5) $4m - 4 = 4m$

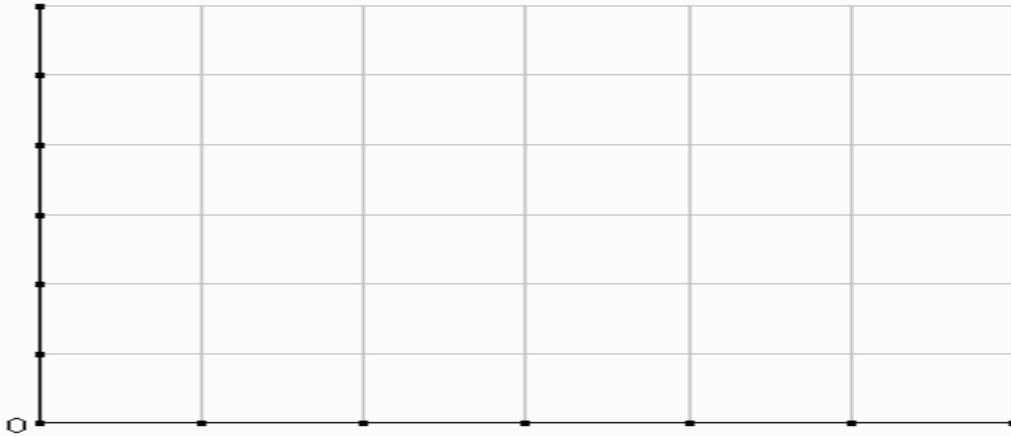
6) $p - 1 = 5p + 3p - 8$

7.) $5p - 14 = 8p + 4$

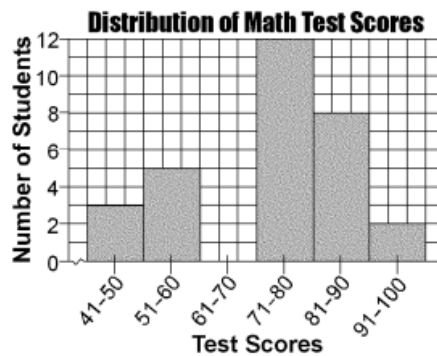
8.) $3(x+2) = 18$

Use the following table to make a scatterplot.

(x)Length of call (min)	3	5	12	19	23	30
(y)Cost of call (\$)	1.50	2.40	5.55	8.70	10.50	15.00



The graph below shows the distribution of scores of 30 students on a mathematics test



Complete the frequency table below using the data in the frequency histogram shown.

Test Scores	Frequency
91-100	
81-90	
71-80	
61-70	
51-60	
41-50	

- 1.) How many students were in the math class?_____
- 2.) How many students received a grade below 60?_____
- 3.) How many students passed the exam? (over 70)_____

Find the slope between the points. (Remember $\frac{0}{\#} = 0$, $\frac{\#}{0} = \text{undefined}$)

1.) (3,1) & (4,7)

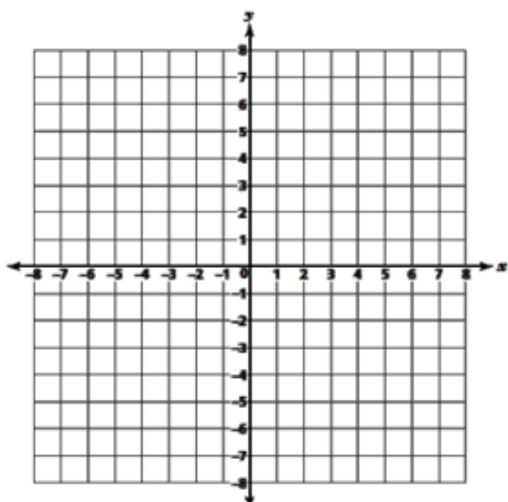
3.) (3,4) & (0,2)

2.) (-2, 6) & (1,3)

4.) (5,-1) & (4, -1)

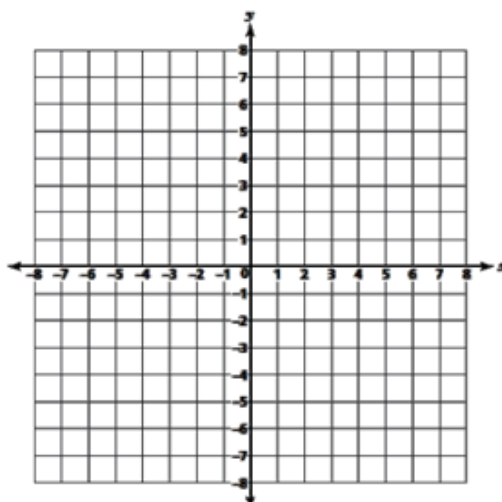
1 Complete the table for $y = x + 3$ and graph the resulting line.

x	y
-5	
0	
4	



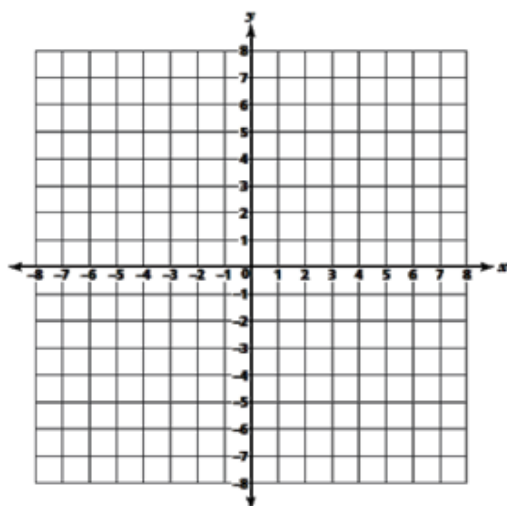
3 Complete the table for $y = -2x$ and graph the resulting line.

x	y
-4	
0	
3	



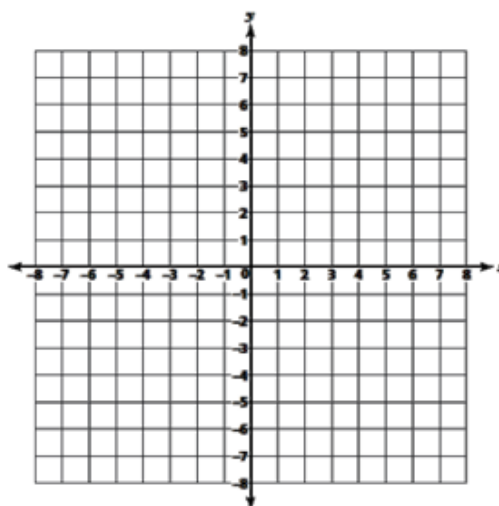
- 2** Complete the table for $y = 3x + 1$ and graph the resulting line.

x	y
-3	
0	
2	



- 4** Complete the table for $y = -x - 2$ and graph the resulting line.

x	y
-3	
0	
4	



Write the equation for the line given the slope and y intercept.

1) Slope = -1 , y-intercept = -5

2) Slope = -1 , y-intercept = -1

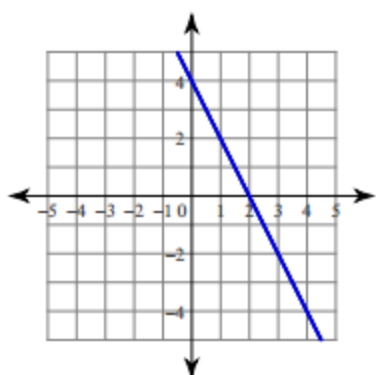
3) Slope = $\frac{3}{2}$, y-intercept = 0

4) Slope = $-\frac{3}{4}$, y-intercept = -4

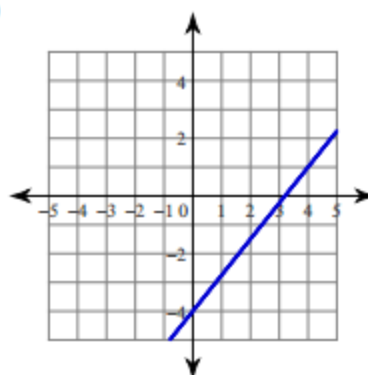
5) Slope = $-\frac{3}{5}$, y-intercept = 2

Find the slope and y-intercept of each line. Write the equation of the line.

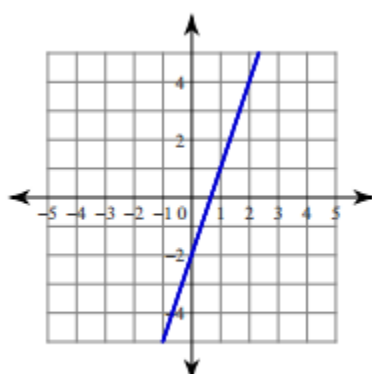
6)



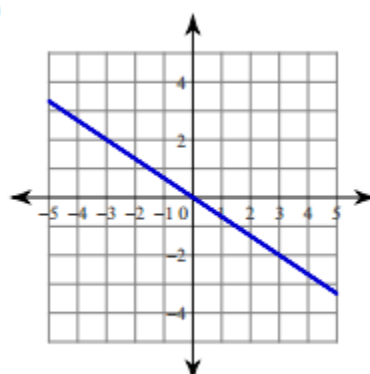
7)



8)



9)



Find the value of the unknown number in each proportion.

a.) $\frac{m}{2} = \frac{3}{4}$

b.) $\frac{n}{14} = \frac{4.5}{7}$

c.) $\frac{27}{18} = \frac{6}{7}$

d.) $\frac{x}{-3} = \frac{7}{-10.5}$

Find the unknown number.

a.) 75% of 68 is what number?

b.) 120% of 37 is what number?

c.) 270 is what percent of 90?

Write each multiplication expression in exponent form: Ex) $2 \cdot 2 \cdot 2 = 2^3$

1) $3 \cdot 3 \cdot 3 \cdot 3$

2) $10 \cdot 10 \cdot 10$

3) $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

Rewrite each expression as a repeated multiplication and find its value

1) 2^6

2) 6^3

3) $(\frac{2}{3})^2$

Write each number in exponent form. Example: $25 = 5^2$

1) 32

2) 27

3) 64

Put in Simplest form:

1.) $x \cdot x \cdot x \cdot x$

2.) x^{-2}

3.) $4x^2 \cdot 3x^3$

Complete all

Writing Equations to Solve Real World Problems

Strategy:

- 1) Define a variable to represent one of the quantities you don't know. Then write expressions using the same variable to represent the other quantities in the problem you don't know.
- 3) Write an equation that uses the variables and expressions you have defined along with information from the problem.
- 4) Simplify and then solve the equation.
- 5) Use your solution to answer the original question in the problem.

Example:

The Sears Tower in Chicago is 40 feet taller than the Empire State Building in New York. The sum of their heights is 2868 feet. How tall is the Empire State Building?

- Define a variable (and possibly related expressions).

x = the height of the Empire State Building

$x + 40$ = the height of the Sears Tower

- Write an equation.

$$x + (x + 40) = 2868$$

- Simplify and solve the equation

$$x + (x + 40) = 2868$$

$$2x + 40 = 2868$$

$$\underline{- 40} \quad \underline{- 40}$$

$$\frac{2x}{2} = \frac{2828}{2}$$

$$x = 1414$$

- Answer the original question. The Empire State Building is 1414 feet tall.

1. The freshman class is selling chocolate bars to raise money. They purchased 1250 chocolate bars and paid a delivery fee of \$25. The total cost, including the delivery fee, was \$800. What was the cost of each chocolate bar?

Define your variable:

Write an equation to represent the situation:

Solve the equation:

Write the final answer to the problem in a sentence:

2. A delivery person uses a service elevator to bring boxes of books up to an office. The delivery person weighs 160 lb and each box of books weighs 50 lb. The maximum capacity of the elevator is 1000 lb. How many boxes of books can the delivery person bring up at one time?

Define your variable:

Write an equation to represent the situation:

Solve the equation:

Write the final answer to the problem in a sentence:

3. Two college friends rent an apartment. They have to pay the landlord two months' rent and a \$500 security deposit when they sign the lease. The total amount they pay the landlord is \$2800. What is the rent for one month?

Define your variable:

Write an equation to represent the situation:

Solve the equation:

Write the final answer to the problem in a sentence:

4. A website allows musicians to post their songs online. Then people using the site can buy any of the posted songs. Suppose each musician must pay a one-time fee of \$5 to use the website. Each musician earns \$.09 every time a particular song of his or hers is downloaded. If a musician earned \$365 for a particular song, how many times was the song downloaded?

Define your variable:

Write an equation to represent the situation:

Solve the equation:

Write the final answer to the problem in a sentence: