8th Grade Assignment – Week #32

<u>Individual Work</u>

- See how far you can get with **Year-End Review - Practice Sheet #3**. Focus on the problems that you think would be most helpful for you.

<u>Group Assignments</u>:

fir Tuesday

- **Factors.** In Monday's lecture, we found several different numbers that had 12 factors. Some of the possible numbers that have 12 factors are:

   2^{11} (=2048), 5^{11} (=48828125), $2^3 \cdot 5^2$ (=200), $3^5 \cdot 17^1$ (=4131), $7^1 \cdot 11^1 \cdot 13^2$ (=13013)

   1) Find several different numbers that have 8 factors?
      (Can you do this where the prime factorization has different exponents, like we did with the above example for 12 factors?)

   2) Find several different numbers that have 7 factors?
      (Can you do this where the prime factorization has different exponents?)

   3) Find the smallest number with 45 factors.

for Tuesday or Thursday:

- **Greatest Common Factors (GCF)**. We have now seen three methods for finding the GCF of large numbers. For each pair of numbers, find the GCF by using these two methods: prime factorization, and the *remainder algorithm* (as explained in Monday's lecture).

   4)   80 and 48

   5)   29400 and 192500

- **Two-Variable Equations.** As explained in Monday's lecture, two variable equations normally have infinitely many pairs of solutions.

   6)   for $2x + 3y = 17$, if $x = 4$, find the value for y.

   7)   for $5x – 4y = 3$, if $y = 6$, find the value for x.

   8)   for $x – 6y = 11$, if $x = 0$, find the value for y.

   9)   Find several different solutions for $2x – 5y = 19$
        (Choose your own values for either x or y.)

   10) *Diophantine Equations*.
         Find several different integer solutions (no fractions or decimals!) for
         $3x + 4y = 31$

- Work together on **Year-End Review - Practice Sheet #4.**

End-of-Year Review − Practice Sheet #3

1) Calculate the area.

2) Calculate the volume.
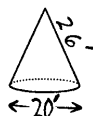
3) A triangle has three sides measuring 23cm, 51cm, and 57cm. Is it an acute, an obtuse, or a right triangle?

4) Use the square root algorithm to calculate $\sqrt{2639.9044}$. (It works out exactly!)

5) What is 94% of 4200?

6) 250 is what percent of 400?

7) 400 is what percent of 250?

8) What percentage increase is it going from 280 to 330?

9) What percentage decrease is it going from 330 down to 280?

10) What is 17 decreased by 60%?

11) A house is purchased for $210,000. What will the value of the house be after 20 years, if it increases at a rate of 8.5% per year during that period?

12) Sophia's investment doubled over a 6-year period. Approximately, what was her average annual rate of return during this period?

13) Kevin has 20% more money than Dan. How much does Kevin have if Dan has $540?

14) Kevin has 20% more money than Dan. How much does Dan have if Kevin has $540?

15) Kevin has 20% less money than Dan. How much does Dan have if Kevin has $540?

16) A recipe calls for 50mℓ of milk to make two dozen muffins. How much milk is needed in order to make 60 muffins?

17) It takes Sue 40 minutes to pick 7 baskets of apples. How long does it take her to pick 18 baskets?

18) **Unit Conversions**

a) 7.3 oz ≈ _____ kg

b) 470 cm ≈ _____ yd

c) 0.39 ℓ ≈ _____ fl.oz.

d) 17 km^2 ≈ _____ mi^2

e) 8 $\frac{cm}{s}$ ≈ _____ mph

f) 63 $\frac{kg}{m^3}$ = _____ $\frac{g}{cm^3}$

19) A block of balsa wood has a volume of 0.42 m^3. What does the block weigh given that Balsa wood has a density of about 130 kg/m^3?
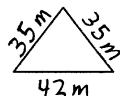
20) A ball weighs 10 pounds and is 8 inches in diameter. What is its density (in lb/ft^3)? Does it float or sink?

End-of-Year Review – Practice Sheet #4

1) Find X, rounded to 3 significant digits. Use the square root algorithm.

$$x \quad 11cm$$
$$14cm$$
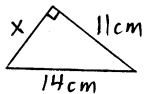
2) Calculate the area.

$$35m \quad 35m$$
$$42m$$

3) What is 350% of 40?

4) What is 800 increased by 0.4%?

5) 68 is what percent of 800?

6) 16.32 is 2.4% of what?

7) 6.3 is 28% less than what?

8) What percentage decrease is it going from 375 down to 90?

9) The population of a city is about 382,000 and is increasing by 3.4% per year. What will its population be in 30 years?

10) If the population of a country is growing at 4% per year, then about how long will it take the population to double?

11) Bob weighs 15% more than Pete. If Pete weighs 64kg…
   a) How much does Bob weigh?

   b) What percent less does Pete weigh than Bob?

12) Pete weighs 15% less than Bob. If Pete weighs 64kg…
   a) How much does Bob weigh?

   b) What percent more does Bob weigh than Pete?

13) After 50 minutes of shoveling, Jeff is $^4/_5$ of the way done with shoveling the snow from the sidewalk. How many more minutes will it be until he is finished?

14) On a map of Rocky Mountain National Park, the distance between Peaceful Valley and Gibraltar Lake measures 13 inches. The actual distance between these two places is 8.2 miles.
   a) What is the verbal scale in the U.S. system?

   b) What is the fractional scale of the map?

   c) What is the verbal scale in the metric system?

15) A block measures 6" by 8" by 12" and weighs 30 pounds. What is its density (in oz/in^3)?

16) A log has a density of 0.87 g/cm^3 and weighs 34.2 kg. What is its volume (in m^3)?

17) A standard men's basketball weighs 21 ounces and has a circumference of 30 inches. What would be the weight of a standard-sized men's basketball if it were solid gold?

18) A cube measures 14 inches along each edge, and is filled with water.
   a) What is the cube's capacity, in gallons?

   b) What is the weight of the water?

19) A certain type of Cheese sells for $4.20/lb in the U.S. and for 140 pesos/kg in Mexico. In which place is it cheaper, and by what percent is it cheaper? (The exchange rate is $0.09113\frac{dollars}{peso}$.)