7th Grade Assignment – Week #22

Individual Work

- See how much you can do with **Percents Sheet #6.**

Group Assignments:

Work on what is below on either Tuesday or Thursday, as needed and/or desired.

1.   **Hand Washing**

Hank's mother tells him that she will pay him $60 per hour to wash his hands. How much money does he get if it takes him 6 seconds to wash his hands?

2.   **Four Congruent Pieces**

The figure shown here is as it appears to be – a square with a quarter of it missing. How can it be cut into four congruent pieces?
("Congruent" means equal shape and equal size.)
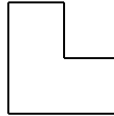
3.   **Making a Math Clock!** Follow the instructions at the end of this document.

4.   Work together on some of the more challenging problems on **Percents Sheet #6.**

Percents – Sheet #6

1) Find each answer by using the easiest method possible. Show work on a separate sheet for those problems that can't be done in your head.

a) What is 25% of 140?

b) What is 80% of 450?

c) What is 15% of 220?

d) What is 1% of 741?

e) What is 33⅓% of 1200?

f) What is 83⅓% of 12,000?

g) What is 160% of 25?

h) What is 0.02% of 3000?

i) 8 is what percent of 16?

j) 8 is what percent of 160?

k) 70 is what percent of 210?

l) 31 is what percent of 310?

m) 14 is what percent of 150?

n) 14 is what percent of 16?

o) 71 is 10% of what number?

p) 40 is 20% of what number?

q) 300 is 66⅔% of what number?

r) 78 is 17% of what number?

s) 5022 is 81% of what number?

2) Quickly Estimate.
a) What is 71% of 245?

b) What is 9% of 5630?

c) What is 43% of 7?

d) 19 is what percent of 82?

e) 63 is what percent of 130?

f) 8567 is what percent of 9100?

3) What do you end up with if you increase 55 by 40%, and then decrease that result by 40%?

4) Increase and decrease.
a) Going from 5200 up to 6500 is what percentage increase?

b) Going from 6500 down to 5200 is what percentage decrease?

c) Why were the answers to the above two problems different?

5) Jen paid $213 for a tent that was priced at $200. What was the tax rate as a percent?

6) John bought a shirt at a 40% discount that was originally marked at $45. What was the price after the discount?

7) A bank offers a savings account with 2% interest compounded annually. What will be the balance of an account after 5 years, if the initial deposit was $600? (Assume no further activity in the account.)

8) **Challenge!**
The discounted price of a bike was $224, and the discount rate was 20%. What was the original price?

Review

9) Reduce $\frac{5175}{17775}$

10) $42\frac{2}{9} - 38\frac{4}{5}$

11) $\dfrac{5\frac{3}{5}}{1\frac{2}{5}}$

Making a Math Clock

- Normally, a clock has the numbers 1-12 on it. Your task is to replace each normal number on the clock with a calculation or an expression which is equal to the normal number in that position.
  For example, you could replace the number 1 with 7634-7633 – but that isn't very interesting.
- The task for this assignment is for the group to make its own math clock. We will make this more interesting by adding a constraint – in order to create the desired number, you must create an expression that uses each of the digits from 1-8 exactly one time.

  For example, for the number 10, you could use this expression: $\left(\frac{48}{16}\right)^3 - (2 \times 5) - 7$. Notice that I used each digit from 1-8 exactly once.
- Below, is a math clock I made with a slightly different rule: I used the digits 5, 6, 7, 8, 9, 0. You should explain to one another why each expression is truly equal to its position on the clock.
- Here is how your group should work on this. Start with 1 (the first clock number). Everyone in the group should try to come up with an expression that uses all the digits from 1-8, where the final answer is 1. After some time working alone, everyone should share their expressions with the others in the group. See how many different expressions you can come up with. Then decide as a group which expression you'd like to have for that position of the group's math clock.
- Proceed in a similar way through the rest of the numbers (2-12) on the math clock.
- Likely, you will not finish the whole clock in one meeting. You may elect to continue working on this math clock in the next group meeting, or decide that individuals should create their own math clock and then share it with the group.
- There is a blank Math Clock below, if you wish to use that.
- As an extra project, you can even make this into a woodworking project, and create a wooden clock with its own moving clock hands.

Clock positions:

- 12: $\dfrac{70}{5} - \sqrt[9-6]{8}$
- 1: $(6-5)^{7089}$
- 2: $\dfrac{(8-6)^5}{9+0+7}$
- 3: $\dfrac{60 \times (9-7)}{8 \times 5}$
- 4: $\sqrt{\dfrac{80}{(7-6)^9 \times 5}}$
- 5: $9+6-7-8+5+0$
- 6: $8-9+\sqrt{56-7+0}$
- 7: $\sqrt{576+0} - 8 - 9$
- 8: $\dfrac{60}{5} - \dfrac{8}{9-7}$
- 9: $5 \times (90-87) - 6$
- 10: $\dfrac{50}{68-(9\times7)}$
- 11: $68-57 + (9 \times 0)$