

7th Grade Assignment – Week #14

Individual Work

- Do as much as you can with the problems on **Ratios (Part I) Sheet #6**.
Be sure to do the Shadow Problem (#14)!

Group Assignments: Puzzles! For Tuesday and Thursday

1. **Two Jugs**

You have two jugs – one with a capacity of four liters and one with a capacity of nine liters – and you have plenty of water. There are no marks on the jugs (indicating one liter, two liter, etc.), and you may not put a mark on a jug. You may only use these two jugs.

How can you get 1 liter into one of the jugs? How can you get 2 liters in a jug? 3 liters in a jug? 5 liters in a jug? 6 liters in a jug? 7 liters in a jug? 8 liters in a jug? (It may be best to do the easiest ones first.)

2. **More Pets**

Alex, Ben, Charlie, and Dan each have a lot of pets. Alex has 4 fewer pets than Charlie. Ben has 3 fewer pets than Alex. Charlie has one more pet than Dan. Ben and Charlie have 15 pets between them. How many pets do the four boys have in total?

3. **Concert Tickets**

Tickets at a concert cost \$8 for section A and \$4.25 for section B. In total, 4500 tickets were sold, worth \$30,000. How many of each type of tickets were sold?

4. **The Money Wizard**

Peggy takes all of her money to the Money Wizard. The Money Wizard doubles her money, but then charges her a \$6 fee. Peggy then takes the resulting amount of money and returns the next day to the Money Wizard. Her money is once again doubled, and then she pays the \$6 fee. The same thing happens on the third day – her money is doubled and then she pays the \$6 fee – but then she is left with nothing. How much money did she start with?

Ratios, Part I – Sheet #6

1) A recipe for salad dressing calls for 1 cup of oil and $1\frac{1}{2}$ fl. oz. of vinegar.

a) What is the ratio of oil to vinegar in whole number form?

b) What is the ratio of oil to vinegar in decimal form?

c) If the recipe is to be enlarged, how much oil is needed (in cups) for 5 fl. oz. of vinegar?

d) How much vinegar is needed for $2\frac{1}{4}$ cups of oil?

2) Convert these ratios from whole number form to decimal form. The decimals may repeat!

a) $X:Y = 18:5$

b) $Y:X = 5:18$

3) Convert these ratios from decimal form to whole number form.

a) $X:Y = 3.5:1$

b) $M:K = 0.32:1$

4) A bag contains only blue marbles and green marbles. The ratio of blue to green is 3 to 2. ($B:G = 3:2$)

a) If there are 18 green marbles, then how many blue marbles are there?

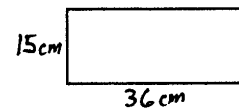
b) What proportion of the bag is blue marbles?

c) What proportion of the bag is green marbles?

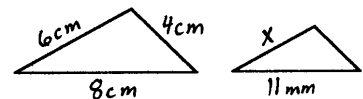
d) If there is a total of 30 marbles in the bag, then how many are green and how many are blue?

5) A gallon of milk is poured into two pitchers such that the ratio of their volumes is 3 to 5. How much milk is in each pitcher (in fl.oz.)?

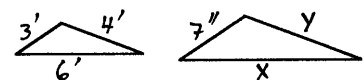
6) Write the four ways to express the ratio of this rectangle's dimensions.



7) Find X given that these two triangles are similar.



8) Find X and Y given that the triangles are similar.



- 9) On a certain tourist train, the ratio of first class seats to economy class seats is 3 to 7.
- a) If there are 210 first class seats, then how many economy class seats are there?
- b) If there are 210 economy class seats, then how many first class seats are there?
- c) If there are a total of 210 seats, then how many are economy and how many are first class?

Review

10) $\frac{3}{4} - \frac{11}{18}$

11) $5\frac{2}{5} \cdot 1\frac{7}{8}$

12) $5\frac{2}{5} \div 1\frac{7}{8}$

13) What is $\frac{2}{5}$ of $6\frac{1}{4}$?

14) The Shadow Problem.

Choose a narrow, tall (at least 10 feet) object outside to calculate the height of (e.g. a tree or a telephone pole). At a moment when there is sun, measure the length of the object's shadow. Take a long pole (or a stick) and measure its height and the length of its shadow when held vertically next to the tall object.

Now, draw two triangles – one for the tall object and one for the pole – roughly to scale. With each triangle, one side represents the length of a shadow, one side represents the height, and the third side (which won't be used) represents the line that could be drawn from the top of the object to the end of its shadow. Label these triangles with the lengths that you measured and label the height of the object (which is what you are trying to calculate) as X. Calculate the height of the object. Round your answer to three significant figures.