7ᵗʰ Grade Assignment – Week #12

<u>Individual Work</u>

- As much as you can with the following:
  - **Ratios (Part I) Sheet #3**: Problems #3-18
  - **Ratios (Part I) Sheet #4**: Problems #4

<u>Group Assignments</u>:

For Tuesday

Together, discuss and complete these problems from the workbook

- **Ratios (Part I) Sheet #3**, problems #1 and #2 (all parts of both problems).
- **Ratios (Part I) Sheet #4**, problem #3

For Thursday

1. **A Handful of Coins.**

   Bob has a handful of nickels and dimes worth $2.45. How many dimes are there if there are 4 more nickels than dimes?
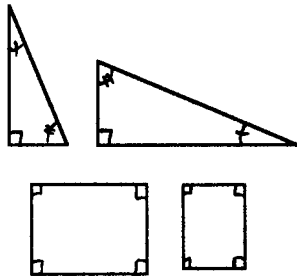
2. **Puzzle: Chessboard Squares**

   How many total squares are there on a chessboard? Keep in mind that a chessboard is 8 by 8, which means that it has 64 small (1 by 1) squares. But there are also squares that are 2 by 2, 3 by 3, 4 by 4, etc. (One of the 4 by 4 squares is shown here.)
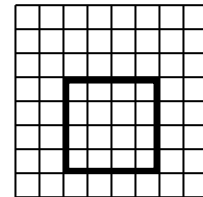
Ratios, Part I – Sheet #3

1) Consider these figures:

a) Are the two triangles definitely similar?

b) Are the two rectangles definitely similar?

c) A triangle has sides of length 10m, 24m, and 26m. Give the lengths of the sides of any other triangle that is similar to it.

d) A rectangle has a 10" base and an 8" height. Give the dimensions of any other rectangle that is similar to it.

2) Is each statement *true* or *false*?

a) All triangles are similar.

b) All isosceles triangles are similar.

c) All equilateral triangles are similar.

d) All equiangular hexagons are similar.

e) All equilateral hexagons are similar.

f) All regular hexagons are similar.

g) All circles are similar.

3) Give the reciprocal.

a) ¾

b) ¹⁄₉

c) ⁵⁄₃

d) 2⅜

e) 3

Give the reciprocal as a decimal.

f) 0.3

g) 2.2

4) Given that the ratio of *milk to water* is 3 to 5 (M:W = 3:5)

a) How much milk is needed for 15 cups of water?

b) How much water is needed for 15 cups of milk?

5) What is the ratio of flour to water, given…

a) 2 quarts of water and 10 cups of flour?

b) ½ cup of flour and 6 fl. oz. of water?

c) 5½ cups of water and 3¼ cups of flour?

6) Proportions as a fraction.

a) 160 is what proportion of 240?

b) 240 is what proportion of 160?

c) 1.25 is what proportion of 1.75?

d) 1.75 is what proportion of 1.25?

7) A basket of fruit has 10 guavas and 15 bananas…

a) What is the ratio of guavas to bananas?

b) What proportion of the basket is guavas?

c) What proportion of the basket is bananas?

8) Look at the "Three Thoughts of a Ratio" from the previous worksheet. Given a ratio of guavas to bananas that is equal to 7 to 4 (G:B = 7:4)…

a) What are the three thoughts associated with this ratio? Write each thought both as an equation and as a sentence.

b) If there are 56 guavas, then how many bananas are there?

c) If there are 56 bananas, then how many guavas are there?

d) If there are 121 guavas and bananas combined, then how many bananas are there?

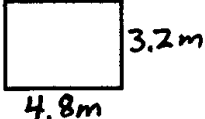9) The ratio of Gabe's height to Nancy's height is 6 to 5 (G:N = 6:5).

a) What are the three thoughts (as equations only) associated with this ratio?
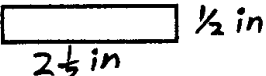
b) What is Gabe's height if Nancy's is 1.75m?

c) What is Nancy's height if Gabe's is 1.56m?

d) What is Nancy's height if Gabe's is 7'6"?

10) Give the ratio of the base to the height.

a)

3.2m
4.8m

b)

½ in
2½ in

Mental Math

11) $12 \cdot 45 =$

12) $35 \cdot 80 =$

13) $55 \cdot 240 =$

14) 15% of $28 =$

15) $48000 \div 1200 =$

16) $2300 \cdot 11 =$

17) $90 \div 150 =$

18) $107^2 =$

Review

19) 3½ c = _____fl.oz.

20) 13.7 g = _____mg

21) 0.04 cm = _____mm

22) 5000 lb = _____ton

23) 3.4 cm = _____mm

24) 7 mm = _____m

25) 300 in = _____yd

26) 50 ℓ = _____mℓ

1) Given that a recipe calls for 2 cups of flour and 5 cups of water (F:W = 2:5), and you want to enlarge the amount...
   a) How much water is needed for 4 cups of flour?

   b) How much water is needed for 8 cups of flour?

   c) How much flour is needed for 8 cups of water?

   d) How much flour is needed for 6¼ cups of water?

2) At Bill's Sports the ratio of aluminum bats to wooden bats is 5 to 2 (A:W = 5:2).
   a) Write down the three thoughts associated with this ratio. Write each thought both as an equation and as a sentence.

b) If they have 40 wooden bats, then how many are aluminum?

c) If they have 50 aluminum bats, then how many are wooden?

d) What proportion of the bats is aluminum?

e) What proportion of the bats is wooden?

f) If they have a total of 63 bats, then how many are aluminum and how many are wooden?
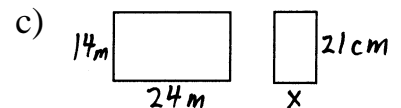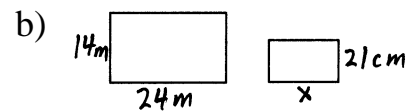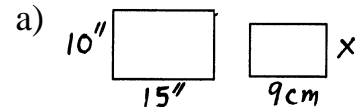
g) many are wooden?

3) The ratio of buffalos to giraffes in a zoo is 5 to 4.
   a) If there are 270 buffalos, then how many giraffes are there?

   b) If there are 36 giraffes, then how many buffalos are there?

   c) If there are 630 giraffes and buffalos combined, then how many are buffalos and how many are giraffes?

4) Find X given that each pair of rectangles is similar.

a)
10″ [rectangle] 15″   [rectangle] X, 9cm

b)
14m [rectangle] 24m   [rectangle] 21cm, X

c)
14m [rectangle] 24m   [rectangle] 21cm, X

Two Forms of a Ratio

Using the example that Jeff has $25 and Meg has $20. We can express the ratio of their money in two ways:

- **Whole Number Form.** This is what we have been using until now. Both numbers in the ratio must be *whole numbers*.

With the above example, we express the ratio as **J:M = 5:4.** It has three thoughts associated with it:

1. $5M = 4J$
2. $J = \frac{5}{4}M$
3. $M = \frac{4}{5}J$

- **Decimal Form.** The first number is often a decimal, and <u>the second number must be 1</u>.

With the above example, we divide 4 into 5 in order to express the ratio as **J:M = 1.25:1**. It has two thoughts associated with it:

1. $J = 1.25 \cdot M$ which means that J is 1.25 times as big as M.
2. $M = J \div 1.25$ which means that M is 1.25 times smaller than J.

Alternatively, we could have divided 5 into 4, which would have given us the ratio as **M:J = 0.8:1**. With this ratio, the two thoughts are:

1. $M = 0.8 \cdot J$ which means that M is 0.8 times as big as J.
2. $J = M \div 0.8$ which means that J is 0.8 times smaller than M. (Which results in J being larger than M.)

---

5) At Fox High there are 120 freshmen, 150 sophomores, 125 juniors, and 128 seniors.

a) Give the ratio of freshmen to sophomores in whole number form.

b) Give the three thoughts associated with the ratio that you gave above.

c) Give the ratio of sophomores to freshmen in whole number form.

d) Give the three thoughts associated with the ratio that you gave above.

e) Give the ratio of sophomores to juniors in decimal form.

f) Give the two thoughts associated with the ratio that you gave above.

g) Give the ratio of juniors to sophomores in decimal form.

h) Give the two thoughts associated with the ratio that you gave above.

---

6) Give the reciprocal.
  a) $^3/_5$

  b) $^2/_9$

  c) $^9/_2$

  d) 3½

  e) 7

Give the reciprocals as decimals.
  f) 0.4

  g) 3.2

7) Give the reciprocal.
  a) X:Y = 7:15

  b) A:B = 3:2

  c) G:L = 17:22

  d) H:J = 1.8:1

  e) E:Q = 0.625:1