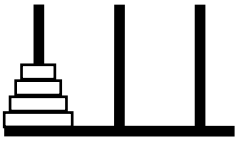
7th Grade Assignment – Week #16

Individual Work

- Do as much as you can with the problems on **Percents Sheet #1.**
- *Flashcards!* Practice daily the "Percents to Fraction Conversion Flashcards". This was part of the flashcards sent earlier in the year, and is also included on the next page.
- *Test!* By the end of the week, take *Ratios Test* found below. Don't forget to send it to your tutor!

Group Assignments:

For Tuesday:



1) *The Towers of Hanoi – Part I*
   There are three pegs (poles) and a stack of donut-shaped disks placed on one of the pegs. The largest disk is on the bottom of the stack; the smallest is on the top. How many moves does it take to transfer the whole stack to another peg if you can only move one disk at a time, and you cannot place a larger disk on top of a smaller disk? Answer this question first for a stack of 3 disks, then for a stack of 4 disks, then 5 disks, and so on, up until 20 disks.

For Thursday:

2) *The Towers of Hanoi – Part II.*
   Answer the classic question: About how long does it take to move a stack of 64 disks to another peg if each move takes 1 second?
3) *Factors* (If you still have time…) The number 20 has six factors: 1, 2, 4, 5, 10, 20.
   a) Find a number with 10 factors.
   b) *Challenge!* Find a number with 7 factors.
   c) *Crazy Challenge!* Find a number with 11 factors.

Percents to Fraction Conversion Flashcards

1%	25%	16⅔%
10%	75%	83⅓%
30%	20%	12½%
70%	40%	37½%
33⅓%	60%	62½%
66⅔%	80%	87½%

Ratios, Part I – Test

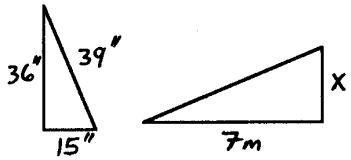
1) Given that the ratio of bananas to guavas is 4 to 5…

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

b) How many guavas are there if there are 360 bananas?

c) How many of each are there if there are 360 bananas and guavas combined?

2) Find X given that the two triangles are similar:



3) A recipe for salad dressing calls for 10 fl.oz. of oil and 1½ 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 for 6 fl. oz. of vinegar?

4) Give the reciprocal of each ratio.

a) J:G = 9:4

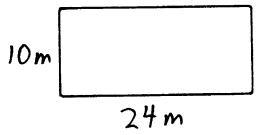
b) B:C = 5.5:1

5) Convert this ratio to decimal form:
J:G = 9:4

6) Convert this ratio to whole number form:
B:C = 5.5:1

7) What can be said about any two similar figures?

8) Write the four ways to express the ratio of this rectangle's dimensions:



9) *Challenge!*
(Do only if you have extra time.)
What is the ratio of the weights (in whole form) of Bob to Fred to Hank if Bob weighs 45kg and Fred weighs 135 lbs. and Hank weighs 18 stone?
(Hint: 1kg≈2.2 lbs. and 1 stone = 14 lbs.)

Percents – Sheet #1

1) Convert each percentage into both a fraction and a decimal.

a) 21%

b) 25%

c) 50%

d) 53%

e) 7%

f) 5%

2) What is 75%

a) as a decimal?

b) as a fraction?

3) Using your answers from the previous problem, solve the following problem in two ways.

What is 75% of 4800?

4) For each, state whether it is easier to solve the problem by converting the percentage into a fraction or into a decimal, and then solve it.

a) What is 21% of 300?

b) What is 25% of 360?

c) What is 7% of 2930?

d) What is 5% of 1600?

5) Convert 0.37 to a percentage.

6) Explain what you did to get the previous answer, and *why* it worked.

7) Convert to a percentage.

a) ¾

b) $^{2}/_{5}$

c) $^{9}/_{10}$

d) $^{29}/_{100}$

8) Explain why the last problem was so easy to do.

9) Convert into a percentage.

a) 0.63

b) 0.95

c) 0.03

d) ¼

e) $^{47}/_{100}$

f) $^{7}/_{100}$

g) $^{53}/_{160}$

10) Explain why the last problem was the most difficult.

Mental Math

11) $34 \cdot 36 =$

12) $58 \cdot 52 =$

13) $73 \cdot 77 =$

14) $210 \div 3.5 =$

15) $1800 \div 45 =$

16) $105 \div 15 =$

17) $80 \cdot 0.55 =$

18) 15% of \$44 =

Review

19) 92 m = _____km

20) 528,000 ft = _____mi

21) 987 cm = _____m

22) 0.007 km = _____cm

23) 320 mg = _____g

24) 400 fl.oz. = _____pt

25) 4.3 kg = _____mg

26) 0.04 mℓ = _____ℓ

27) 0.04 ℓ = _____mℓ

28) 0.31g = _____kg

29) 3½ lb = _____oz

30) Give the reciprocal.

a) A:B = 7:2

b) G:L = 19:22

c) H:J = 4.5:1

31) 2½ quarts of milk are poured into two pitchers such that the ratio of their volumes is 5:3. How much milk is in each pitcher (in fl.oz.)?

32) $(8\frac{4}{7})^2$

33) $(8\frac{4}{7})^3$

34) $2\frac{2}{5} + 1\frac{7}{8}$