

## 7<sup>th</sup> Grade Assignment – Week #25

### Individual Work

- Try your best with the *Seventh Grade Math Tricks – Sheet #4*, which is found at the bottom of this document. Refer to the *Math Tricks* at the back of the workbook, as needed. (Answers are found in the document “G7 - Group Answers (non-workbook) – Q4”.)
- Do as much as you can with **Sheet #2** of the *Ratios, Part II* unit.

### Group Assignments:

*For Tuesday:*

- Work together in your group on the problems on the *Seventh Grade Math Tricks – Sheet #3*, which is found at the bottom of this document. Refer to the *Math Tricks* (at the back of the workbook, and included on the 7<sup>th</sup> grade portal/assignment page), as needed. (Answers are found in the document “G7 - Group Answers (non-workbook) – Q4”.)

- *A Different Scale Puzzle.*

Frank has a balance scale that resembles what is shown in the photo here. He has a total of 12 weights: 2 ten-pound weights, and 10 one-pound weights. This enables him to weigh objects in whole number values up to 30 pounds. If he could create weights of any size, how few weights would he need in order to (again) weigh objects in every whole number value up to 30 pounds?



*For Thursday:*

- Work together in your group on problems #1-5 on **Sheet #1** of the *Ratios, Part II* unit.
- Calculate the following square roots:
  - 1)  $\sqrt{784}$
  - 2)  $\sqrt{5329}$
  - 3) *Challenge!*  $\sqrt{148996}$

*For Tuesday or Thursday: NIM!*

- If you still haven't mastered NIM, then practice the game some more. (See the assignment from week #23.) Remember, your goal is to figure out the perfect unbeatable strategy for all of the versions of NIM, and then to beat the NIM Machine!

# Seventh Grade Math Tricks Sheet #3

Elapsed time:
Number correct:
Number completed:

Do each problem in your head using the easiest math trick. If necessary, leave your answer as a decimal instead of a fraction.

1)  $48000 \div 1200$

2)  $247.5 \div 100$

3)  $54 \cdot 11$

4)  $103 \cdot 105$

5)  $6.4 \div 4$

6)  $2034 - 1988$

7)  $6 \cdot 9999$

8)  $160 \div 240$

9)  $13000 \div 5$

10)  $48 \cdot 52$

11)  $44 \cdot 25$

12)  $75^2$

13)  $120 \div 25$

14)  $120 \cdot 15$

15)  $35 \cdot 14$

16)  $53 \cdot 57$

17)  $6000 \div 120$

18)  $0.034 \cdot 10000$

19)  $84 \cdot 11$

20)  $107^2$

21)  $22 \div 4$

22)  $414 - 395$

23)  $26 \div 999$

24)  $12 \cdot 99$

25)  $49 \div 63$

26)  $32 \cdot 5$

27)  $3.1 \div 5$

28)  $102 \cdot 98$

29)  $45^2$

30)  $15 \cdot 41$

31)  $3000 \div 25$

32) 15% of \$206

33)  $24 \cdot 45$

34)  $360 \div 45$

35)  $53^2$

36)  $0.43 \cdot 10$

# Seventh Grade Math Tricks Sheet #4

Elapsed time:
Number correct:
Number completed:

Do each problem in your head using the easiest math trick. If necessary, leave your answer as a decimal instead of a fraction.

1)  $0.63 \cdot 10$

2)  $35 \cdot 11$

3)  $0.022 \div 4$

4)  $109 \cdot 112$

5)  $315 \div 35$

6)  $25 \cdot 29$

7)  $260 \cdot 15$

8)  $240 \div 25$

9)  $140 \div 5$

10)  $15\% \text{ of } \$46$

11)  $12 \cdot 999$

12)  $3200 \div 2400$

13)  $220 \cdot 45$

14)  $135 \div 45$

15)  $332 \div 5$

16)  $155 \cdot 4$

17)  $260 \cdot 11$

18)  $296.5 \div 100$

19)  $48000 \cdot 25$

20)  $947 \div 999$

21)  $35 \cdot 22$

22)  $53 \cdot 47$

23)  $320 \cdot 5$

24)  $56000 \div 800$

25)  $54^2$

26)  $93 \cdot 97$

27)  $7 \cdot 9999$

28)  $1800 \div 3000$

29)  $6400 \div 4$

30)  $21 \div 999$

31)  $4 \cdot 69$

32)  $103 \cdot 104$

33)  $34 \cdot 26$

34)  $90 \div 25$

35)  $227 - 189$

36)  $95^2$

# Ratios, Part II – Sheet #1

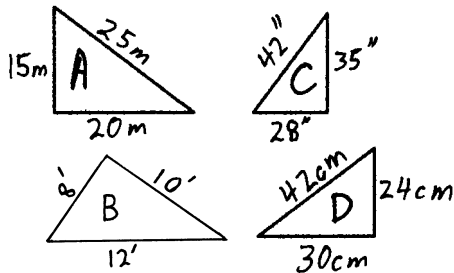
1) The ratio of Gabe's hourly wage to Nancy's hourly wage is 7 to 9. (G:N = 7:9)

a) What are the three thoughts (as equations only) associated with this ratio?

b) What is Gabe's hourly wage if Nancy's is \$13.50/hr?

c) What is Nancy's hourly wage if Gabe's is \$9.10/hr?

2) Which of these figures are similar. (Not drawn to scale.)



3) A fruit stand sells only bananas and guavas. The ratio of bananas to guavas is 6 to 5. (B:G = 6:5)

a) Give the three thoughts associated with this ratio.

b) What proportion of the fruit is bananas?

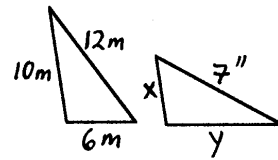
c) What proportion of the fruit is guavas?

d) If there are 330 guavas, then how many bananas are there?

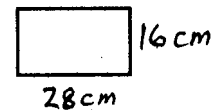
e) If there are 330 bananas, then how many guavas are there?

f) If there are 330 pieces of fruit combined, then how many are guavas and how many are bananas?

4) Given that these two figures are similar, find X and Y.



5) Give the four ways to express the ratio of this rectangle's dimensions.



6) Convert each of these fractions into a decimal (perhaps repeating).

a)  $\frac{5}{9}$

b)  $\frac{5}{11}$

c)  $\frac{5}{16}$

d)  $\frac{5}{27}$

7) John is in the process of converting  $\frac{5}{17}$  into a repeating decimal. At this moment, his work (which is completely correct, but not yet finished) looks like this:

$$\begin{array}{r}
 .2941176470588 \\
 17 \overline{) 5.0000000000000} \\
 \underline{-34} \\
 160 \\
 \underline{-153} \\
 70 \\
 \underline{-68} \\
 20 \\
 \underline{-17} \\
 30 \\
 \underline{-17} \\
 130 \\
 \underline{-119} \\
 110 \\
 \underline{-102} \\
 80 \\
 \underline{-68} \\
 120 \\
 \underline{-119} \\
 10 \\
 \underline{-0} \\
 100 \\
 \underline{-85} \\
 150 \\
 \underline{-136} \\
 140 \\
 \underline{-136} \\
 4
 \end{array}$$

a) Under what condition will John finally be finished?

b) Given that the divisor is 17, what is the most number of digits that could appear under the repeat bar, if it ends up repeating?

c) Finish the problem.

8) Give an example of a fraction (with whole numbers in the numerator and denominator) that, when converted into a decimal, won't ever repeat or end.

### Mental Math

9)  $71^2 =$

10)  $41^2 =$

11)  $21^2 =$

12)  $22 \cdot 18$

13)  $34 \cdot 26$

14)  $97 \cdot 103$

15)  $53^2 =$

16)  $24 \cdot 26 =$

### Review

17)  $7\frac{1}{2}\text{ft} = \underline{\hspace{2cm}}\text{in}$

18)  $1.34\text{ m} = \underline{\hspace{2cm}}\text{mm}$

19)  $60000\text{ mg} = \underline{\hspace{2cm}}\text{kg}$

20) What is 300 decreased by 7%?

21) Do it in your head.  
a) 6 is what percent of 18?

b) 40 is what percent of 80?

c) 6000 is what percent of 8000?

d) 8 is what percent of 48?

e) 800 is what percent of 3200?

f) 140 is what percent of 210?

22)  $(0.02)^5$

23)  $\sqrt{25000000}$

24)  $\sqrt{8100000000}$

25)  $\sqrt[4]{8100000000}$

26)  $5\frac{1}{2} \cdot 2\frac{2}{3}$

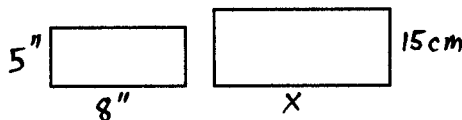
27)  $5\frac{1}{2} - 2\frac{2}{3}$

28)  $2\frac{2}{3} \div 5\frac{1}{2}$

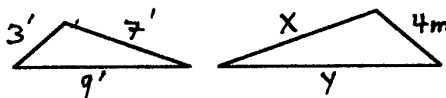
# Ratios, Part II – Sheet #2

- 1) What can be said about any two similar figures?

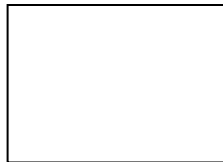
- 2) Find X, given that these figures are similar.



- 3) Find X and Y given that the two figures are similar.



- 4) Using a ruler with this rectangle.



- a) What is the length of its base in centimeters (to the nearest tenth of a centimeter)?
- b) What is the length of its height in centimeters?
- c) Calculate the ratio of base to height in decimal form (to three significant digits).

- d) Calculate the ratio of height to base in decimal form (to three significant digits).

- 5) Use the same rectangle as given with the previous problem.

- a) What is the base's length in inches (to the nearest  $\frac{1}{16}$ "?)

- b) What is the length of its height in inches?

- c) Calculate the ratio of base to height in decimal form (to three significant digits).

- d) Calculate the ratio of height to base in decimal form (to three significant digits).

- 6) State the two laws of repeating decimals.

- 7) Bill weighs 120 pounds and Jeff weighs 84 pounds.
- What is the ratio of their weights?
  - What is the ratio of the distances that they must sit from the fulcrum?
  - If Bill sits 2.1m out from the fulcrum of a see-saw, then how far out does Jeff need to sit for the see-saw to balance?
  - If Jeff sits 3.2m out from the fulcrum of a see-saw, then how far out does Bill need to sit for the see-saw to balance?
  - What does this statement mean?  
With a balanced seesaw, a person's weight, and the distance that he must sit from the fulcrum, are *inversely proportional*.

- 8) Sue averaged 40mph when driving to Betty's house on Monday, and the trip took her 30 minutes.
- How far did Sue drive to get to Betty's house?
  - If Sue does the same trip on Tuesday, but drives at  $\frac{4}{5}$  of Monday's speed, then what would her average speed be, and how long would the trip take?
  - If Sue does the same trip on Wednesday, but drives at  $\frac{3}{2}$  of Monday's speed, then what would her average speed be, and how long would the trip take?
  - What does the following statement mean?  
When traveling, speed and time are *inversely proportional*.

## Mental Math

- $31^2 =$
- $61^2 =$
- $91^2 =$
- $56^2 =$
- $35 \cdot 14 =$
- $84 \cdot 76 =$
- $280 \div 350 =$
- $180 \cdot 500 =$

## Review

- 17) Do it in your head.
- What is 35 increased by 20%?
  - What is 35 decreased by 20%?
  - What is 35 increased by 80%?
  - What is 35 decreased by 80%?
- 18)  $25\frac{5}{6} + 37\frac{7}{18}$
- 19)  $(3\frac{4}{7})^2$
- 20)  $\frac{2\frac{5}{8}}{6\frac{3}{4}}$