

6th Grade Assignment – Week #27

Individual Work: As always, do what you can!

- Do as much as you can with Sheet #23 in the workbook.

Group Assignments:

For Tuesday

Divisibility Magic – Part II

- In last Wednesday's lecture, we used our divisibility magic trick to show that the prime factorization of 241241 is $241 \times 7 \times 11 \times 13$.
(Note that I intentionally made sure 241 is prime.)

Answer these questions:

- (1) What do I multiply 241 by in order to get 241241?
- (2) What is $241241 \div 241$?
- (3) What is the prime factorization of 1001?
- (4) What do I multiply 953 by in order to get 953953?
- (5) What is $953953 \div 953$?
- (6) What is the prime factorization of 953953? (Note that 953 is prime.)
- (7) What is the prime factorization of 125125?
- (8) What is the prime factorization of 128128?
- (9) What is the prime factorization of 385385?

Puzzles! Missing-Digit Multiplication

Fill in the missing digits (indicated by “?”) for these problems.

$$\begin{array}{r} \text{a) } \quad ??? \\ \quad \times 74 \\ \quad 2152 \\ \hline + \quad ????0 \\ \hline \quad ???? \end{array}$$

$$\begin{array}{r} \text{b) } \quad ?9 \\ \quad \times ?? \\ \quad \quad ?77 \\ \hline + \quad 4??0 \\ \hline \quad ?30? \end{array}$$

$$\begin{array}{r} \text{c) } \quad ?3?? \\ \quad \times ?? \\ \quad \quad 4?72 \\ \hline + \quad ????20 \\ \hline \quad ????2 \end{array}$$

For Thursday

Rules for Repeating Decimals

- Background (repeated from last week):
 - When converting any given fraction to a (perhaps repeating) decimal, the number of digits under the repeat bar is solely determined by the denominator.
 - Everything here (and below) is assuming that the given fraction **cannot be reduced**.
 - For example, last week we saw that when 7 is in the denominator (and therefore you divide by 7), we always get 6 digits under the repeat bar.
For example: $\frac{3}{7} = 0.428571$
- *Discover the Theorem!*
 - (1) Write down as many possible denominators you can think of which, when converting to a decimal, will not result in a repeating decimal.
 - (2) Write down the prime factorization of all the denominators you came up with in #1.
 - (3) What is the law (or theorem) for this? Fill in the below statement:
If the prime factorization of the denominator is _____, then the resulting decimal will not repeat.

A Strange Calculation.

- 1) Multiply these two prime numbers together: 333667×37
- 2) Multiply your answer to #1 by 9.
- 3) Multiply your answer to #2 by 9.
- 4) Give the prime factorization of 999,999,999

6th Grade Math – Sheet #23

Do it in your head.

- 1) 13^2
- 2) $15 \cdot 5$
- 3) 16^2
- 4) $25 \cdot 6$
- 5) 2^5
- 6) 4^3
- 7) 5^4
- 8) 400^2
- 9) $0.00026 \cdot 100$
- 10) $0.11 \cdot 0.53$
- 11) $0.22 \div 4$
- 12) $59 \div 99$
- 13) $32 \div 48$
- 14) $\sqrt{\frac{121}{3600}}$
- 15) $\frac{2}{3} - \frac{1}{4}$
- 16) $\frac{4}{15} \cdot \frac{5}{12}$
- 17) $\frac{7}{13} \div \frac{7}{13}$
- 18) Convert to a percent.
 - a) $\frac{1}{4}$
 - b) $\frac{1}{8}$
 - c) 0.46
 - d) 0.8

19) Convert to a fraction.

- a) 60%
- b) 23%
- c) 23.7%
- d) $55\frac{5}{9}\%$
- e) 0.05

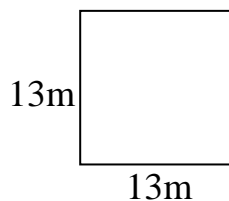
20) Convert to a decimal.

- a) 84%
- b) 4.6%
- c) $\frac{2}{11}$
- d) $\frac{3}{20}$

Area and Perimeter.

21) Calculate the area and perimeter of each.

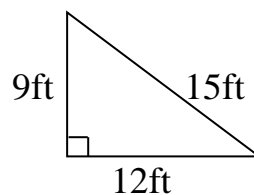
a) A square:



Perimeter =

Area =

b)



Perimeter =

Area =

Divisibility.

22) 2541280 is evenly divisible by which: 2, 3, 4, 5, 9, or 10?

Fractions.

23) Reduce each fraction.

a) $\frac{9600}{43200}$

b) $\frac{912}{9828}$

Measurement.

24) $3\frac{1}{2}$ lb = _____ oz

25) 81 in = _____ yd

26) 4 gal = _____ cups

27) 3 mi = _____ ft

28) $31\frac{1}{4}$ tons = _____ oz

Percents.

- 29) Convert 15.6% to a fraction.
- 30) What is 40% of 320?
- 31) What is 7% of 61?
- 32) 140 is what percent of 160?
- 33) 140 is what percent of 150?
- 34) What is 240 increased by $33\frac{1}{3}\%$?

Ratios.

- 35) There are 12 girls and 15 boys in Kate's class.
- a) What is the ratio of boys to girls?
- b) What is the ratio of girls to boys?
- 36) John has 28 cows and 126 sheep on his farm. What is the ratio of cows to sheep?

Rates.

- 37) Fred's hourly wage is \$11.25 per hour.
- a) What does Fred earn in a 40-hour work-week?
- b) What does Fred earn in a year? (Assume that he works 50 weeks in a year.)

- 38) Kate is paid \$60/day. How long does it take her to make \$720?
- 39) Bill earns \$356 in a 40-hour week. What is his hourly wage?
- 40) Karen is biking at a rate of 12mph.
- a) How far does she go in 5 hours?
- b) How far does she go in $3\frac{1}{2}$ hours?
- c) How long does it take her to go 36 miles?