Week-In-Review 10 on 5.3

1. Given $\frac{a+b}{cd}$. Identify the additive inverse and justify your answer.

2. Jeopardy: Melissa made 3 and $\frac{1}{2}$ gallons of ginger ale, which she intends to bottle in "fifths" (that is, bottles that contain a fifth of a gallon). The answer is 17 full bottles and $\frac{1}{2}$ of another bottle. What is the question?

3. Rewrite $\frac{5}{24}$ and $\frac{11}{98}$ with the same least common denominator.

4. If x, y, and z are integers and $\frac{x}{y}=\frac{x}{z}$, what four things must be true?

5. Insert four fractions between $\frac{3}{4}$ and $\frac{-256}{81}$ so that the six numbers together constitute a geometric sequence.

6. Estimate to the nearest whole number $3\frac{2}{3}-\frac{6}{7}+9\frac{4}{9}-6\frac{1}{2}+2\frac{3}{13}$.

7. Circle the properties that hold for division of rational numbers.

closure commutative associative identity

8. Find the number which is one-third of the way from $\frac{3}{8}$ to $1\frac{1}{4}$ on the number line.

9. Model $\frac{1}{4}\cdot\frac{2}{3}$ using the rectangular model.

10. Solve $\frac{1}{5^x}=625$.

11. Find the product $3\frac{1}{5}\cdot 5\frac{1}{3}$ and write your answer as a mixed number.

12. Fully simplify $\frac{\left(-5x^3y^{-1}z^4\right)^{-3}}{4xy^{-5}z^{-2}}$ using only positive exponents in the final answer.

13. A student claims that if x is positive, then $\frac{1}{x}<x$. What is your response?

14. A high school consists of $\frac{2}{5}$ freshman, $\frac{1}{4}$ sophomores and $\frac{1}{10}$ juniors. What fraction of the class is seniors?

15. Fully simplify $\dfrac{\frac{2}{5}-\frac{1}{2}}{7+\frac{9}{11}}$.

16. Find $\left(2-3\frac{6}{7}\right)\left(8\frac{3}{4}\right)$ as an improper fraction in lowest terms.

17. Using the rectangular model, illustrate and compute $\frac{4}{5}\div\frac{1}{2}$.

18. A spool of ribbon contained 25 and $\frac{1}{3}$ yards of brocade ribbon. The ribbon was divided evenly among 4 stores. One store sold all its ribbon. Another store sold $\frac{1}{2}$ of its ribbon. Another store sold $\frac{1}{4}$ of its ribbon. The last store was closed for inventory and sold none of its ribbon. How much of the original ribbon is left?

19. True or False:

a. The additive inverse of the nonzero rational number $\frac{a}{b}$ is $\frac{b}{a}$.

b. $2^{100}=8\cdot 2^{97}$

20. Sarah is reading a book. She has finished $\frac{5}{6}$ of the book and has 80 pages left to read. How many pages has she read? [Hint: Define your variable, set up **an** equation, and then solve your equation.]

21. Find the multiplicative inverse.

a. –2

b. $-3\frac{4}{9}$

22. Prove $\frac{a}{b}\div\frac{c}{d}=\frac{ad}{bc}$, where $\frac{c}{d}\neq 0$. Show each step.

23. Write each of the following in simplest form using positive exponents in the final answer. Assume all expressions are defined.

a. $\left(\frac{-4}{7}\right)^{-3}$

b. $\left(-x^{-4}y^{2}z\right)^{-5}$

c. $c^{3}k^{0}(c^{2}k^{4})$

d. $\left(\frac{x^{7}}{y^{11}}\right)^{-9}$

e. $\frac{x^{-1}}{x}$

f. $\left(\frac{-2a}{b^{-2}}\right)^{3}(ab^{4})^{6}$

g. $\frac{-(9yz^{-4})^{2}}{13y^{5}z^{-6}}$

h. $(3\text{nmr})^{2}(\text{mr}^{-1})^{-4}$

i. $\frac{25^{32}\cdot 5^{0}-5^{3}\cdot 5^{63}}{5^{-1}\cdot 5^{64}+5^{-2}\cdot 125^{21}}$

24. A 340-gram jar of wheat germ contains about 26 grams of fat. Use a common fraction to estimate what fraction of the jar of wheat germ are fat grams.

25. Use the distributive property of multiplication over addition to find the product:
$7\frac{1}{8}\cdot 4\frac{5}{9}=$

26. Write a story that requires the division $2\frac{3}{4}\div\frac{2}{3}$.

27. Explain and justify step-by-step using properties of rational numbers to explain $5\div(3\div 4)=(5\div 3)\cdot 4$.

28. Jacy has money in a savings account. Isabel has half as much in savings as Jacy. Kent has one-third as much in savings as Isabel. If Kent has $30 in savings, how much does Jacy have in savings?

29. Use a mental math technique to find the following product in simplest form.
$8\times 4\frac{1}{4}$

30. Use techniques learned in Math 365 to write the following as a single fraction.
$\frac{2}{3}-\frac{1}{3}\times\frac{1}{2}+\frac{4}{5}\div\frac{4}{3}$