

Week in Review # 9

MATH 365

Marcia Drost

5.1 - 5.2

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Created and compiled by Sherry Scarborough with thanks for additional problems from Zach Barcevac, Lynnette Cardenas, Greg Klein, David Manuel, Jane Schielack, and Jenn Whitfield.

1. True or False: The set $\left\{\frac{2}{3}, 0, \frac{-2}{3}\right\}$ is closed under addition.

2. Circle which fractions are less than one-third.

a. $\frac{10}{27}$

b. $\frac{9}{26}$

c. $\frac{8}{25}$

d. $\frac{7}{24}$

3. Put the following fractions in order from smallest to largest: $\frac{25}{16}, \frac{-9}{10}, \frac{5}{11}, \frac{4}{7}$

4. Find two rational numbers between $\frac{2}{7}$ and $\frac{3}{7}$.

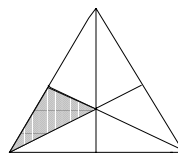
5. Give an example of the Fundamental Law of Fractions.

6. Circle the properties that hold for subtraction of rational numbers.

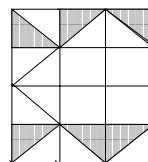
closure commutative associative

7. Given that the entire shape represents one unit area, write a fraction in lowest terms that represents the shaded portion.

a.



b.



8. Find three rational numbers in fraction form that are between $\frac{-5}{9}$ and $\frac{-4}{9}$.

9. What is the name of the property that guarantees that between any two distinct rational numbers is a rational number?

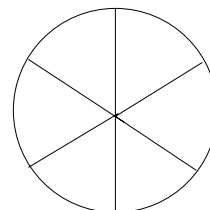
10. Represent $\frac{5}{6}$ by shading

a. congruent rectangles

b. unit segments

c. congruent circles

d. by shading congruent sectors (pie-shaped pieces) of a circle.



11. Give an example of a rational number that is:
- a proper fraction
 - an improper fraction
 - a fraction that is equivalent to an integer
 - a fraction in simplest form or lowest terms
 - a fraction not in lowest terms
12. Simplify:
- $\frac{5}{36} + \frac{28}{45} - \frac{7}{10} =$
 - $\frac{6}{x} - \frac{2}{2x+2} + \frac{9}{(x+1)^2} =$
13. Change $\frac{105}{39}$ to a mixed number in lowest terms.
14. Change $-7\frac{2}{11}$ to a fraction of the form $\frac{a}{b}$ where a and b are integers, such that $b \neq 0$. Show your work and do not just use a rule or property.
15. Using drawings and shadings of sectors of circles, model $2\frac{1}{2} + 1\frac{2}{5}$ and give its sum.
16. If $\frac{t}{u}, \frac{v}{w} \in \mathbb{Q}$, then by definition of subtraction, $\frac{t}{u} - \frac{v}{w} = d$ if, and only if, what?
17. Use the definition of less than to prove $\frac{-5}{7} < \frac{-2}{5}$.
18. A bread recipe requires $6\frac{2}{3}$ cups of flour. Courtney put $3\frac{1}{4}$ cups of flour into the bread batter. How much more flour does she need to put into the batter? Write an expression that describes this problem and then simplify it to find the answer.
19. Model $\frac{1}{3} + \frac{1}{4}$.
20. Circle all values which are equivalent to $\frac{9}{4}$.
- $\frac{2}{3}$
 - $2\frac{1}{4}$
 - $\frac{18}{8}$
 - $\frac{-27}{12}$
21. Find the additive inverse of $4\frac{5}{6}$ as an improper fraction in lowest terms.
22. How did the early Egyptians write the following numbers:
- $\frac{5}{6}$
 - $\frac{3}{4}$
 - $\frac{5}{8}$
23. Give an example of how the ancient Babylonian use of fractions is still in use today.
24. True or false: Given two positive rational numbers, the one with the largest numerator is the largest.
25. True or false: Given two positive rational numbers, the one with the greatest denominator is the least.
26. True or false: Given two rational numbers, $\frac{a}{b}$ and $\frac{c}{d}$, then $\frac{a}{b} < \frac{c}{d}$ if $a \cdot d < b \cdot c$.