11-23-2009

Review for Exam III

Example Problems:

1. Draw the colored counters diagram which illustrates the following problems.

   (a) $(-4)+6$

   (b) $5-(-3)$

   (c) $(-5)-(-3)$

2. Carefully illustrate the following computations in the number line model.

   (a) $3+4$

   (b) $-4+5$

   (c) $-3-4$

   (d) $2-(-3)$

   (e) $-1-(-3)$

3. Carefully describe the mailtime stories which model the following arithmetic problems.

   (a) $41+(-7)$

   (b) $41-7$

   (c) $20-(-15)$

   (d) $-20-15$

4. Carefully describe the mailtime stories which model the following arithmetic problems.

   (a) $2\cdot(-4)+3\cdot 7$

   (b) $3\cdot(-5)-3\cdot 8$

   (c) $4\cdot 5-7\cdot(-21)$

5. Compute the following:

   (a) $5+_{12}9$

   (b) $7-_{12}9$

   (c) $8\times_{12}5$

6. In arithmetic with integers the following property is true: if $a\times b=0$, at least one of a and b is zero. Is this true in 12 hour clock arithmetic? If it is, explain. If it is not true provide a counterexample.

7. Use the multiplication table on page 331 to compute the following. If an answer does not exist, explain why.

   (a) $10 \div_{12} 7$

   (b) $10 \div_{12} 2$

   (c) $10 \div_{12} 2$

8. For each of the following pairs of fractions, use the test we described in class to determine which of the fractions is the smaller. Show your work!

   (a) $\frac{5}{16}, \frac{11}{32}$

   (b) $\frac{7}{8}, \frac{7}{9}$

   (c) $\frac{10}{11}, \frac{11}{13}$.

9. Show that the fractions $\frac{a}{b} < \frac{c}{d}$ are equivalent when $ad < bc$.

10. Represent the fractions 3/4 and 5/8 in the colored regions, sets, fraction strips, and number line models.

11. Illustrate the following computations in the colored regions, fractions strips, and number lines models:

    (a) $\frac{3}{2} + \frac{3}{4}$

    (b) $3\frac{3}{5} - 2$

12. Convert $\frac{10}{3}$ to a mixed number and $3\frac{2}{3}$ to an improper fraction. Show all your work and then illustrate your work with one of the models from class.

13. Perform the following fraction computations. Show your work as if you were presenting the problem to a 4th grade classroom. That is, explain each step and use models if appropriate.

    (a) $\frac{2}{3} + \frac{1}{2}$

    (b) $\frac{5}{6} - \frac{3}{4}$

    (c) Convert $2\frac{3}{5}$ to an improper fraction.

    (d) Convert $\frac{17}{3}$ to a mixed number.