Review Exercise Set 13

Exercise 1: Multiply.

$$\frac{2}{15} \times \frac{5}{6}$$

Exercise 2: Multiply.

$$-\frac{3}{4} \times \frac{8}{15}$$

Exercise 3: Multiply.

$$\frac{5}{12} \times \frac{9}{35} \times \frac{7}{8}$$

Exercise 4: Divide.

$$\frac{3}{8} \div \frac{2}{3}$$

Exercise 5: Divide.

$$\frac{15}{16} \div \frac{9}{4}$$

Review Exercise Set 13 Answer Key

Exercise 1: Multiply.

$$\frac{2}{15} \times \frac{5}{6}$$

First, rewrite the problem as a single fraction by distributing the multiplication to both the numerator and denominator. Then perform prime factorization of the numerator and denominator. 15 = 5 * 3 and 6 = 3 * 2.

$$= \frac{2 \times 5}{15 \times 6}$$

$$= \frac{2 \times 5}{5 \times 3 \times 3 \times 2}$$

Reduce any common factors. When reducing the common factors remember to keep a 1 in their place

$$= \frac{\cancel{2}^1 \times \cancel{5}^1}{\cancel{5}^1 \times 3 \times 3 \times \cancel{2}^1}$$

multiply across the numerator and denominator

$$= \frac{1}{9}$$

Exercise 2: Multiply.

$$-\frac{3}{4} \times \frac{8}{15}$$

$$= -\frac{3 \times 8}{4 \times 15}$$

Prime factorization: 8 = 2*2*2 ; 4 = 2*2 ; and 15 = 3*5

$$= -\frac{3 \times 2 \times 2 \times 2}{2 \times 2 \times 3 \times 5}$$

$$= -\frac{\cancel{3}^1 \times \cancel{2}^1 \times \cancel{2}^1 \times 2}{\cancel{2}^1 \times \cancel{2}^1 \times \cancel{3}^1 \times 5}$$

$$= -\frac{2}{5}$$

Exercise 3: Multiply.

$$\frac{5}{12} \times \frac{9}{35} \times \frac{7}{8}$$

Even though this problem has three fractions, we will work it exactly the same way as before

$$= \frac{5 \times 9 \times 7}{12 \times 35 \times 8}$$

Prime factorization: 9 = 3*3 ; 12 = 2*2*3 ; 35 = 5*7 ; and 8 = 2*2*2

$$= \frac{5 \times 3 \times 3 \times 7}{2 \times 2 \times 3 \times 5 \times 7 \times 2 \times 2 \times 2}$$

$$= \frac{\cancel{5}^{1} \times \cancel{3}^{1} \times 3 \times \cancel{7}^{1}}{2 \times 2 \times \cancel{3}^{1} \times \cancel{5}^{1} \times \cancel{7}^{1} \times 2 \times 2 \times 2}$$

$$= \frac{3}{2 \times 2 \times 2 \times 2 \times 2}$$

$$= \frac{3}{32}$$

Exercise 4: Divide.

$$\frac{3}{8} \div \frac{2}{3}$$

When you have a problem where you are asked to divide two fractions, you want to convert the problem into a multiplication problem by inverting (flipping) the second fraction.

$$= \frac{3}{8} \times \frac{3}{2}$$

Now perform the problem just like the others

$$= \frac{3 \times 3}{8 \times 2}$$

$$= \frac{3 \times 3}{2 \times 2 \times 2 \times 2}$$

Some problems may not have any common factors so you would simply multiply to get the answer

$$= \frac{9}{16}$$

Exercise 5: Divide.

$$\frac{15}{16} \div \frac{9}{4}$$

$$= \frac{15}{16} \times \frac{4}{9}$$

$$= \frac{15 \times 4}{16 \times 9}$$

$$= \frac{5 \times 3 \times 2 \times 2}{2 \times 2 \times 2 \times 2 \times 3 \times 3}$$

$$= \frac{5 \times \cancel{3}^{1} \times \cancel{2}^{1} \times \cancel{2}^{1}}{2 \times 2 \times \cancel{2}^{1} \times \cancel{2}^{1} \times \cancel{3}^{1} \times 3}$$

$$= \frac{5}{12}$$