

Fraction Operations Final Exam Review

- Introduction**

a. Add/Subtract.

$$\frac{2}{9} + \frac{2}{9} = \frac{4}{9} \quad \frac{6}{7} - \frac{2}{7} = \frac{4}{7} \quad \frac{4}{5} + \frac{1}{5} + \frac{8}{5} = \frac{13}{5} \quad \frac{64}{5} \quad \frac{12}{2} - \frac{4}{3} = \frac{24}{2} - \frac{13}{3} = \frac{72}{6} - \frac{26}{6} = \frac{46}{6} \quad \boxed{\frac{23}{3}}$$

b. Calculate.

$$32 + 72 \div 12 - 8 \times (16 + 4)$$

$$32 + 6 - 8 \times 20 \quad 32 + 6 - 160 \quad \boxed{-122}$$

- Multiplying a Fraction and a Whole Number**

a. Determine each product.

$$16 \times \frac{1}{2} = 8 \quad 12 \times \frac{1}{4} = 3 \quad 8 \times \frac{5}{6} = \frac{20}{3} \quad 20 \times \frac{2}{3} = \frac{40}{3}$$

b. The width of a rectangle is $\frac{1}{4}$ of its length. What is the width of a rectangle that is 24 cm long?

$$24 \times \frac{1}{4} = 6 \text{ cm}$$

c. There are 30 students in a class $\frac{2}{5}$ of them have a pet. How many students do not have a pet?

$$30 \times \frac{3}{5} = 18 \text{ do not}$$

- Dividing a Fraction by a Whole Number**

a. Determine each quotient.

$$\frac{1}{2} \div 8 = \frac{1}{16} \quad \frac{6}{5} \div 6 = \frac{1}{5}$$

b. A recipe for soup includes chicken broth. It requires $4\frac{1}{2}$ cup of broth to make four servings. What fraction of the broth is in each serving?

$$\frac{9}{8} = 1\frac{1}{8}$$

c. People from Alberta, Saskatchewan and Newfoundland make up $\frac{3}{4}$ of the workers in the tar sands. What fraction of workers is from Alberta?

$$\frac{1}{4}$$

d. It takes $\frac{2}{5}$ of an hour to complete two homework assignments. What fraction of an hour

does it take to complete one assignment? $\frac{1}{5}$

- Multiplying Proper Fractions**

a. Determine the product.

$$\frac{10}{7} \times \frac{1}{2} = \frac{5}{7} \quad \frac{3}{4} \times \frac{4}{3} = 1 \quad \frac{2}{3} \times \frac{2}{3} \times \frac{8}{27} = \frac{32}{27} \quad \frac{5}{6} \times \frac{3}{8} \times \frac{7}{10} = \frac{7}{32}$$

b. There is $\frac{2}{3}$ of a pizza left. You want to $\frac{1}{4}$ of the remaining pizza. How much of the whole pizza did you eat?

$$\frac{1}{4} \text{ of } \frac{2}{3} = \frac{1}{4} \times \frac{2}{3} = \frac{1}{6}$$

c. In a sample of grade 8 students $\frac{1}{2}$ of them achieve honors. Of the honor students $\frac{1}{3}$ of them achieve higher than 90%.

What fraction of Grade 8's achieved above 90%? If there are 38 grade 8 students how many achieve above 90%?

$$\frac{1}{2} \text{ of } \frac{1}{3}$$

$$\frac{1}{2} \times \frac{1}{3}$$

$$\frac{1}{6}$$

$$\frac{1}{6} \times 38 = 6.\bar{3}$$

$\therefore 6$ students

• **Multiplying Improper Fractions and Mixed Numbers**

a. Change to a mixed fraction.

$$\frac{44}{3} = 14 \frac{2}{3}$$

b. Change to an improper fraction.

$$16 \frac{3}{4} = \frac{67}{4}$$

c. Multiply.

$$8 \frac{1}{2} \times 8 \frac{1}{4} = \frac{561}{8} \quad 8 \frac{1}{5} \times 4 \frac{2}{3} = \frac{574}{15} \quad 4 \frac{1}{6} \times 4 \frac{2}{5} \times 8 \frac{2}{7} = \frac{1045}{7}$$

d. Three and a half laps around a race track are equal to 2 km. How many laps are equal to 10 km?

$$3 \frac{1}{2} \times 5 = 17 \frac{1}{2}$$

e. A kitchen is $2 \frac{1}{2}$ times as long as $2 \frac{3}{4}$ times as wide as a bedroom. How many times greater is the area of the kitchen than the area of the bedroom?

$$A = lw \\ = 2 \frac{1}{2} l \times 2 \frac{3}{4} w \\ = \frac{5}{2} \times \frac{11}{4} lw = \frac{55}{8} = 6 \frac{7}{8} \text{ times}$$

• **Dividing Fractions and Mixed Numbers**

a. Determine each quotient

$$\frac{20}{8} \div \frac{2}{4} = 5 \quad \frac{12}{3} \div \frac{4}{6} = 7 \frac{4}{3} \quad \frac{4}{3} \div \frac{8}{6} = \frac{74}{3} \quad \frac{14}{3} \times \frac{5}{53} = \frac{70}{159}$$

b. It takes $1 \frac{1}{2}$ h to clean a movie theatre. How many theatres are cleaned in 9 hours?

$$9 \div \frac{3}{2} = \frac{9}{1} \times \frac{2}{3} = 6 \text{ theatres}$$

c. In Canada, about $\frac{7}{12}$ of the population are in PEI and about $\frac{1}{6}$ is in Alberta. How many times as big as Alberta is PEI's population?

$$\frac{7}{12} \div \frac{1}{6} = \frac{7}{2} = 3 \frac{1}{2} \text{ times as big.}$$

• **Applying Fraction Operations**

a. Solve.

$$\frac{6}{5} - \frac{2}{3} \times \frac{4}{5} = \frac{2}{3} \quad \frac{2}{3} + \frac{6}{7} \div \frac{6}{8} \div \frac{2}{5} = \frac{74}{21}$$

$$45 \div 2 = 22.5 \quad \$67.5$$

b. Liam earns \$45/h. For time worked above 40h he earns time and a half. How much does he earn if he works $46 \frac{3}{4}$ h?

$$(40h)(45) = 1800 \quad 6 \frac{3}{4} \times 67.5 = 455.63 \\ \$2255.63$$

c. Table salt contains sodium and hydroxide. Sodium is usually $\frac{5}{6}$ of the mass of the salt.

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What is the mass of sodium in 200g of salt? What is the mass of hydroxide in 350g of salt?

$$200 \times \frac{5}{6} = 166.67g$$

$$\frac{1}{6} \times 350 = 58.3g$$

Questions to Review

Chapter 6 Get Ready

Pg. 202 # 4 – 7
203 # 8 – 16
208 # 4 – 5
6.5 # 6 – 8
208 # 6 – 12
214 # 3 – 6, 14, 15
214 # 7 – 11, 13

Fraction Operations Assignment 1

Pg. 220 # 4 – 9, 20, 21

220 # 10 – 18

Multiplying Fractions Assignment

Pg. 227 # 5 – 10

228 # 11 – 17, 19, 20

234 # 4, 5, 13, 14(a, b, c)

234 # 6 – 12

Fraction Operations Assignment 2

Fraction Operations Test

