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Basic Math • Algebra • Geometry

Chapter 1 Fractions and Decimals

This chapter reviews how to work with fractions. Although it is assumed students possess these skills, time is taken to ensure the student has mastered the procedures to perform operations involving fractions.

Sections:
- Introduction to Fractions and Decimals
- Least Common Multiple/Denominator
- Multiplying and Dividing Fractions
- Adding and Subtracting Fractions

Overview of problems

Example Set: A

Write each fraction as a decimal.

$\frac{2}{5}$ $\frac{1}{9}$

$\frac{7}{13}$ $3\frac{2}{7}$

Example Set: B

Write each decimal as fraction or mixed number.

.3 1.42

.26 $5.\overline{6}$

Example Set: C

Write each fraction is simplest form (reduce).

$\frac{2}{8}$

$\frac{9}{30}$

$\frac{14}{20}$

$\frac{16}{50}$

$\frac{17}{32}$

$\frac{1}{10}$

$\frac{64}{120}$

$\frac{96}{520}$

Example Set: D

Answer the following.

Approximately 22 out of 30 teachers have a masters degree. Express this relationship as a fraction in simplest form and a decimal.

In a business .68 of the total work force gets paid overtime. If the total number of workers is 400, express the relationship of paid workers that earn overtime as a fraction in simplest form.

Overview of problems- KEY

Example Set: A

Write each fraction as a decimal.

$\frac{2}{5} = .4$ $\frac{1}{9} = .\overline{1}$

$\frac{7}{13} = .5384$ $3\frac{2}{7} = 3.285$

Example Set: B

Write each decimal as fraction or mixed number.

$.3 = \frac{3}{10}$ $1.42 = 1\frac{21}{50}$

$.26 = \frac{13}{50}$ $5.\overline{6} = 5\frac{2}{3}$

Example Set: C

Write each fraction is simplest form (reduce).

$\frac{2}{8} = \frac{1}{4}$

$\frac{9}{30} = \frac{3}{10}$

$\frac{14}{20} = \frac{7}{10}$

$\frac{16}{50} = \frac{8}{25}$

$\frac{17}{32} = \frac{17}{32}$

$\frac{1}{10} = \frac{1}{10}$

$\frac{64}{120} = \frac{8}{15}$

$\frac{96}{520} = \frac{12}{65}$

Example Set: D

Answer the following.

Approximately 22 out of 30 teachers have a masters degree. Express this relationship as a fraction in simplest form and a decimal.

$\frac{11}{15} = .733$

In a business .68 of the total work force gets paid overtime. If the total number of workers is 400, express the relationship of paid workers that earn overtime as a fraction in simplest form.

$\frac{17}{25}$

Finding the Least Common Multiple (LCM)

Overview of problems

Example Set: A

Find the least common multiple (LCM) of each pair of numbers.

6, 10

16, 20

7, 3

12, 6, 15

Example Set: B

Find the least common denominator (LCD) of each pair of fractions.

$\frac{2}{3}$, $\frac{1}{9}$

$\frac{7}{10}$, $\frac{3}{14}$

$\frac{2}{5}$, $\frac{1}{8}$, $\frac{9}{20}$

Example Set: C

When adding fractions one needs to be able to determine the LCD. Find the least common denominator (LCD) of each fraction expression.

$$\frac{5}{8} + \frac{1}{4}$$

$$\frac{3}{10} + \frac{7}{6}$$

$$\frac{1}{15} + \frac{3}{12}$$

$$\frac{6}{11} + \frac{9}{7}$$

Example Set: D

When subtracting fractions one needs to be able to determine the LCD. Find the least common denominator (LCD) of each fraction expression.

$$\frac{4}{7} - \frac{1}{2}$$

$$\frac{13}{12} - \frac{9}{8}$$

$$\frac{5}{14} - \frac{2}{6}$$

$$\frac{22}{25} - \frac{17}{20}$$

Finding the Least Common Multiple (LCM)

Overview of problems- KEY

Example Set: A

Find the least common multiple (LCM) of each pair of numbers.

6, 10 = 30

16, 20 = 80

7, 3 = 21

12, 6, 15 = 60

Example Set: B

Find the least common denominator (LCD) of each pair of fractions.

$\frac{2}{3}, \frac{1}{9} = 9$

$\frac{7}{10}, \frac{3}{14} = 70$

$\frac{2}{5}, \frac{1}{8}, \frac{9}{20} = 40$

Example Set: C

When adding fractions one needs to be able to determine the LCD. Find the least common denominator (LCD) of each fraction expression.

$\frac{5}{8} + \frac{1}{4}$ 8

$\frac{3}{10} + \frac{7}{6}$ 30

$\frac{1}{15} + \frac{3}{12}$ 60

$\frac{6}{11} + \frac{9}{7}$ 77

Example Set: D

When subtracting fractions one needs to be able to determine the LCD. Find the least common denominator (LCD) of each fraction expression.

$\frac{4}{7} - \frac{1}{2}$ 14

$\frac{13}{12} - \frac{9}{8}$ 24

$\frac{5}{14} - \frac{2}{6}$ 42

$\frac{22}{25} - \frac{17}{20}$ 100

Overview of problems

Example Set: A

Find each product. Write your answer in simplest form.

$\frac{3}{7} \cdot \frac{1}{2}$ $\qquad$ $\frac{4}{10} \cdot \frac{8}{3}$

$4\frac{1}{2} \cdot 5$ $\qquad$ $2\frac{3}{5} \cdot 1\frac{1}{3}$

Example Set: B

Find each quotient. Write your answer in simplest form.

$\frac{2}{3} \div \frac{1}{3}$ $\qquad$ $\frac{2}{9} \div \frac{2}{5}$

$6\frac{1}{5} \div \frac{3}{4}$ $\qquad$ $2\frac{3}{7} \div 3\frac{1}{2}$

Example Set: C

Find the product or quotient of the following problems. Write your answer in simplest form.

$\frac{3}{5} \cdot \frac{1}{4}$

$\frac{6}{10} \div \frac{2}{5}$

$\frac{3}{2} \cdot \frac{4}{6}$

$\frac{8}{9} \div \frac{5}{2}$

$2\frac{1}{4} \cdot 6\frac{3}{5}$

$7\frac{1}{3} \div 5\frac{2}{7}$

Example Set: D

Evaluate the expression using the following values for a, b and c. Write your answer in simplest form.

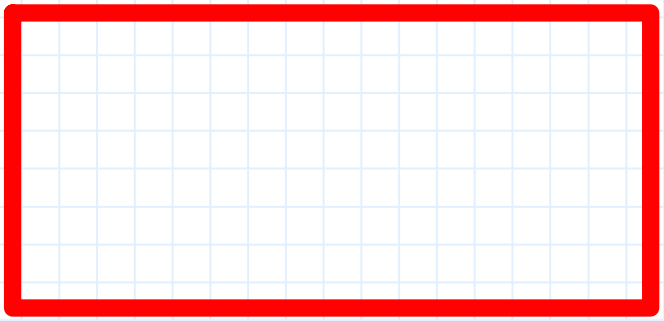
$a = \frac{2}{7}$ $b = \frac{1}{3}$ $c = \frac{4}{5}$

ab $c \div b$

$\frac{1}{2}c$ $\frac{2}{3}a$

Example Set: E

To find the area of a rectangle multiply the length by the width. Determine the area of rectangle below. Write your answer in both fraction and decimal form.



$8\frac{3}{5}$ ft.

$12\frac{1}{4}$ ft.

Overview of problems- KEY

Example Set: A

Find each product. Write your answer in simplest form.

$\frac{3}{7} \cdot \frac{1}{2} = \frac{3}{14}$

$\frac{4}{10} \cdot \frac{8}{3} = \frac{16}{15}$

$4\frac{1}{2} \cdot 5 = \frac{45}{2}$

$2\frac{3}{5} \cdot 1\frac{1}{3} = \frac{52}{15}$

Example Set: B

Find each quotient. Write your answer in simplest form.

$\frac{2}{3} \div \frac{1}{3} = 2$

$\frac{2}{9} \div \frac{2}{5} = \frac{5}{9}$

$6\frac{1}{5} \div \frac{3}{4} = \frac{124}{15}$

$2\frac{3}{7} \div 3\frac{1}{2} = \frac{34}{49}$

Example Set: C

Find the product or quotient of the following problems. Write your answer in simplest form.

$\frac{3}{5} \cdot \frac{1}{4} = \frac{3}{20}$

$\frac{6}{10} \div \frac{2}{5} = \frac{3}{2}$

$\frac{3}{2} \cdot \frac{4}{6} = 1$

$\frac{8}{9} \div \frac{5}{2} = \frac{16}{45}$

$2\frac{1}{4} \cdot 6\frac{3}{5} = \frac{297}{20}$

$7\frac{1}{3} \div 5\frac{2}{7} = \frac{154}{111}$

Example Set: D

Evaluate the expression using the following values for a, b and c. Write your answer in simplest form.

$a = \frac{2}{7}$ $b = \frac{1}{3}$ $c = \frac{4}{5}$

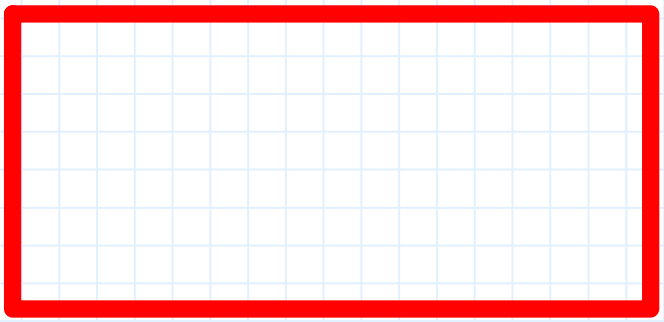
$ab = \frac{2}{21}$ $c \div b = \frac{12}{5}$

$\frac{1}{2}c = \frac{2}{5}$ $\frac{2}{3}a = \frac{4}{21}$

Example Set: E

To find the area of a rectangle multiply the length by the width. Determine the area of rectangle below. Write your answer in both fraction and decimal form.

$\frac{2107}{20}$ ft.^{2} 105.35 ft.^{2}



$8\frac{3}{5}$ ft.

$12\frac{1}{4}$ ft.

Overview of problems

Example Set: A

Find each sum or difference. Write your answer in simplest form.

$\frac{6}{7} - \frac{1}{7}$

$\frac{3}{15} + \frac{2}{15}$

$\frac{19}{3} + \frac{2}{3}$

$4\frac{2}{5} - \frac{12}{5}$

Example Set: B

Find each sum or difference. Write your answer in simplest form.

$\frac{3}{10} + \frac{2}{5}$

$\frac{4}{7} - \frac{1}{3}$

$\frac{5}{8} + \frac{7}{10}$

$6 - \frac{4}{5}$

Example Set: C

Find each sum or difference. Write your answer in simplest form.

$3\frac{1}{7} + \frac{2}{14}$

$2\frac{2}{3} - 1\frac{1}{4}$

$5\frac{2}{9} + 2\frac{1}{3}$

$16\frac{11}{12} - 10\frac{2}{3}$

Example Set: D

Evaluate the expression using the following values for a, b and c. Write your answer in simplest form.

$a = \frac{1}{2}$ $b = \frac{2}{3}$ $c = \frac{4}{5}$

$ab + c$

$a + b + c$

Example Set: E

A construction worker wants to install molding around the door. How many inches of molding will be needed?

Overview of problems- KEY

Example Set: A

Find each sum or difference. Write your answer in simplest form.

$\frac{6}{7} - \frac{1}{7} = \frac{5}{7}$

$\frac{3}{15} + \frac{2}{15} = \frac{1}{3}$

$\frac{19}{3} + \frac{2}{3} = 7$

$4\frac{2}{5} - \frac{12}{5} = 2$

Example Set: B

Find each sum or difference. Write your answer in simplest form.

$\frac{3}{10} + \frac{2}{5} = \frac{7}{10}$

$\frac{4}{7} - \frac{1}{3} = \frac{5}{21}$

$\frac{5}{8} + \frac{7}{10} = \frac{53}{40}$

$6 - \frac{4}{5} = \frac{26}{5}$

Example Set: C

Find each sum or difference. Write your answer in simplest form.

$3\frac{1}{7} + \frac{2}{14} = \frac{23}{7}$

$2\frac{2}{3} - 1\frac{1}{4} = \frac{17}{12}$

$5\frac{2}{9} + 2\frac{1}{3} = \frac{68}{9}$

$16\frac{11}{12} - 10\frac{2}{3} = \frac{25}{4}$

Example Set: D

Evaluate the expression using the following values for a, b and c. Write your answer in simplest form.

$a = \frac{1}{2}$ $b = \frac{2}{3}$ $c = \frac{4}{5}$

$ab + c$

$\frac{17}{15}$

$a + b + c$

$\frac{59}{30}$

Example Set: E

A construction worker wants to install molding around the door. How many inches of molding will be needed?

192"