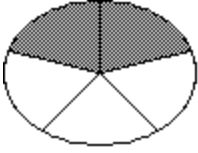


1) Write a fraction to represent the shaded portion.



2) Write a fraction to represent the shaded portion.



Tell whether the fractions are equivalent or not equivalent.

3) $\frac{2}{4}$ and $\frac{12}{24}$

4) $\frac{2}{4}$ and $\frac{40}{36}$

Evaluate the expression.

5) -7^3

6) $\left(\frac{5}{4}\right)^{-3}$

7) $\frac{1}{10^{-4}}$

8) The 28 sixth graders make up $\frac{1}{7}$ m of the student population at the elementary school.

What is the total student population?

9) Reduce to lowest terms:

a. $\frac{12}{15}$

b. $\frac{7abc}{14ab^2}$

c. $\frac{625}{1000}$

d. $\frac{3x + 6y}{(x + 2y)^2}$

10) Illustrate the following multiplication problem using an area model?

$$\frac{7}{12} \cdot \frac{3}{4}$$

11) Write three more fractions equivalent to the fraction $\frac{2}{5}$.

12) Demonstrate subtraction of fractions by subtracting $8\frac{1}{5} - 2\frac{7}{8}$. Show all steps and explain each one. **Do not change each fraction to an improper fraction.**

13) One fourth of the expected tomato crop was destroyed by drought and $\frac{1}{5}$ by insect pests. What fraction of the expected crop survived?

14) Estimate the sum or difference to the nearest whole number.

a. $12\frac{1}{5} + 10\frac{1}{4} + 8\frac{1}{3}$ b. $6\frac{1}{2} - 4\frac{3}{5}$

15) Change $\frac{85}{7}$ to a mixed number.

16) Three pieces of ribbon of lengths $15\frac{1}{2}$ in., $12\frac{3}{4}$ in., and $10\frac{7}{8}$ in., are cut from a 48 in. piece of ribbon. How much remains?

17) There are forty students in a mathematics class. One-fourth of the students are math majors, one-eighth are economics majors, and two-fifths are science majors. The remainder of the class are education majors. One-third of the education majors are seniors. How many of the education majors are seniors? What fractional part of the total class are seniors who are education majors?

18) Find the area and perimeter of a **square** with side of length $1\frac{3}{8}$ in.

19) You have a 48 in. coil of wire. How many $3\frac{3}{4}$ in. lengths can you cut? How much is left if any?

20) On a cruise ship $\frac{4}{7}$ of the passengers are female, $\frac{1}{6}$ of the males are rich, and $\frac{3}{10}$ of the rich males are young. What fraction of the passengers are old, rich males?

21) Perform the following computations.. Do not use your calculator.

a. $2\frac{3}{4} + 3\frac{5}{6}$ b. $6\frac{1}{3} - 2\frac{7}{8}$ c. $6 \div 2\frac{1}{4}$ d. $1\frac{3}{4} \cdot 1\frac{3}{5}$

22) Find the multiplicative inverse of $\frac{3}{16}$, $3\frac{1}{2}$, and $-5\frac{1}{2}$.

23) Place $>$, $<$ or $=$ between the pair of rational numbers to make a true statement.

a. $\frac{3}{7} \square \frac{7}{12}$ b. $\frac{2}{3} \square \frac{24}{36}$

24) Simplify: Leave all answers in simplest exponential form.

a. $2^3 \cdot 2^{-5}$ b. $4^{-6} \div 2^{-4}$

25) Order these fractions from smallest to largest. **Show all work and do not change to decimals.**

$\frac{1}{3}, \frac{3}{4}, \frac{23}{22}, \frac{7}{9}, \frac{4}{9}$

26) Describe what the following problems mean, include sketches and solve the problem.

a. $\frac{1}{3} \cdot \frac{2}{5}$ b. $3 \div \frac{1}{2}$ c. $\frac{1}{2} + \frac{3}{4}$

27) Find two fractions between $\frac{7}{15}$ and $\frac{1}{2}$.

28) Find the additive inverse of $4\frac{1}{6}$.

29) Estimate each answer to the nearest $\frac{1}{2}$.

a. $2\frac{1}{36} + 8\frac{7}{8} + 1\frac{3}{4}$ b. $6\frac{1}{8} - 4\frac{8}{9}$

- 30) Mr. Rivera opened a package of 150 drinking cups for his restaurant. During the day, 39 cups were used. What fraction of the package of cups was used? Express the result using a simple, convenient fraction that is close in value to the exact answer.

Write the fraction in simplest form.

31) $\frac{s - v}{v - s}$

Perform the indicated operation. Express your answer in simplest form.

32) $\frac{9}{5x} - \frac{3}{5y}$

33) a. $\frac{-8}{9} + \frac{4}{5}$

b. $\frac{-4}{9} + \frac{3}{17}$

34) Solve for x: a. $\frac{2}{3}x = \frac{7}{6}$ b. $\frac{2x}{3} - \frac{1}{4} = \frac{x}{6} + \frac{1}{2}$ c. $2^x = 64$ d. $4^x < 16$

- 35) A worker has readings that take $2\frac{2}{3}$ minutes each to read and record. How many readings can be completed in 192 minutes?

- 36) A company has 37,800 employees. Of these, $\frac{1}{3}$ drive alone to work, $\frac{1}{5}$ car pool, $\frac{1}{7}$ use public transportation, $\frac{1}{9}$ cycle, and the remainder use other methods of transportation. How many employees use each method of transportation?

- 37) Determine which of the following fraction is greater:

a. $(\frac{1}{2})^3$ or $(\frac{1}{2})^4$ b. $(\frac{3}{4})^{10}$ or $(\frac{4}{5})^{10}$ c. 32^{50} or 4^{100}

- 38) Use the distributive property to find each product of rational numbers.

a. $2\frac{1}{3} \cdot 4\frac{3}{5}$ b. $(\frac{a}{b} + 1)(\frac{b}{a} - 1)$

39) A suit is on sale for \$150. What was the original price of the suit if the discount was $\frac{1}{3}$ of the original price?

40) Write each of the following in simplest form using positive exponents in the final answer.

a. $(\frac{1}{2})^{-2}$

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

c. $\frac{a^{-5}}{a^2}$

Answer Key

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- 1) $\frac{2}{5}$
- 2) $\frac{3}{8}$
- 3) Equivalent
- 4) Not equivalent
- 5) -343
- 6) $\frac{64}{125}$
- 7) 10,000
- 8) 196 students.
- 9) a. $\frac{4}{5}$ b. $\frac{c}{2b}$ c. $\frac{5}{8}$ d. $\frac{3}{x+2y}$
- 10) Draw a rectangle and divide it vertically into 12ths, then shade in 7 of these. Now horizontally divide the rectangle into 4ths and shade in 3 of these. Your answer is the part of rectangle shaded in both times -- that is $\frac{21}{48}$ or $\frac{7}{16}$
- 11) various answers--examples $\frac{4}{10}, \frac{6}{15}, \frac{8}{20}$
- 12) $8\frac{1}{5} - 2\frac{7}{8} = 8\frac{8}{40} - 2\frac{35}{40} = 7\frac{48}{40} - 2\frac{35}{40} = 5\frac{13}{40}$
- 13) $\frac{11}{20}$
- 14) a. 30 b. 2
- 15) $12\frac{1}{7}$
- 16) $8\frac{7}{8}$ in.
- 17) Three education majors are seniors. Of the total class $\frac{3}{40}$ are senior education majors.
- 18) $A = 1\frac{57}{64}$ in² P = $5\frac{1}{2}$ in
- 19) 12 lengths, 3 inches left
- 20) $\frac{1}{20}$
- 21) a. $6\frac{7}{12}$ b. $3\frac{11}{24}$ c. $2\frac{2}{3}$ d. $2\frac{4}{5}$
- 22) $\frac{16}{3}, \frac{2}{7} - \frac{2}{11}$

Answer Key

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23) a. $<$ b. $=$

24) a. $\frac{1}{4}$ b. $\frac{1}{28}$ or $\frac{1}{256}$

25) $\frac{1}{3}, \frac{4}{9}, \frac{3}{4}, \frac{7}{9}, \frac{23}{22}$

26) a. $\frac{2}{15}$ b. 6 c. $1\frac{1}{4}$

27) Answers may vary $\frac{29}{30}$ and $\frac{19}{40}$

28) $-4\frac{1}{6}$

29) a. 13 b. 1

30) $\frac{1}{4}$

31) -1

32) $\frac{9y - 3x}{5xy}$

33) a. $-\frac{4}{45}$ b. $-\frac{41}{153}$

34) a. $\frac{7}{4}$ b. $\frac{3}{2}$ c. 6 d. $x < 2$

35) 72 readings

36) Drive alone: 12,600; car pool: 7560; public transportation: 5400; cycle: 4200; other: 8040

37) a. $(\frac{1}{2})^3$ b. $(\frac{4}{5})^{10}$ c. 32^{50}

38) a. $8 + \frac{6}{5} + \frac{4}{3} + \frac{3}{15} = 10\frac{11}{15}$ b. $\frac{b^2 - a^2}{ab}$

39) \$225

40) a. 2^2 or 4 b. $\frac{1}{x}$ c. $\frac{1}{a^7}$