Learning Plan 2

Chapter 2

Questions 1 and 2

(page 45)

Convert to fractional notation.

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

Solution

$3\frac{1}{7} = \frac{3 \cdot 7 + 1}{7}$ $= \frac{22}{7}$	Multiply 3 by 7 and add 1. Don't forget to include the denominator.

Questions 3 and 4

(pages 45-46)

Convert to a mixed number.

$$\frac{23}{4}$$

Solution:

Think it this way:

How many times 4 goes into 23? 5 times.

What is left? 3 is left.

So,

$$\frac{23}{4} = 5\frac{3}{4}$$

When working with larger numbers, use long division.

Questions 5 and 6

Write the fraction in lowest terms.

$$\frac{42}{108}$$

Solution:

Divide both the numerator and the denominator by 6 (6 is the largest number that goes into both 42 and 108).

$$\frac{42 \div 6}{108 \div 6} = \frac{7}{18}$$

Questions 7 an 8

(pages 50-51)

Find the least common denominator of the numbers:

$$5, 12, 20, 24$$

Solution:

There are multiple ways of completing a problem like this. I will show you several of them and then you can choose your method.

Method 1

Find multiples of each number and then look for the smallest common multiple:

5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, …
12, 24, 36, 48, 60, 72, 84, 96, 108, 120, 132, …
20, 40, 60, 80, 100, 120, 140, …
24, 48, 72, 96, 120, 144, 168, …

The smallest common number is 120, so Least Common Denominator is 120.

Method 2

Find the prime factorization of each number:

$$5 = 5$$
$$12 = 2^2 \cdot 3$$
$$20 = 2^2 \cdot 5$$
$$24 = 2^3 \cdot 3$$

The LCD is the product of every prime factor that occurs, raised to the greatest power to which it occurs, in these factorizations.

$$LCD = 2^3 \cdot 3 \cdot 5$$

$$= 120$$

Method 3

Take the largest number 24 and multiply it by 2:

$$24 \cdot 2 = 48$$

Then check if you could divide 48 by 5, 12, and 20.
48 does not divide by 5, 12, and 20.

Multiply 24 by 3.

$$24 \cdot 3 = 72.$$

72 still does not divide by 5, 12, and 20.

Multiply 24 by 4.

$$24 \cdot 4 = 96.$$

96 still does not divide by 5, 12, and 20.

Multiply 24 by 5.

$$24 \cdot 5 = 120$$

120 divides by 5, 12, and 20.
So, 120 is the Least Common Denominator.

Question 9

Subtract and simplify.

$$\frac{12}{15} - \frac{2}{15}$$

Solution

$$\frac{12}{15} - \frac{2}{15} = \frac{10}{15} = \frac{2}{3}$$

Questions 10 and 11

(page 52)
Add and simplify.

$$\frac{1}{4} + \frac{1}{2} + \frac{1}{6}$$

Solution
The least common denominator of 4, 2, and 6 is 12.

$$\frac{1}{4} + \frac{1}{2} + \frac{1}{6}$$

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

$$= \frac{3}{12} + \frac{6}{12} + \frac{2}{12}$$

$$= \frac{11}{12}$$

If it would be possible to reduce, then you must reduce the fraction.

Question 12

Multiply.

$$\frac{4}{5} \cdot \frac{3}{7}$$

Solution

Multiply the numerators together and the denominators together.

$$\frac{4}{5} \cdot \frac{3}{7} = \frac{12}{35}$$

Question 13

Multiply.

$$\frac{15}{16} \cdot \frac{6}{25}$$

Solution

Reduce first, then multiply the numerators together and the denominators together. (Divide 15 and 25 by 5, and 16 and 6 by 2).

$$\frac{15}{16} \cdot \frac{6}{25} = \frac{3}{8} \cdot \frac{3}{5} = \frac{9}{40}$$

Question 14

(p. 64)

Multiply.

$$3\frac{5}{6} \times 4\frac{2}{5}$$

Solution

$$3\frac{5}{6} \times 4\frac{2}{5}$$

$$= \frac{3 \cdot 6 + 5}{6} \times \frac{4 \cdot 5 + 2}{5}$$

$$= \frac{23}{6} \times \frac{22}{5}$$

$$= \frac{23}{3} \times \frac{11}{5}$$

$$= \frac{253}{15} = 16\frac{13}{15}$$

Question 15

Divide.

$$\frac{9}{10} \div \frac{3}{5}$$

Solution

$$\frac{9}{10} \div \frac{3}{5}$$

$$= \frac{9}{10} \cdot \frac{5}{3}$$

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

Question 16

(p. 65)

Divide.

$$12\frac{5}{6} \div 4\frac{2}{5}$$

Solution

$$12\frac{5}{6} \div 4\frac{2}{5}$$

$$= \frac{12 \cdot 6 + 5}{6} \div \frac{4 \cdot 5 + 2}{5}$$

$$= \frac{77}{6} \div \frac{22}{5}$$

$$= \frac{77}{6} \cdot \frac{5}{22}$$

$$= \frac{7}{6} \cdot \frac{5}{2}$$

$$= \frac{35}{12}$$

$$= 2\frac{11}{12}$$

Question 18

Convert 0.125 into a fraction.

Solution

$$0.125 = \frac{125}{1000} = \frac{125 \div 125}{1000 \div 125} = \frac{1}{8}$$

Question 20

A hospital study of 1584 heart-attack patients found that 5 out of 8 quit taking life-saving drugs prescribed to them.

a. What fraction stopped taking the medicine?
b. Convert the fraction into a decimal.
c. How many patients quit taking their medicine?

Solution

a. $\frac{5}{8}$

b. $5 \div 8 = 0.625$. You could use the calculator or use long division to divide 5 by 8.

c.

$$\frac{5}{8} \cdot \frac{1584}{1}$$

$$= \frac{7920}{8}$$

$$= 990$$

If you get a decimal, you will have to round to the nearest whole number.