

22.  $\frac{3}{5}w = 15$   
(Inv. 7)
23.  $b - 1.6 = (0.4)^2$   
(Inv. 7)
24.  $20w = 5.6$   
(Inv. 7)
- Simplify:
25.  $\frac{2 \text{ yd } 1 \text{ ft } 7 \text{ in.}}{+ 1 \text{ yd } 2 \text{ ft } 8 \text{ in.}}$   
(49)
26.  $0.5 \text{ m} \cdot \frac{100 \text{ cm}}{1 \text{ m}} \cdot \frac{10 \text{ mm}}{1 \text{ cm}}$   
(50)
27.  $12\frac{2}{5} \cdot 4\frac{1}{5} \cdot 2\frac{2}{3}$   
(26)
28.  $7\frac{1}{2} \div \left(6\frac{2}{3} \cdot 1\frac{1}{5}\right)$   
(26)
29. (a)  $(-8) + (-7) - (-15)$  (b)  $(-15) + (+11) - |+24|$   
(68)
30. Find the product of 2.25 and  $1\frac{1}{3}$ .  
(26, 43)

# LESSON 74

## Fractional Part of a Number, Part 2

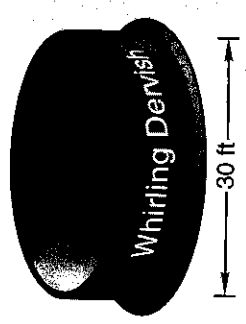
**Facts Practice:**  $+ - \times \div$  Mixed Numbers (Test N in Test Masters)

**Mental Math:**

- a.  $(-8) - (-12)$
- b.  $45 \times 10^{-3}$
- c.  $7w + 1 = 50$
- d. Estimate 15% tip on a \$19.81 bill.
- e. 400 m to km
- f. 80% of \$25
- g. 10% of 80,  $\times 2, \sqrt{\quad}, \times 7, - 1, \div 3, \sqrt{\quad}, \times 12, \sqrt{\quad}, \div 6$

**Problem Solving:**

Gil rode the Whirling Dervish at the fair. The cylindrical chamber spins, forcing riders against the outer wall while the floor drops away. If the chamber is 30 feet in diameter and if it spins around 30 times during a ride, how far do the riders travel? Do riders travel more or less than half of a mile?



In some fractional-part-of-a-number problems the fraction is

### Example 1 What fraction of 56 is 42?

**Solution** We translate this statement directly into an equation by replacing **what fraction** with  $W_F$ , replacing **of** with a multiplication symbol, and replacing **is** with an equals sign.

What fraction of 56 is 42? question

$$W_F \times 56 = 42 \quad \text{equation}$$

To solve, we divide both sides by 56.

$$\frac{W_F \times 56}{56} = \frac{42}{56} \quad \text{divided by 56}$$

$$W_F = \frac{3}{4} \quad \text{simplified}$$

If the question had been, "What decimal part of 56 is 42?" the procedure would have been the same. As the last step we would have written  $\frac{3}{4}$  as the decimal number 0.75.

$$W_D = 0.75$$

### Example 2 Seventy-five is what decimal part of 20?

**Solution** We make a direct translation.

Seventy-five is what decimal part of 20? question

$$75 = W_D \times 20 \quad \text{equation}$$

To solve, we divide both sides by 20.

$$\frac{75}{20} = \frac{W_D \times 20}{20} \quad \text{divided by 20}$$

$$W_D = 3.75 \quad \text{simplified}$$

If the question had asked "What fractional part," we would have written the answer as a fraction or as a mixed number.

$$\frac{75}{20} = W_F \quad \text{fraction}$$

**Solution** In this problem the total is the unknown. We can still do direct translation from the question to the equation.

Three fourths of what number is 60? question

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$\frac{3}{4} \times W_N = 60 \quad \text{equation}$$

To solve, we multiply both sides by  $\frac{4}{3}$ .

$$\frac{4}{3} \times \frac{3}{4} \times W_N = 60 \times \frac{4}{3} \quad \text{multiplied by } \frac{4}{3}$$

$$W_N = 80 \quad \text{simplified}$$

Had the question been phrased by using 0.75 instead of  $\frac{3}{4}$ , the procedure would have been the same.

Seventy-five hundredths of what number is 60? question

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$0.75 \times W_N = 60 \quad \text{equation}$$

To solve, we can divide both sides by 0.75.

$$\frac{0.75 \times W_N}{0.75} = \frac{60}{0.75} \quad \text{divided by 0.75}$$

$$W_N = 80 \quad \text{simplified}$$

**Practice** Translate each statement into an equation and solve.

- What fraction of 130 is 80?
- Seventy-five is what decimal part of 300?
- Eighty is 0.4 of what number?
- Sixty is  $\frac{5}{6}$  of what number?
- Sixty is what fraction of 90?

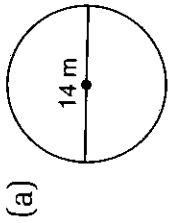
**Problem set**  
74

- <sup>(55)</sup> During the first 3 days of the week, Mike read an average of 28 pages per day. During the next 4 days, Mike averaged 42 pages per day. For the whole week, Mike read an average of how many pages per day?
- <sup>(46)</sup> Twelve ounces of Brand X costs \$1.14. Sixteen ounces of Brand Y costs \$1.28. Brand X costs how much more per ounce than Brand Y?
- <sup>(50)</sup> Use a unit multiplier to convert  $4\frac{1}{2}$  feet to inches.
- <sup>(65)</sup> Use a ratio box to solve this problem. The ratio of left-handed students to right-handed students in the math class was 2 to 3. If 18 of the students were right-handed, how many students were there in the math class?
- <sup>(72)</sup> Use a ratio box to solve this problem. If 5 pounds of apples cost \$1.40, how much would 8 pounds of apples cost?
- <sup>(22,36)</sup> Draw a diagram of this statement. Then answer the questions that follow.  
*Five sixths of the 300 triathletes completed the course.*
  - How many triathletes completed the course?
  - What was the ratio of triathletes who completed the course to those who did not complete the course?

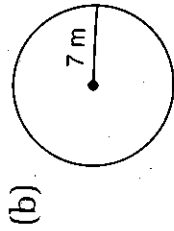
Write equations to solve problems 7–10.

- <sup>(74)</sup> Fifteen is  $\frac{3}{8}$  of what number?
- <sup>(74)</sup> Seventy is what decimal part of 200?
- <sup>(74)</sup> Two fifths of what number is 120?
- The store made a 60% profit on the \$180.00 selling price

12. Find the circumference of each circle.



Use  $\frac{22}{7}$  for  $\pi$ .



Leave  $\pi$  as  $\pi$ .

13. Complete the table.

FRACTION	DECIMAL	PERCENT
$3\frac{1}{2}$	(a)	(b)
(c)	(d)	35%

14. The shoe salesperson received a 20% commission on the sale of a \$35.00 pair of shoes. What was the salesperson's commission?

15. (a) Describe the rule of this function. In 

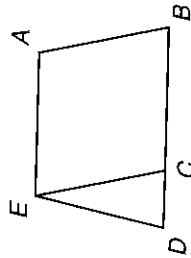
F	U	N	C	T	I	O	N
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 Out 

0	1
2	7
4	13
5	<input type="checkbox"/>
<input type="checkbox"/>	25
- (b) Find the missing numbers in the function.

16. Write 425 million in scientific notation.

Refer to the figure to answer problems 17 and 18.  $\overline{AE} \parallel \overline{BD}$ ,  $\overline{AB} \parallel \overline{EC}$ , and  $\overline{EC} = \overline{ED}$ .



18. If the measure of  $\angle A$  is  $100^\circ$ , then what is the measure of
- (a)  $\angle ABC$ ? (b)  $\angle BCE$ ? (c)  $\angle ECD$ ?  
 (d)  $\angle EDC$ ? (e)  $\angle DEC$ ? (f)  $\angle DEA$ ?

19. Arrange these numbers in order from least to greatest:

0.013, 0.1023, 0.0103, 0.021

20. Evaluate:  $(m + n) - mn$  if  $m = 1\frac{1}{2}$  and  $n = 2\frac{2}{3}$

Show a line-by-line solution of each of these equations. Then show a check of the solution.

21.  $p + 3\frac{1}{5} = 7\frac{1}{2}$       22.  $3n = 0.138$   
(Inv. 7)      (Inv. 7)

23.  $n - 0.36 = 4.8$       24.  $\frac{2}{3}x = \frac{8}{9}$   
(Inv. 7)      (Inv. 7)

Simplify:

25.  $\sqrt{49} + \{5[3^2 - (2^3 - \sqrt{25})] - 5^2\}$   
(63)

26.  $\begin{array}{r} 4 \text{ hr } 5 \text{ min } 15 \text{ s} \\ - 1 \text{ hr } 15 \text{ min } 30 \text{ s} \\ \hline \end{array}$   
(56)      *2 hr 5 min 45 s*

27. (a)  $(-9) + (-11) - (+14)$       (b)  $(26) + (-43) - |-36|$   
(68)

28. (a)  $(-3)(12)$       (b)  $(-3)(-12)$   
(73)

(c)  $\frac{-12}{3}$       (d)  $\frac{-12}{-3}$

29. Write the sum of  $8\frac{1}{3}$  and 7.5 as a mixed number.  
(30, 43)

30. Florence was facing north. If she turns  $180^\circ$ , which direction will she be facing?  
(17)