

Part 1 Exponents for Multiplied Groups

$$10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^6$$

$$(10 \times 10) \times (10 \times 10 \times 10 \times 10) = 10^6$$

$$10^2 \times 10^4 = 10^6$$

$$10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^6$$

$$(10 \times 10 \times 10) \times (10 \times 10 \times 10) = 10^6$$

$$10^3 \times 10^3 = 10^6$$

◆ If the base is shown **6 times**, the exponents must **add up to 6**.

Part 2 Copy and complete each boxed equation.

a. $(8 \times 8) \times (8 \times 8 \times 8) \times (8 \times 8)$

$$8^7 = \square \times \square \times \square$$

d. $(5 \times 5) \times (5 \times 5)$

$$5^4 = \square \times \square$$

b. $(7 \times 7 \times 7) \times (7 \times 7)$

$$7^5 = \square \times \square$$

e. $(10 \times 10 \times 10) \times (10 \times 10 \times 10) \times (10 \times 10)$

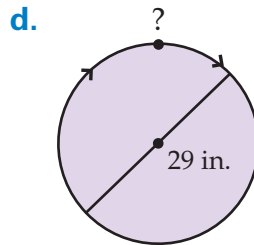
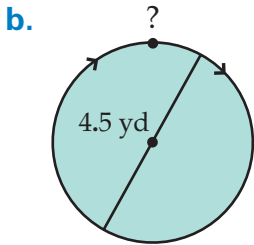
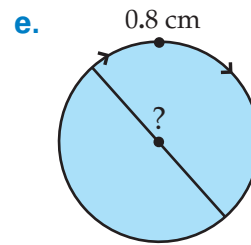
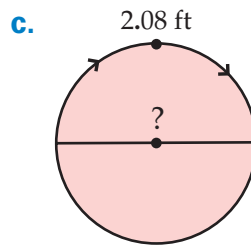
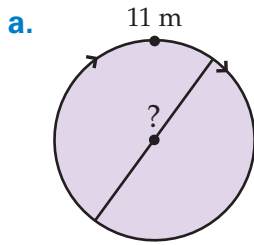
$$10^8 = \square \times \square \times \square$$

c. $(9 \times 9 \times 9 \times 9) \times (9 \times 9) \times (9 \times 9 \times 9)$

$$9^9 = \square \times \square \times \square$$

Part 3

Find the circumference or the diameter of each circle.

**Part 4**

For each problem, write the rate equation with letters. Start with the letter that answers the question. Then work the problem.

- A machine produces pencils at the rate of 120 pencils per minute. How long will it take to produce 40 pencils?
- There are 3.5 pounds of flour for every pound of sugar. How many pounds of flour are used if 10 pounds of sugar are used?
- How many women work in a factory that employs 96 men if the ratio of men to women is 3 to 5?
- A tree trunk grows at a steady rate. If the diameter of the tree trunk increases by 8 centimeters in 3 years, by how much will the diameter increase in 7 years?

Part 5

Copy and work each item. First figure out the sign in the answer. Then multiply.

a. $-5(-2.3) = \blacksquare$

d. $-.4(+2) = \blacksquare$

g. $+1(-6) = \blacksquare$

b. $-\frac{3}{8}(+5) = \blacksquare$

e. $-7(-1) = \blacksquare$

h. $-\frac{2}{3}(+7) = \blacksquare$

c. $+6.4(-10) = \blacksquare$

f. $-\frac{5}{7}(-6) = \blacksquare$

Part 6

Copy each equation. Rewrite each equation with like terms combined. Then solve for the letter.

a. $9w - 3w = 10 + w - 4$

d. $11k - 4k = 15 + 2k - 5$

b. $4r - 1 - 13 - r = 3 + 4$

e. $3g - 7g - 10 + 40 = g$

c. $10 - 2 = \frac{2}{3}h + 6 + \frac{5}{3}h$

Independent Work**Part 7**

Work each problem.

- The jeans cost \$11.30 less than the coat. The jeans cost \$17.55. How much did the coat cost?
- There were 63 people in the park. 17 were on vacation. How many were not on vacation?
- Jon's shoes were 1.3 inches shorter than Eric's shoes. Jon's shoes were 10.5 inches long. How long were Eric's shoes?
- There are 72 boys and 59 girls at the show. How many children are at the show?
- The number of tables is $\frac{2}{3}$ the number of people. There are 42 tables. How many people are there?

Part 8

Complete each equation to show the base and exponent.

a. $8 \times 8 \times 8 \times 8 \times 8 = \blacksquare$

b. $10 \times 10 \times 10 = \blacksquare$

Part 9

Solve each problem.

a. $2t - 30m = 20$

$$m = \frac{1}{5}$$

c. $\frac{1}{8}r + t = 1$

$$r = -3$$

b. $14 + m = 2k$

$$m = 12$$

Part 10 Work each problem.

a. $30 - 5 = -\frac{3}{8}p + p$

b. $2b - 2 + 10b - 1 = 3$

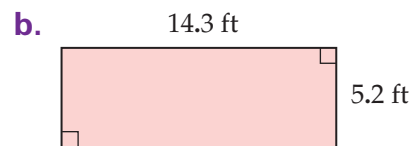
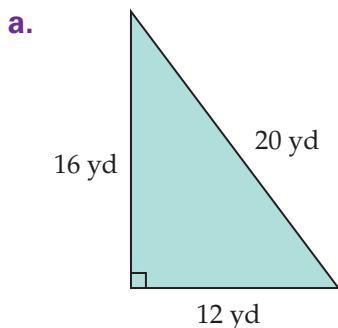
c. Red and yellow birds are nesting in the tree. There are 26 yellow birds. If 48 birds are nesting in the tree, how many red birds are there?

d. A shadow is $\frac{5}{7}$ the height of the hill. The hill is 56 feet high. How long is the shadow?

e. The dog is 2.6 months younger than the cat. The cat is 20.8 months old. What's the age of the dog?

f. Furnace M is 66 degrees hotter than furnace P. If furnace P is 588 degrees, what is the temperature inside furnace M?

g. 12 of the children are sick. The rest are well. There are 135 children. How many are well?

Part 11 Find the area and perimeter of each figure.**Part 12** Copy and complete each equation. First show the multiplication. Then show the value it equals.

a. $5^4 = \blacksquare = \blacksquare$

c. $.5^4 = \blacksquare = \blacksquare$

b. $7^5 = \blacksquare = \blacksquare$

d. $14^3 = \blacksquare = \blacksquare$