



## Interest on Savings and Loans

When we use a vehicle or house belonging to another person, we expect to pay rent for the use of the item. In a sense, interest is rent paid for the privilege of using another person's money. When we put our money into a savings account at a bank, we are allowing the bank to use our money until we need it. The bank pays interest to us for the use of our money, thus adding to the amount we have in savings. When we borrow money, we return what we borrow, and we also usually pay interest, thus adding to the total cost of the loan.

The money placed into a savings account or borrowed as a loan is called the **principal**. The **rate of interest** is the percent of the principal that will be paid for one full year's use of the money. The simple interest formula is  $i = prt$ , where  $i$  stands for "interest,"  $p$  stands for "principal,"  $r$  stands for "rate," and  $t$  stands for "time in years."

Mary kept \$250 ( $p$ ) in her savings account for 3 years ( $t$ ). The bank pays 2% ( $r$ ) interest per year. How much interest did Mary's account earn?

Use the formula:  $i = prt$

Substitute numbers for the variables:  $i = \$250 \times 0.02 \times 3$

Solve:  $i = \$15.00$

Mary's savings account earned \$15.00 interest.

How much was in Mary's account at the end of three years? To solve, add the interest to the original principal.

$$\$250 + \$15.00 = \$265.00$$

At the end of three years, Mary had \$265.00 in her savings account.

Sometimes a savings account or a loan is maintained for less than a year. Express this time as a decimal.

Joshua borrowed \$1,200 to buy a lawn mower for his lawn mowing business. The bank charged a rate of 15% interest per year. He paid back the loan after  $\frac{1}{2}$  year. How much interest did he pay on the loan? How much did he pay back the bank altogether?



The Bible condemns charging oppressive interest on borrowed money. The New Testament calls this the sin of extortion. Extortion means obtaining money through force. Those who charge unreasonable interest rates for the use of their money are taking unfair advantage of those poorer than themselves.

Use the formula:

$$i = prt$$

Change  $\frac{1}{2}$  to a decimal.

Substitute numbers for the variables:

$$i = \$1,200 \times 0.15 \times 0.5$$

Solve:

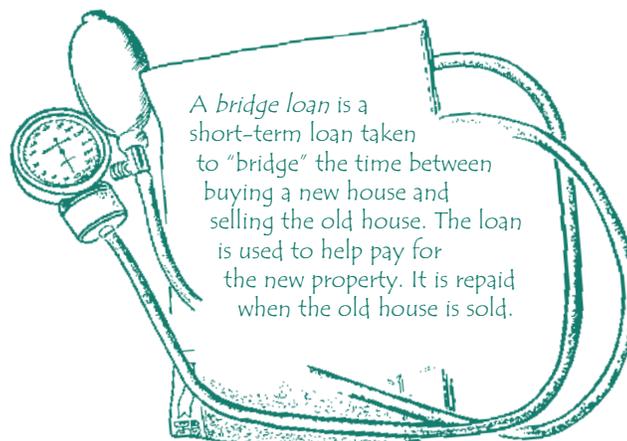
$$i = \$90.00$$

Joshua paid \$90.00 interest on the loan.

Add the interest to the original principal:

$$\$1,200 + \$90.00 = \$1,290$$

Joshua paid \$1,290 back to the bank.



Use the interest formula to solve.



1. Since Sam has no family to support, he offered to give a young family from church a bridge loan so they could buy a larger house after their third child was born. Sam offered to give them a low-interest loan of \$50,000 for  $\frac{1}{2}$  year at 2% interest.

a. How much interest was paid to Sam at the end of 6 months? \_\_\_\_\_

b. What was the total amount that was repaid to Sam?  
\_\_\_\_\_



## We Remember

Write right or left.

2. A positive power of 10 moves the decimal point \_\_\_\_\_ from 1.0.

3. A negative power of 10 moves the decimal point \_\_\_\_\_ from 1.0.

Write the products. Use decimals for those with negative exponents.

4. a.  $10^{-5} =$  \_\_\_\_\_

b.  $10^7 =$  \_\_\_\_\_

c.  $10^{-3} =$  \_\_\_\_\_

## Lesson 4

Write each product or quotient.

5. a.  $\frac{-48}{-6} = \underline{\hspace{2cm}}$

b.  $18 \div (-3) = \underline{\hspace{2cm}}$

c.  $9 \overline{)54}$

6. a.  $\frac{2}{-5} \times \frac{1}{-2} = \underline{\hspace{2cm}}$

b.  $-9 \times 8 = \underline{\hspace{2cm}}$

c.  $11 \times (-7) = \underline{\hspace{2cm}}$

Write the products as fractions.

7. a.  $2^{-6} = \underline{\hspace{2cm}}$

b.  $3^{-3} = \underline{\hspace{2cm}}$

c.  $4^{-2} = \underline{\hspace{2cm}}$

Write the products.

8. a.  $2^3 = \underline{\hspace{2cm}}$

b.  $8^1 = \underline{\hspace{2cm}}$

c.  $2^5 = \underline{\hspace{2cm}}$

d.  $4^0 = \underline{\hspace{2cm}}$

Solve. Use proportions if necessary.

9. What is  $\frac{5}{6}$  of 36?  $\underline{\hspace{2cm}}$

10. 9 is  $\frac{1}{8}$  of what number?  $\underline{\hspace{2cm}}$

11. 13 is what fraction of 52?  $\underline{\hspace{2cm}}$

Write complementary or supplementary.

12.  $\angle TUW$  and  $\angle WUV$  are  $\underline{\hspace{2cm}}$  angles.

13.  $\angle YAX$  and  $\angle YAZ$  are  $\underline{\hspace{2cm}}$  angles.

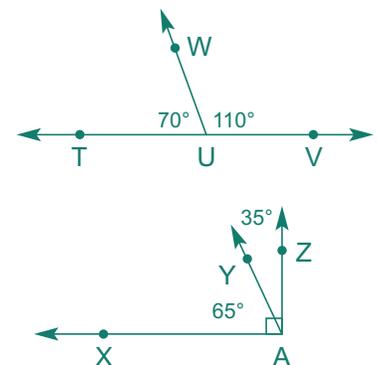
Convert. Round to the nearest whole.

14. 18 in  $\approx$   $\underline{\hspace{2cm}}$  cm

15. 25 kg  $\approx$   $\underline{\hspace{2cm}}$  lb

16. 85 cm  $\approx$   $\underline{\hspace{2cm}}$  in

17. 30 gal  $\approx$   $\underline{\hspace{2cm}}$  L



18. Linda's bank is offering certificates of deposit (CDs) that pay  $4\frac{1}{2}\%$  interest on \$2,000 if it is left in the account for  $2\frac{1}{2}$  years. How much interest would this CD earn in  $2\frac{1}{2}$  years?

$\underline{\hspace{2cm}}$

## Mastery Drill

19. A reflex angle measures between \_\_\_\_\_° and \_\_\_\_\_°.
20. The formula for finding the volume of a cylinder is \_\_\_\_\_.
21. Any number except zero with an exponent of 0 equals \_\_\_\_\_.
22. Any number with an exponent of \_\_\_\_\_ equals the number itself.
23. a. 1 kilogram  $\approx$  \_\_\_\_\_ pounds                      b. 1 gallon  $\approx$  \_\_\_\_\_ liters
24. a. The decimal for  $\frac{5}{8}$  is \_\_\_\_\_ .                      b. The decimal for  $\frac{3}{8}$  is \_\_\_\_\_ .
25. a. The decimal for  $\frac{1}{8}$  is \_\_\_\_\_ .                      b. The decimal for  $\frac{7}{8}$  is \_\_\_\_\_ .
26. a. The fraction for  $0.8\bar{3}$  is \_\_\_\_\_ .                      b. The fraction for  $0.\bar{3}$  is \_\_\_\_\_ .
27. a. The fraction for  $0.1\bar{6}$  is \_\_\_\_\_ .                      b. The fraction for  $0.\bar{6}$  is \_\_\_\_\_ .

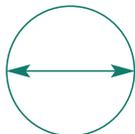
**Simplify and solve.**

28. a.  $12 + 12 \div 2 = 5x - 9 + 4x$     b.  $6x - 9 + 3x + x = 9 \cdot 7 + 8$     c.  $3n + \frac{27}{3} = 8 + 12 \div 3$

**Find the final cost after discount.**

29. The cost was \$26.95 before an 8% discount.  
The final cost is \_\_\_\_\_.

**Use the circumference formula to find the diameter of the circle. Use 3.14 for pi.**



30. The diameter is \_\_\_\_\_ .                       $C = 21.98 \text{ m}$

**Write an expression using an exponent.**

31. a. Base 3, Exponent 8 \_\_\_\_\_                      b. Eleven to the fourth power \_\_\_\_\_

Lesson 4, 5

—  $\div$   $\times$  Skill Builders —

$3\frac{2}{3}$

$6\frac{1}{2}$

32. a.  $21 + \frac{n}{8} = 25$

b.  $3\frac{1}{5} = \underline{\hspace{2cm}}$

c.  $+ 4\frac{5}{6}$

Lesson

5



Quiz 1



Tell your teacher when you are ready to take Quiz 1.



Networks

Without lifting your pencil, try tracing the following configurations. Trace every line, but do not trace any line twice.

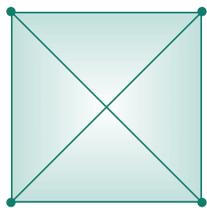


Figure 1

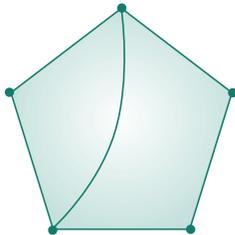


Figure 2

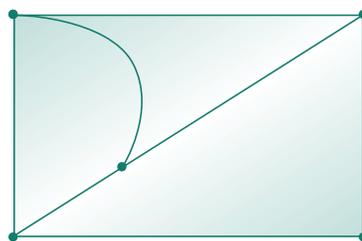


Figure 3

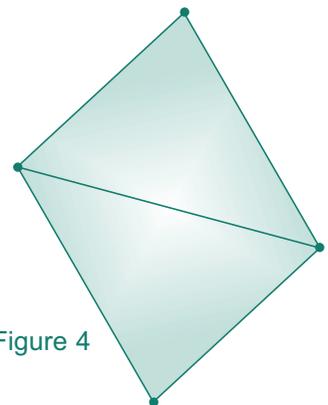


Figure 4

Answer the questions.

1. Which figures were you able to trace completely? \_\_\_\_\_
2. Which figures were impossible to trace completely? \_\_\_\_\_

These figures are called **networks**. In a network, each line segment or curve ends at a point. Each point has an even or odd number of lines extending from it. Networks having more than two points with an odd number of lines extending from each point are impossible to trace completely without lifting your pencil or going over any line twice.

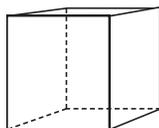
Lesson

6

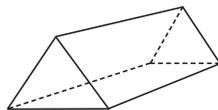


Polyhedra

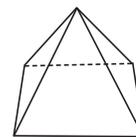
A **polyhedron** (pă lē hē' drən) is a three-dimensional shape whose faces are all polygons. The plural of polyhedron is **polyhedra**. You called polyhedra *solids* in previous LightUnits. You should recognize the following polyhedra:



cube

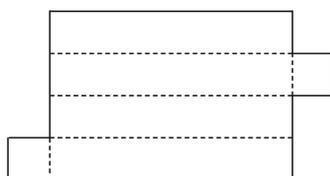


triangular prism



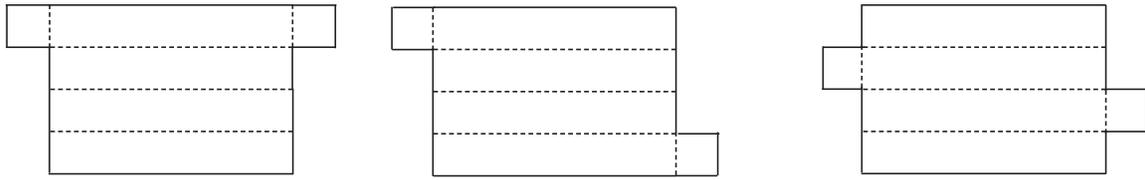
pyramid

A **net** of a polyhedron is an arrangement of connected polygons which can be drawn on a flat surface and folded up to make a polyhedron. This is a net for the rectangular prism shown.

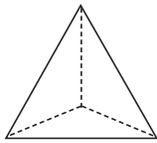


## Lesson 6

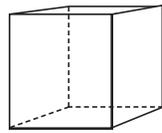
Often there is more than one possible net for a polyhedron. Here are several other nets for the rectangular prism shown on the previous page.



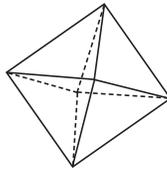
A **regular polyhedron** has congruent regular polygons for each face. There are only five regular polyhedra:



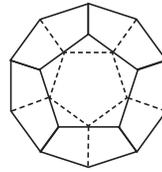
tetrahedron



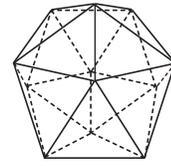
hexahedron  
(cube)



octahedron



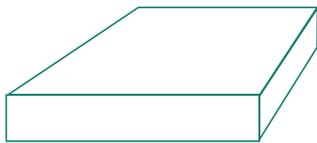
dodecahedron



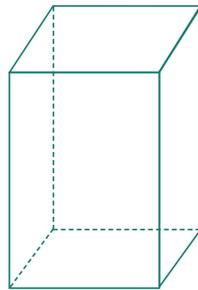
icosahedron

The faces of the tetrahedron, octahedron, and the icosahedron are all equilateral triangles. The faces of the cube are all squares. The faces of the dodecahedron are all regular pentagons.

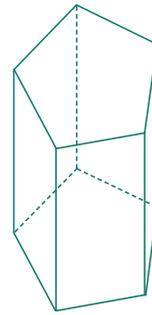
Match each polyhedron with its net.



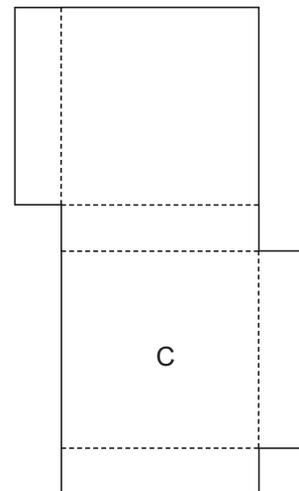
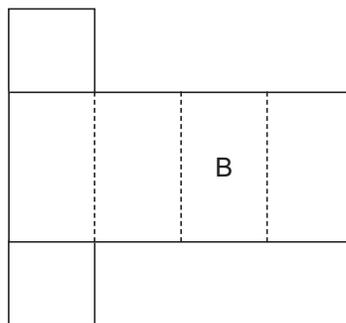
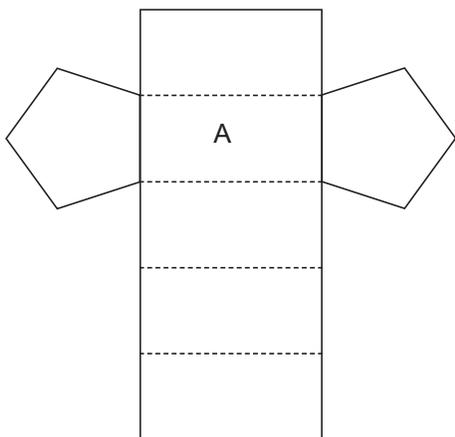
1. a. \_\_\_\_\_



b. \_\_\_\_\_



c. \_\_\_\_\_



Go to page 69. Cut out the net for the hexahedron (cube). Fold on the dotted lines. Tape or glue together to make the hexahedron. Answer the questions.

2. How many faces does the hexahedron have? \_\_\_\_\_
3. How many edges does the hexahedron have? \_\_\_\_\_
4. How many vertices does the hexahedron have? \_\_\_\_\_



## We Remember



5. Linda loaned \$12,500 to her brother Leon so he could expand his roofing and siding business. He agreed to pay  $6\frac{1}{4}\%$  simple interest and repay the loan after 5 years.



- a. How much interest will be due on the loan in 5 years?

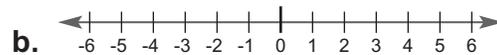
\_\_\_\_\_

- b. What is the total Leon will need to repay Linda?

\_\_\_\_\_

Solve. Then graph the solution.

6. a.  $x - 8 \leq -4$



Convert. Round to the nearest whole.

7. a. 34 months  $\approx$  \_\_\_\_\_ years

b. 7 weeks = \_\_\_\_\_ days

Solve. Round to the nearest cent.

8. Original price of \$14.95 with decrease of 25%.

a. Amount of decrease: \_\_\_\_\_

b. New price: \_\_\_\_\_

9. The price went up 15% from \$79 = \_\_\_\_\_

**Lesson 6**

 **Mastery Drill** 

- 10. The *greater than or equal to* symbol is \_\_\_\_\_.
- 11. The *less than or equal to* symbol is \_\_\_\_\_.
- 12. Any number with an exponent of \_\_\_\_\_ equals the number itself.
- 13. The sum of the measures of supplementary angles equals \_\_\_\_\_°.
- 14. The formula for finding the area of a trapezoid is \_\_\_\_\_.
- 15. a.  $1 \text{ foot}^2 =$  \_\_\_\_\_  $\text{inches}^2$                       b.  $1 \text{ gallon} \approx$  \_\_\_\_\_  $\text{liters}$
- 16. a. The repeating decimal for  $\frac{5}{6}$  is \_\_\_\_\_ .                      b. The repeating decimal for  $\frac{1}{3}$  is \_\_\_\_\_ .
- 17. a. The repeating decimal for  $\frac{1}{6}$  is \_\_\_\_\_ .                      b. The repeating decimal for  $\frac{2}{3}$  is \_\_\_\_\_ .

**Solve.**

- 18. 12 is 48% of what number? \_\_\_\_\_
  
- 19. 51 is what percent of 75? \_\_\_\_\_
  
- 20. What is 68% of 125? \_\_\_\_\_

**Simplify the expressions.**

- 21. a.  $5 \cdot 3w$                       b.  $3 + 6 + 3n - 8$                       c.  $2(y + 12)$                       d.  $(6x)(8)$

**List the prime factors. Use exponents where possible.**

- 22.  $63 =$  \_\_\_\_\_
- 23.  $70 =$  \_\_\_\_\_

**Round to the nearest 1,000 to estimate. Then copy and solve.**

- 24.  $76,345 - 23,796 =$  \_\_\_\_\_  
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

**Write as powers of 10.**

- 25. a.  $0.00001 =$  \_\_\_\_\_                      b.  $1,000 =$  \_\_\_\_\_                      c.  $1 =$  \_\_\_\_\_

**+** **×** Skill Builders

Annex zeros to complete.

Round to the nearest hundredth.

26. a.  $\begin{array}{r} \$25.99 \\ \times \quad 15 \\ \hline \end{array}$

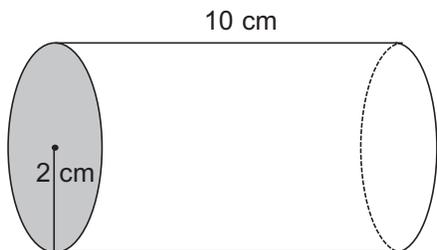
b.  $1.25 \overline{)7}$

c.  $4.5 \overline{)65}$

Use a compass and a straightedge to bisect  $\overline{ST}$ .



Use the formula to find the volume of the cylinder.



28. \_\_\_\_\_

Answer the question.

29. Which nets can be used to make this polyhedron? \_\_\_\_\_ and \_\_\_\_\_

