Chapter 7

Name____ Date__________

Chapter 7 Constructions and Scale Drawings

Dear Family,

Do you know someone who works with blueprints on a daily basis? One possible career that uses blueprints often is an architect. An architect designs buildings and structure. They must take in consideration not only the look but also safety, function, and cost when designing structures. Architects work with engineers to create blueprints for the builders.

How do architects and engineers create blueprints? How does a builder then read the blueprint to create buildings or other types of structures?

Spend some time with your student researching the questions above. If you are able, visit a local architecture or engineering firm. They will be able to show you examples of blueprints.

Have your student take note of how engineers create the blueprints of a structure an architect has designed.

> What type of lines and angles do they use?
>
> What type of polygons are formed when they create the drawings?
>
> What information does the engineer need about the location of the structure to make accurate drawings?

Once the blueprints are complete, they are sent to the builder. Consider visiting a building site to watch how the drawings come to life. Here are some other questions to think about as you watch the building being built.

> How does a builder read the blueprints?
>
> What if the measurements are wrong? How does that affect the final product?

Enjoy your journey with your student as you watch a building come to life that once started out as a drawing in an architect's office.

Nombre ____ Fecha ________

Capítulo 7 Construcciones y dibujos a escala

Estimada familia,

¿Conocen a alguien que trabaje con planos diariamente? Una carrera que usualmente requiere del uso de planos es la arquitectura. Un arquitecto diseña edificios y estructuras. Debe tener en cuenta no solo la apariencia sino también la seguridad, función y el costo al diseñar estructuras. Los arquitectos trabajan con los ingenieros para hacer planos para los constructores.

¿Cómo hacen sus planos los arquitectos e ingenieros? ¿De qué forma luego un constructor lee los planos para construir edificios u otro tipo de estructuras?

Dedique tiempo con su estudiante a investigar las preguntas anteriores. Si puede, visite una firma de arquitectos o ingenieros de su vecindario. Ellos le enseñarán muestras de planos.

Haga que su estudiante tome nota de la manera en que los ingenieros hacen los planos de una estructura que ha diseñado un arquitecto.

> ¿Qué tipo de líneas y ángulos usan?
>
> ¿Qué tipo de polígonos se forman cuando ellos hacen los dibujos?
>
> ¿Qué información necesita el ingeniero sobre la ubicación de la estructura para hacer dibujos exactos?

Una vez se terminan los planos, se envían al constructor. Considere la posibilidad de visitar una construcción para ver cómo los dibujos se hacen realidad. He aquí otras preguntas que pueden hacerse mientras ven cómo se construye el edificio.

> ¿Cómo lee los planos el constructor?
>
> ¿Qué pasaría si las medidas estuvieran equivocadas? ¿Cómo afectaría esto al producto final?

Disfrute de una aventura con su estudiante observando cómo un edificio que comienza como un dibujo en la oficina de un arquitecto, cobra vida.

Activity 7.1 Start Thinking!

For use before Activity 7.1

What is an acute angle?

What is an obtuse angle?

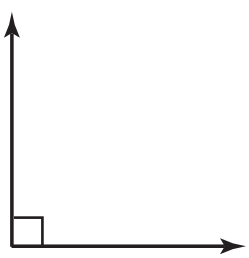
Use a dictionary to look up the non-math definitions of *acute* and *obtuse*. How do the definitions relate to the math definitions?

Activity 7.1 Warm Up

For use before Activity 7.1

Identify the angles as *acute*, *right*, *obtuse*, or *straight*.

1.



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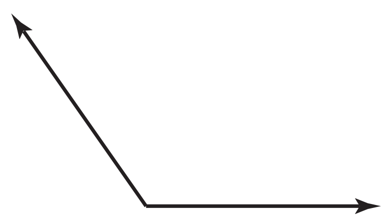

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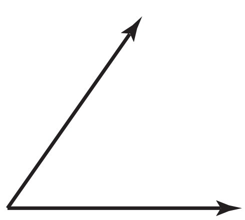


4.

Lesson 7.1

Start Thinking!

For use before Lesson 7.1

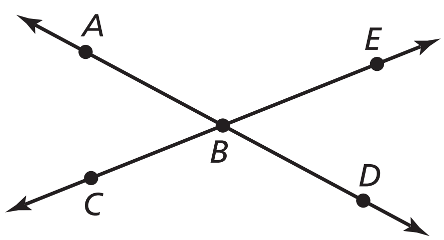
Draw two lines that intersect. Explain to a partner how to locate a pair of adjacent angles.

Lesson 7.1

Warm Up

For use before Lesson 7.1

Use the figure below.



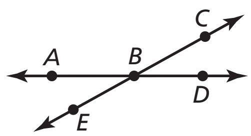
1. Measure each angle formed by the intersecting lines.

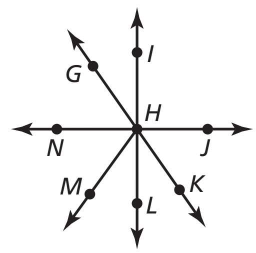
2. Name two angles that are adjacent to $\angle ABC$.

Name____ Date__________

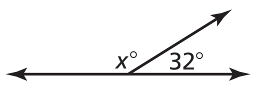
7.1 Practice A

Name two pairs of adjacent angles and two pairs of vertical angles in the figure.

1. 

2. 

Tell whether the angles are *adjacent* or *vertical*. Then find the value of *x*.

3. 

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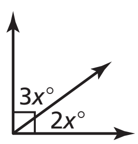
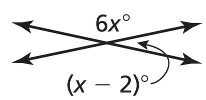
5. 

6. 

Draw a pair of vertical angles with the given measure.

7. 40° **8.** 75° **9.** 120°

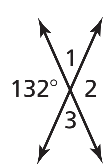
10. Draw a pair of adjacent angles with the given description.

a. Both angles are obtuse.

b. The sum of the angle measures is 180°.

c. The sum of the angles measures is 60°.

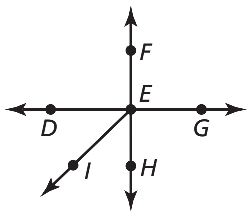
11. What are the measures of the other three angles formed by the intersection?

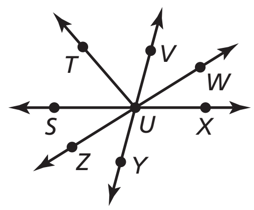


Name ______________________________ Date __________

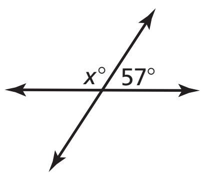
7.1 Practice B

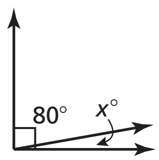
Name two pairs of adjacent angles and two pairs of vertical angles in the figure.

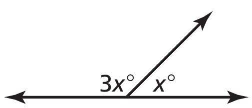
1. 

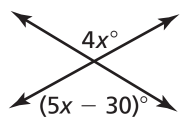
2. 

Tell whether the angles are *adjacent* or *vertical*. Then find the value of *x*.

3. 

4. 

5. 

6. 

Draw a pair of vertical angles with the given measure.

7. 100° **8.** 15° **9.** 150°

10. Draw five angles so that ∠2 and ∠3 are acute vertical angles, ∠1 and ∠2 are supplementary, ∠2 and ∠5 are complementary, and ∠4 and ∠5 are adjacent.

11. The measures of two adjacent angles have a ratio of 3 : 5. The sum of the measures of the two adjacent angles is 120°. What is the measure of the larger angle?

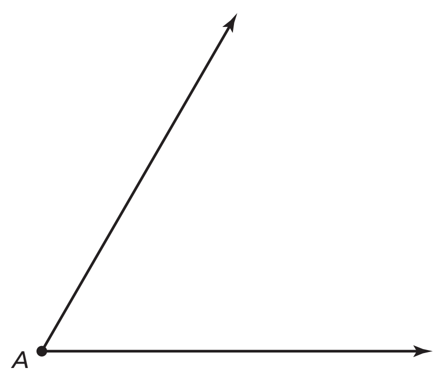
7.1 Enrichment and Extension

Compass Straightedge Construction

In addition to modern technology, a geometer's most important tools are a compass and a straightedge (ruler without marks). These instruments can be used for geometric drawings called constructions.

Bisecting the Angle

Bisecting the angle is the process of cutting a given angle in half so that both halves are equal. This can be done using only a compass and straightedge.



1. Classify angle *A*.
2. Open the compass. Place the point of the compass at *A* and draw an arc (a small curved line that is part of a circle) that intersects both sides of the angle. Label the points where the curved line intersects the angle as *B* and *C*.
3. Place the point of the compass on *B*. Draw an arc that is contained within the angle. Without changing the width of the compass, place the point of the compass on *C* and draw an arc that intersects the one just drawn.
4. Label the intersection point of the two arcs *G*. Use a straightedge to connect points *A* and *G*. The line segment *AG* bisects angle *BAC*.
5. Use a protractor to measure angle *BAC*. Divide this measure by two to determine what each smaller angle should measure. Then, use your protractor and measure the smaller angles. How do the numbers compare?

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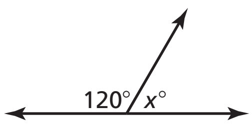
7.1 Puzzle Time

What Runs Around All Day And Lies Under The Bed With Its Tongue Hanging Out?

Write the letter of each answer in the box containing the exercise number.

Tell whether the angles are *adjacent* or *vertical*.

1.



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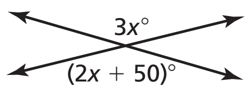

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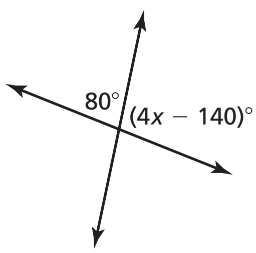
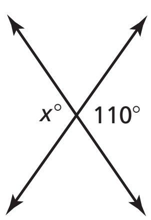


Find the value of *x*.

4.



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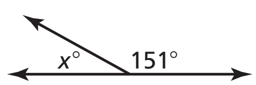

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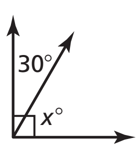
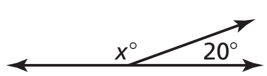
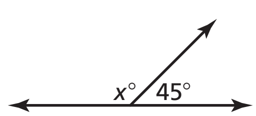


7.



8. A road intersects another road at an angle of $45°$. Find the value of x.



Answers

N. 29

K. vertical

A. 160

S. 60

E. adjacent

R. 135

E. adjacent

A. 110

7		6	5	3	4	2	1	8

Activity 7.2

Start Thinking!

For use before Activity 7.2

Review with a partner what the difference is between adjacent angles and vertical angles.

Activity 7.2

Warm Up

For use before Activity 7.2

Draw a pair of vertical angles with the given measure.

1. 120°

2. 45°

3. 160°

4. 30°

Lesson 7.2

Start Thinking!

For use before Lesson 7.2

Complete the statement.

Two angles are __?__ if the sum of their measures is 90°.

Two angles are __?__ if the sum of their measures is 180°.

People often have trouble remembering which is 90° and which is 180°. Make up your own way to help you remember the definitions.

Lesson 7.2

Warm Up

For use before Lesson 7.2

Tell whether the statement is *always*, *sometimes*, or *never* true. Explain.

1. If x and y are supplementary angles, then x is right.

2. If x and y and complementary angles, then y is acute.

3. If x is a right angle and y is an acute angle, then x and y are supplementary angles.

4. If x is acute and y is obtuse, then x and y are supplementary angles.

Name____ Date__________

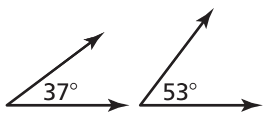
7.2 Practice A

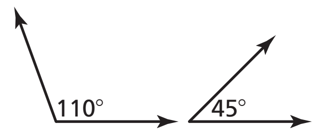
Tell whether the statement is *always*, *sometimes*, or *never* true. Explain.

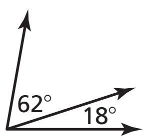
1. If x and y are supplementary angles, then y is acute.

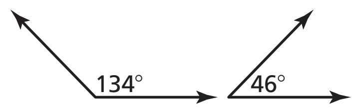
2. If x and y are complementary angles, then x is obtuse.

Tell whether the angles are *complementary*, *supplementary*, or *neither*.

3. 

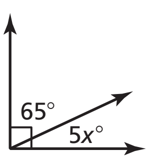
4. 

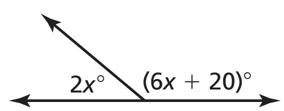
5. 

6. 

7. Angle x and angle y are complementary. Angle x is supplementary to a $128°$ angle. What are the measures of angle x and angle y?

Tell whether the angles are *complementary* or *supplementary*. Then find the value of *x*.

8. 

9. 

Draw a pair of adjacent supplementary angles so that one angle has the given measure.

10. $50°$

11. $110°$

12. $135°$

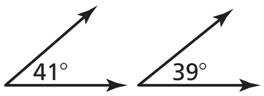
13. Two angles have the same measure. What are their measures if they are also complementary angles? supplementary angles?

Name ____ Date _________

7.2 Practice B

Tell whether the angles are *complementary*, *supplementary*, or *neither*.

1.



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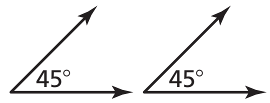

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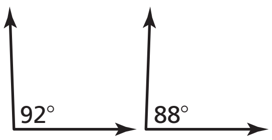

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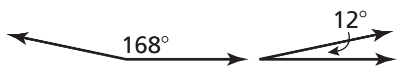
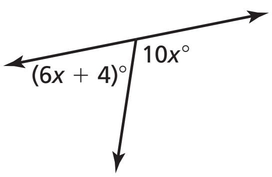


Tell whether the angles are *complementary* or *supplementary*. Then find the value of *x*.

5.



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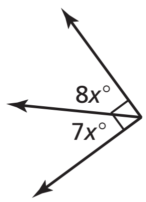
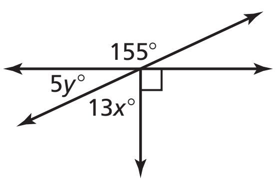


7. The measures of two supplementary angles have a ratio of 2 : 4. What is the measure of the smaller angle?

8. Find the values of x and y.



9. Let x be an angle measure. Let c be the measure of the complement of the angle and let s be the measure of the supplement of the angle.

a. Write an equation involving c and x.

b. Write an equation involving s and x.

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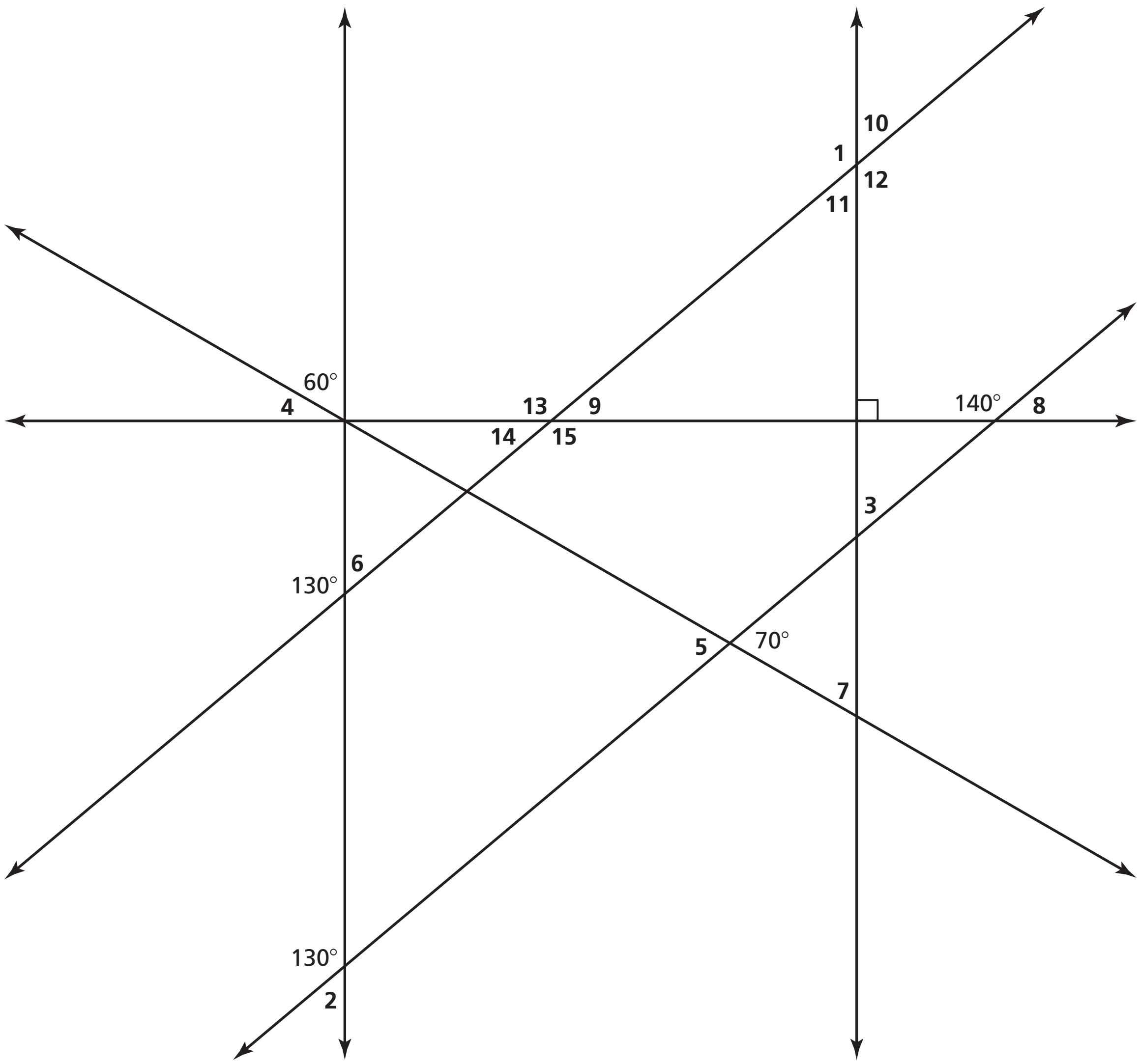
7.2 Enrichment and Extension

Finding Missing Angles

Use properties of shapes and angles to find the missing measures.



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7.2 Puzzle Time

What Is The Best Year For Grasshoppers?

Write the letter of each answer in the box containing the exercise number.

Answers

Y. 10

P. 20

A. neither

E. 4

A. 15

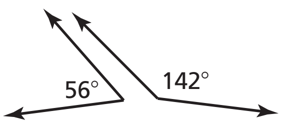
E. complementary

R. supplementary

L. 27

Tell whether the angles are *complementary*, *supplementary*, or *neither*.

1.



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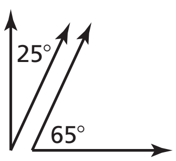

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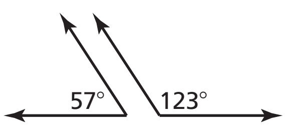
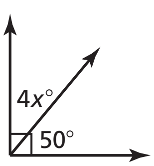


Find the value of *x*.

4.



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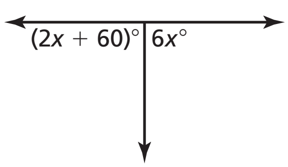

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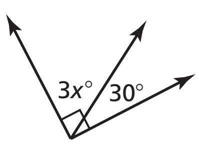

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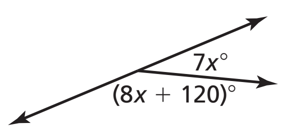
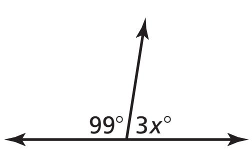


8. The crosswalk in front of a school intersects the sidewalk at an angle of 99°. Find the value of x.



8	7	1	6		4	2	5	3

Activity 7.3

Start Thinking!

For use before Activity 7.3

Describe some real-life triangles. What kind of triangles are they?

Activity 7.3

Warm Up

For use before Activity 7.3

Construct the line segment.

1. Line segment: 7 in.

2. Line segment: 10 cm

3. Line segment: 3.5 in.

4. Line segment: 4 cm

5. Line segment: 1 in.

6. Line segment: 30 mm

Lesson 7.3

Start Thinking!

For use before Lesson 7.3

Given two of the three angles of a triangle, explain to a partner how to find the third angle. Use the angle measures 30° and 60°.

Lesson 7.3

Warm Up

For use before Lesson 7.3

Construct a triangle with the given description.

1. side lengths: 2 cm, 2 cm

2. side lengths: 7 cm, 10 cm

3. angles: 90°, 45°

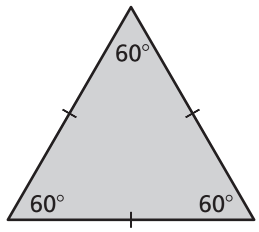
4. angles: 60°, 60°

Name______________________________ Date__________

7.3 Practice A

Classify the triangle.

1.



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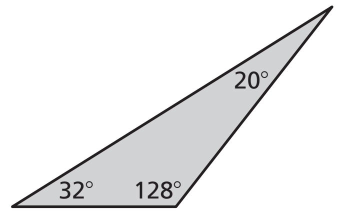
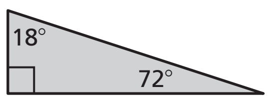


3.



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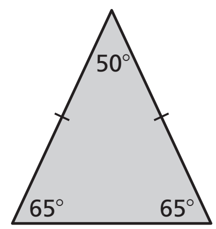
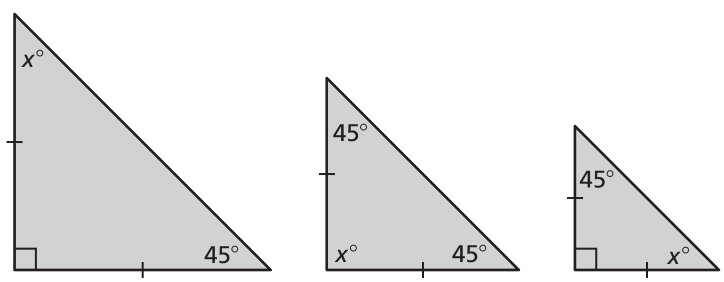


Draw a triangle with the given description.

5. a right triangle with two congruent sides

6. a scalene triangle with a 3-inch side and a 4-inch side that meet at a 110° angle

7. Consider the three isosceles right triangles.



a. Find the value of x for each triangle.

b. What do you notice about the angle measures of each triangle?

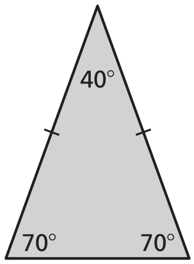
c. Write a rule about the angle measures of an isosceles right triangle.

Name ______________________________ Date __________

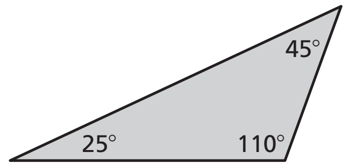
7.3 Practice B

Classify the triangle.

1.



2.



Draw a triangle with the given angle measures. Then classify the triangle.

3. $25°, 65°, 90°$

4. $45°, 60°, 75°$

Draw a triangle with the given description.

5. an obtuse scalene triangle

6. a triangle with a $110°$ angle connected to a $25°$ angle by a 6-inch side

Determine whether you can construct *many*, *one*, or *no* triangle(s) with the given description. Explain your reasoning.

7. a triangle with a 2-inch side, a 4-inch side, and a 5-inch side

8. a scalene triangle with two 7-centimeter sides

9. a triangle with one angle measure of $100°$ and one 6-inch side

10. Draw a circle. Draw a triangle with the given description such that all three vertices of the triangle touch the circle.

a. Draw an obtuse triangle.

b. Draw a right triangle.

c. Draw an acute triangle.

Name____ Date__________

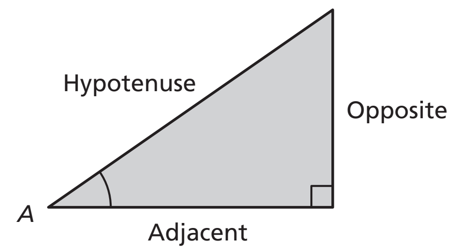
7.3 Enrichment and Extension

Writing Ratios

The sides of a right triangle can be named by their locations with respect to an angle of the triangle.

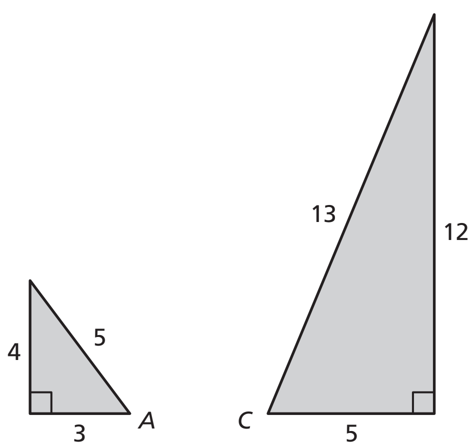
Trigonometry

It is possible to write ratios that compare the lengths of the sides in the triangle using special functions and a given angle. These ratios are called sine (sin), cosine (cos), and tangent (tan) and are studied in depth in a branch of mathematics called trigonometry.

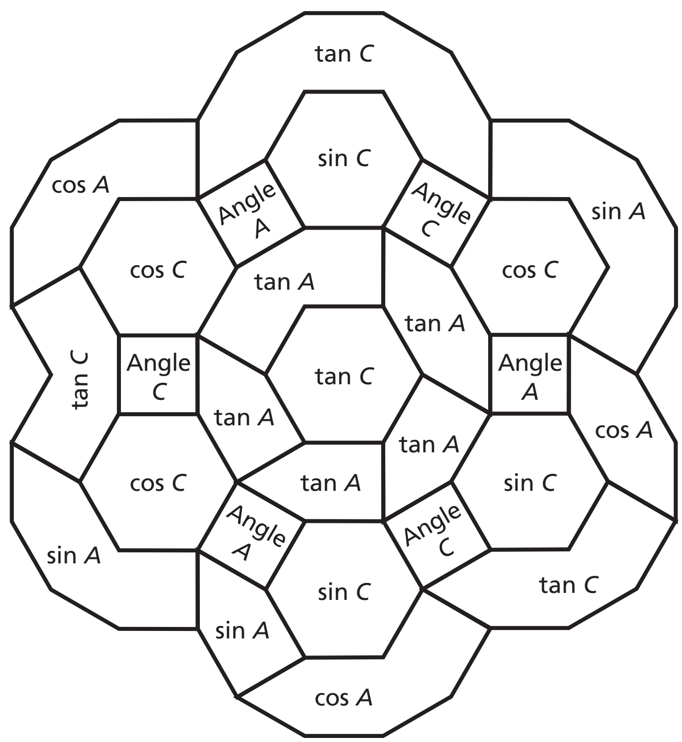


$$\sin A = \frac{\text{Opposite}}{\text{Hypotenuse}} \qquad \cos A = \frac{\text{Adjacent}}{\text{Hypotenuse}} \qquad \tan A = \frac{\text{Opposite}}{\text{Adjacent}}$$

Write the ratios. Use your answers and the color key to shade the mosaic.



1. $\sin A$
2. $\tan C$
3. $\cos A$
4. $\tan A$
5. $\sin C$
6. $\cos C$



Key:
Angles = Blue
5 in the denominator = Red
13 in the denominator = Yellow
3 in the denominator = Purple

Name ____ Date __________

7.3 Puzzle Time

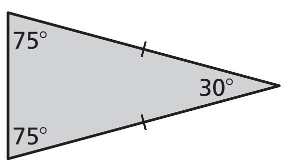
Why Did The Kindergartener Take Her Books To The Zoo?

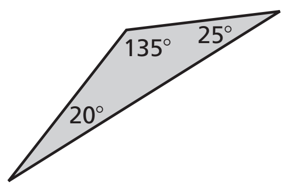
A	B	C	D	E	F
G	H	I			

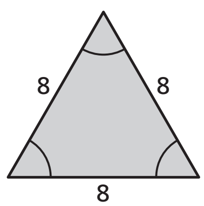
Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

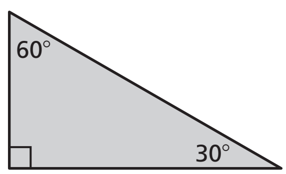
Equilateral and Equiangular Triangle **TO**
80 **LIONS**
Acute Scalene Triangle **READ**
Obtuse Scalene Triangle **WANTED**
Right Isosceles Triangle **BETWEEN**

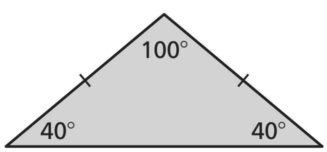
Classify the triangle.

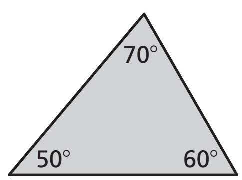
A. 

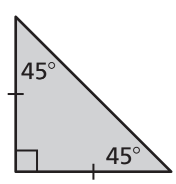
B. 

C. 

D. 

E. 

F. 

G. 

H. A triangle contains angles measuring $28°$ and $37°$. How many degrees is the third angle of the triangle?

I. A triangle contains angles measuring $25°$ and $75°$. How many degrees is the third angle of the triangle?

Obtuse Isosceles Triangle **TO**
Acute Isosceles Triangle **SHE**
Right Scalene Triangle **LEARN**
115 **THE**

Extension 7.3 Start Thinking!

For use before Extension 7.3

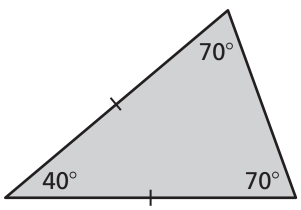
In real life, when is it important to know the angle measures of a triangle?

Extension 7.3 Warm Up

For use before Extension 7.3

Classify the triangle.

1.



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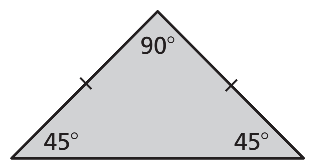

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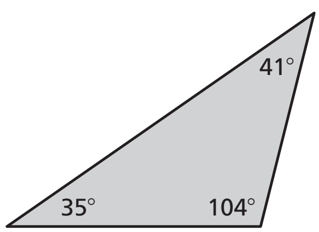

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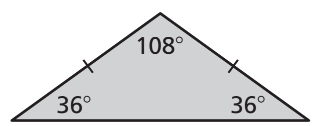

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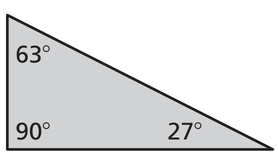

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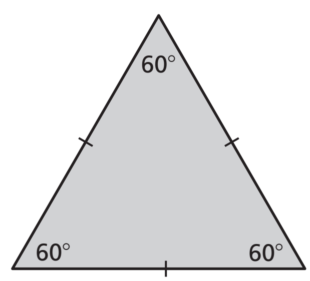
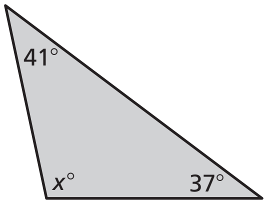


Name ____ Date __________

Extension 7.3 Practice

Find the value of *x*. Then classify the triangle.

1.



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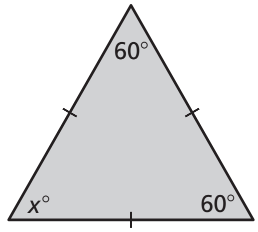

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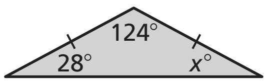

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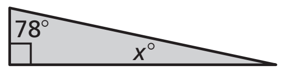

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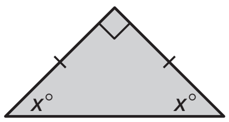

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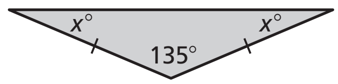


Tell whether a triangle can have the given angle measures. If not, change the first angle measure so that the angle measures form a triangle.

7. $46\frac{1}{3}°, 81\frac{1}{2}°, 52\frac{1}{6}°$

8. 36.9°, 121.4°, 33.7°

9. Using 3 equal-sized craft sticks, put the ends together to make a triangle.

a. Use a protractor to find the measure of each angle.

b. Classify the triangle.

c. Replace one of the sticks with either a longer stick or a longer pencil. Use a protractor to find the measure of each angle and classify this new triangle.

d. Replace the longest side with a stick or pencil that is shorter than the two other sides. Use a protractor to find the measure of each angle and classify this new triangle.

e. What do you notice about the triangle when two of its sides are equal in length?

Activity 7.4

Start Thinking!

For use before Activity 7.4

List some words that start with the prefix *quad*-.

What do those words mean?

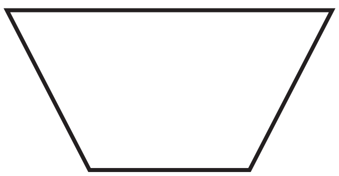
What do you think *quad*- means?

Activity 7.4

Warm Up

For use before Activity 7.4

Identify the polygon.

1. 

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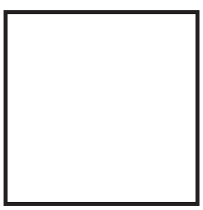
3. 

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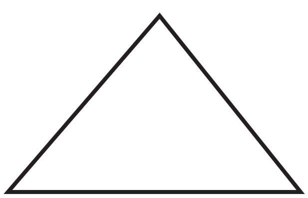
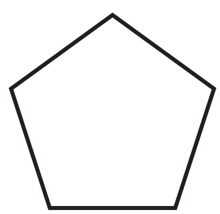
5. 

6. 

Lesson 7.4 Start Thinking!

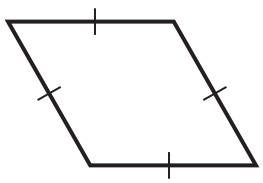
For use before Lesson 7.4

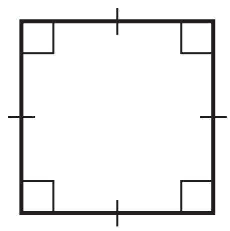
Name all the different kinds of four-sided figures that you know. Draw a sketch of each.

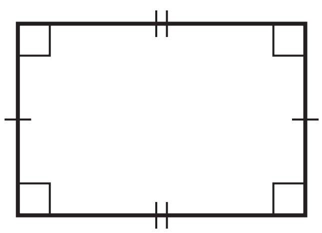
Lesson 7.4 Warm Up

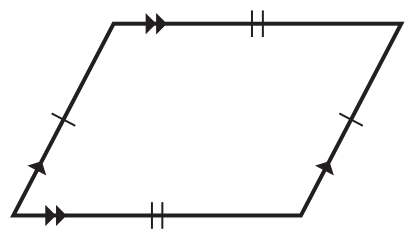
For use before Lesson 7.4

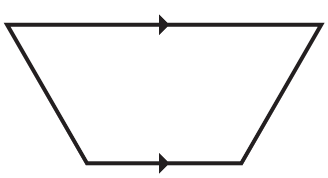
Classify the quadrilateral.

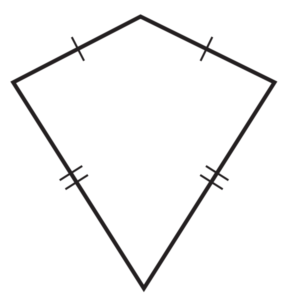
1. 

2. 

3. 

4. 

5. 

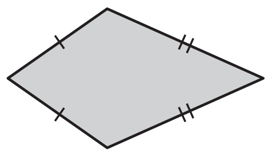
6. 

Name______________________________ Date__________

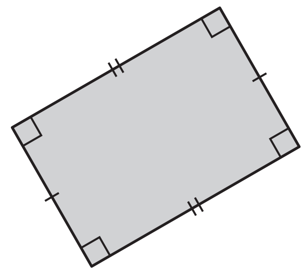
7.4 Practice A

Classify the quadrilateral.

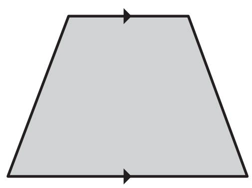
1.



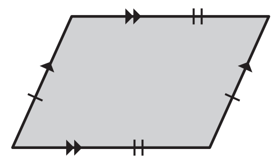
2.



3.

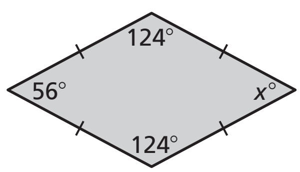


4.

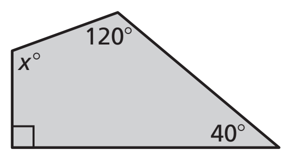


Find the value of *x*.

5.



6.



Copy and complete using *always*, *sometimes*, or *never*.

7. A square is __?__ a rhombus.

8. A parallelogram is __?__ a rectangle.

9. A kite is __?__ a square.

10. A trapezoid is __?__ a square.

11. Draw the following trapezoids. If it is not possible, explain why.

a. a trapezoid with one right angle

b. a trapezoid with two right angles

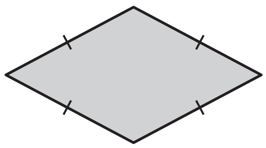
c. a trapezoid with three right angles

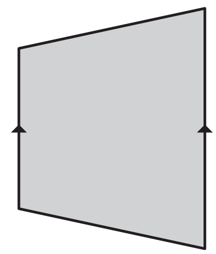
d. a trapezoid with four right angles

Name ____ Date _________

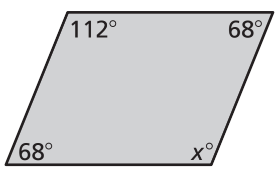
7.4 Practice B

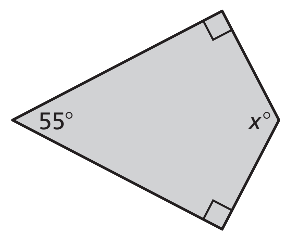
Classify the quadrilateral.

1. 

2. 

Find the value of *x*.

3. 

4. 

Copy and complete using *always*, *sometimes*, or *never*.

5. A rectangle is __?__ a square.

6. A rhombus is __?__ a parallelogram.

7. A trapezoid is __?__ a kite.

8. A parallelogram is __?__ a rhombus.

9. Determine whether the statement is *true* or *false*. Explain your reasoning. You may use diagrams to explain your reasoning.

   a. A rectangle that is 30 inches long and 10 inches wide can be divided into two congruent squares.

   b. A rectangle that is 30 inches long and 10 inches wide can be divided into three congruent squares.

   c. A parallelogram with opposite congruent sides of 6 feet and 3 feet can be divided into two congruent rhombuses.

   d. A rectangle that is 30 inches long and 10 inches wide can be divided into two congruent trapezoids.

   e. A rhombus that has side length 8 meters can be divided into two congruent parallelograms.

Name____ Date__________

7.4 Enrichment and Extension

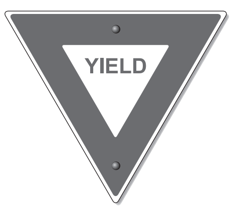
Sum of Interior Angles

A regular polygon is a shape in which all sides are the same length and all angles have equal measure. For example, a regular quadrilateral is most often called a square.

Because all the angles in a regular polygon have equal measure, a formula can be used to calculate the measure of each angle:

Measure of one angle in a regular polygon $= \dfrac{(n-2)180^\circ}{n}$, where n is the number of sides in the polygon.

Identify which polygon the real-life object resembles. Then determine the measure of each angle using the formula.

1. 

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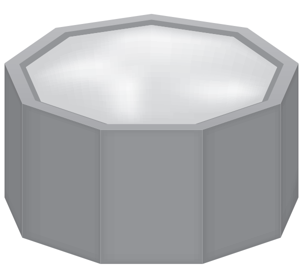
5. 

6. 

Name ____ Date __________

7.4 Puzzle Time

What's The Healthiest Insect?

Write the letter of each answer in the box containing the exercise number.

Answers

N. rectangle

A. kite

E. rhombus

M. trapezoid

I. square

T. parallelogram

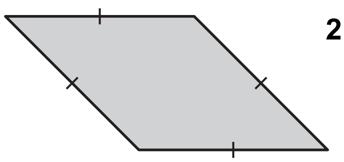
E. 90

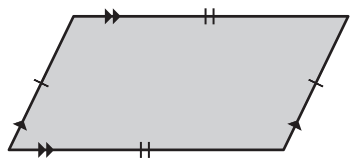
B. 65

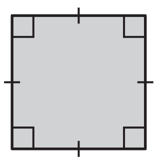
V. 38

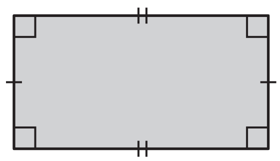
I. 55

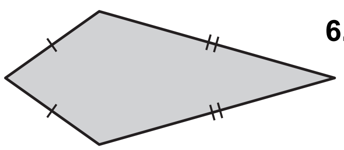
Classify the quadrilateral.

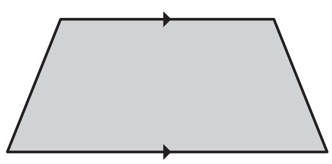
1. 

2. 

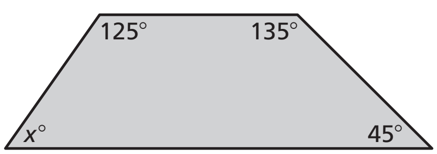
3. 

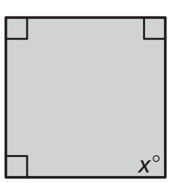
4. 

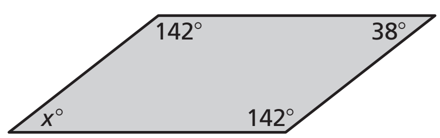
5. 

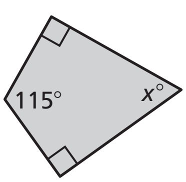
6. 

Find the value of *x*.

7. 

8. 

9. 

10. 

9	7	2	5	6	3	4		10	1	8

Activity 7.5 Start Thinking!

For use before Activity 7.5

Explain why a contractor must know how to read an architect's blueprints.

Activity 7.5 Warm Up

For use before Activity 7.5

Find the missing number.

1. $\frac{8}{9} = \frac{x}{27}$

2. $\frac{4}{14} = \frac{x}{35}$

3. $\frac{8}{36} = \frac{x}{90}$

4. $\frac{12}{3} = \frac{x}{7}$

5. $\frac{20}{14} = \frac{x}{56}$

6. $\frac{18}{4} = \frac{x}{18}$

Lesson 7.5 Start Thinking!
For use before Lesson 7.5

What must you know about the scale of a map before planning a trip?

Lesson 7.5 Warm Up
For use before Lesson 7.5

Find the actual dimension. The scale is 1 cm : 4 ft.

1. model: 7 cm

2. model: 10.5 cm

3. model: 30 cm

4. model: 19 mm

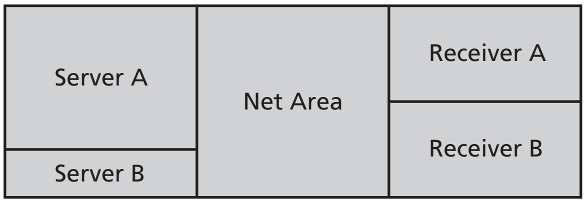
5. model: 0.4 m

6. model: 4.25 m

Name____ Date__________

7.5 Practice A

1. Use the drawing of the game court and an inch ruler. Each inch in the drawing represents 8 feet.



a. What is the actual length of the court?

b. What are the actual dimensions of Receiver A?

c. What are the actual dimensions of the Net Area?

d. The area of Server B is what percent of the area of Server A?

e. What is the ratio of the perimeter of Receiver B to the perimeter of Net Area?

f. What is the ratio of the area of Receiver B to the area of Net Area?

g. Are Receiver B and Net Area similar rectangles?

h. The area of Server A is increased by what percent to get the area of Net Area?

Find the missing dimension. Use the scale factor 1 : 5.

2. Model: 3 ft

Actual: __?__

3. Model: 7 m

Actual: __?__

4. Model: __?__

Actual: 20 yd

5. Model: __?__

Actual: 12.5 cm

6. A scale drawing of a rose is 3 inches long. The actual rose is 1.5 feet long.

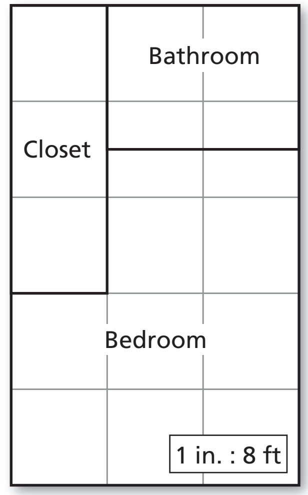
a. What is the scale of the drawing?

b. What is the scale factor of the drawing?

Name ______________________________ Date __________

7.5 Practice B

1. In the actual blueprint of the bedroom suite, each square has a side length of $\frac{1}{2}$ inch.



   a. What are the dimensions of the bedroom suite?

   b. What are the dimensions of the bathroom?

   c. What is the length of the longest wall in the bedroom?

   d. What is the ratio of the perimeter of the closet to the perimeter of the bathroom?

   e. What is the ratio of the area of the closet to the area of the bathroom? How can you explain this by looking at the squares in each?

   f. All of the walls in the bedroom suite are covered with drywall. Which will cost the most to drywall—*the closet*, *the bathroom*, or *both are the same*?

   g. All of the floors in the bedroom suite are covered with tile. Which will cost the most to tile—*the closet*, *the bathroom*, or *both are the same*?

   h. What is the area of the bedroom?

Find the missing dimension. Use the scale factor 2 : 5.

2. Model: 10 km

   Actual: __?__

3. Model: 5 in.

   Actual: __?__

4. Model: __?__

   Actual: 24 ft

5. Model: __?__

   Actual: 32.5 m

6. A scale factor is 1 : 8. Describe and correct the error in finding the model length that corresponds to 48 feet.

$$\frac{1}{8} = \frac{48 \text{ ft}}{x \text{ ft}}$$
$$x = 384 \text{ ft}$$

Name____ Date__________

7.5 Enrichment and Extension

Create a Scale Drawing

Your challenge is to create a scale drawing of a room. It could be your classroom, your bedroom, or another room of your choice. Measure the actual length and width of the room and the dimensions of any furniture in the room. Then decide what your scale will have to be in order to fit your drawing on the grid below. Include furniture and other items in the room drawn to scale. Be sure to label the scale dimensions of the room and the lengths of the items that you include in the room.

Trade papers with another student in your class. Use the scale drawing you are given and the scale to find the actual dimensions of the room and the furniture. Check your answers with the actual dimensions.

Your scale: _____________ = ______________

Name ____ Date __________

7.5 Puzzle Time

What Do Cats Put In Soft Drinks?

Write the letter of each answer in the box containing the exercise number.

Find the missing dimension.

1. Airplane Wingspan, Scale of 1 : 48

Model: 18 in. Actual: __?__ ft

2. Dinosaur Height, Scale of 1 : 42

Model: __?__ in. Actual: $12\frac{1}{4}$ ft

3. Railway Train, Scale of 1 : 87

Model: 11 in. Actual: __?__ ft

4. Rocket Height, Scale of 1 : 15

Model: __?__ mm Actual: 9.9 m

5. Shark Length, Scale of 1 : 38

Model: 20 cm Actual: __?__ m

6. Tree house Base, Scale of 1 : 21

Model: __?__ in. Actual: 7 ft

7. Sofa Length, Scale of 1 : 25

Map: 3 in. Actual: __?__ ft

8. Bridge Span, Scale of 1 in. : 0.5 mi

Model: __?__ in. Actual: 7 mi

9. Driving Distance, Scale of 1 in. : 70 mi

Map: 5.5 in. Actual: __?__ mi

Answers

B. 385	**E.** 660
C. $79\frac{3}{4}$	**M.** 14
I. $6\frac{1}{4}$	**E.** 72
S. $3\frac{1}{2}$	**C.** 4
U. 7.6	

8	7	3	1		6	5	9	4	2

Name ______________________________ Date __________

Chapter 7

Technology Connection

For use after Section 7.5

Working with a Scale Model

Scale models can be very useful for planning or rearranging the location of furniture in a room. Although interior decorating professionals use software specifically designed for that purpose, you can use practically any word processing or dynamic geometry software for the same purpose.

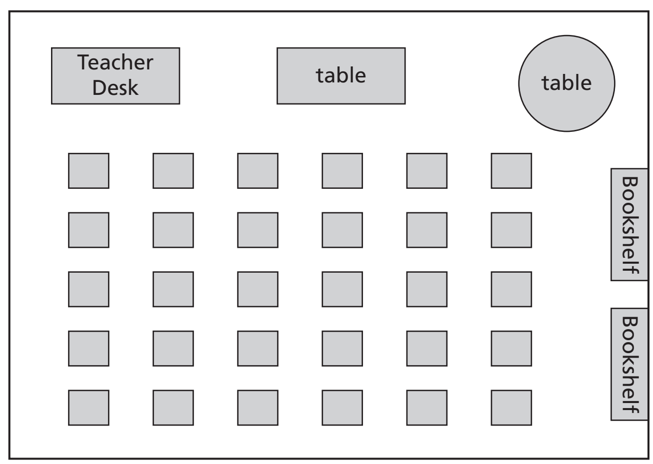
EXAMPLE Model the current layout of your classroom with a scale drawing.

SOLUTION

Step 1 Use a tape measure, yardstick, or ruler to find the measurements of the classroom itself and all the furniture in the room. For simplicity, round each measurement to the nearest $\frac{1}{2}$ foot.

Step 2 Decide on a scale that is convenient and convert your measurements to inches. $\left(\text{For example, 1 foot} = \frac{1}{4}\text{ inch.}\right)$

Step 3 Use the Shapes drawing tool to add each piece of furniture to your document. You will need to access the object's properties dialogue box (usually with a right-click of your mouse) to specify the exact size of the object. Remember to use copy and paste for all of the repeated objects like student desks.



Use the scale model of your classroom in the following exercises.

1. Rearrange the objects in your scale model to find one alternative arrangement for your classroom's furniture.

2. Analyze your new scale model and list some benefits and drawbacks to the functionality of your arrangement. In other words, why would your teacher decide to use your arrangement of furniture over someone else's, and why might someone else's arrangement be better than your own?