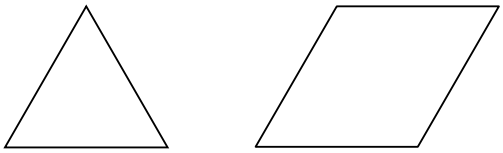
CHAPTER 8

1 Exploring Area

Goal **Compare and order areas using nonstandard units.**

You will need scissors and a ruler.
Trace and cut out the number of each pattern block shape indicated.



12 triangles

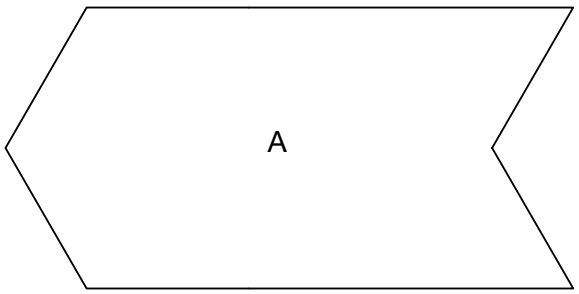
6 rhombuses

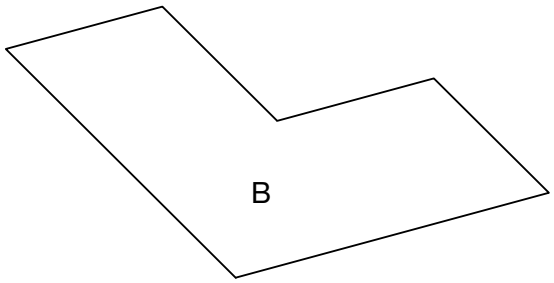
6 trapezoids

At-Home Help

Area is the amount of space covered by something. You can find the area using **nonstandard units**. For example, the area of this page is about 6 of a child's closed hands, or about 12 playing cards, or about 200 triangle pattern blocks.

1. Measure the areas of shapes A and B using the pattern block shapes you cut out.





Shape A: 12 triangles or 6 rhombuses or 4 trapezoids

Shape B: 6 triangles or 3 rhombuses or 3 trapezoids

2. a) Which shape, A or B, has the greater area? A

b) Tell how you know. No matter which shape they were measured in, shape A had twice as many shapes as shape B.

CHAPTER 8

2

Measuring Area with Square Units

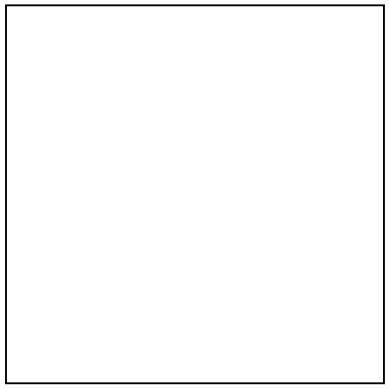
Goal **Estimate, measure, and compare areas using square units.**

You will need scissors and a ruler.

At-Home Help

Cover each surface to be measured with squares. None of the surfaces will be an exact number of squares. For example, a CD case is about 6 of these square units.

1. a) Trace and cut out this square 24 times. It will be your square unit.



b) Estimate the number of your square units that will cover this page. Estimates will vary.

c) Measure the area of this page in your square units. more than 20 square units

2. a) Locate a surface that you think will have less area than this page. What is the surface? Answers will vary.

b) Estimate the number of your square units that will cover this surface. Estimates will vary.

c) Measure the area of this surface in your square units. Answers will vary.

3. a) Locate a surface that you think will have an area that is a bit larger than this page. What is the surface? Answers will vary.

b) Estimate the number of your square units that will cover this surface. Estimates will vary.

c) Measure the area of this surface in your square units. Answers will vary.

CHAPTER 8

3

Counting Square Units

Goal **Compare and order areas by counting square units.**

1. What is the area of each in square units?

a) door 6

b) roof 46

c) wall 34

d) tree 56

e) grass 42

f) sky 152

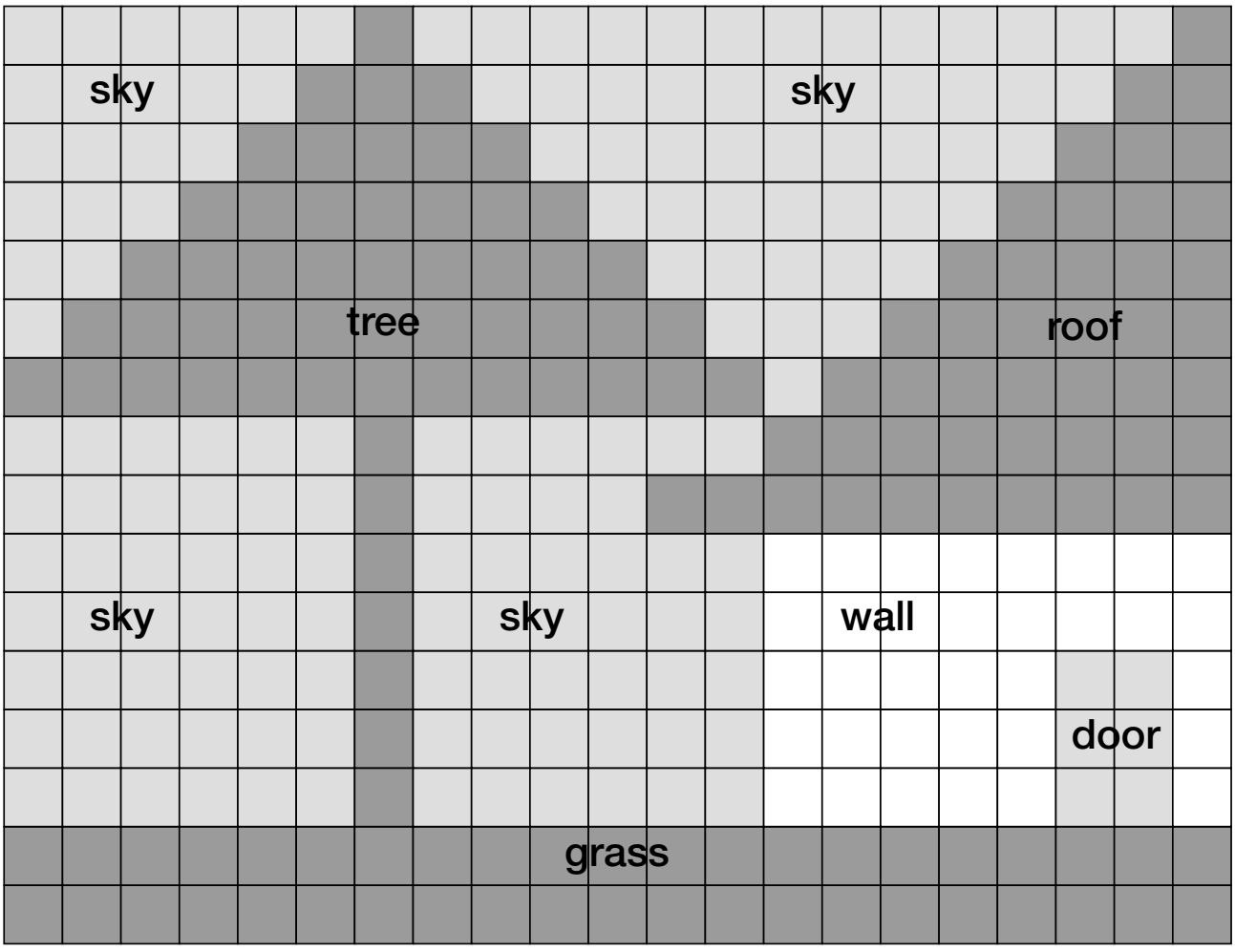
2. a) What is the area of the entire house?

86 square units

b) Explain what you did. For example, I added the 3 house parts together.

At-Home Help

To find the area by counting square units, sometimes we count every square and at other times we use strategies, such as skip counting by 2s. For example, you can use skip counting by 2s to count the area of the grass.



CHAPTER 8

4 Solve Problems Using a Model

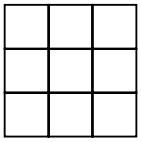
Goal **Use models to solve area problems.**

You will need scissors and a ruler.
Trace and cut out the 18 tiles at the bottom of the page. Use the cutout tiles to help you solve these problems.

At-Home Help

A **model** is used to show an idea. Materials used for modelling include counters, base ten blocks, pattern blocks, tiles, grid paper, and 2-D shapes.

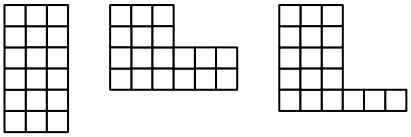
1. Mike's family has a patio made of 9 tiles.
They want to double the area of their patio.



a) What will be the area of the new patio? 18 tiles

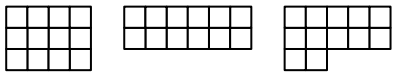
b) Model and then sketch 3 shapes for the new patio.

Answers will vary.
For example:



2. a) Model and then sketch 3 different shapes for patios made with 12 tiles.

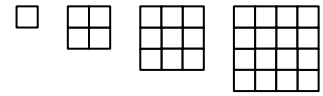
Answers will vary.
For example:



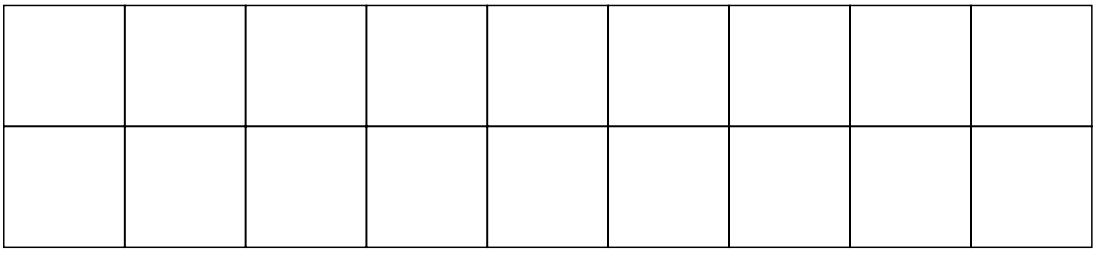
b) What is the area of each shape? 12 tiles each

3. Model and then sketch as many different square patios as you can.

Answers will vary.
For example:



What is the area of each of your patios? 1 tile, 4 tiles, 9 tiles, 16 tiles



CHAPTER 8

5 Moving on a Grid

Goal **Describe movements on a grid.**

1. a) Draw 2 routes to move Farmer Ben to the tractor.

b) Describe each route. For example, for routes in a):

Route 1 4 spaces right, 1 space up

Route 2 1 space up, 4 spaces right

At-Home Help

Moving up, down, left, and right on a grid prepares for work with coordinate grids in geometry and helps with reading maps and other grids.

2. a) Draw the route that moves Ben and the tractor 1 space up and 5 spaces left.

b) Where are they now?

at the scarecrow

3. a) Draw 2 routes to move the gopher to the scarecrow and then to the farmhouse.

b) Describe each route. For example, for routes in a):

Route 1 1 space down, 2 spaces left, 2 spaces down, 1 space left

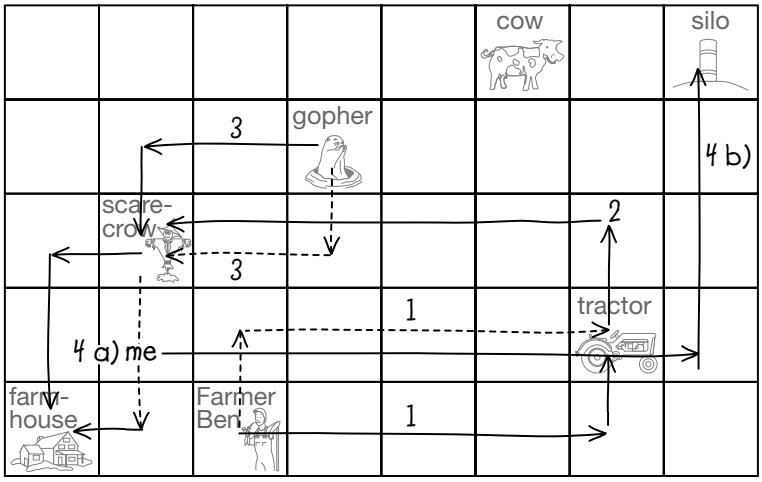
Route 2 2 spaces left, 1 space down, 1 space left, 2 spaces down

4. a) Draw yourself in a square close to the farmhouse.

b) Draw a route to move yourself to the silo.

c) Describe the route. For example, for location in a) and route in b): 6 spaces right, 3 spaces up

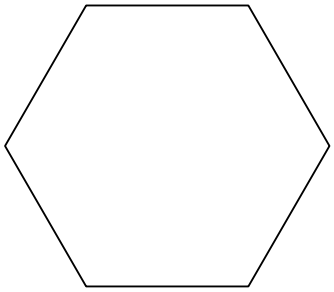
For example:



Test Yourself

Circle the correct answer.

Use this shape and the pattern block shapes from page 64 for Questions 1 to 3.



1. What is the area of the shape in pattern block triangles?

A. 2 **C.** 6

B. 3 **D.** 8

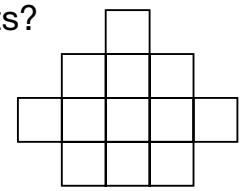
2. What is the area of the shape in pattern block rhombuses?

E. 2 **F.** 3 **G.** 6 **H.** 8

3. What is the area of the shape in pattern block trapezoids?

A. 2 **B.** 3 **C.** 6 **D.** 8

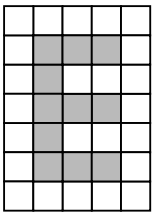
4. What is the area of this shape in square units?



E. 12 **G.** 16

F. 10 **H.** 9

5. What is the area of the letter E in square units?



A. 35 **C.** 9

B. 15 **D.** 11

6. Maya moves 2 spaces up and 5 spaces right. Which tree is she at?

					spruce
					oak
					maple
Maya					fir

E. spruce **F.** oak **G.** maple **H.** fir