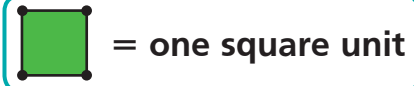


# Introducing Area

NCTM Standards 1, 2, 6, 7, 8, 9, 10

Find the area of each figure. How many square units is it?



1



Area: 1

2

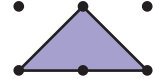
Area:  $\frac{1}{2}$ 

3



Area: \_\_\_\_\_

4



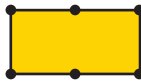
Area: \_\_\_\_\_

5



Area: \_\_\_\_\_

6



Area: \_\_\_\_\_

7



Area: \_\_\_\_\_

8



Area: \_\_\_\_\_

9



Area: \_\_\_\_\_

10



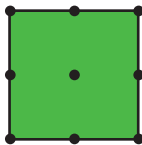
Area: \_\_\_\_\_

11



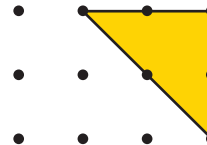
Area: \_\_\_\_\_

12



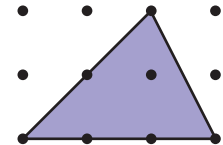
Area: \_\_\_\_\_

13



Area: \_\_\_\_\_

14



Area: \_\_\_\_\_

Find the area of each figure. How many square units is it?

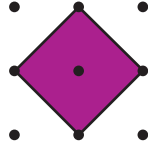
 = one square unit

15



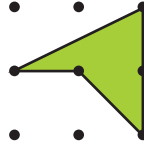
Area:

16



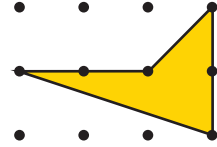
Area:

17



Area:

18



Area:

19



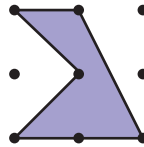
Area:

20



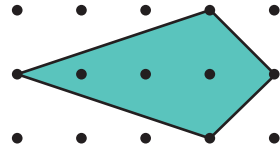
Area:

21



Area:

22



Area:



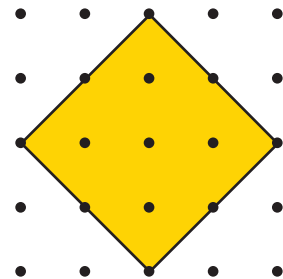
**23 Challenge** Explain how you found the area.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

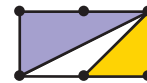


Area:

**24 Challenge** Use the diagram to find each area.

Purple area \_\_\_\_\_ White area \_\_\_\_\_

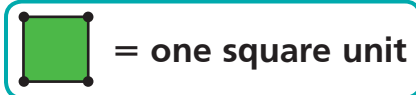
Yellow area \_\_\_\_\_ Total area \_\_\_\_\_



# Assembling Congruent Figures to Find Area

NCTM Standards 1, 2, 6, 7, 8, 9, 10

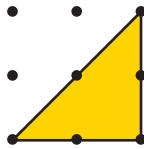
- 1 Quinlan's Quilt Shop makes quilts using pieces like these. Find the area of each piece in square units.



Piece W

Area: 

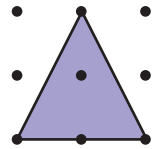
Piece X

Area: 

Piece Y

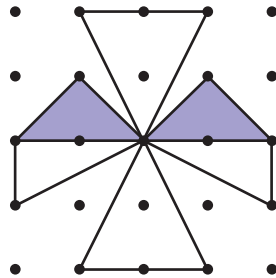
Area: 

Piece Z

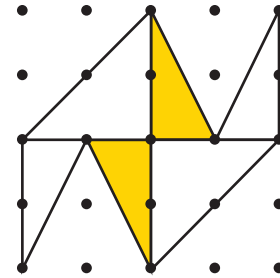
Area: 

Find the area of these quilt designs in square units.

2

Area: 

3

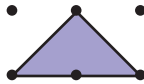
Area: 

- 4 In Problem 2, would you **reflect**, **rotate**, or **translate** the left shaded piece to get the right shaded piece?
- \_\_\_\_\_

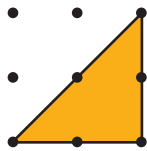
- 5 In Problem 3, would you **reflect**, **rotate**, or **translate** the upper shaded piece to get the lower shaded piece?
- \_\_\_\_\_

Use the quilt pieces for Problems 6–7.

Piece W



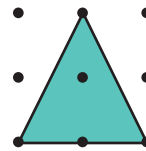
Piece X



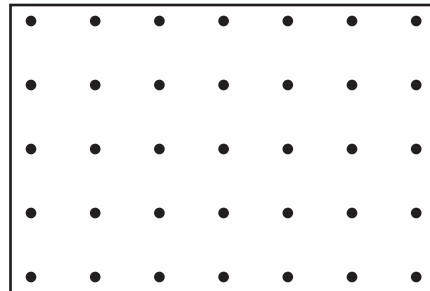
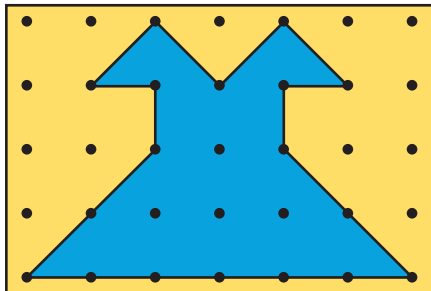
Piece Y



Piece Z



- 6 Quinlan’s Quilt Shop sells the quilt shown at the right. On the blank grid, draw a figure congruent to the blue design and show how to make it using the 4 triangular pieces above.



- 7 What is the area of the blue design? Explain how you found the answer.

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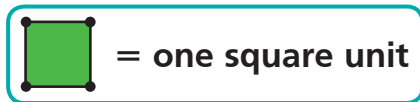


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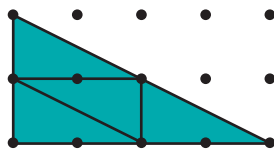


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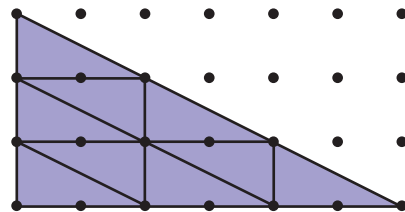
- 8 **Challenge** Quinlan’s Quilt Shop makes triangular quilts in different sizes. What is the area of each of these quilts?



Area:



Area:



Area:

What would the area of the next largest quilt be?

Area:

# Using Known Areas to Find Unknown Areas

NCTM Standards 1, 2, 6, 7, 8, 9, 10

Find the area of each region.

 has an area of one square unit.

1



blue area	$\frac{1}{2}$
yellow area	
white area	
Total Area	1

2



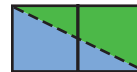
yellow area	
blue area	
white area	
Total Area	

3



light blue area	
green area	
white area	
Total Area	

4



light blue area	
green area	
white area	
Total Area	

5



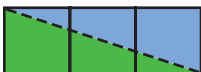
yellow area	
blue area	
white area	
Total Area	

6



yellow area	
blue area	
white area	
Total Area	

7



light blue area	
green area	
white area	
Total Area	



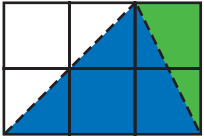
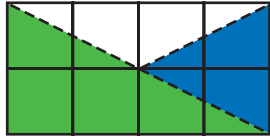

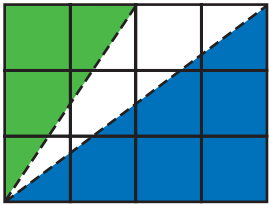
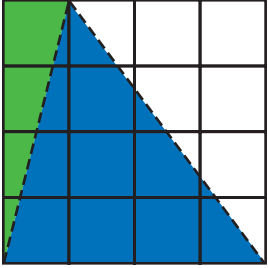
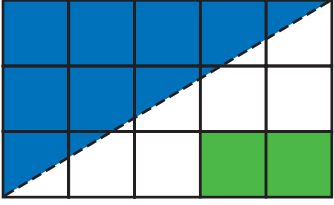
8



light blue area	
green area	
white area	
Total Area	

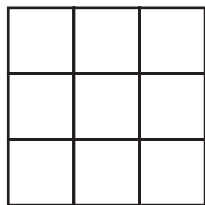
Find the area of each region.

 has an area of one square unit.

<p><b>9</b></p> 	<p><b>10</b></p> 	<p><b>11</b></p> 	<p><b>12</b></p> 
<p><b>13</b></p> 	<p><b>14</b></p> 	<p><b>15</b></p> 	<p><b>16</b></p> 

	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
blue area								
green area								
white area								
Total								

**13 Challenge** Color the grid to match the table.

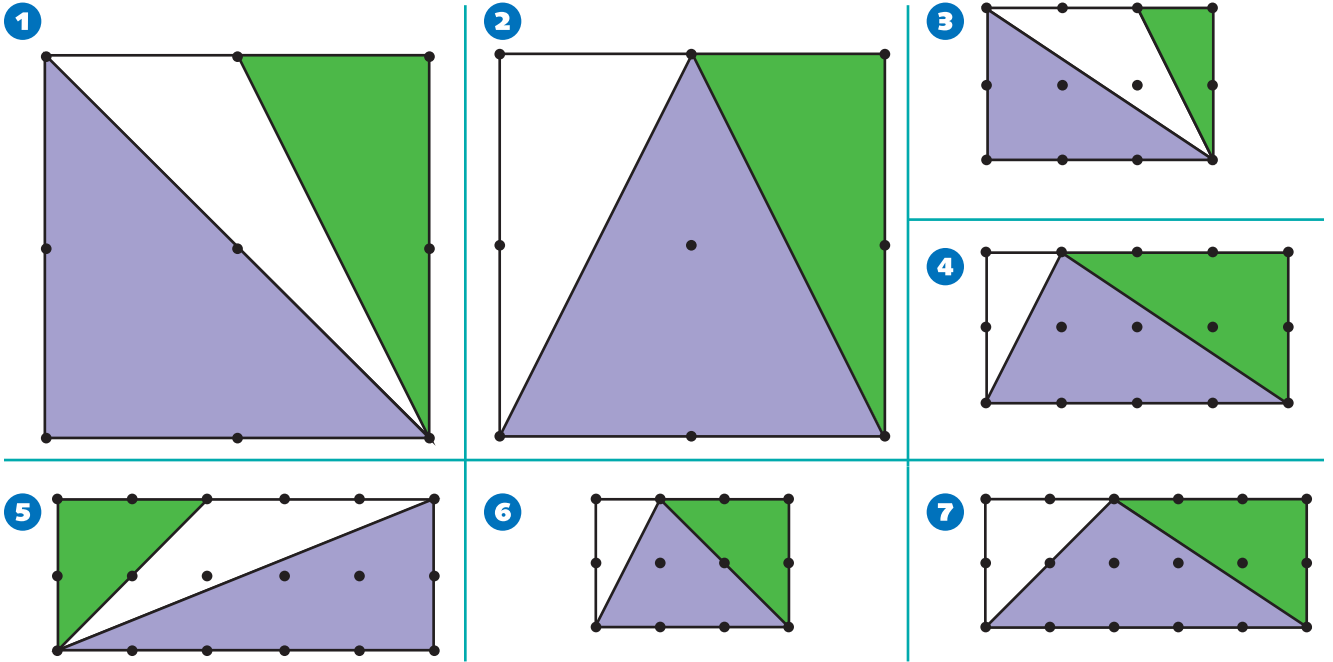


lighter shaded area	$1\frac{1}{2}$
darker shaded area	$4\frac{1}{2}$
white area	3
Total Area	9

# Introducing Standard Units for Measuring Area

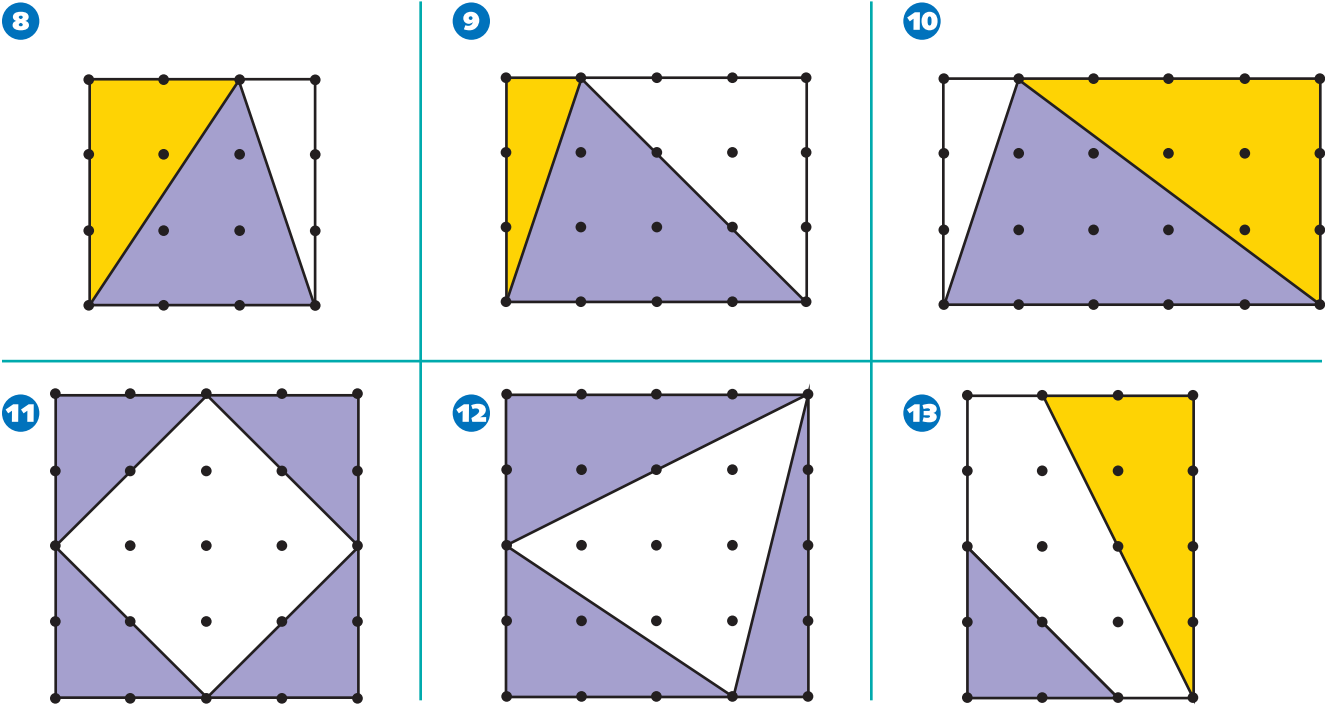
NCTM Standards 1, 2, 6, 7, 8, 9, 10

**Measure to find whether the unit of area for each figure is square inches, square centimeters, or neither. Then find the area of each region. Circle the correct area unit for each figure.**



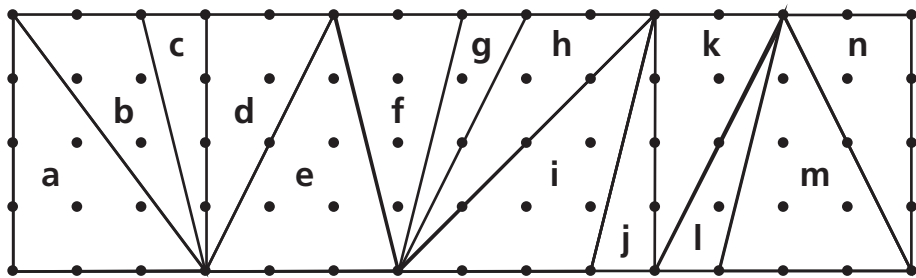
Area	1	2	3	4	5	6	7
green area							
purple area							
white area							
unit of area (circle one)	square in.	square in.	square in.	square in.	square in.	square in.	square in.
	square cm	square cm	square cm	square cm	square cm	square cm	square cm
	other unit	other unit	other unit	other unit	other unit	other unit	other unit

Find the area of each region and fill in the chart.  
Measure to identify the area unit.



Area	8	9	10	11	12	13
yellow area	3					
purple area						
white area						
total area						
unit of area						

**14 Challenge** Color all the regions that have the same area with the same color.



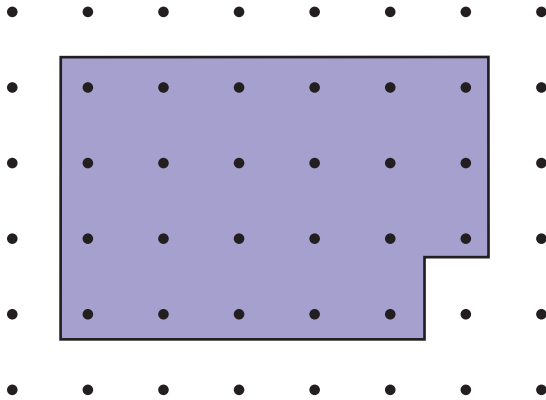


# Estimating Area in Standard Units

NCTM Standards 1, 2, 6, 7, 8, 9, 10

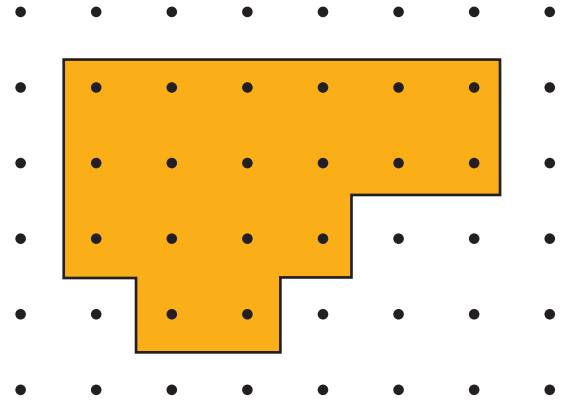
Estimate the area of each figure in square centimeters.

1



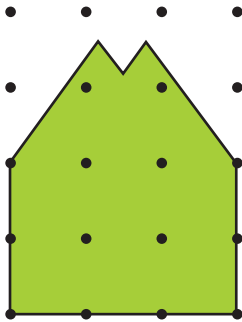
Area: about \_\_\_\_\_ square cm

2



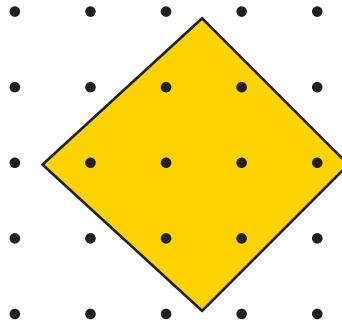
Area: about \_\_\_\_\_ square cm

3



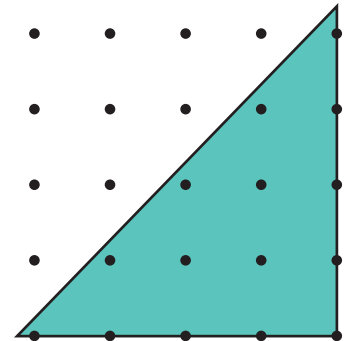
Area: about \_\_\_\_\_ square cm

4

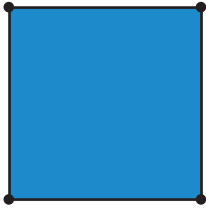


Area: about \_\_\_\_\_ square cm

5



Area: about \_\_\_\_\_ square cm



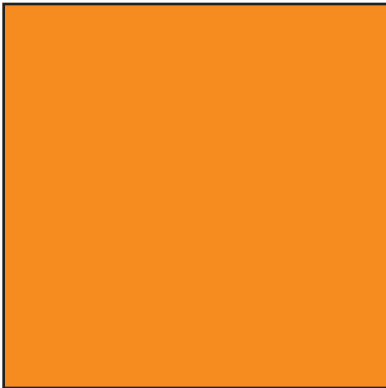
= 1 square inch



= 1 square centimeter

Estimate the area of each figure in square inches and in square centimeters.

6



Area: about \_\_\_\_\_ square inches

Area: about \_\_\_\_\_ square cm

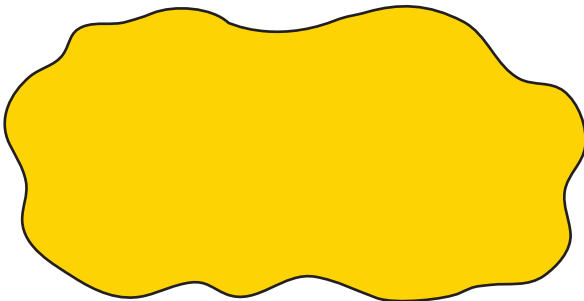
7



Area: about \_\_\_\_\_ square inches

Area: about \_\_\_\_\_ square cm

8



Area: about \_\_\_\_\_ square inches

Area: about \_\_\_\_\_ square cm



9 **Challenge** How could you use a ruler to help you estimate the area of a figure?

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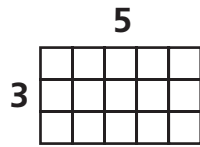


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# Introducing Perimeter

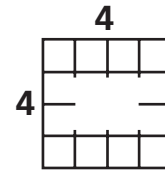
NCTM Standards 1, 2, 6, 7, 8, 9, 10

1



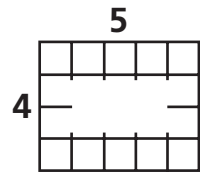
length	5	area	
width	3	perimeter	16

2



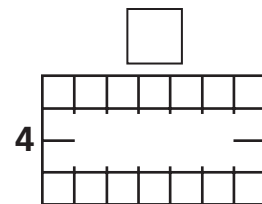
length	4	area	
width	4	perimeter	

3



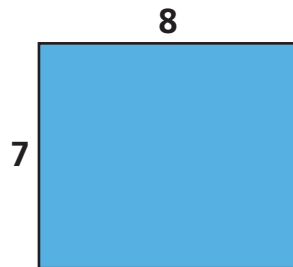
length	5	area	
width	4	perimeter	

4



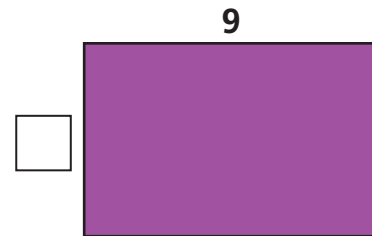
length		area	28
width	4	perimeter	

5



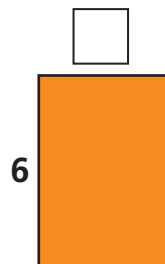
length	8	area	
width	7	perimeter	

6



length	9	area	54
width		perimeter	

7



length		area	24
width	6	perimeter	

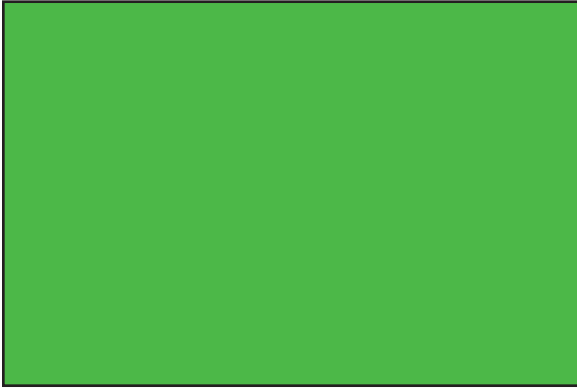
8



length	8	area	24
width		perimeter	22

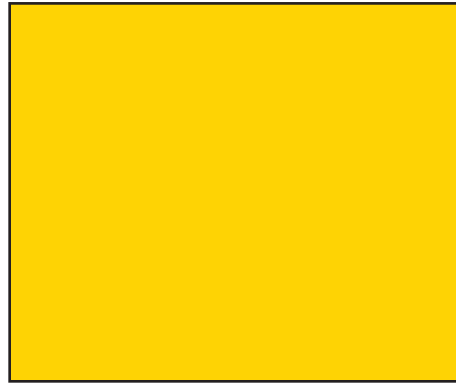
**Measure to find the length, width, and perimeter of the rectangle.**

9



length	inches
width	inches
perimeter	inches

10



length	centimeters
width	centimeters
perimeter	centimeters

11



length	centimeters
width	centimeters
perimeter	centimeters



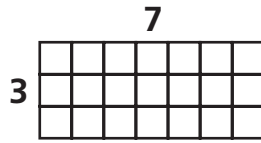
**12 Challenge** Find the areas of the rectangles on this page. Include the units in your answers.

9	
10	
11	

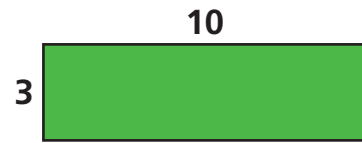
# Connecting Perimeter and Area

NCTM Standards 1, 2, 6, 7, 8, 9, 10

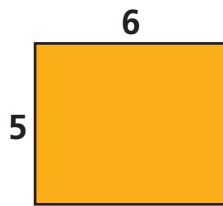
1

perimeter area 

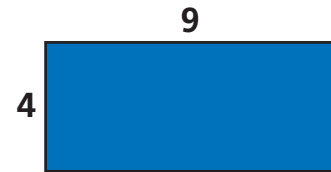
2

perimeter area 

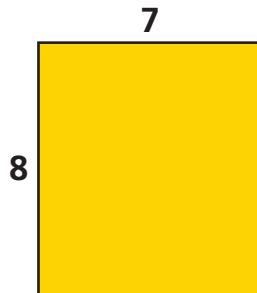
3

perimeter area 

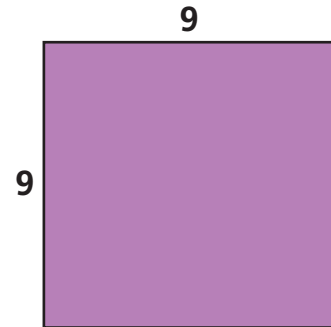
4

perimeter area 

5

perimeter area 

6

perimeter area 

**Quinlan's Quilt Shop sold a quilt that was 5 feet wide and 7 feet long.**



7 What was the perimeter of the quilt? How did you find the answer?

\_\_\_\_\_

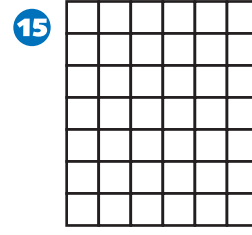
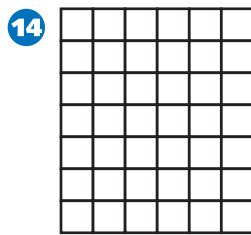
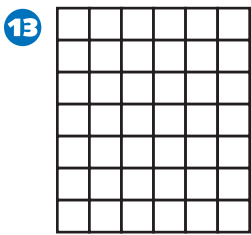
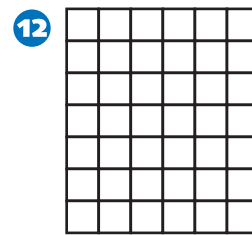
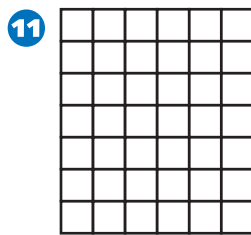
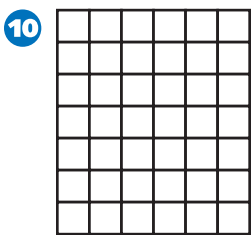
\_\_\_\_\_

8 The quilt was made out of squares whose sides were 1 foot long. How many squares were in the quilt? \_\_\_\_\_

9 What was the area of the quilt? \_\_\_\_\_

For each column in the table, draw a figure with the given area or perimeter. The figure does not have to be a rectangle. Fill in the rest of the table based on the figures you drew.

	10	11	12	13	14	15
area	12	12				15
perimeter			16	18	20	16



**Challenge** Kathleen has 28 meters of wire fence to put around her garden.

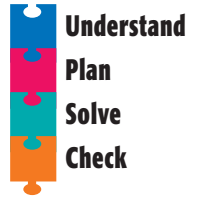
16 What is the largest rectangular area she can enclose inside the fence? \_\_\_\_\_

17 What would be the length and width of her garden? \_\_\_\_\_

# Problem Solving Strategy

## Solve a Simpler Problem

NCTM Standards 1, 2, 6, 7, 8, 9, 10



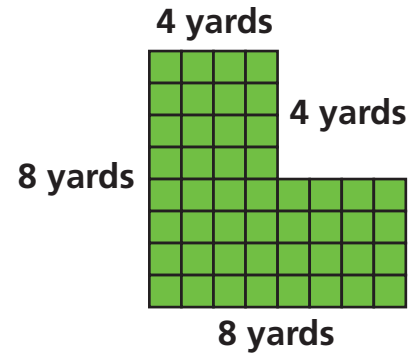
**Solve each problem.**

- 1 A diagram of Hong Lin's swimming pool is shown at the right.

She measured some of the sides. Use her measurements to find the perimeter and area of her pool.

perimeter: \_\_\_\_\_

area: \_\_\_\_\_



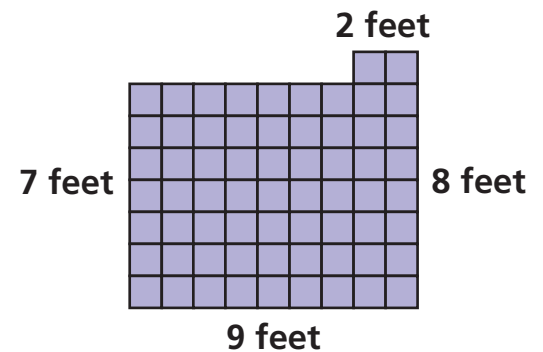
- 2 A diagram of Maria's garden is shown at the right.

What is the area of the garden?

\_\_\_\_\_

How long is the fence around the garden?

\_\_\_\_\_



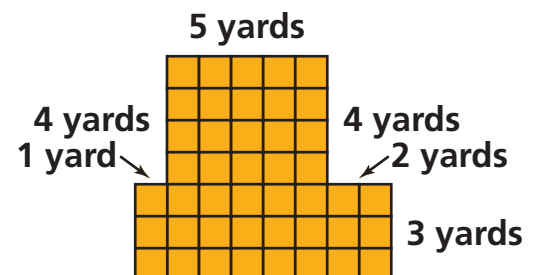
- 3 A diagram of Tony's kitchen is shown at the right.

What is the perimeter of his kitchen?

\_\_\_\_\_

What is the area of the kitchen?

\_\_\_\_\_



# Problem Solving Test Prep

Choose the correct answer.

1 Andrea has a roll of ribbon to make bows for bags of cookies. If the roll has 248 inches of ribbon and Andrea uses 8 inches of ribbon to make each bow, how many bows can she make?

- A. 30 bows
- B. 31 bows
- C. 34 bows
- D. 40 bows

2 Timon's dad is figuring out how many posts he needs for a fence around a garden. He draws the three plans below. If he continues the pattern, how many posts will he use in his next plan?

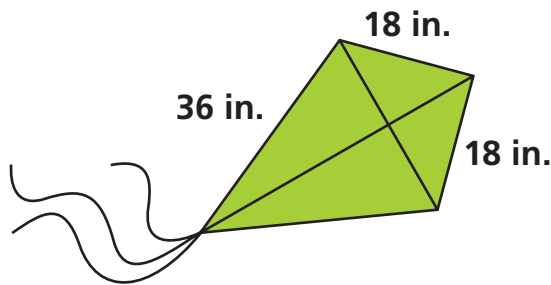


- A. 22 posts
- B. 24 posts
- C. 26 posts
- D. 28 posts

## Show What You Know

Solve each problem. Explain your answer.

3 Holly's kite has a perimeter of 108 inches.



How long is the fourth side of Holly's kite? Explain how you know your answer is correct.

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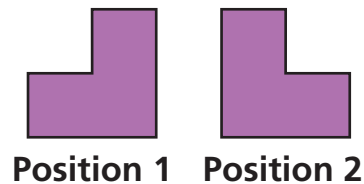


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4 Will transformed this figure from Position 1 into Position 2.



Name a transformation that Will could have used to move the figure. Explain how you know.

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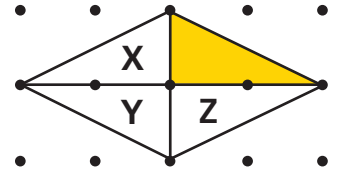
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## Review/Assessment

NCTM Standards 1, 2, 6, 7, 8, 9, 10

Use the figure for Problems 1–3. *Lessons 1, 2*



- 1 What is the area of the yellow piece? Dots are 1 centimeter apart.

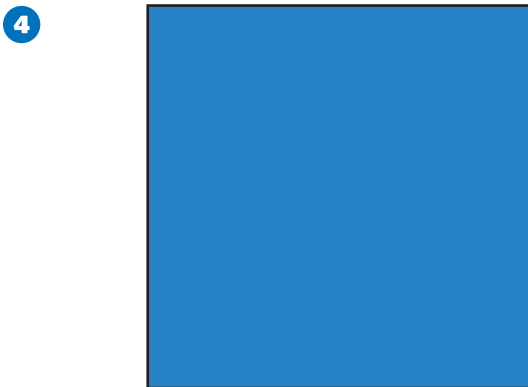
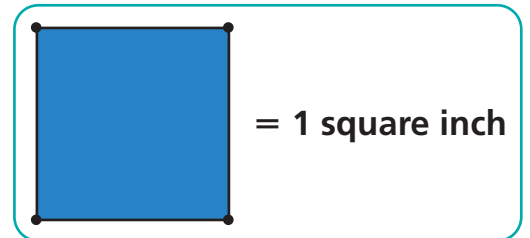
\_\_\_\_\_ square cm

- 2 Would you **reflect**, **rotate**, or **translate** the yellow piece to get each of the other pieces?

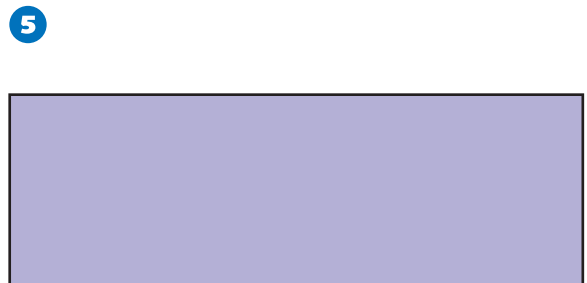
X: \_\_\_\_\_ Y: \_\_\_\_\_ Z: \_\_\_\_\_

- 3 What is the total area of the shape? \_\_\_\_\_ square cm

Measure the perimeter of each figure in inches. Estimate the area of each figure in square inches. *Lessons 4, 5, 6, 7*



perimeter	inches
area (estimated)	square inches



perimeter	inches
area (estimated)	square inches

6 How many small triangles would you need to make a figure congruent to the big triangle? \_\_\_\_\_

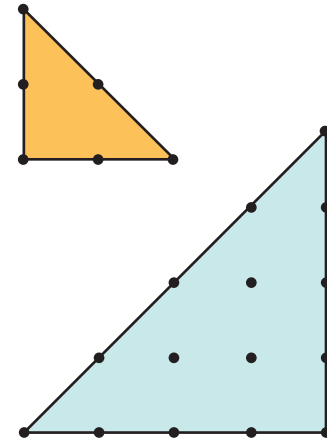
7 Show how you would arrange the small triangles.

8 What is the area of the small triangle?

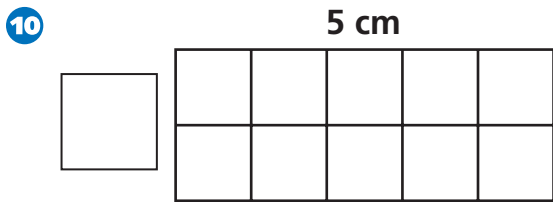
\_\_\_\_\_ square cm

9 What is the area of the big triangle?

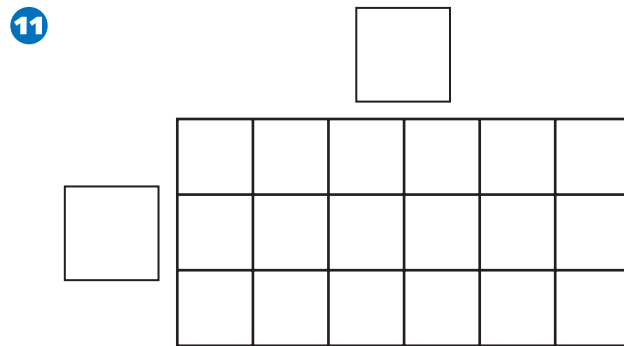
\_\_\_\_\_ square cm Lesson 2



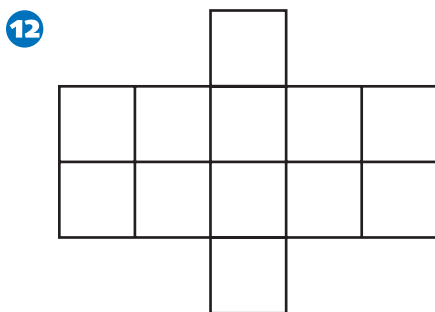
**For 10–12, find the length of the missing sides in centimeters. Then find the area and perimeter.** Lesson 6



perimeter	cm
area	square cm



perimeter	
area	



perimeter	
area	

13 What simpler problem could you solve to help you find the area in Problem 12?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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