

DECOMPOSING TO FIND AREA

TEKS

3.6C Determine the area of rectangles with whole number side lengths in problems using multiplication related to the number of rows times the number of unit squares in each row.

3.6D Decompose composite figures formed by rectangles into non-overlapping rectangles to determine the area of the original figure using the additive property of area.

ELPS

c2D (Listening) Monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed.

c3E (Speaking) Share information in cooperative learning interactions.

MATERIALS

For each student

- Copy of pp 6-9

For pairs of students

- Copy of pp 3-5
- Scissors
- Glue
- 1 piece of manila paper
- [Engaging Mathematics](#) Area: Whose Strategy Is Most like Mine? pp 175-176

ENGAGE

Pairs of students complete p 5. Discuss solutions as a class.

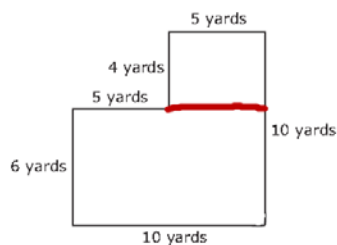
CONCEPT DEVELOPMENT

1. Pass out the three area models on p 3 to each pair of students. Pairs are to:
 - Find the area of each rectangle and record it inside each rectangle.
 - Cut out the three rectangles and glue them on to manila paper to form a figure, making sure to leave no space between the rectangles and no overlapping.
 - Determine the area of the new figure they just created.
 - Explain their thinking by recording under the figure created.
2. Have several groups share the figure they created and the area. Discussion should include that all groups found the same area for their figures, regardless of their arrangement because the areas of the three rectangles were: 14 sq in, 15 sq in and 24 sq in and when added together equals 53 sq in.
3. Pose the problem on p 4 and ask students to turn and talk with their partners to determine how to solve. How is this problem similar to other problems we have solved today?

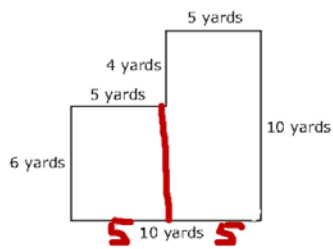
After students have had time to share and discuss with their partner, share as a class. Discussion should include:

 - We divided the shape into 2 rectangles: 5 by 4 and 10 by 6. We found the area of both and then added them to get 80 square yards because $5 \times 4 = 20$ and $10 \times 6 = 60$, so $20 + 60 = 80$.

Equation: $(5 \times 4) + (10 \times 6) = 20 + 60 = 80$



- We divided the shape into 2 rectangles but ours were: 5 by 10 and 5 by 6. We found the area of both and then added them to get 80 square yards because $5 \times 10 = 50$ and $5 \times 6 = 30$, so $50 + 30 = 80$.
Equation: : $(5 \times 10) + (5 \times 6) = 50 + 30 = 80$



4. Students complete Engaging Mathematics Area: Whose Strategy Is Most like Mine? pp 175-176. Discuss solutions as a class.

INDIVIDUAL PRACTICE

Students independently complete pp 6-9.

7 in

2 in

Area = _____ sq in

5 in

3 in

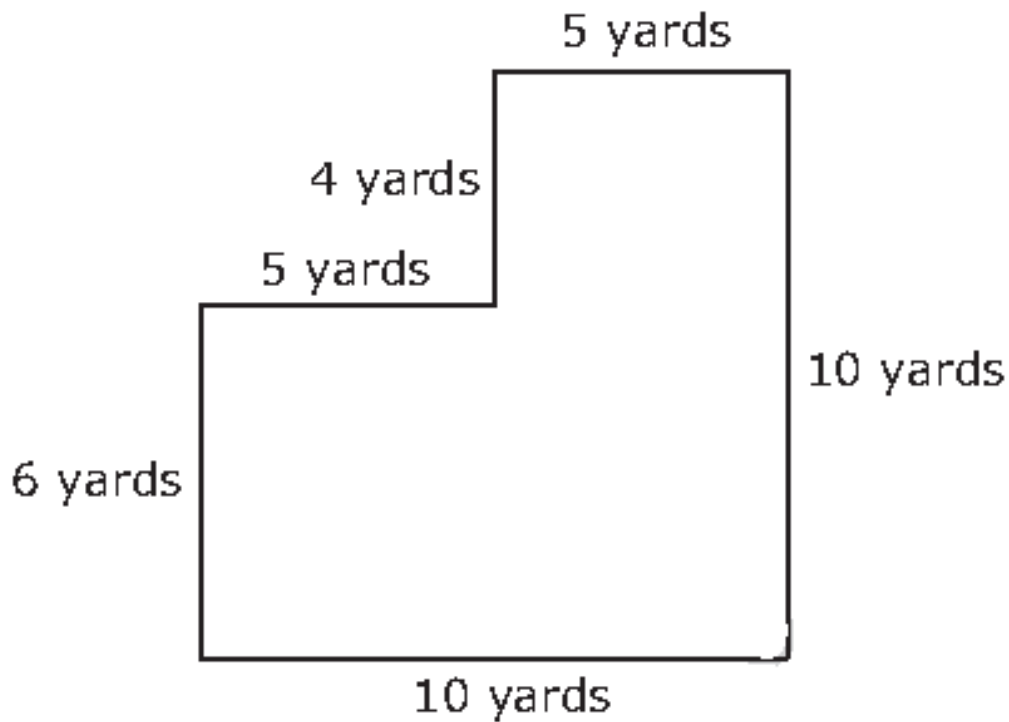
Area = _____ sq in

8 in

3 in

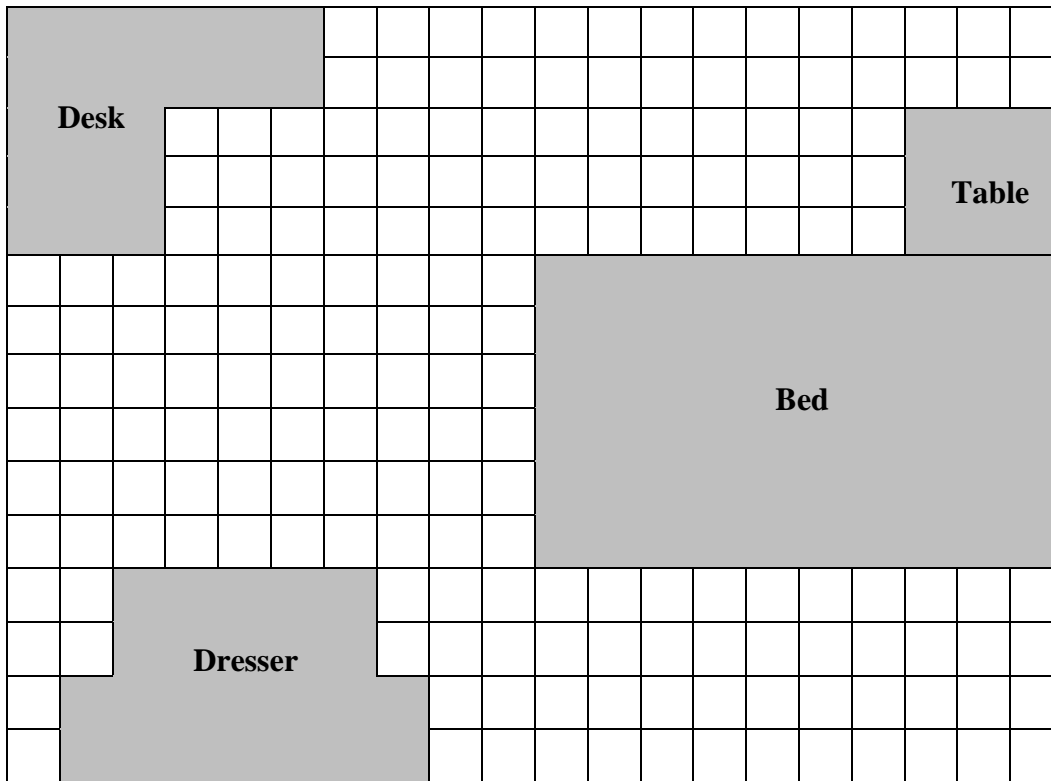
Area = _____ sq in

The figure below shows the measurements of a playground.



How can the area of the playground be calculated?

Jack uses grid paper to create a floor plan of his room. Draw a line to show where you broke apart the furniture to make more than 1 rectangle. Label the side lengths and find the area of the items listed below.

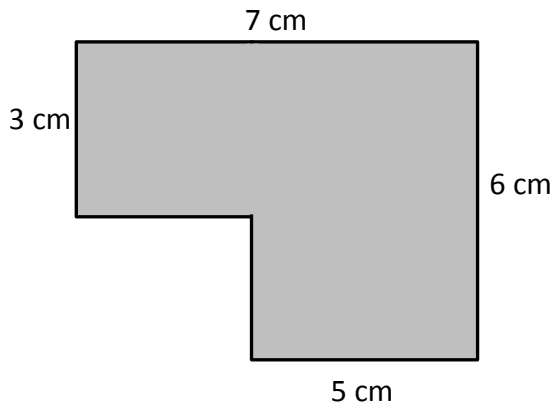


Name	Equations	Total Area
a. Jack's Room		_____ square units
b. Bed		_____ square units
c. Table		_____ square units
d. Dresser		_____ square units
e. Desk		_____ square units

Name _____

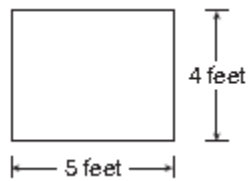
Individual Practice

1. Find the area of the shaded figure. Then, draw and label a rectangle with the same area.

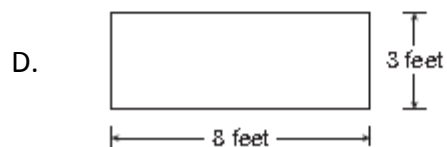
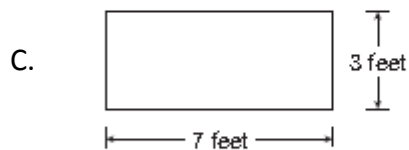
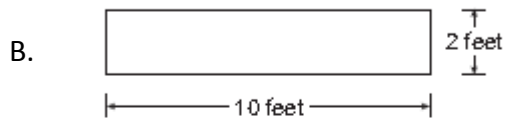
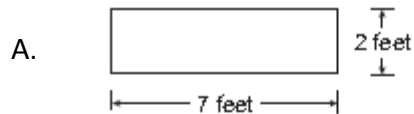


Draw your rectangle in here:

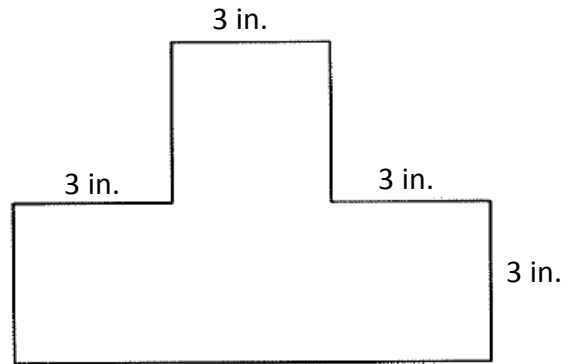
2. Natalie made a rug in the shape of a rectangle show below.



Which rug has the same area as the one Natalie made?



3. Four congruent squares were used to make the following figure.

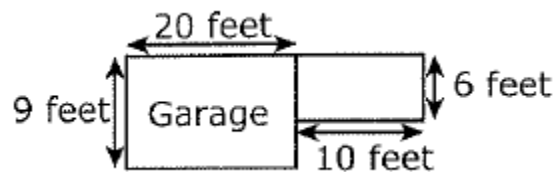


What is the total area of the figure?

Record your answer in the boxes below. Then fill in the bubbles. Be sure to use the correct place value.

			.
0	0	0	
1	1	1	
2	2	2	
3	3	3	
4	4	4	
5	5	5	
6	6	6	
7	7	7	
8	8	8	
9	9	9	

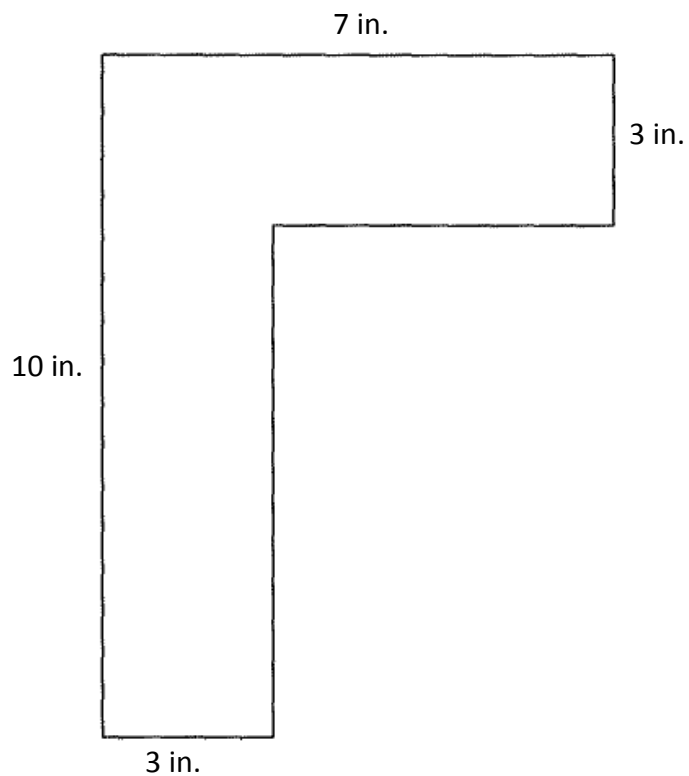
4. Stephen wants to add an additional storage room to the side of his garage. The floor plan is shown.



What is the area, in square feet, of the garage and storage room?

- A. 180 square feet
- B. 60 square feet
- C. 120 square feet
- D. Not here

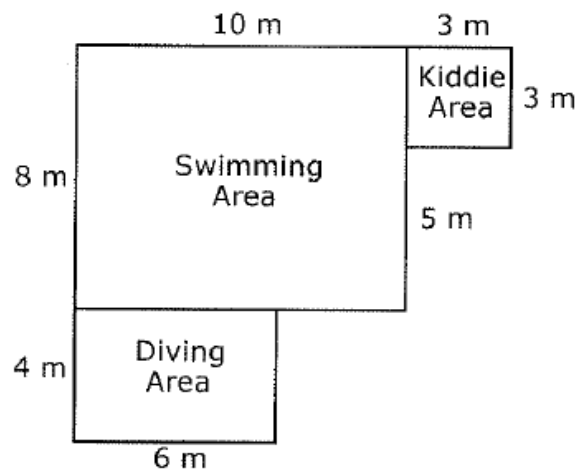
5. The following figure is made up of two congruent rectangles.



What is the area of one of the rectangles?

- A. 30 square inches
- B. 21 square inches
- C. 42 square inches
- D. 23 square inches

6. The following diagram shows the map and dimensions of the pool at the recreation center.



Which of these expressions can be used to find the total area of the pool?

- A. $(4 \times 6) + (8 \times 5) + (3 \times 3)$
- B. $(10 \times 12) + (3 \times 3)$
- C. $(4 \times 6) + (8 \times 10) + (3 \times 3)$
- D. $10 + 3 + 3 + 5 + 6 + 4 + 8$