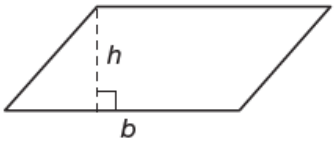
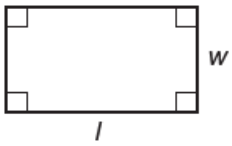
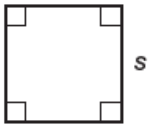
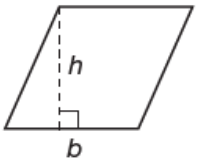
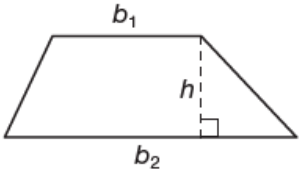
Objective: REVIEW

# Area of Triangles and Area of Quadrilaterals

**Area** is a measure of the number of square units needed to cover a region. A **square unit** is a square with a side length of 1 of any particular unit. Square units can be square inches ( $in.^2$ ), square centimeters ( $cm^2$ ), or any other squared unit length.

The formula for the area of a triangle is $A = \frac{1}{2}bh$, where b represents the base length and h represents the height of the triangle. Some examples of triangles, with their bases and heights labeled, are shown below.

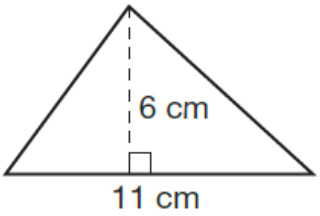
A **quadrilateral** is a polygon that has 4 sides. You can use formulas to find the areas of quadrilaterals.

| Figure | Area Formula |
|---|---|
| **Parallelogram**   | $A = bh$, where $b$ represents the base length and $h$ represents the height |
| **Rectangle**   | $A = lw$, where $l$ represents the length and $w$ represents the height<br>Or $A = bh$, where $b$ represents the base length and $h$ represents the height |
| **Square**   | $A = s^2$, where $s$ represents the length of a side |
| **Rhombus**   | $A = bh$, where $b$ represents the base length and $h$ represents the height |
| **Trapezoid**   | $A = \frac{1}{2}h(b_1 + b_2)$, where $h$ represents the height and $b_1$ and $b_2$ represent the lengths of the bases |

EXPLORE 1

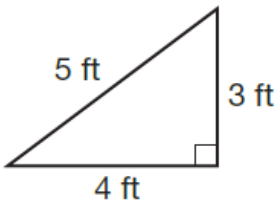
# Area of Triangles

**1.** What is the area of this triangle?




**A.** 16.5 $cm^2$
**B.** 17 $cm^2$
**C.** 33 $cm^2$
**D.** 66 $cm^2$

**2.** What is the area of this triangle?

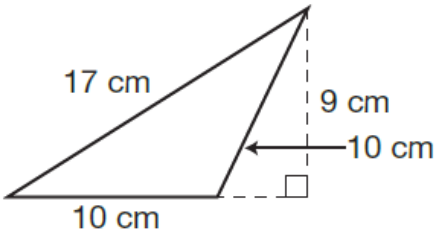



**A.** 6 $ft^2$
**B.** 12 $ft^2$
**C.** 13 $ft^2$
**D.** 22 $ft^2$

**3.** A triangular pennant has a base that is 9 inches long and a height of 19 inches. What is the area of the pennant?

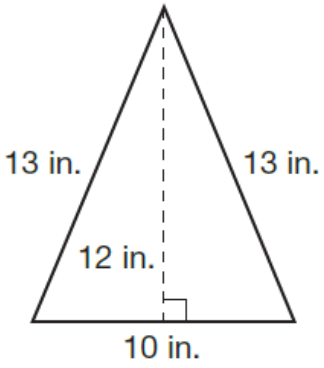
**A.** 14 $in.^2$
**B.** 28 $in.^2$
**C.** $85\frac{1}{2}$ $in.^2$
**D.** 171 $in.^2$

**4.** What is the area of this triangle?




**A.** 45 $cm^2$
**B.** 46 $cm^2$
**C.** 50 $cm^2$
**D.** 85 $cm^2$

**5.** What is the area of this triangle?

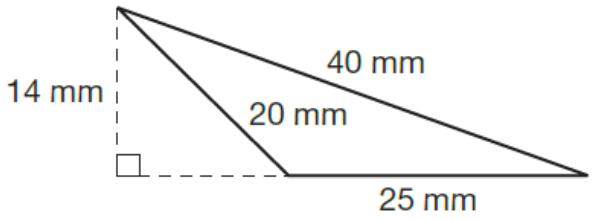



**A.** 39 $in.^2$
**B.** 60 $in.^2$
**C.** 65 $in.^2$
**D.** 120 $in.^2$

**6.** A flower bed in the shape of a right triangle has legs that measure 16 feet and 9 feet. What is the area of the flower bed?

**A.** 12.5 $ft^2$
**B.** 25 $ft^2$
**C.** 72 $ft^2$
**D.** 144 $ft^2$

**7.** What is the area of this triangle?



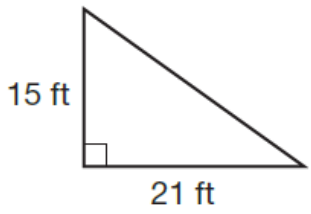

**A.** 140 $mm^2$

**B.** 175 $mm^2$

**C.** 200 $mm^2$

**D.** 400 $mm^2$

**8.** What is the area of this triangle?



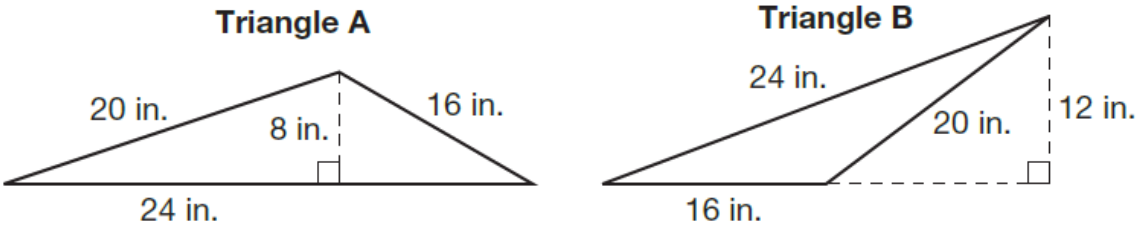

**A.** 315 $ft^2$

**B.** 305 $ft^2$

**C.** 285 $ft^2$

**D.** $157\frac{1}{2} ft^2$

**9.** Mrs. Green drew these two triangles on the board.

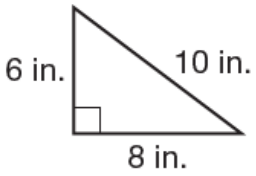



**A.** What is the area of triangle A? Show your work.

**B.** What is the area of triangle B? Show your work.

**C.** What do you notice about the two triangles? Explain your answer.

**10.** Use numbers from the box to complete the statements.




| |
|---|
| 6 |
| 8 |
| 10 |
| 24 |
| 48 |

The height of this triangle is _____ inches.

The base of this triangle is _____ inches.

The area of this triangle is _____ square inches.

**11.** Circle every set of measurements of base $b$ and height $h$ that are for triangles with an area of 18 square millimeters.

**A.** $b = 4$ mm, $h = 10$ mm

**B.** $b = 3$ mm, $h = 12$ mm

**C.** $b = 6$ mm, $h = 6$ mm

**D.** $b = 5$ mm, $h = 8$ mm

**E.** $b = 9$ mm, $h = 4$ mm

**12.** A park is in the shape of a right triangle with legs that measure 20 miles and 21 miles. Circle the number that makes the statement true.

The area of the park is

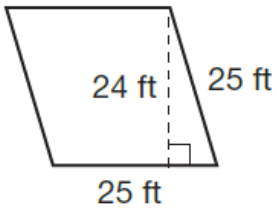
| |
|---|
| 2,021 |
| 420 |
| 315 |
| 210 |

square miles.

EXPLORE 2

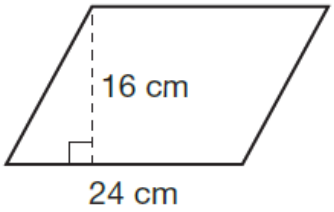
# Area of Quadrilaterals

**1.** What is the area of this rhombus?




**A.** 100 $ft^2$
**B.** 576 $ft^2$
**C.** 600 $ft^2$
**D.** 625 $ft^2$

**2.** What is the area of this parallelogram?

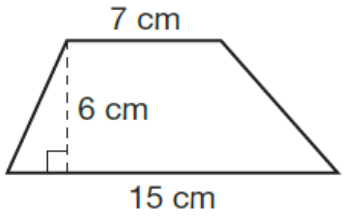



**A.** 288 $cm^2$
**B.** 384 $cm^2$
**C.** 504 $cm^2$
**D.** 576 $cm^2$

**3.** Nikki's bedroom is shaped like a rectangle that is 18 feet long and 12 feet wide. She wants to carpet the entire room. How many square feet of carpeting does she need?

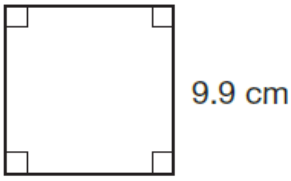
**A.** 40 square feet
**B.** 80 square feet
**C.** 108 square feet
**D.** 216 square feet

**4.** What is the area of this trapezoid?




**A.** 28 $cm^2$
**B.** 66 $cm^2$
**C.** 132 $cm^2$
**D.** 630 $cm^2$

**5.** What is the area of this square?




**A.** 3.3 $cm^2$
**B.** 39.6 $cm^2$
**C.** 81.81 $cm^2$
**D.** 98.01 $cm^2$

**6.** Lex built a rectangular pen outdoors for his dog Luther. The pen is 36 feet long and 27 feet wide. What is the area of the pen?

**A.** 126 $ft^2$
**B.** 486 $ft^2$
**C.** 972 $ft^2$
**D.** 3,969 $ft^2$

**7.** Mae's rose garden is in the shape of a trapezoid with a height of 35 feet. The bases of the garden measure 50 feet and 32 feet. What is the area of Mae's rose garden?

**A.** $58\frac{1}{2}$ ft$^2$

**B.** 1,360 ft$^2$

**C.** 1,435 ft$^2$

**D.** 2,870 ft$^2$

**8.** The schoolyard at Kenny's school is a square that is 50 yards long on each side. What is the area of the schoolyard?

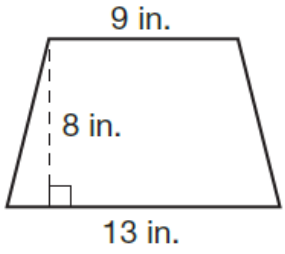
**A.** 2,500 yd$^2$

**B.** 2,000 yd$^2$

**C.** 250 yd$^2$

**D.** 200 yd$^2$

**9.** Amanda drew the trapezoid shown below.




**A.** What is the area of Amanda's trapezoid? Show your work.

**B.** Explain how the formula for the area of a triangle can be used to find the area of Amanda's trapezoid.

**10.** Look at each statement below. Is the statement correct? Select Yes or No.

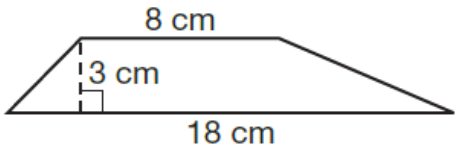
**A.** A diagonal of a trapezoid divides the trapezoid into two triangles that are equal in area. ○ Yes ○ No

**B.** If a square and a rhombus have the same side length, the area of the square is greater than the area of the rhombus. ○ Yes ○ No

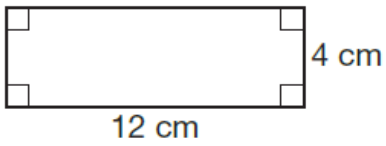
**C.** A diagonal of a square divides the square into two triangles that are equal in area. ○ Yes ○ No

**D.** The formula for the area of a triangle can be used to find the formula for the area of a trapezoid. ○ Yes ○ No

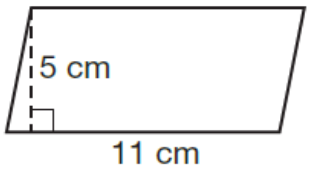
**11.** Draw a line from each quadrilateral to its area.

**A.** 

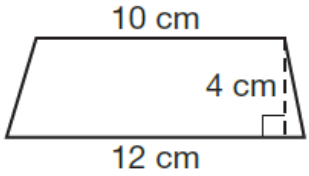

• $44\ cm^2$

**B.** 


• $39\ cm^2$

**C.** 


• $48\ cm^2$

**D.** 


• $55\ cm^2$

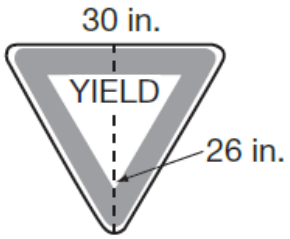
Name: _____ Date: _____ Class: _____

Homework HW

## LESSON SE 4a

Objective

Use a number from the box to complete the statement.

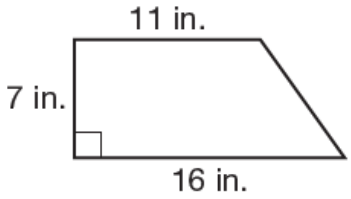



The area of this yield sign is

| |
|---|
| 780 |
| 585 |
| 390 |
| 195 |

square inches.

Use numbers from the box to complete the statements.




| |
|---|
| 7 |
| 11 |
| 16 |
| 92.5 |
| 94.5 |

The shorter base of this trapezoid is _____ inches.

The longer base of this trapezoid is _____ inches.

The height of this trapezoid is _____ inches.

The area of this trapezoid is _____ square inches.