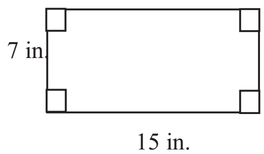
NAME____

Module 13 **Perimeter, Area, and Volume**
Lesson 2 **Area**

Independent Practice 13.2

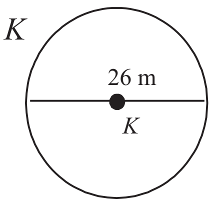
Find the area.

1.



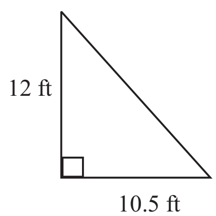
105 in.^{2}

2. Circle K



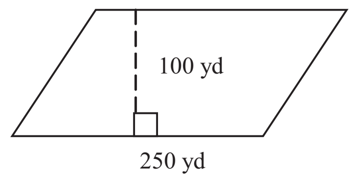
About 530.66 m^2

3.



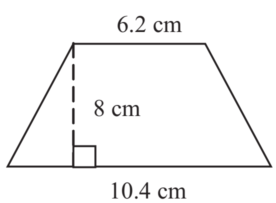
63 ft^2

4.



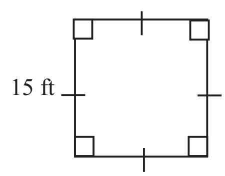
25,000 yd^2

5.



66.4 cm^2

6.



225 ft^2

7. A large banner in the shape of a parallelogram has a base of seven feet and a height of four feet. What is the area of the banner?

The area is 28 ft^2.

8. A rectangular swimming pool cover has an area of 340 square feet. The width of the cover is 17 feet. What is the length?

The pool cover is 20 feet long.

9. Jerome wants the perimeter of a rectangular vegetable garden to be 28 yards. Complete the table below to find the greatest and least possible areas that he can obtain by using whole-number dimensions only. Tell which dimensions give these areas.

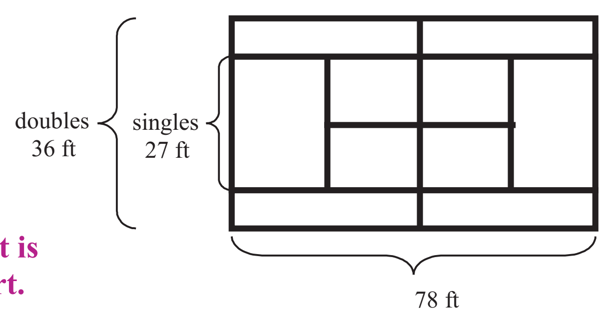
Length (yd)	Width (yd)	*P* (yd)	*A* (yd^2)
1	**13**	28	**13**
2	**12**	28	**24**
3	**11**	28	**33**
4	**10**	28	**40**
5	**9**	28	**45**
6	**8**	28	**48**
7	**7**	28	**49**

Least possible area: 13 yd^2; 1 yd by 13 yd
Greatest possible area: 49 yd^2; 7 yd by 7 yd

10. A discus thrower must stand inside a circle that is 8 feet $2\frac{1}{2}$ inches in diameter. Find the area of the circle to the nearest whole inch.

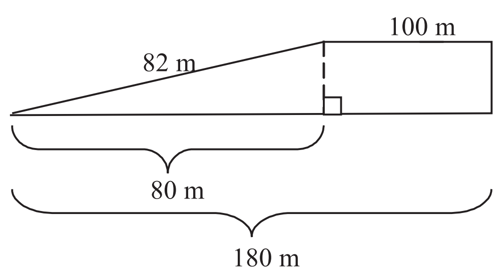
The area is about 7,616 square inches.

11. A doubles tennis court is nine feet wider than a singles tennis court. How much greater is the area of the doubles tennis court than the singles tennis court?



The area of the doubles tennis court is 702 ft^2 greater than the singles court.

12. Find the area of the trapezoid.



The area is 2,520 m^2.

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Journal

1. If you know the perimeter of a square, can you determine its area? How? What about for a rectangle that is not a square? Explain.
2. How is the formula for the area of a triangle related to the formula for the area of a parallelogram? Explain.
3. Explain how to find the length of the base of a triangle if you know the height and area of the triangle.
4. How can you find all the different whole-number dimensions of a rectangle whose perimeter is 26 feet long?

Cumulative Review

Fill in the blanks.

1. 425 min = ____ h ____ min

   7; 5

2. 748 g = ______ mg

   748,000

3. 7.5 gal = ______ pt

   60

4. 74 yd = ______ in.

   2,664

Perform the indicated operation.

5. 45 h ÷ 4

   11 h 15 min

6. 128 mL × 21

   2,688 mL or 2.688 L

7. 22 h 47 min
   + 8 h 18 min

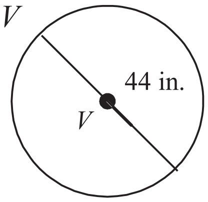
   31 h 5 min

8. 18 gal 2 qt
   – 3 gal 3 qt

   14 gal 3 qt

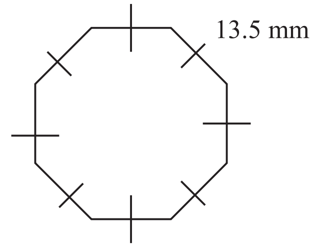
Find the perimeter or circumference.

9. Circle V



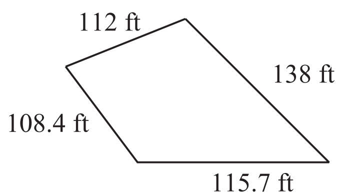
About 138.16 in.

10.



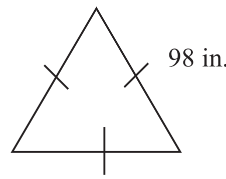
108 mm

11.



474.1 ft

12.



294 in.

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Possible Journal Answers

1. **If I know the perimeter of a square, I can find its area by first dividing the perimeter by four to find the length of one side. Then, I square the side length to find the area of the square. Because the four sides of a square are congruent, there is one unique square with a given perimeter. A rectangle that is not a square has different length and width values, meaning there can be several unique rectangles with the same perimeter. For instance a 5 ft by 2 ft rectangle and a 3 ft by 4 ft rectangle both have a perimeter of 14 ft, but the former has an area of 10 square feet while the latter has an area of 12 square feet. In conclusion, yes, I can find the area of a square given its perimeter, but I cannot find the area of rectangle given its perimeter.**

2. **The formula for the area of a triangle is the same as for the area of a parallelogram except that after multiplying the base times the height, I would divide by two (or would multiply by one-half). This is because any parallelogram can be divided into two congruent triangles.**

3. **I write the area of a triangle: $A = \frac{1}{2}bh$. I then substitute the area for A and the height for h. Next, I multiply the height by $\frac{1}{2}$ and divide the area by this amount. The quotient is the length of the base, b.**

4. **Because the perimeter is 26 feet, the sum of one length and one width must be half of 26 feet or 13 feet. Starting with one foot for the length, I list all the possible lengths: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12. Then, I list the corresponding widths: 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. If desired, I remove repeats that give the same dimensions, but in a different order, such as length five and width six and length six and width five. The dimensions are 1 ft by 12 ft, 2 ft by 11 ft, 3 ft by 10 ft, 4 ft by 9 ft, and 5 ft by 8 ft.**