1.4 Start Thinking

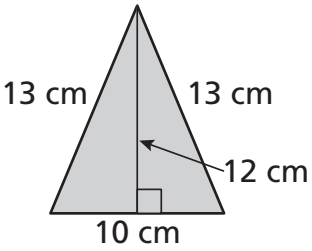
A polygon with three sides is called a *triangle*. The prefix *tri-* means three. One object with the prefix *tri-* is a tripod. Tripods have three legs and are often used to stabilize video cameras.

Find the prefix for *quadrilateral*, *pentagon*, and *hexagon*. Then research one word using each prefix. State what each word means and provide a sentence explaining the usage of the word.

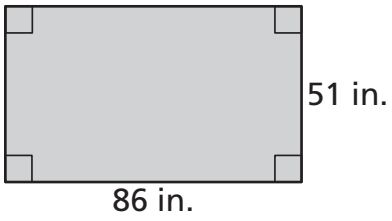
1.4 Warm Up

Find the perimeter and area of the polygon.

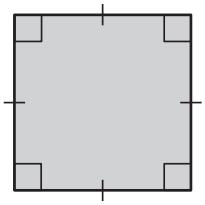
1.



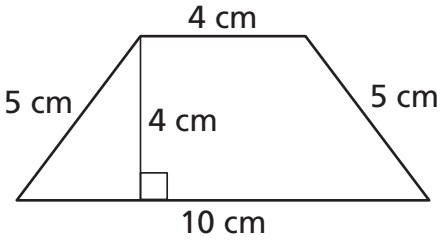
2.



3.



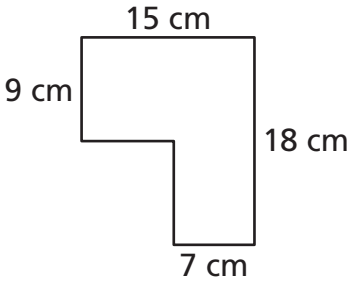
4.



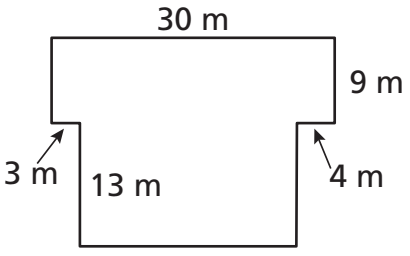
1.4 Cumulative Review Warm Up

Find the perimeter of the figure.

1.



2.

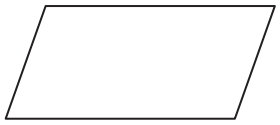


Name _____ Date _____

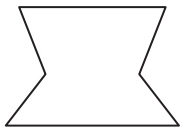
1.4 Practice A

In Exercises 1 and 2, classify the polygon by the number of sides. Tell whether it is *concave* or *convex*.

1.



2.



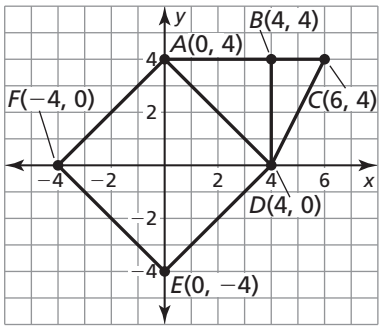
3. Find the perimeter of quadrilateral $PQRS$ with the vertices $P(2, 4)$, $Q(2, 3)$, $R(-2, -2)$, and $S(-2, 3)$.

In Exercises 4 and 5, find the area of the polygon with the given vertices.

4. $T(0, -2)$, $U(3, 5)$, $V(-3, 5)$

5. $A(-3, 3)$, $B(-3, -1)$, $C(4, -1)$, $D(4, 3)$

In Exercises 6–10, use the diagram.



6. Find the perimeter of square $ADEF$.

7. Find the perimeter of $\triangle BCD$.

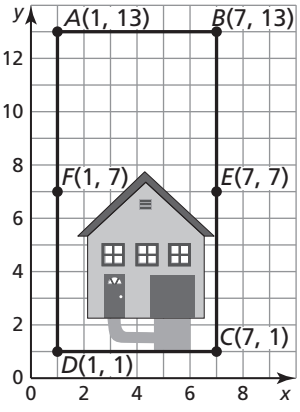
8. Find the area of square $ADEF$.

9. Find the area of $\triangle ACD$.

10. Find the area of pentagon $ACDEF$.

11. A rectangle has vertices $(1, 4)$, $(3, 4)$, and $(3, -3)$. Find the remaining vertex of the rectangle. What is the area of the rectangle?

12. You are installing a fence around your yard. In the figure, your yard is rectangle $ABCD$. Each unit in the coordinate plane represents 10 feet.



a. What is the perimeter of your entire yard?

b. You consider only installing a fence around your backyard represented by rectangle $ABEF$. What is the perimeter of your backyard?

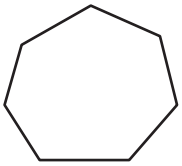
c. The cost of fencing is \$50 for each 6-foot section. How much do you save by only installing a fence in the backyard?

Name_____ Date _____

1.4 Practice B

In Exercises 1 and 2, classify the polygon by the number of sides. Tell whether it is *convex* or *concave.*

1.



2.

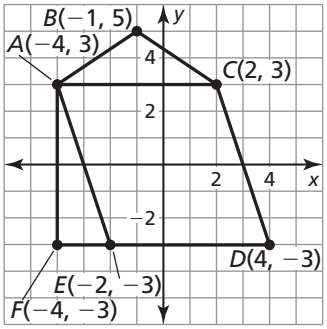
3. Find the perimeter of quadrilateral $ABCD$ with vertices $A(-2, -2)$, $B(-1, 3)$, $C(5, 3)$, and $D(4, -2)$.

In Exercises 4 and 5, find the area of the polygon with the given vertices.

4. $P(1, 1)$, $Q(-2, 1)$, $R(-1, -4)$

5. $A(3, 7)$, $B(5, 7)$, $C(3, -7)$, $D(5, -7)$

In Exercises 6–10, use the diagram.



6. Find the perimeter of $\triangle ABC$.

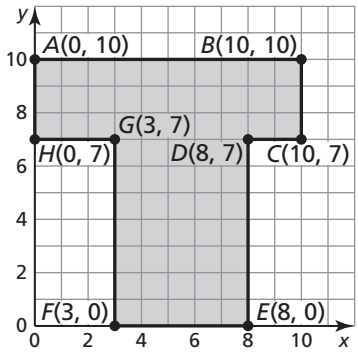
7. Find the perimeter of quadrilateral $ACDE$.

8. Find the area of $\triangle ABC$.

9. Find the area of quadrilateral $ACDE$.

10. Find the area of pentagon $ABCDF$.

11. You are buying tile for your bathroom floor and baseboards for your bathroom walls. In the figure, the entire polygon represents the layout of the floor. Each unit in the coordinate plane represents 1 foot.



a. Find the area of the floor.

b. Find the perimeter of the floor.

c. The cost of the baseboard is \$2 per foot. The cost of the tile is \$2.50 per square foot. Find the total cost to buy tile and baseboards for your bathroom.

12. You and your friend go for a walk around town. You walk 0.8 mile east and then 1.5 miles south. You then return to where you started. How far do you travel during your entire walk?

Name _____ Date _____

1.4 Enrichment and Extension

Finding Area in a Coordinate Plane

1. Find the area of the triangle created by the intersecting lines below.

$y = -2x + 15$

$y = -\frac{1}{2}x + 3$

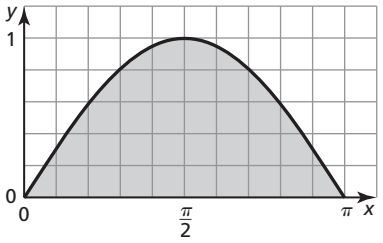
$y = x + 3$

2. Given the following intersecting lines, find an equation of a third vertical line which intersects the others to create a triangle with an area of 27 square units.

$y = 3$

$y = \frac{3}{2}x$

3. Given the graph of $y = \sin(x)$ on the interval $0 \leq x \leq \pi$, complete the following.

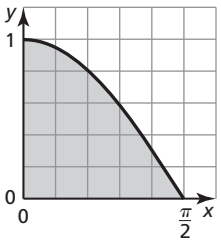


a. Determine the area of each square unit on the graph. Round to the nearest thousandth.

b. Approximately how many squares make up the shaded region?

c. Approximate the area under the curve of $y = \sin(x)$ on $0 \leq x \leq \pi$.

4. Approximate the area under the curve $y = \cos(x)$ on the interval $0 \leq x \leq \frac{\pi}{2}$.



Name_____ Date _____

1.4 Puzzle Time

Why Was The Geometry Book So Sad? It Had …

Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

Indicate the number of sides of the polygon.

1. nonagon **2.** hexagon **3.** decagon **4.** quadrilateral

Find the perimeter, in units, of the polygon with the given vertices. Round to the nearest tenth.

5. $A(8, 0), B(-3, 2), C(10, 2)$

6. $A(4, -3), B(7, 10), C(-8, 2)$

7. $A(-5, 5), B(5, -5), C(-5, -5)$

8. $A(4, -3), B(7, 10), C(-8, 2), D(-1, -5)$

9. $A(-4, -8), B(4, -8), C(4, 0), D(0, 3), E(-4, 0)$

Find the area, in square units, of the polygon with the given vertices. Round to the nearest tenth.

10. $A(0, 8), B(6, 5), C(-3, 2)$

11. $A(-5, 0), B(0, 10), C(5, 0)$

12. $A(7, 0), B(-4, 0), C(-4, 11)$

13. $A(-5, 5), B(3, -2), C(-4, -10), D(-12, -3)$

14. $A(-4, 0), B(1, 4), C(5, -1), D(0, -5)$

15. $A(0, -3), B(0, 4), C(10, 4), D(10, -3)$

T	I	E	O	H	O	A	U	M	F	Q	A	H	G	O	J
4	33.4	8	43.3	65.4	70	111	51	45.6	26.2	44.3	34.1	23	5	73	27.1
G	**M**	**D**	**Z**	**N**	**Y**	**P**	**I**	**R**	**O**	**B**	**I**	**L**	**E**	**M**	**S**
10.5	17	38.6	$\frac{1}{2}$	27.0	113	10	115	6	22.5	34.0	48.2	41	60.5	50	9