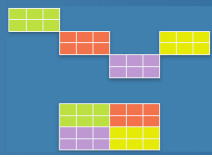
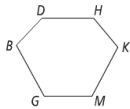


Lesson 1.8 Perimeter, Circumference, and Area

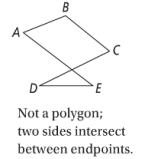
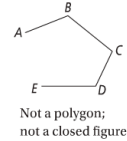
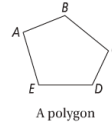
You and your friend have two choices for a wall decoration. You say the decoration on the top will use more wall space. Your friend says the two decorations will use the same amount of wall space. Who is correct? Explain.



To name a polygon, start at any vertex and list the vertices consecutively in a clockwise or counterclockwise direction.



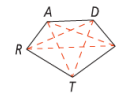
A **polygon** is a closed plane figure formed by three or more segments. Each segment intersects exactly two other segments at their endpoints. No two segments with a common endpoint are collinear. Each segment is called a *side*. Each endpoint of a side is a *vertex*.



Names of Common Polygons

Sides	Name	Sides	Name
3	Triangle, or trigon	9	Nonagon, or enneagon
4	Quadrilateral, or tetragon	10	Decagon
5	Pentagon	11	hendecagon
6	Hexagon	12	Dodecagon
7	Heptagon	⋮	⋮
8	Octagon	n	n -gon

You can also classify a polygon as concave or convex, using the diagonals of the polygon. A **diagonal** is a segment that connects two nonconsecutive vertices.

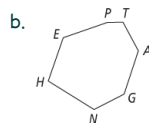
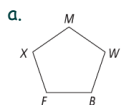


A **convex polygon** has no diagonal with points outside the polygon.



A **concave polygon** has at least one diagonal with points outside the polygon.

Name, classify, and state whether it is concave or convex:



Square

side length s

$$P = 4s$$

$$A = s^2$$

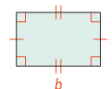


Rectangle

base b and height h

$$P = 2b + 2h, \text{ or } 2(b + h)$$

$$A = bh$$

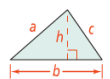


Triangle

side lengths a , b , and c ,
base b , and height h

$$P = a + b + c$$

$$A = \frac{1}{2}bh$$



Circle

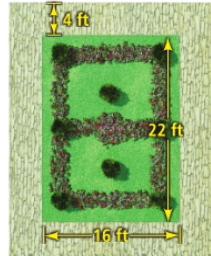
radius r and diameter d

$$C = \pi d, \text{ or } C = 2\pi r$$

$$A = \pi r^2$$



The botany club members are designing a rectangular garden for the courtyard of your school. They plan to place edging on the outside of the path. How much edging material will they need?

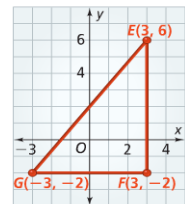


- 1 You want to frame a picture that is 5 in by 7 in with a 1 in wide frame. What is the perimeter of the outside edge of the frame? (label your answer)

Ex. What is the circumference and area of the circle with a radius of 9 in?

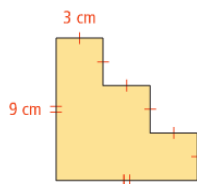
Ex. What is the area of a circle with a diameter of 17 ft?

Ex. What is the perimeter of triangle EFG?



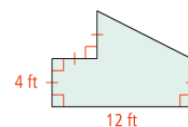
- 2 What is the area of the figure below? All angles are right angles.

- A 27
- B 36
- C 45
- D 54



- 3 What is the area of the figure below?

- A 48
- B 64
- C 60
- D 80



- 4 You are designing a poster that will be 3 yd wide and 8 ft high. How much paper do you need to make the poster? Give your answer in square feet.