## Lesson 1.4: Polygons

-In this lesson you will:

- learn the definition of polygon
- learn the meaning of terms associated with polygons, such as concave, convex, equilateral, equiangular, and regular
- identify congruent polygons
*Add "polygon" to your dictionary.


Polygons


Not Polygons

You classify a polygon by the number of sides it has. Familiar polygons have specific names, listed in this table. The ones without specific names are called $\qquad$ -sided polygons, or $\qquad$ -gons. For instance, you call a 25 -sided polygon a 25-gon.

To name a polygon, list the vertices in consecutive order. You can name the pentagon below pentagon ABCDE. You can also call it DCBAE, but not BCAED. When the polygon is a triangle, you use the triangle symbol. For example, $\triangle \mathrm{ABC}$ means triangle ABC .


| Sides | Name |
| :---: | :---: |
| 3 | Triangle |
| 4 | Quadrilateral |
| 5 | Pentagon |
| 6 | Hexagon |
| 7 | Heptagon |
| 8 | Octagon |
| 9 | Nonagon |
| 10 | Decagon |
| 11 | Undecagon |
| 12 | Dodecagon |
| $n$ | $n$-gon |

*Add "diagonal," "convex polygon," and "concave polygon" to your dictionary.




Concave polygons: One or more diagonals are outside

Recall that two segments or two angles are congruent if and only if they have the same measures. Two polygons are congruent if and only if they are exactly the same size and shape. "If and only if" means that the statements work $\qquad$ ways.


For example, if quadrilateral CAMP is congruent to quadrilateral SITE, then their four pairs of corresponding angles and four pairs of corresponding sides are also congruent. When you write a statement of congruence, always write the letters of the corresponding vertices in an order that shows the correspondences.



CAMP $\simeq$ SITE
-Example 1: Which polygon is congruent to ABCDE? ABCDE $\cong$ $\qquad$


Remember that the perimeter of a polygon equals the $\qquad$ of the lengths of its sides.

## Investigation 1.4: "Special Polygons"

Write a good definition of each boldfaced term. Discuss your definitions with others in your group. Agree on a common set of definitions for your class and add them to your dictionary.

## Equilateral Polygon



Equilateral polygons


Not equilateral polygons

## Equiangular Polygon



Equiangular polygons


## Regular Polygon



