

Warm-up

Table partner brainstorm challenge

List all plane figures (2D shapes) that you can.

May 13-10:02 PM

Geometry

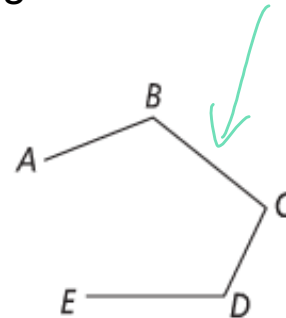
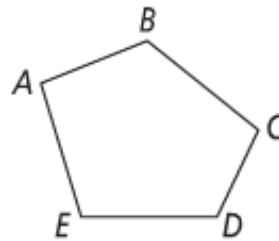
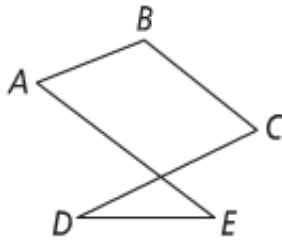
Chapter 1

Section 1-8

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A **polygon** is a closed plane figure formed by three or more segments. Each segment intersects exactly two other segments at their endpoints.

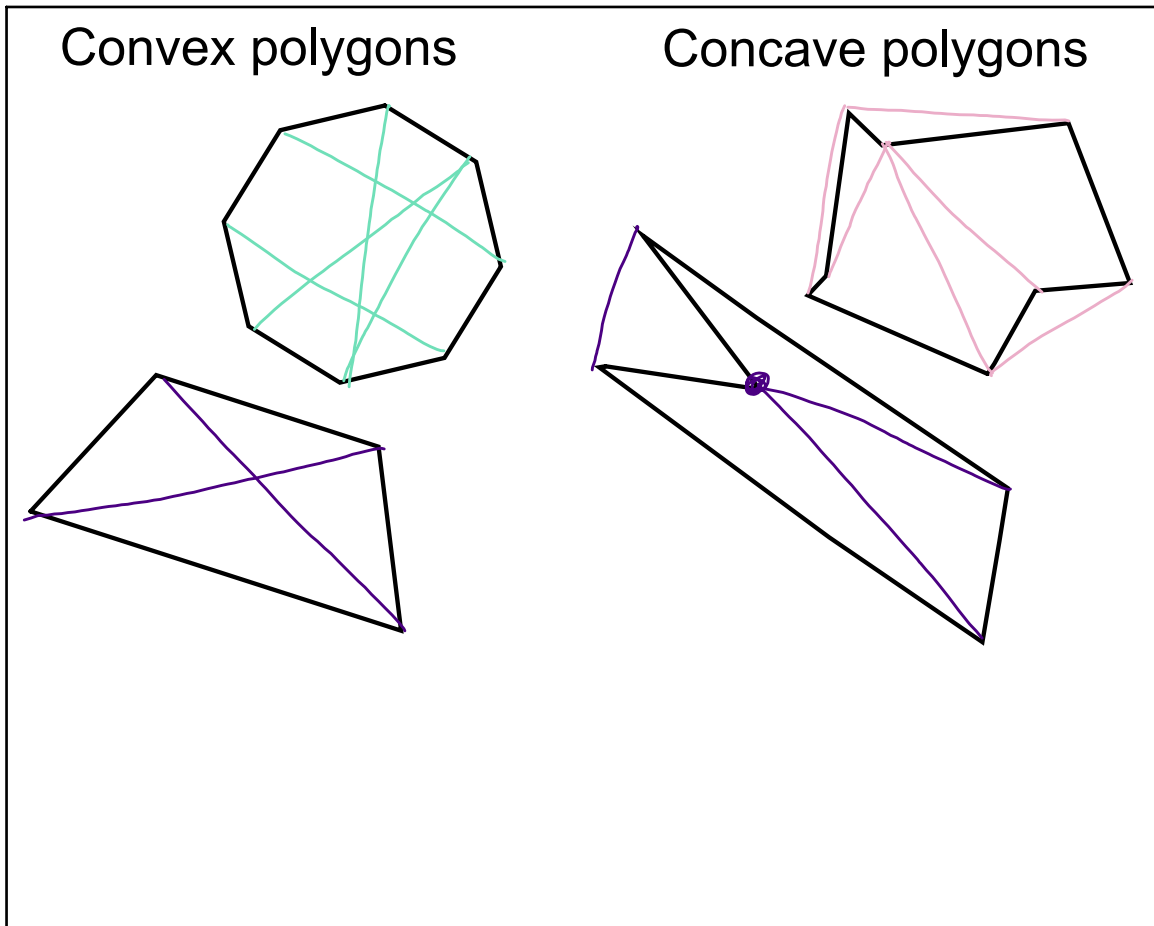
Which of the following are polygons?



Aug 18-2:23 PM

Polygon	Single plane figure that is closed and has three or more sides
Diagonal	Segment that connects two nonconsecutive vertices
Convex Polygon	Polygon with no diagonals on the outside of the figure
Concave Polygon	Polygon with at least one diagonal outside the figure

Aug 18-2:23 PM



Aug 18-2:23 PM

Polygon Names by Number of Sides

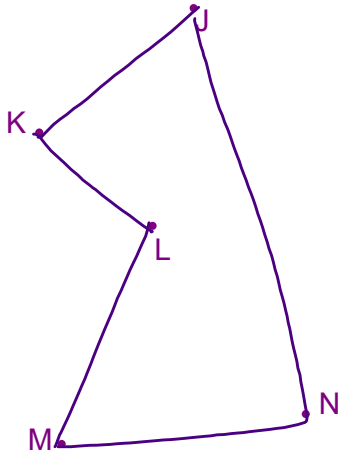
Sides	Name	Sides	Name
3	Triangle, or trigon	9	Nonagon, or enneagon
4	Quadrilateral, or tetragon	10	Decagon
5	Pentagon	11	Hendecagon
6	Hexagon	12	Dodecagon
7	Heptagon, <i>Septagon</i>	⋮	⋮
8	Octagon	<i>n</i>	<i>n</i> -gon

100-gon

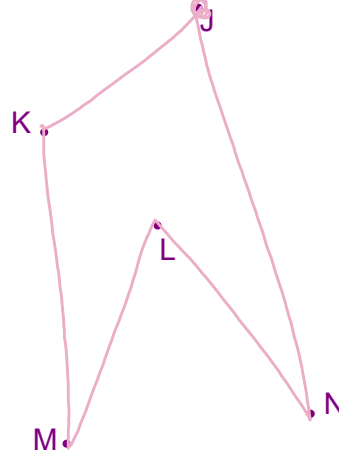
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Name a polygon using all corners in order around the shape.

Draw JKLMN



Draw JKMLN



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Perimeter

Sum of the lengths of the sides of a polygon

Ex: 4m

Area

The number of square units a plane figure encloses

Ex: 10m²

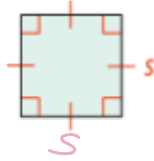
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Square

side length s

$$P = 4s$$

$$A = s^2$$

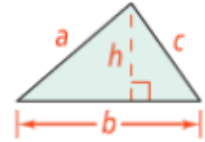


Triangle

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

$$P = a + b + c$$

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



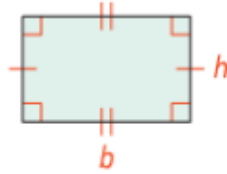
Rectangle

base b and height h

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

$$2(b + h)$$

$$A = bh$$

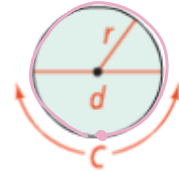


Circle

radius r and diameter d

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

$$A = \pi r^2$$



Sep 1-8:27 PM

Using the Formulas

Rectangle 20 m

7 m

$P = 2(7) + 2(20) = 54 \text{ m}$
 $A = 7 \cdot 20 = 140 \text{ m}^2$

Square $P = 4(20) = 80 \text{ ft}$

Triangle

$A = \frac{1}{2}(13)(8) = 52 \text{ in}^2$

$A = s^2$
 $\sqrt{400} = \sqrt{s^2}$
 $20 = s$

Sep 1-8:28 PM

A contractor measures a rectangular piece of tiling that will be used on a new roof. The tile is one foot long and fifteen inches wide. What is the area of the tiling?

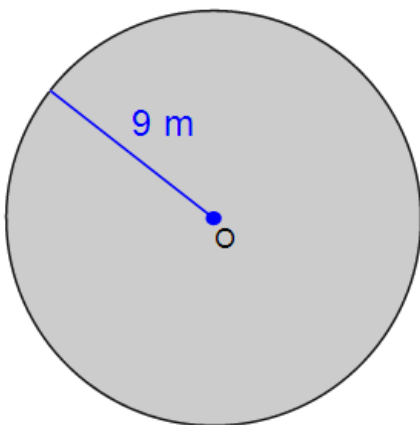
$$12 \text{ in} \cdot 15 \text{ in} = 180 \text{ in}^2$$

12 in

Aug 28-9:57 AM

Circles

Find the area and circumference of the circle. Give the answers in terms of π and answers rounded to two decimals.



$$C = 2\pi(9) = 18\pi \text{ m}$$

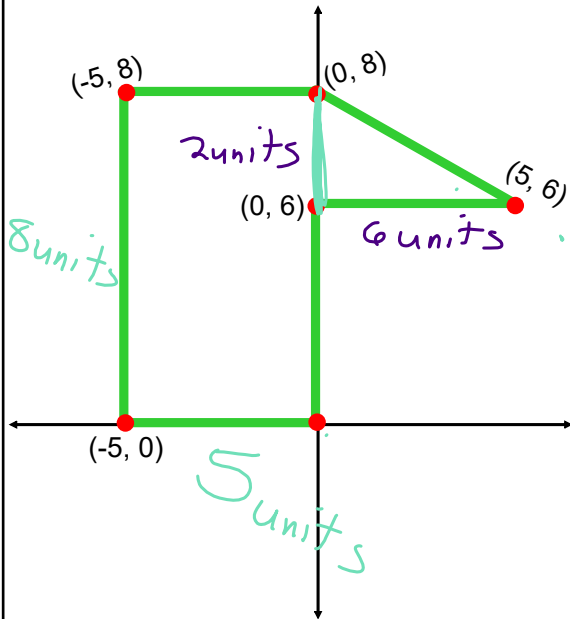
$$A = \pi(9)^2 = 81\pi \text{ m}^2$$

$$C = 56.55 \text{ m}$$

$$A = 254.47 \text{ m}^2$$

Sep 1-8:32 PM

Area in the coordinate plane



$$8 \cdot 5 + \frac{1}{2} \cdot 6 \cdot 2$$

$$40 + 6$$

$$46 \text{ units}^2$$

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Area Addition

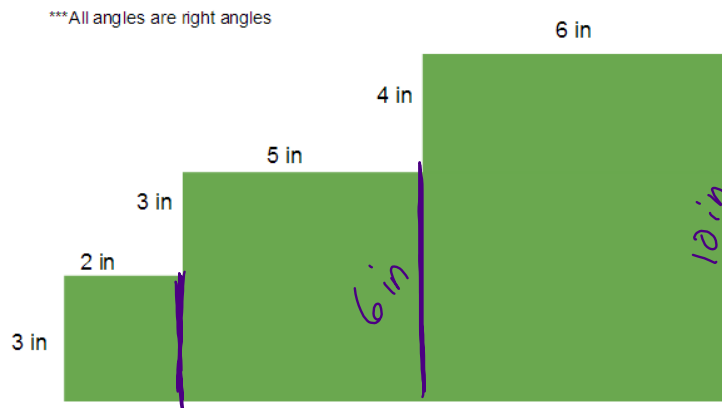


Postulate 1-10 Area Addition Postulate

The area of a region is the sum of the areas of its nonoverlapping parts.

Sep 1-8:43 PM

Find the Area



$$2 \cdot 3 + 5 \cdot 6 + 6 \cdot 10$$

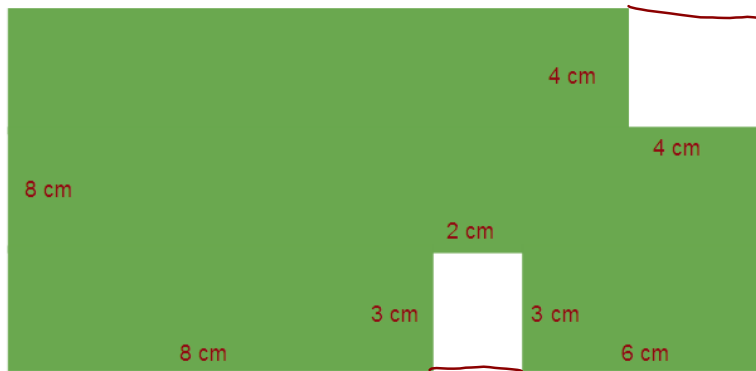
$$6 + 30 + 60$$

$$96 \text{ in}^2$$

Sep 1-8:43 PM

Find the Area

***All angles are right angles



$$8 \cdot 16 - 2 \cdot 3 - 4 \cdot 4 = 128 - 6 - 16$$

$$106 \text{ cm}^2$$

Sep 1-8:43 PM

Homework

Page 64-66

8-26 even, 32-37 all, 41-45 all

May 13-10:02 PM