

Geometry

Chapter 1

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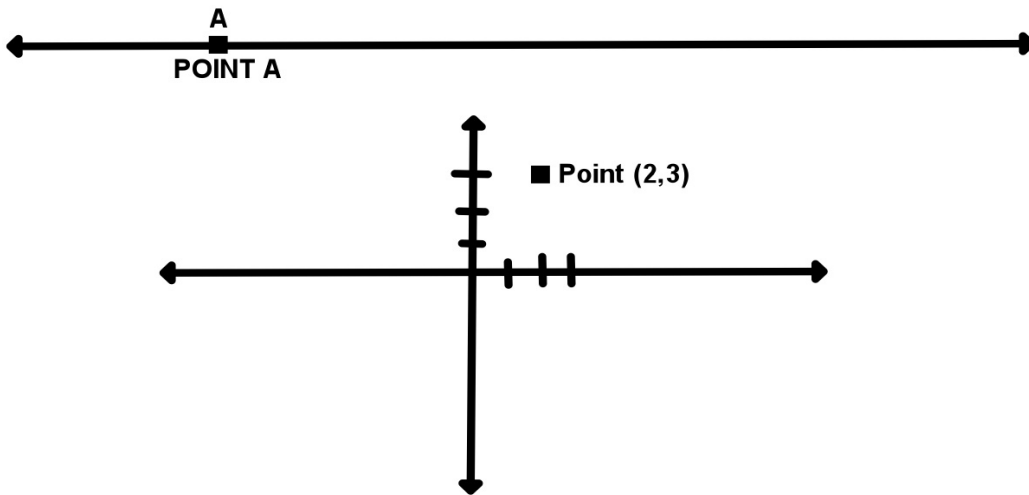
www.routtenkhsmath.weebly.com

The whole purpose of education is to turn mirrors into windows. ~Sydney J. Harris

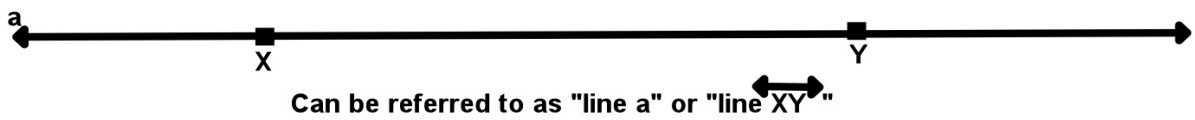
Ch 1.1 POINTS, LINES AND PLANES

OBJECTIVE: TSW identify and model points, lines, and planes and identify collinear and coplanar points and intersecting lines in space.

Point: a location represented by a capital print letter or ordered pair.

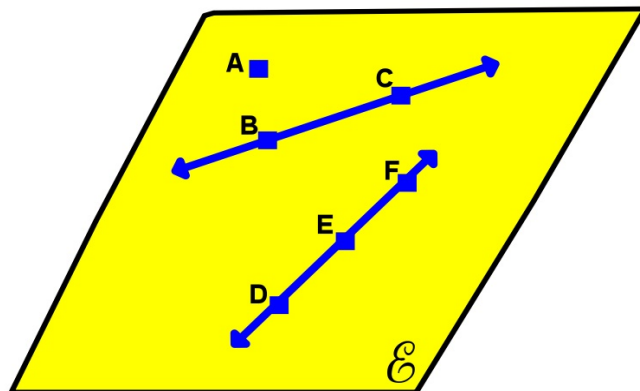


Line: made up of a series of points, identified with a lower case script or two points.
Extends indefinitely in both directions



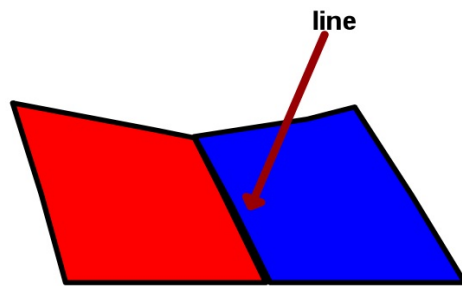
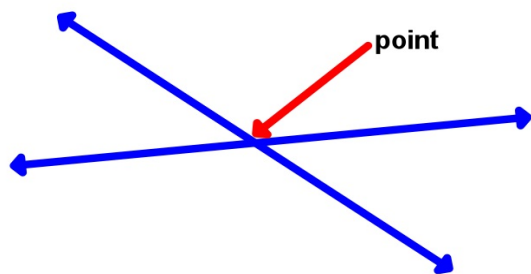
Collinear: points on the same line, ex. X and Y are collinear

Plane: a flat surface of points, identified with upper case script, or any three points on the plane.



NOTE: - two lines intersect to form a point

- two planes intersect to form a line

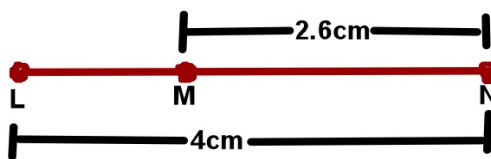


Coplanar: two or more points on the same plane are said to be coplanar

Ch 1.2 LINEAR MEASURE AND PRECISION

OBJECTIVE: TSW measure segments and determine accuracy of measurement.

ex 1)



What is the length of LM ?

$LM = \underline{\hspace{2cm}}$

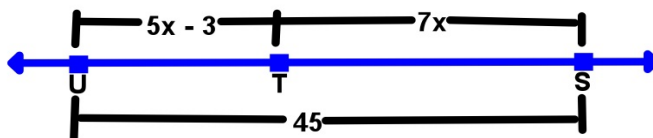
ex 2)



Find XZ

$XZ = \underline{\hspace{2cm}}$

ex 3)



$X = \underline{\hspace{2cm}}$

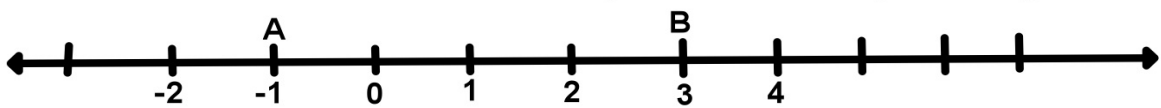
Betweenness of Points: point M is between points P and Q iff P , Q , and M are collinear and $PM + MQ = PQ$

ex. 4) Find X and ST if T is between S and U: $ST = 7x$, $SU = 45$, and $TU = 5x - 3$

ex. 5) Find b and WY if X is a midpoint between W and Y: $WX = 2b + 1$, $XY = 2b + 1$, and $WY = b + 13$

Ch 1.3 DISTANCE AND MIDPOINTS

OBJECTIVE: TSW find the distance between two points and find the midpoint of a segment.

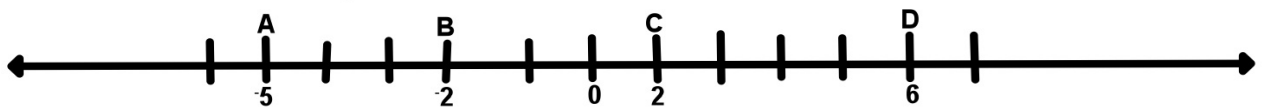


What is the distance between A and B?

Formula: $|A - B|$ or $|B - A|$

$$|3 - (-1)| = 4 \quad \text{or} \quad |-1 - 3| = 4$$

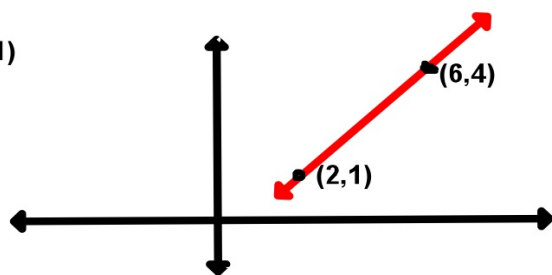
ex. 1) Find the distance from B to D



Distance between points on the coordinate plane

Formula: $\sqrt{(X_2 - X_1)^2 + (Y_2 - Y_1)^2}$

ex. 1)



Midpoint: the point $\frac{1}{2}$ way between two points on a line segment.



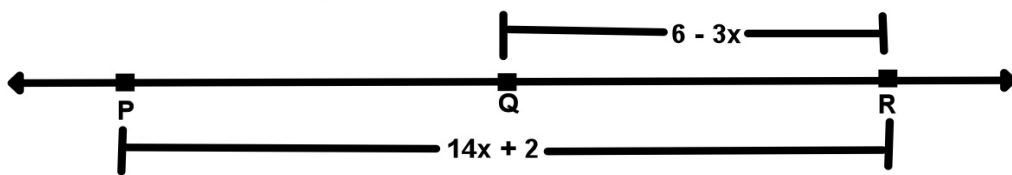
Formula: $\frac{A + B}{2}$

Find the distance between the two points on the coordinate plane

ex. 2) (-2,4) (3,5)

ex. 3) (2,4) (6,-3)

ex. 4) Find PR if Q is the midpoint of PR



Midpoint on a coordinate plane

Formula: $\left(\frac{X_1 + X_2}{2}, \frac{Y_1 + Y_2}{2}\right)$

ex. 5) Find the midpoint of coordinates (2,3) and (6,9)

ex. 6) Find the coordinates of the midpoint of line UV if $U(-6, -3)$, $V(12, -7)$

ex. 7) Find the coordinates of the midpoint of line RS if $R(3, -7)$, $S(-2, -5)$

ex. 8) Find the distance between A $(2,3)$ and B $(-4,6)$

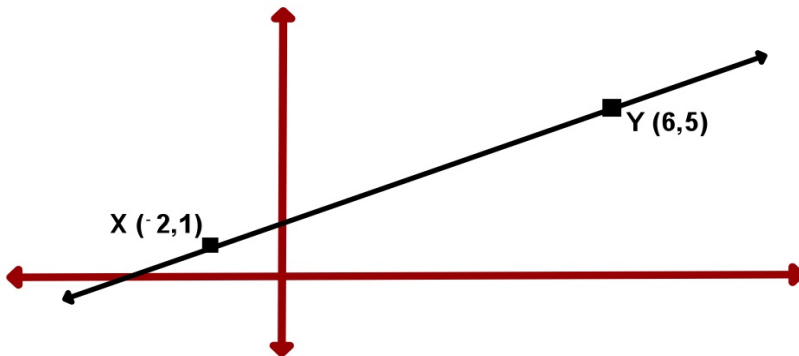
Review of Formulas

1.) Find the distance between A and B



2.) Find the midpoint of A and B

3.) Find the distance between X and Y



4.) Find the midpoint of XY

Ch 1.4 ANGLE MEASURES

OBJECTIVE: TSW measure and classify angles and identify and use congruent angles and the bisector of an angle.

How many degrees in a circle?

How many degrees in a straight line?

How many degrees in a right angle?

Ray - part of a line, has one end point and extends indefinitely in one direction.

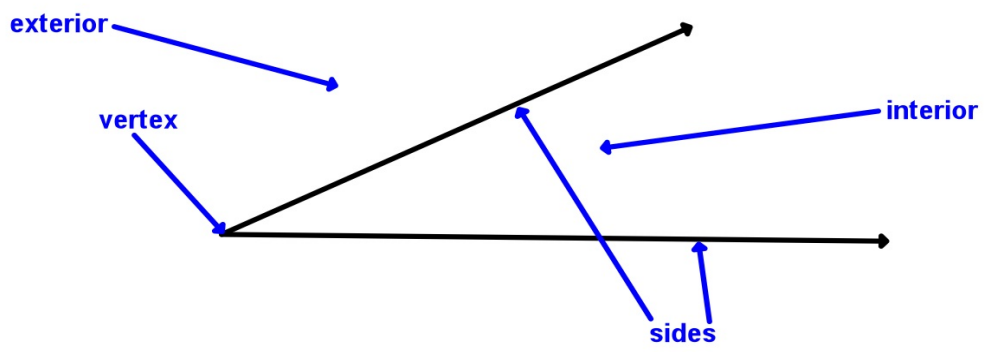


Opposite rays - two rays that extend in opposite directions from a single point



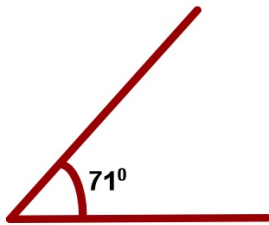
Angle - two noncollinear rays joined by a common point (vertex).

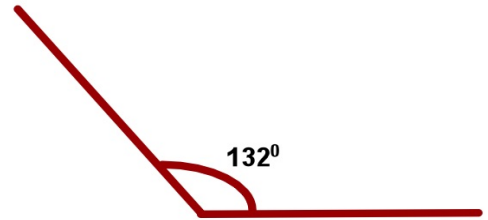
Parts of an angle



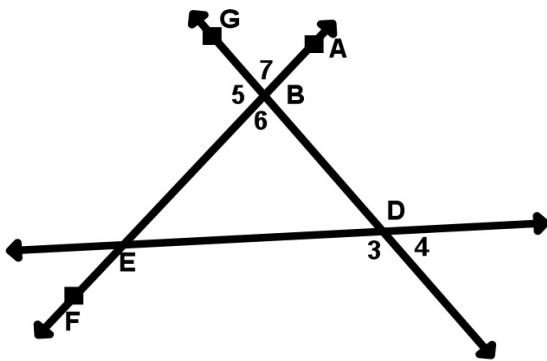
Classifying angles by their measure







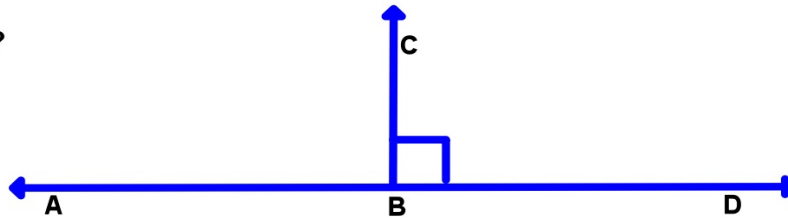
Name all of the angles that have B as a vertex.



Name the sides of angle 5.

Congruent angles: angles that have the same measure.

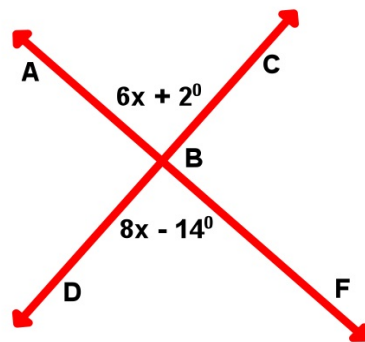
Is angle $ABC \cong$ angle CBD ?



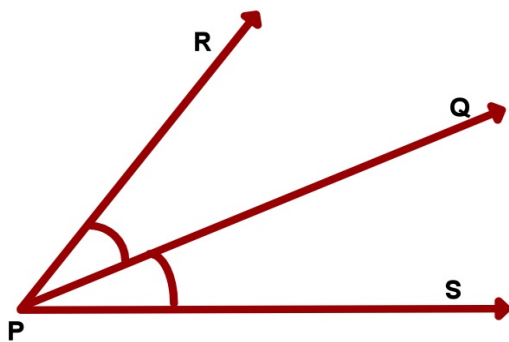
Use algebra to find X

angle ABC \cong angle DBF

X = _____



Angle Bisector: a ray that divides an angle into two congruent angles

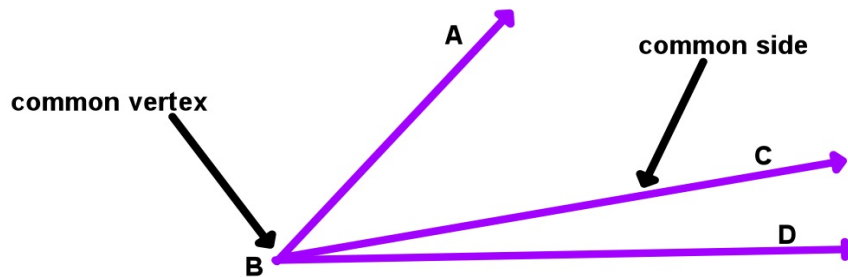


If PQ is the angle bisector of angle RPS then Point Q lies in the interior of angle RPS and angle RPQ \cong angle QPS

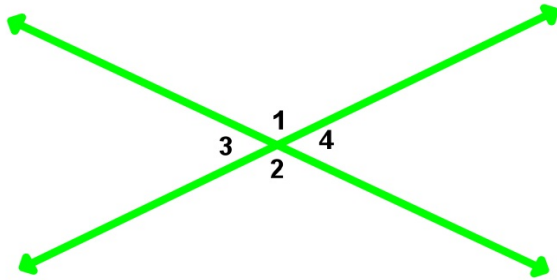
Ch. 1.5 ANGLE RELATIONSHIPS

OBJECTIVE: TSW identify and use special pairs of angles and identify perpendicular lines

Adjacent Angles: two angles that lie in the same plane, have a common vertex and a common side.



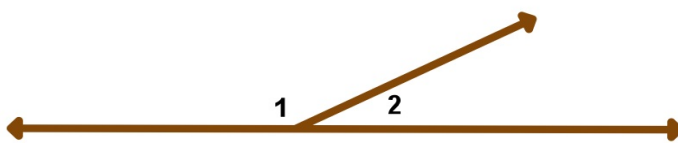
Vertical Angles: two nonadjacent angles formed by intersecting lines.
Vertical angles are congruent.



angle 1 and angle 2 are vertical angles

angle 3 and angle 4 are vertical angles

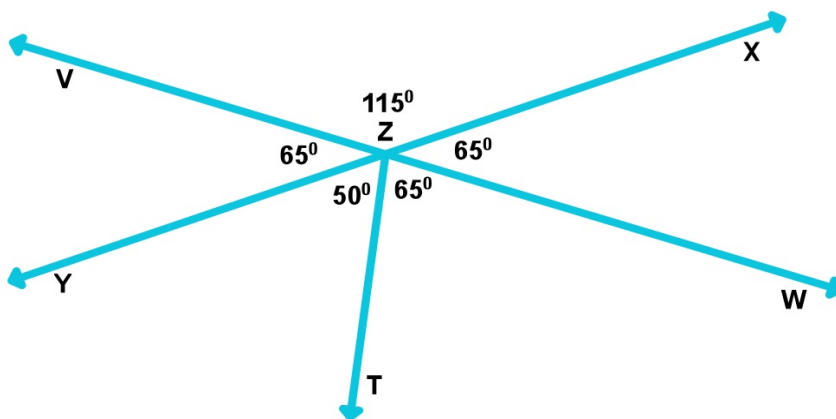
Linear Pair: a pair of adjacent angles whose noncommon side are opposite rays



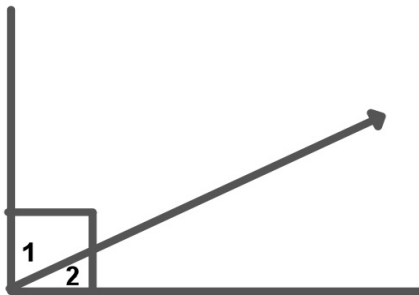
angle 1 and angle 2 form a linear pair

ex. 1) Name two obtuse vertical angles _____

Name two acute adjacent angles _____

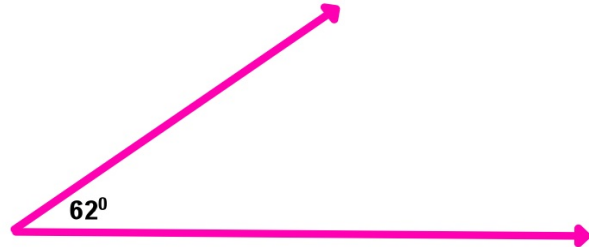
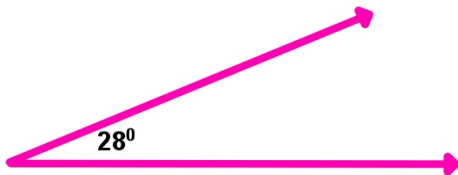


Complementary Angles: two angles whose measure is equal to 90°

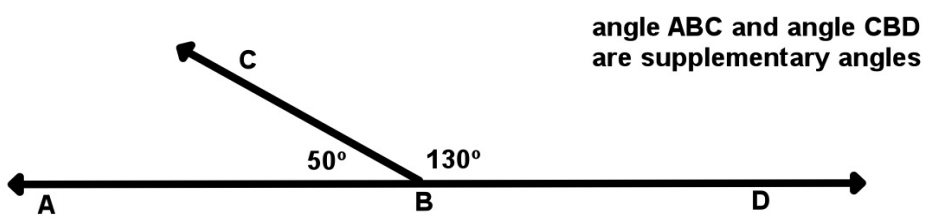


angle 1 plus angle 2 therefore they are said to be complementary

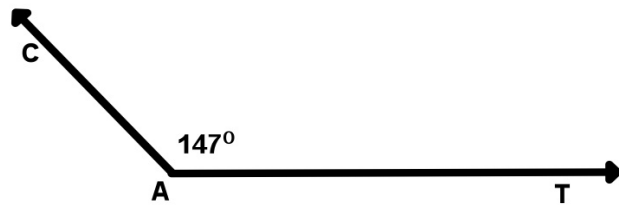
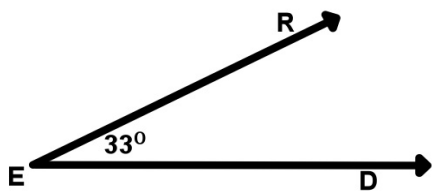
Is angle 3 and angle 4 complementary?



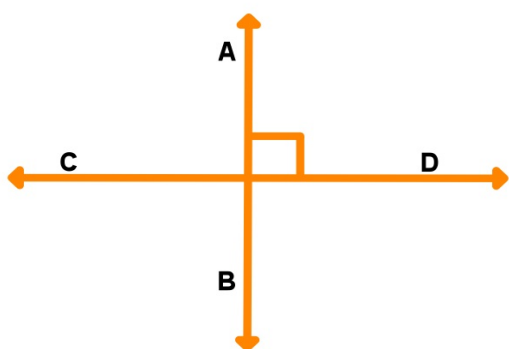
Supplementary Angles: two angles whose sum is 180°



Is angle RED and angle CAT supplementary?



Perpendicular lines: lines that intersect to form right angles.



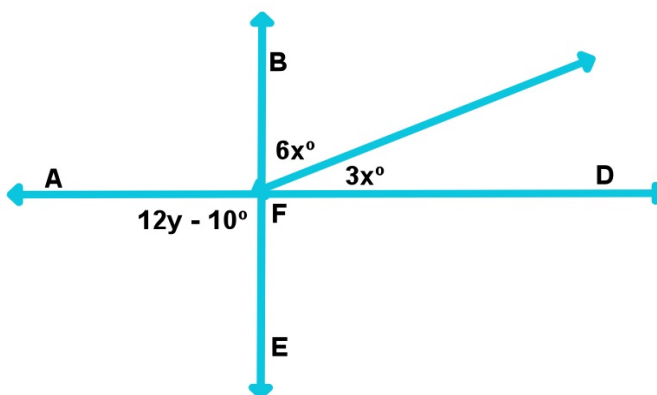
Line AB is perpendicular to line CD

written as $AB \perp CD$

ex. 2) Given: $BE \perp AD$

X = _____

Y = _____

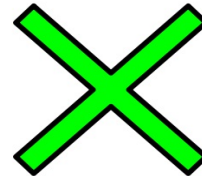
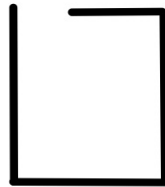
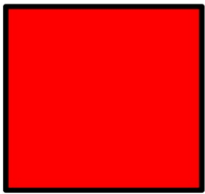


ex. 3) Find the measure of two supplementary angles if the measure of one angle is six less than five times the measure of the other angle.

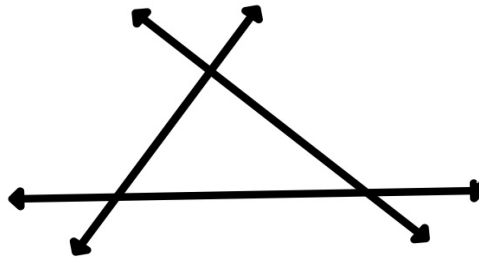
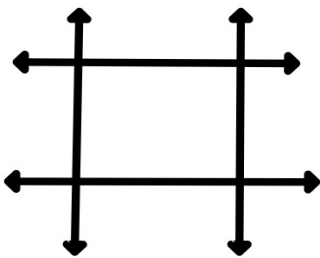
Ch 1.6 POLYGONS

Polygon: a closed figure whose sides are all line segments. We name a polygon by its vertices.

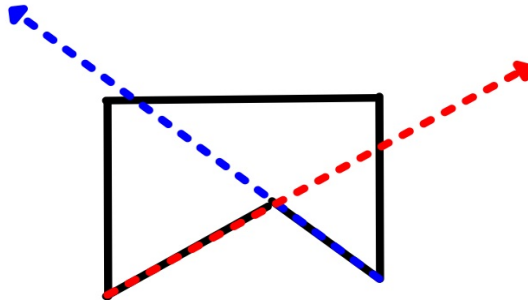
Are the following figures polygons?



Convex: extended line segments does not contain interior points



Concave: extended line segments does contain interior points

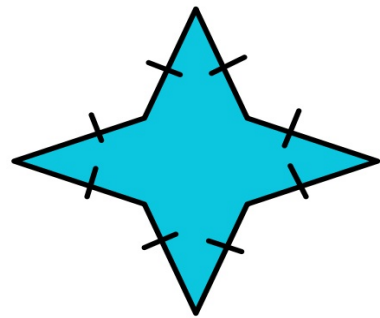
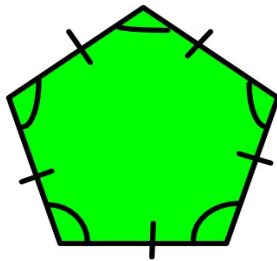
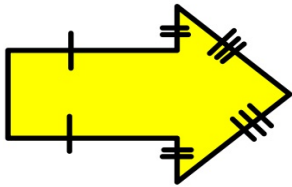


Regular Polygon: a convex polygon in which all sides and angles are congruent, ex. square.
If a polygon is not regular then we say it is irregular

Naming Polygons

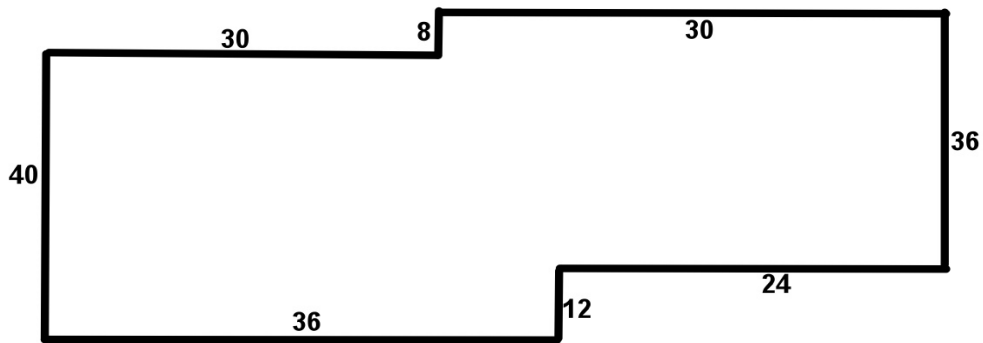
<u># of sides</u>	<u>Name</u>
3	triangle
4	quadralateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

Identify each polygon 1. by the number of sides
2. concave or convex
3. regular or irregular



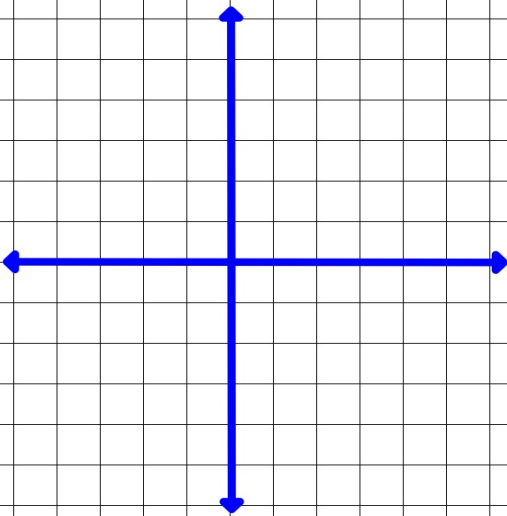
Perimeter: the sum of the lengths of the sides.

Find the perimeter of the figure below: $P = \underline{\hspace{2cm}}$



answer: 216

Find the perimeter of pentagon ABCDE with A (0,4), B (4,0), C (3,-4), D (-3,-4), E (-3,1)



Parts of a Polygon

