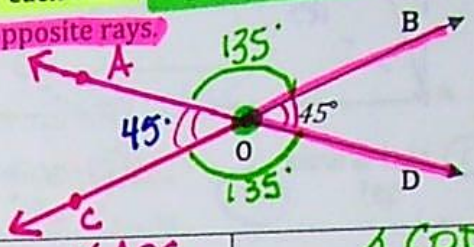
~~ Unit 8, Page 8 ~~

Vertical Angles ... be careful!

When two lines intersect, **two pairs** of **VERTICAL ANGLES** are formed. Vertical angles are **not** adjacent. Vertical angles are located across from each other, they share a common vertex, and the sides of the angles are composed of opposite rays.

Use a straight edge.
Draw ray $\overrightarrow{OC}$ opposite to ray $\overrightarrow{OB}$, and then draw ray $\overrightarrow{OA}$ opposite to ray $\overrightarrow{OD}$.

Use what you've learned about the measure of straight angles to prove that the figure contains two pairs of congruent angles.



180 − 45 = 135°

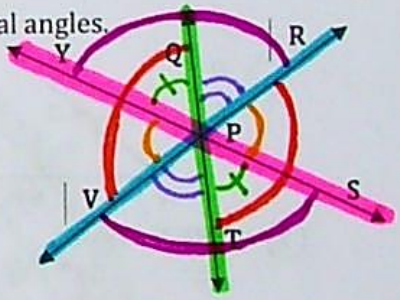
∡BOD ≅ ∡AOC (45)	∡BOA ≅ ∡COD (135)

Pairs of vertical angles always have the same measure.

Vertical angles are congruent (symbol hint ≅)

Congruent means they have the same measure.

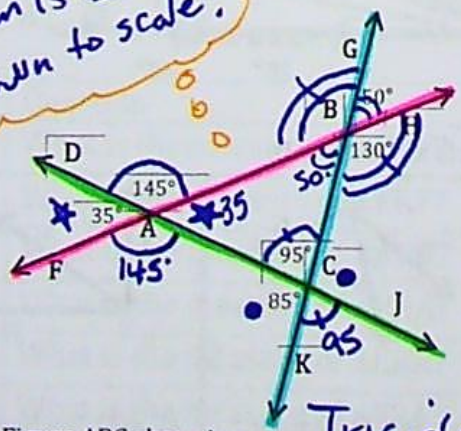
Set A: In the diagram, name the second angle in each pair of vertical angles.



1) ∡YPV ∡RPS
2) ∡QPR ∡VPT
3) ∡SPT ∡YPQ
4) ∡VPT ∡QPR
5) ∡RPT ∡QPV
6) ∡VPS ∡RPY

Set B: Use the information given in the diagram to find the measure of each unknown vertical angle.

Diagram is NOT drawn to scale!

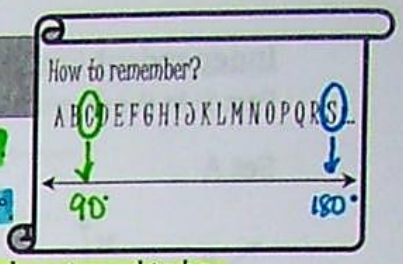


Set B Questions

1) m∡CAF = 145°
2) m∡ABC = 50°
3) m∡KCJ = 95°
4) m∡ABG = 130°
5) m∡BCJ = 85°
6) m∡CAB = 35°

7) Figure ABC above is a Triangle (obtuse)
8) The proper notation for the figure is ΔABC
9) The sum of the angles in figure ABC is 95 (obtuse) + 35 + 50 = 180°

Complementary and Supplementary Angles



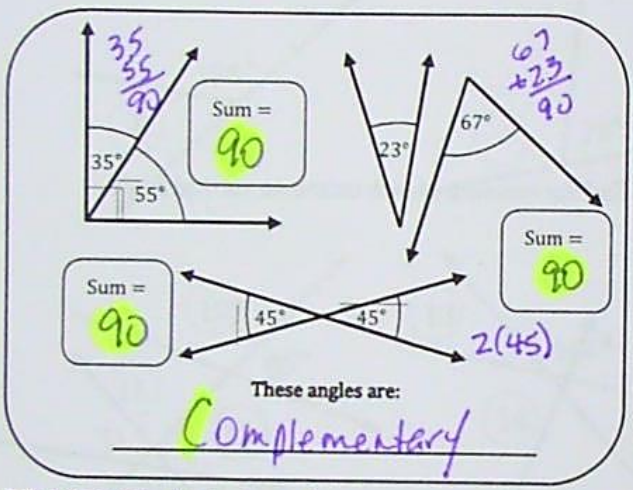
Two angles are **complementary** if the **sum of their angles** measure **90°**. (or more)

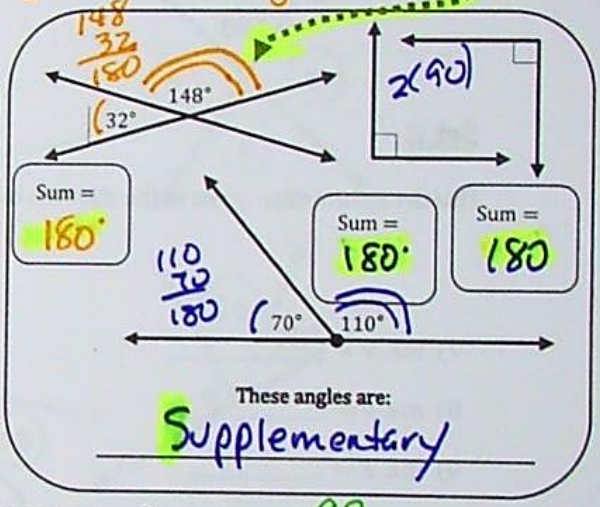
Two angles are **supplementary** if the **sum of their angles** measure **180°**. (or more)

Complementary and supplementary angle pairs *may be* adjacent, but *do not need to be.*

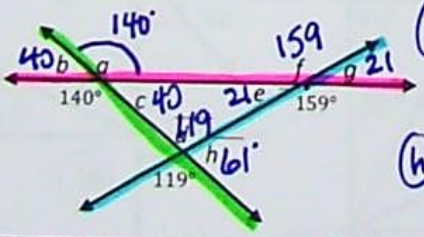
A **linear pair** is a pair of adjacent angles that are supplementary.
Below, the angles marked 32° and 148° are a linear pair.

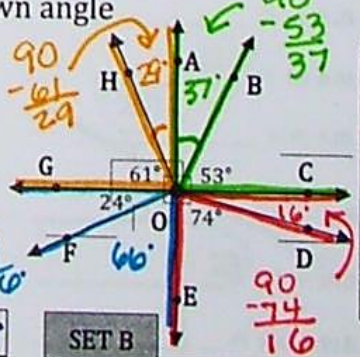
Together, these angle pairs form a straight angle.





PRACTICE: Calculate the measure of each unknown angle





The sum of all the central angles = 4(90) = 360°

SET A	The sum of angles e + d + c = 21 + 119 + 40 = 180°
1) m∠a = 140°	5) m∠e = 21°
2) m∠b = 40°	6) m∠f = 159°
3) m∠c = 40°	7) m∠g = 21°
4) m∠d = 119°	8) m∠h = 61°

Vertical & supplementary

SET B	
9) m∠AOB = 37°	
10) m∠COD = 16°	
11) m∠EOF = 66°	
12) m∠AOH = 29°	

complementary