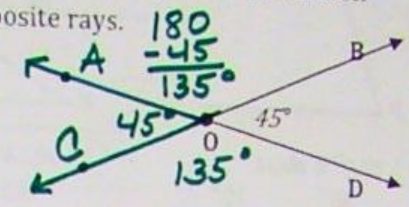
Vertical Angles

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.



∠BOD ≅ ∠ AOC	∠BOA ≅ ∠ DOC

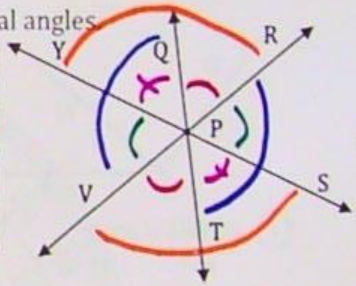
Pairs of vertical angles always have the same measure.

Vertical angles are Congruent (symbol hint ≅)

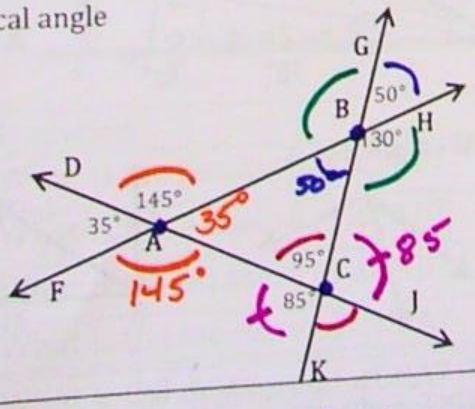
Congruent means they have the same measure.

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



Set B Questions

1) m∠ CAF = 145°
2) m∠ ABC = 50°
3) m∠KCJ = 95°
4) m∠ABG = 130°
5) m∠BCJ = 85°

6) Figure ABC above is a triangle
7) The proper notation for the figure is △ABC
8) The sum of the angles in figure ABC is 35° + 50° + 95° = 180°

Complementary and Supplementary Angles

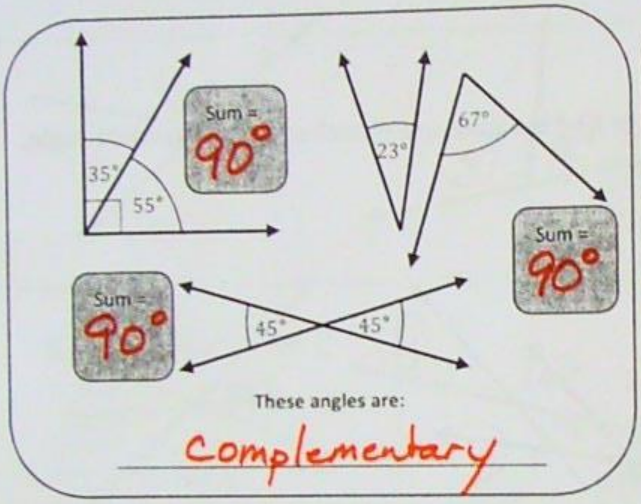
Two angles are **complementary** if the sum of their angles measure 90°. (right)

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

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

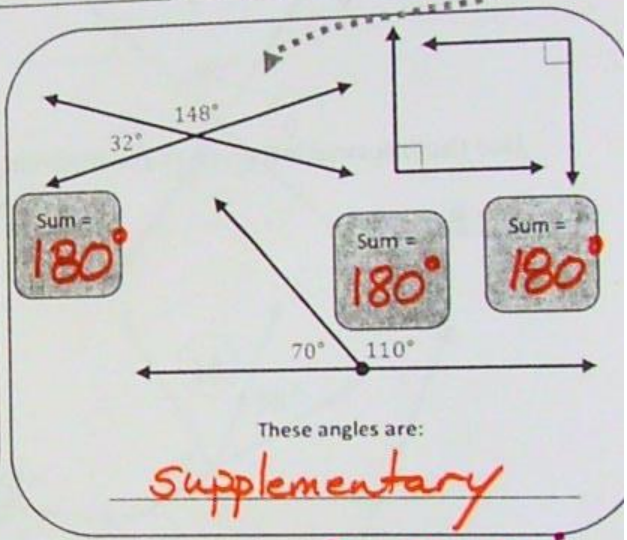
A **linear pair** is a pair of adjacent angles that are supplementary.
Below, the angles marked 32° and 148° are a linear pair.

Together, these angle pairs form a _____ _____.



These angles are:

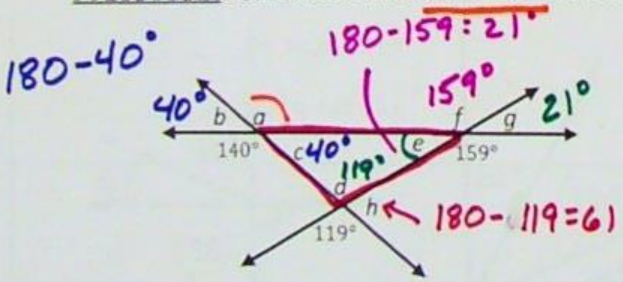
Complementary

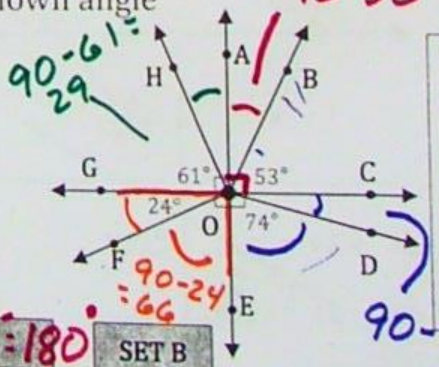


These angles are:

Supplementary

PRACTICE: Calculate the measure of each unknown angle





The sum of all the central angles =

SET A The sum of angles e + d + c = 21° + 119° + 40° = 180°

1) m∠ *a* = 140°
2) m∠ *b* = 40°
3) m∠ *c* = 40°
4) m∠ *d* = 119°
5) m∠ *e* = 21°
6) m∠ *f* = 159°
7) m∠ *g* = 21°
8) m∠ *h* = 61

SET B

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