GEOMETRY: ANGLES

COMMON MISTAKES
Geometry-Angles

Types and Definition of Various Angles

- **Types** - Vertical, Complementary and Supplementary, Adjacent, Straight
- **Vertical** - Definition
  Vertical lines are lines formed when two lines intersect at a point.
- **Vertical Angles** are congruent (have the same measure),

Common Mistakes

- Not correctly identifying the vertical angles.
- Not realizing the angles are congruent.
- Incorrect: Angles 1 and 2 are congruent vertical angles.
- **Correct**: Angle 1 and Angle 3 are congruent vertical angles. Angle 2 and Angle 4 are congruent vertical angles.
Complementary Angles are angles whose sum is 90°.

Supplementary Angles are angles whose sum is 180°.

Note: These angles do not have to “touch”.

Common Mistakes

- Confusing which term which goes with which definition.

- Incorrect: Angles B and H are supplementary angles.

- Correct: Angles B and H are complementary angles; Angles H and S are supplementary.
Geometry– Angles continued

Types and Definition-
Adjacent Angles and Linear Pairs

- **Adjacent Angles**- angles which share a common side or “touch”.

- **Linear Pair**- adjacent angles that are also supplementary (their measurements add up to 180°).

Note: Not all adjacent angles are linear pairs; however, **ALL** linear pairs are adjacent.

Common Mistakes

- Believing adjacent angles may only be complementary or adjacent.

- **Incorrect:** Angle 1 and 2 are an adjacent linear pair.

- **Correct:** Angles 1 and 2 are adjacent; Angle 3 and 4 are the linear pair.
Geometry-Angles continued

Types formed by Intersecting lines and Transversals

- When a transversal line intersects two other lines, parallel or not, names are given to the angles formed based upon the position(s) in which they lie.

  - **Corresponding Angles** occupy the same position with respect to the intersecting line and transversal (i.e. angles 1 and 5; 2 and 6; 3 and 7; 4 and 8).
  
  - **Alternate Interior Angles** lie in the interior positions, but on opposite sides of the transversal. (i.e. angles 4 and 6; 3 and 5).
  
  - **Alternate Exterior Angles** lie in the exterior positions, also on opposite sides of the transversal. (i.e. angles 1 and 7; 2 and 8).
  
  - **Same-Side Interior Angles** occupy the interior positions on the same-side of the transversal. (i.e. angles 4 and 5; 3 and 6).
  
  - **Same-Side Exterior Angles** also occupy the exterior positions but on the same-side of the transversal. (i.e. angles 1 and 8; 2 and 7).

Common Mistakes

- Incorrectly naming the angles formed by a transversal.

  - **Incorrect**: Angles 2 and 6 are same-side interior angles.
  
  - **Correct**: Angles 2 and 6 are corresponding angles.
Geometry-Angles continued

Types defined by their Angle Measurements

- **Acute Angles** are angles whose measurements are between 0° and 90° (i.e. Angle A).
- **Right Angles** are angles whose measurements are 90° (i.e. Angle B).
- **Obtuse Angles** are angles whose measurements are between 90° and 180° (i.e. Angle C).
- **Straight Angles** are angles whose measurements are 180° (i.e. Angle D). Lines are examples of straight angles.

Common Mistakes

- Mistaking the definitions of angles based upon their measurements.
- Incorrect: Angle A is an obtuse angle.
- Correct: Angle A is an acute angle.