

Angles

Angles are formed when two rays have a common endpoint. Their measure depends only on how far “open” the rays are, NOT on their length.

Small angles are **acute**. Remember that small things are “cute:” babies, kittens, puppies... We need to mentally connect “small” and “cute,” then transfer the relationship to “acute.” Acute also means “sharp” as in “acute appendicitis,” where the pain is usually “stabbing.” Acute angles measure greater than zero and less than 90° .

Right angles measure *exactly* 90° . Right angles are the most common angles used in construction. A carpenter’s square forms a right angle.

Obtuse, in English, means dense or dull. Remember “Moose” from the Archie Comics? He was obtuse. He was also big. An obtuse angle’s measure is greater than 90° , but less than 180° .

A **straight** angle is, well, “straight.” Its measure is 180° .

Angles can be greater than 180° . Imagine using a student to illustrate the different angles. We have them stand up and extend one arm to the side, palm up. Bend the arm at the elbow until the hand is close to the head (acute angle). Move the hand until it is “right” above the elbow (right angle). Move the hand further out (obtuse angle). Then move the hand so the arm is “straight” out from the body (straight angle). Now, if we placed our hand under the student elbow and pushed down on their wrist, we would cause the student extreme pain. If so, they would react automatically to protect their arm (screaming, fainting, attacking the instructor, etc.) This “automatic reaction” is a “reflex.” Any angle with measure greater than 180° is a **reflex** angle.

Angle pairs

Individual angles are described as acute, right, obtuse, straight, or reflex, depending on the opening of the angle. When we examine pairs of angle, however, we describe the angle pairs based on the relative size or position (or both) of the angles. Some of these are:

Adjacent angles: Two angles are side-by-side, so one ray forms a common side for both angles.

Congruent angles: Two angles which have the same measure.

Complementary angles: Two angles whose measures add up to 90° (Do not confuse these with “complimentary angles” – that’s where one angle thinks the other is a cute angle.)

Supplementary angles: Two angles whose measures add up to 180° . Students confuse complementary and supplementary angles, but there are a couple of ways to remember them. C comes before S, and 90° comes before 180° . Also, (and this is easier to draw than type), we can use a letter “c” to make 90 , and we can make 180 out of the letter “S.”

Vertical angles: The “non-adjacent” (or opposite) angles formed when two lines intersect. They are not vertical (up/down) in the English sense. The only point they have in common is the vertex point, but “vertexical” is not a word.