

Dear Parents and Caregivers,

We appreciate the support you give to your child’s education. You are a vital partner in this learning. We would like to share some information to help you better understand Arizona’s College and Career Ready Standards. The purpose of these letters is to clarify vocabulary and strategies that your child may use to make sense of numbers and develop underlying mathematical ideas. We do not expect you to teach these methods but want to help you understand the work your child will be bringing home. The topic covered in this letter is the **relationship between geometric constructions in seventh grade.**

End-of-year goals

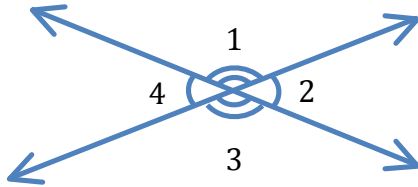
The goal of middle school mathematics is to extend the strong foundational knowledge developed in elementary school to new topics as students prepare for high school. Students continue their work solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8, they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions. Students gain familiarity with the relationships between angles formed by intersecting lines.

Vocabulary

- adjacent angles: angles that share a common side and have the same vertex
- vertical angles: opposite angles formed by the intersection of two lines
- congruent angles: angles with the same measure
- complementary angles: two angles whose sum is 90 degrees
- supplementary angles: two angles whose sum is 180 degrees

Adjacent and vertical angles

Examples:



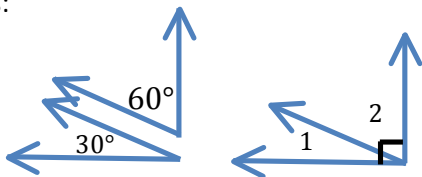
$\angle 1$ and $\angle 2$ are adjacent angles. They share a common side and have the same vertex.

$\angle 2$ and $\angle 4$ are vertical angles. They are opposite angles formed by two intersecting lines.

$\angle 2$ and $\angle 4$ are congruent angles. They have the same measure.

Complementary and supplementary angles

Examples:



$\angle 1$ and $\angle 2$ are complementary angles. Their sum is 90° .

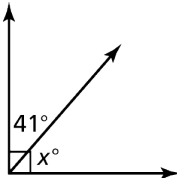


$\angle 3$ and $\angle 4$ are supplementary angles. Their sum is 180° .

Using relationships to find angle measures

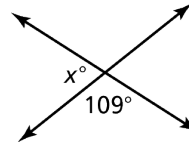
Examples:

Find the value of x .



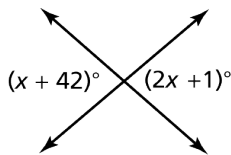
The angles are adjacent; they share a common side and the same vertex. The angles are also complementary, so the sum of the angles is 90 degrees.

$$\begin{array}{r} 41 + x = 90 \\ -41 \quad -41 \\ \hline x = 49^\circ \end{array}$$



The angles are adjacent; they share a common side and the same vertex. The angles are also supplementary, so the sum of the angles is 180 degrees.

$$\begin{array}{r} 109 + x = 180 \\ -109 \quad -109 \\ \hline x = 71^\circ \end{array}$$

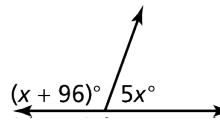


The angles are vertical angles; they are opposite and formed by the intersection of two lines. Vertical angles have equal measures.

$$\begin{array}{r} x + 42 = 2x + 1 \\ -x \quad -x \\ \hline 42 = x + 1 \\ -1 \quad -1 \\ \hline 41 = x \end{array}$$

Check solution by substitution.

$$\begin{aligned} ((41) + 42) &= (2(41) + 1) \\ 83 &= 83 \end{aligned}$$



The angles are adjacent; they share a common side and the same vertex. The angles are also supplementary, so the sum of the angles is 180 degrees.

$$\begin{array}{r} x + 96 + 5x = 180^\circ \\ 6x + 96 = 180 \\ -96 \quad -96 \\ \hline 6x = 84 \\ \underline{6} \quad \underline{6} \\ x = 14 \end{array}$$

$$((14) + 96) + 5(14) = 110 + 70 = 180$$

How to help at home

- Encourage your child to read problems carefully, explain the problems using her own words, and what she is trying to answer.
- Watch this video about angle relationships on TeacherTube.
http://www.teachertube.com/viewVideo.php?video_id=140767
- Encourage your child to persevere, even if the problem seems difficult. Ask him to think of a strategy he already knows to help solve the problem.
- Remember, making mistakes is a part of learning.