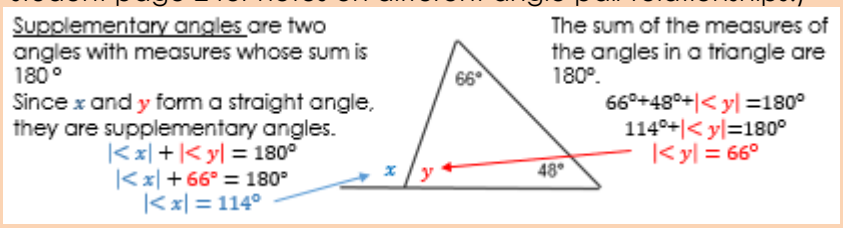
Packet 12: Lines, Angles, and Triangles

Dear Parents/Guardians,

Packet 13 integrates geometry and algebraic notation. In Lessons 1 and 2, students learn about angle relationships with triangles and parallel lines. They use these relationships to write and solve equations to find missing angle measures. In Lesson 3, students explore the Pythagorean Theorem and use it to solve problems.

Angle Measures

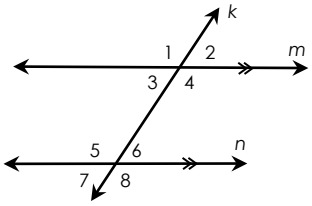
Students explore angle relationships to determine angle measures. (See student page 2 for notes on different angle pair relationships.)



Parallel Lines

When parallel lines are crossed by a third line, the angles formed have the following relationships.

- Alternate interior angles have equal measure, such as $|\angle 4|$ and $|\angle 5|$.
- Corresponding angles have equal measure, such as $|\angle 1|$ and $|\angle 5|$.
- Alternate exterior angles have equal measure, such as $|\angle 2|$ and $|\angle 7|$.

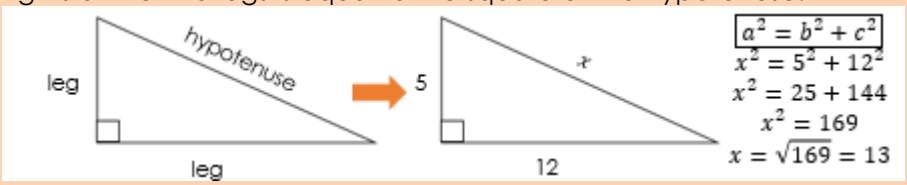


We can use these relationships to find angle measures.
If $|\angle 1| = 80°$, then
$|\angle 2| = 100°$ (supplementary angles)
$|\angle 4| = 80°$ (vertical angles)
$|\angle 5| = 80°$ (corresponding angles)
$|\angle 8| = 80°$ (alternate exterior angles)

The Pythagorean Theorem

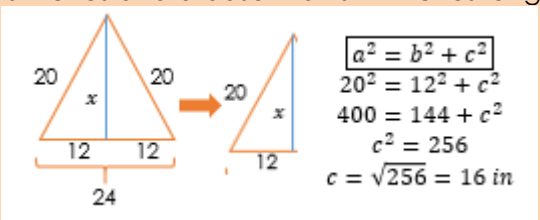
Students explore the Pythagorean relationship on right triangles and engage in a proof of the theorem.

Pythagorean Theorem: For a right triangle, the sum of the squares of the lengths of the two legs is equal to the square of the hypotenuse.



Students use the Pythagorean Theorem to solve problems.

Example: Find the height of an isosceles triangle with equal sides that each measure 20 inches and a base that is 12 inches long.



By the end of the packet, your student should know…

How to use facts about angle relationships to find angle measures Lessons 12.1 and 12.2

How to write and solve equations involving angle measures Lessons 12.1 and 12.2

How to use the Pythagorean Theorem and its converse to solve problems Lesson 12.3

Additional Resources

Resource Guide (RG)
Part 2, pages 39-43

http://www.mathtv.com/
Click: Geometry
For Lesson 12.1, click Angles
For Lesson 12.2, click Parallel Lines
For Lesson 12.3, click Pythagorean Theorem

For a proof of the Pythagorean Theorem:
http://youtu.be/ibkR4PHpylg