# *Triangles and the Pythagorean Theorem* Family Letter

## Dear Family,

In this module, *Triangles and the Pythagorean Theorem*, students will use their prior knowledge of angles and triangles to understand special angle pairs and the **Pythagorean Theorem**. They will use this understanding to find missing angle measures, as well as side lengths of right triangles.

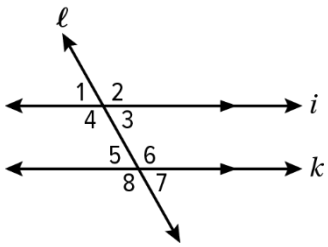
## What Did Students Learn Previously?

In earlier grades, students investigated angle characteristics and measures. They used facts about supplementary, complementary, adjacent, and vertical angles to find missing angle measures, and they used angle measures to classify triangles as acute, obtuse or right.

## What Will Students Learn in This Module?

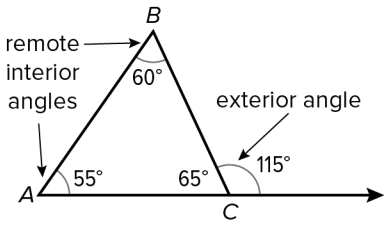
### Angle Pairs When Two Parallel Lines Are Cut by a Transversal

- Students will identify angle pairs as **alternate interior** ($\angle 3$ and $\angle 5$, $\angle 4$ and $\angle 6$), **alternate exterior** ($\angle 1$ and $\angle 7$, $\angle 2$ and $\angle 8$), or **corresponding** ($\angle 1$ and $\angle 5$, $\angle 4$ and $\angle 8$, $\angle 2$ and $\angle 6$, $\angle 3$ and $\angle 7$).
- Students will find missing angle measures when parallel lines are cut by a **transversal**. In the figure shown, $i$ and $k$ are parallel lines and $\ell$ is a transversal.




### Angles of Triangles

- Students will use the angle sum to find the measure of a missing angle in a triangle.
- Students will use angle ratios to find measures of missing angles in a triangle.
- Students will use the relationship between an **exterior angle** and its two **remote interior angles** to find missing angle measures. For example, in the figure shown, students will recognize that the sum of the remote interior angles, 55° + 60°, is equal to the measure of the exterior angle, 115°.




### Pythagorean Theorem

- Students will find a missing side length in a right triangle using the Pythagorean Theorem.
- Students will use the **Converse of the Pythagorean Theorem** to determine whether a given triangle is a right triangle.

- Students will use the **Pythagorean Theorem** to find the distance between two points on the coordinate plane.

## What Vocabulary Terms Will Students Use?

| Term | Definition |
|---|---|
| **alternate exterior angles** | Exterior angles that lie on opposite sides of a transversal. |
| **alternate interior angles** | Interior angles that lie on opposite sides of a transversal. |
| **Converse of the Pythagorean Theorem** | A theorem used to determine whether a triangle is a right triangle. The theorem states, if the square of the longest side of a triangle is equal to the sum of the squares of the remaining sides, then the triangle is a right triangle. |
| **corresponding angles** | Angles that are on the same side of a transversal and in the same relative position to the parallel lines. |
| **exterior angle** | The angle between one side of a polygon and the extension of an adjacent side. |
| **hypotenuse** | The side opposite the right angle in a right triangle. The longest side of a right triangle. |
| **legs** | The sides of a right triangle that form the right angle. |
| **Pythagorean Theorem** | The theorem that states, for any right triangle, the sum of the square of each leg is equal to the square of the hypotenuse; given by the equation: $a^2 + b^2 = c^2$, where $a$ and $b$ are legs and $c$ is the hypotenuse. |
| **remote interior angles** | The two non-adjacent angles to an exterior angle of a triangle. |
| **transversal** | A line that intersects two or more other lines. |

## How You Can Provide Support

1. Support your child's understanding of the Pythagorean Theorem by explaining how it is used in everyday life. For example, *TV Screens and Computer Monitors* are sold by their diagonal length.
   - Discuss the size difference between a 24" x 18" screen and a 24" screen.
   - What screen size would correspond with a 24" x 18" TV?
   - What might be the dimensions of a 24" computer monitor?
2. Encourage your child to have a positive, growth-oriented attitude towards mathematics and their learning.
   - Encourage them to ask questions – both at home and in class. Sometimes, an answer to a question will generate more questions. That's how you know they are learning!
   - Encourage your child to embrace challenges and remind them that every challenge is an opportunity to learn something new.
   - Celebrate successes – both small and large.
3. Contact me to arrange a time to discuss the specifics of your child's performance and how we can work together to help them succeed in this module.

Sincerely,

Reveal MATH™

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(Teacher's Name) (Email/Phone)