Family Support Materials

Angles, Triangles, and Prisms

Here are the video lesson summaries for Grade 7, Unit 7: Angles, Triangles, and Prisms. Each video highlights key concepts and vocabulary that students learn across one or more lessons in the unit. The content of these video lesson summaries is based on the written Lesson Summaries found at the end of lessons in the curriculum. The goal of these videos is to support students in reviewing and checking their understanding of important concepts and vocabulary. Here are some possible ways families can use these videos:

- Keep informed on concepts and vocabulary students are learning about in class.
- Watch with their student and pause at key points to predict what comes next or think up other examples of vocabulary terms (the bolded words).
- Consider following the Connecting to Other Units links to review the math concepts that led up to this unit or to preview where the concepts in this unit lead to in future units.

Grade 7, Unit 7: Angles, Triangles, and Prisms	Vimeo	YouTube
Video 1: Angle Relationships (Lessons 1–5)	Link	Link
Video 2: Drawing Polygons with Given Conditions (Lessons 6–10)	Link	Link
Video 3: Volume of Right Prisms and Pyramids (Lessons 11–13)	Link	Link
Video 4: Volume and Surface Area of Right Prisms (Lessons 14–16)	Link	Link

Video 1

Video 'VLS G7U7V1 Angle Relationships (Lessons 1–5)' available here: https://player.vimeo.com/video/516923320.

Video 2

Video 'VLS G7U7V2 Drawing Polygons with Given Conditions (Lessons 6–10)' available here: https://player.vimeo.com/video/516924015.

Video 3

Video 'VLS G7U7V3 Volume of Right Prisms and Pyramids (Lessons 11–13)' available here: https://player.vimeo.com/video/519998551.

Video 4

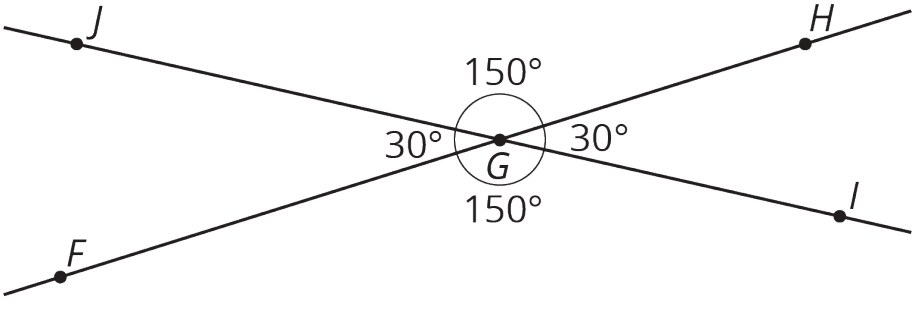
Video 'VLS G7U7V4 Volume and Surface Area of Right Prisms (Lessons 14–16)' available here: https://player.vimeo.com/video/520348663.

Angle Relationships

Family Support Materials 1

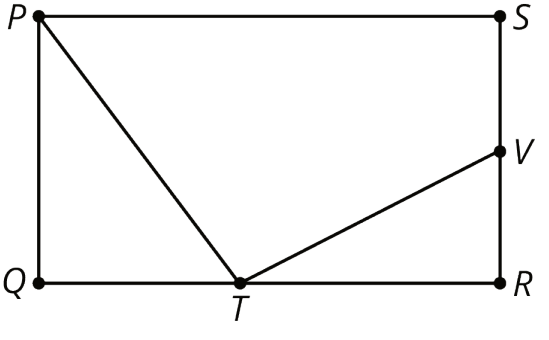
This week your student will be working with some relationships between pairs of angles.

- If two angles add to 90°, then we say they are **complementary angles**. If two angles add to 180°, then we say they are **supplementary angles.** For example, angles JGF and JGH below are supplementary angles, because $30 + 150 = 180$.



- When two lines cross, they form two pairs of **vertical angles** across from one another. In the previous figure, angles JGF and HGI are vertical angles. So are angles JGH and FGJ. Vertical angles always have equal measures.

Here is a task to try with your student: Rectangle $PQRS$ has points T and V on two of its sides.



1. Angles SVT and TVR are supplementary. If angle SVT measures 117°, what is the measure of angle TVR?

2. Angles QTP and QPT are complementary. If angle QTP measures 53°, what is the measure of angle QPT?

Solution:

1. Angle TVR measures 63°, because $180 - 117 = 63$.

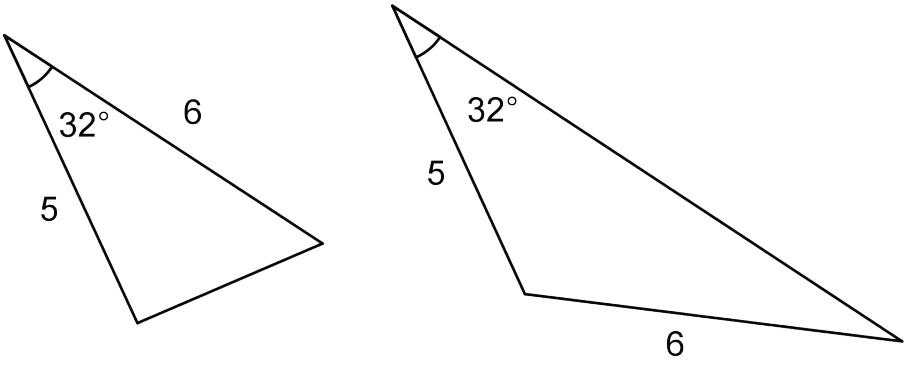
2. Angle QPT measures 37°, because $90 - 53 = 37$.

Drawing Polygons with Given Conditions

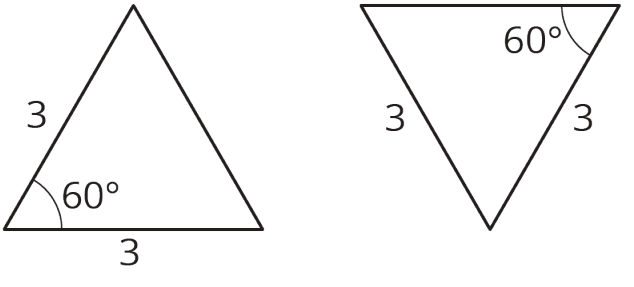
Family Support Materials 2

This week your student will be drawing shapes based on a description. What options do we have if we need to draw a triangle, but we only know some of its side lengths and angle measures?

- Sometimes we can draw more than one kind of triangle with the given information. For example, "sides measuring 5 units and 6 units, and an angle measuring $32°$" could describe two triangles that are not identical copies of each other.



- Sometimes there is only one unique triangle based on the description. For example, here are two identical copies of a triangle with two sides of length 3 units and an angle measuring $60°$. There is no way to draw a *different* triangle (a triangle that is not an identical copy) with this description.

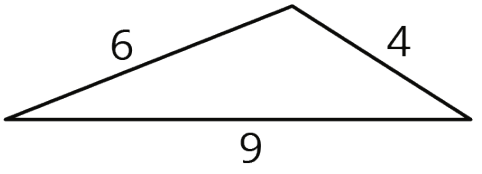


- Sometimes it is not possible to draw a triangle with the given information. For example, there is no triangle with sides measuring 4 inches, 5 inches, and 12 inches. (Try to draw it and see for yourself!)

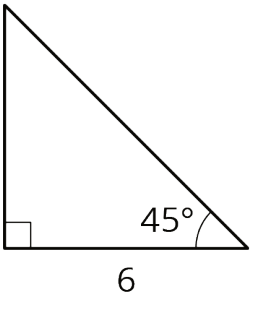
Here is a task to try with your student:

Using each set of conditions, can you draw a triangle that is *not an identical copy* of the one shown?

1. A triangle with sides that measure 4, 6, and 9 units.

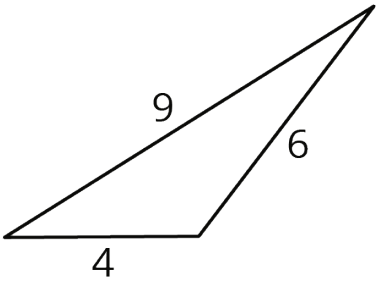


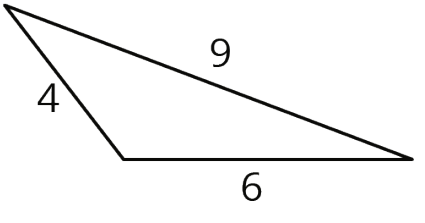
2. A triangle with a side that measures 6 units and angles that measure 45° and 90°



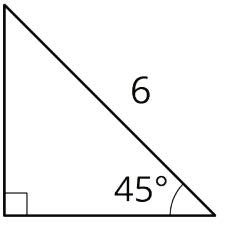
Solution:

1. There is no way to draw a *different* triangle with these side lengths. Every possibility is an identical copy of the given triangle. (You could cut out one of the triangles and match it up exactly to the other.) Here are some examples:





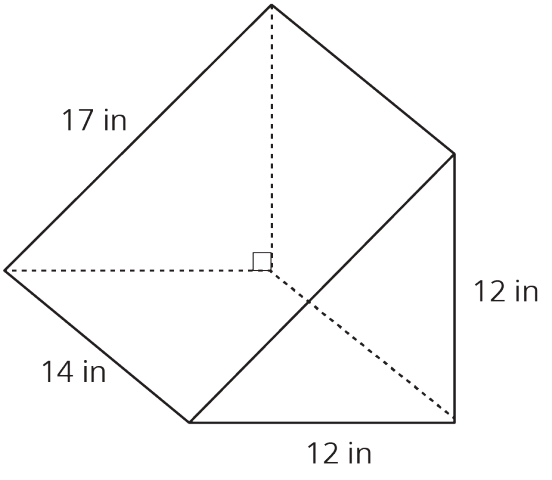
2. You can draw a different triangle by putting the side that is 6 opposite from the 90° angle instead of next to it. This is not an identical copy of the given triangle, because it is smaller.



Solid Geometry

Family Support Materials 3

This week your student will be thinking about the surface area and volume of three-dimensional figures. Here is a triangular prism. Its base is a right triangle with sides that measure 12, 12, and 17 inches.

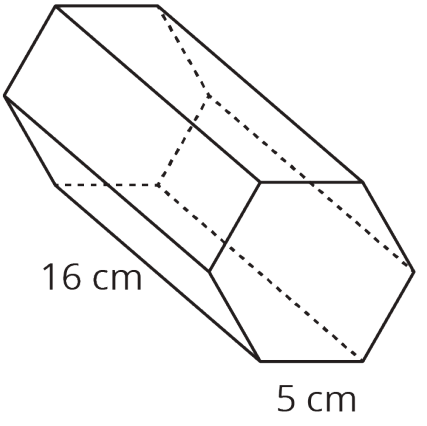


In general, we can find the volume of any prism by multiplying the area of its base times its height. For this prism, the area of the triangular base is 72 in^2, so the volume is $72 \cdot 14$, or 1,008 in^3.

To find the surface area of a prism, we can find the area of each of the faces and add them up. The example prism has two faces that are triangles and three faces that are rectangles. When we add all these areas together, we see that the prism has a total surface area of $72 + 72 + 168 + 168 + 238$, or 718 in^2.

Here is a task to try with your student:

The base of this prism is a hexagon where all the sides measure 5 cm. The area of the base is about 65 cm^2.



1. What is the volume of the prism?

2. What is the surface area of the prism?

Solution:

1. The volume of the prism is about 1,040 cm^3, because $65 \cdot 16 = 1{,}040$.

2. The surface area of the prism is 610 cm^2, because $16 \cdot 5 = 80$ and $65 + 65 + 80 + 80 + 80 + 80 + 80 + 80 = 610$.