Level 3: Geometry Midtest Answer Key

Question 1:

An elementary school teacher is arranging a geometry display in his classroom. He has many different lengths of ribbon.

Which set of lengths could he use to create a triangle?

a. 2 in, 3 in, 5 in

b. 2 in, 10 in, 14 in

c. 8 in, 9 in, 17 in

d. 4 in, 8 in, 10 in

Question 2:

A civil engineer is planning a new city park in the shape of a triangle. Two sides of the park measure 250 meters each. The angle where these sides meet is 110°.

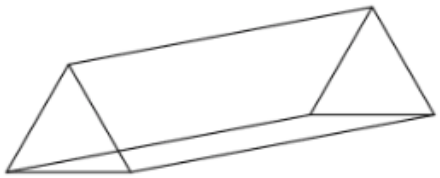
What are the measures of the other two angles of the triangle?

Angle 1: 35 °

Angle 2: 35 °

Question 3:

A computer graphic artist is using the image of a prism with a base that is an equilateral triangle. The artist slices the prism with planes at different angles and points of intersection.



Which of the following shapes could NOT be a cross-section of this prism?

a. rectangle

b. equilateral triangle

c. square

d. trapezoid

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Question 4:

A right pyramid with a square base is cut by a plane perpendicular to the base and parallel to an edge of the base. The plane does not go through the vertex of the pyramid.

What is the shape of the cross section?

Trapezoid

Question 5:

A sculptor will make artwork from a cube. She plans to cut a cross section of the cube.

Which shape can she get with one cut along a plane of the cube?

a. right triangle

b. equilateral triangle

c. trapezoid

d. rhombus that is not a square

Question 6:

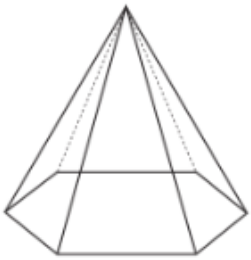
A carpenter is building a new porch. He has a piece of wood in the shape of a prism with a square base.

What is the **most** descriptive term to describe the shape of the cross section?

Rectangle

Question 7:

The figure below shows a right pyramid with a hexagonal base.



Amy will cut the pyramid along different planes. The planes could be parallel to the base, perpendicular to the base, or neither.

What is the greatest number of sides of a cross section made from one slice?

7

Question 8:

A geologist is studying a crystal. This crystal is in the shape of a rectangular octahedron which is the same as two right pyramids that share a square base. The geologist will cut the crystal along a plane parallel to the shared base.

What is the **most** precise name for the shape of the cross section?

a. triangle

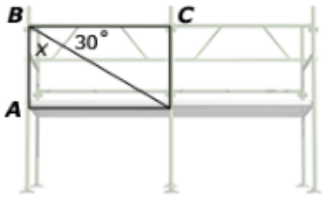
b. right triangle

c. rectangle

d. square

Question 9:

A builder is using scaffolding at a job site. A portion of the scaffolding is shown below.



Angle *ABC* is a right angle.

What is the value of *x*?

$x =$ 60 °

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Question 10:

A cabinet maker is cutting trim for the door of a cabinet. He cuts two pieces of trim at angles that are supplementary to one another. One of the angles measures 70°.

What is the measure of the other angle?

a. 20°

b. 30°

c. 70°

d. 110°

Question 11:

A botanist studies trees growing out of the side of a rock face. She sketches the position of one such tree. The tree and rock face make two angles in this sketch.

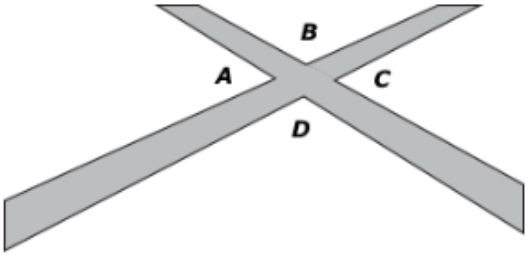
What word describes the relationship between these two angles with respect to their measures?

Supplementary

Continue

Question 12:

Two paths cross in a park.



Which statement about the angles formed must be true?

a. Angle *a* and Angle *b* are congruent because they are supplementary.

b. Angle *a* and Angle *b* are congruent because they are vertical.

c. Angle *a* and Angle *c* are congruent because they are supplementary.

d. Angle *a* and Angle *c* are congruent because they are vertical.

Question 13:

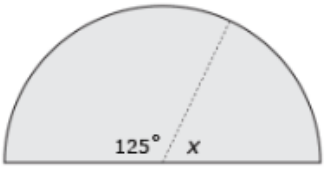
A chemist is studying the structure of a newly discovered molecule. With a high-powered microscope and computer, she observes that 4 atoms are bonded in a plane so that the two angles formed are complementary.

If one of the angles measures 35°, what is the measure, in degrees, of the other angle?

55 °

Question 14:

A landscaper is creating a flower garden in the shape of a semicircle as shown below. The dotted line represents a row of flowers.



What is the value of *x*?

x = 55 °

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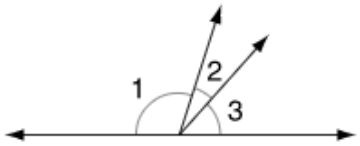
Question 15:

This diagram shows angles 1, 2, and 3 formed by the intersection of a line and two rays.



Which equation represents the measure of $\angle 1$ in terms of the measures of $\angle 2$ and $\angle 3$?

a. $m\angle 1 = 180^\circ - (m\angle 2 + m\angle 3)$

b. $m\angle 1 = 90^\circ - (m\angle 2 + m\angle 3)$

c. $m\angle 1 = 180^\circ + (m\angle 2 + m\angle 3)$

d. $m\angle 1 = 90^\circ + (m\angle 2 + m\angle 3)$

Question 16:

Which three measurements could be the lengths of the sides of a triangle?

a. 25 ft, 30 ft, 60 ft

b. 40 ft, 175 ft, 220 ft

c. 40 ft, 60 ft, 70 ft

d. 80 ft, 150 ft, 230 ft

Question 17:

Which of the following could be the measures of the three angles of a triangle?

a. 28°, 59°, 92°

b. 53°, 60°, 67°

c. 129°, 111°, 120°

d. 140°, 185°, 215°

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Question 18:

Which of the following could be the measures of the acute angles of a right triangle?

a. 25° and 90°

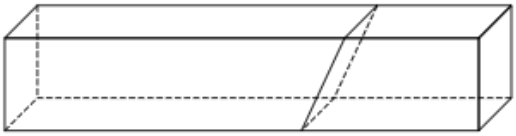
b. 32° and 58°

c. 40° and 45°

d. 33° and 67°

Question 19:

The figure below represents a right rectangular prism with square bases. The cross section shown is formed by a plane intersecting the prism at an angle that is not perpendicular to any of the bases.



Which shape is the cross-section?

a. parallelogram

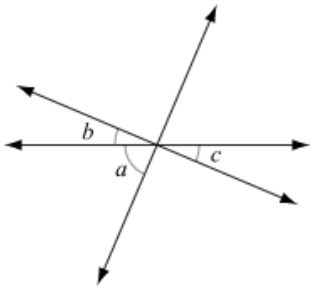
b. rhombus

c. square

d. trapezoid

Question 20:

Use this figure to answer the question.



Angles *a* and *b* are complementary. The measure of $\angle a$ is 67°.

What is the measure, in degrees, of $\angle c$?

23 °

Stop