

Handout 2: Pythagoras? More Like PythaGorgeous Answers

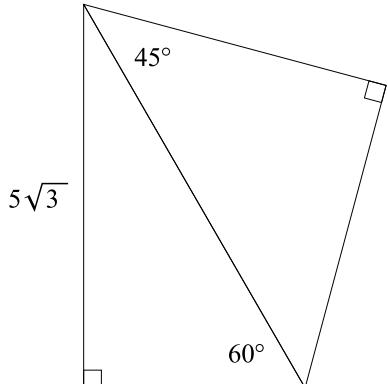


Figure 1

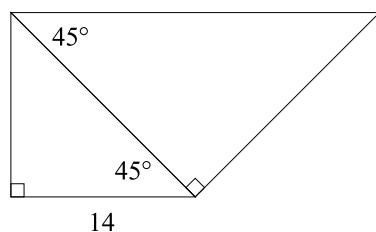


Figure 2

1. Find the length of the hypotenuse if two legs of a right triangle are 6 and 8.
10.
2. Find the length of the remaining side if a triangle's hypotenuse and leg are 15 and 9, respectively.
12.
3. Using the knowledge of altitudes and geometric means, prove the Pythagorean theorem.
Hint: Since all the triangles are similar, we can create proportions by comparing the hypotenuse to the long and short legs ($\frac{c}{a} = \frac{a}{x}$ and $\frac{c}{b} = \frac{b}{y}$).
4. A triangle has three points at $P(2, 2)$, $Q(2, 8)$, and $R(10, 2)$. Determine whether this is a right triangle and, if applicable, a Pythagorean triple.
 ΔPQR is both a right triangle and a Pythagorean triple.
5. Both legs of a right triangle equal $2\sqrt{2}$. What are the measurements of all angles?
 $45^\circ, 45^\circ, 90^\circ$.
6. Two legs of a right triangle are 9 and $3\sqrt{3}$. What are the measurements of all angles?
 $30^\circ, 60^\circ, 90^\circ$.
7. Find the perimeter of the quadrilateral in Figure 1.
27.8.
8. Find the perimeter of the trapezoid created by the two triangles in Figure 2.
75.8.

9. A rectangular building has a central walkway of 196 feet along its diagonal. If this walkway meets the corners of the building at 30° and 60° angles, what are the dimensions of the building in feet, rounded to the nearest foot?

98 feet by 170 feet.

10. A ramp is placed at a 30° angle with the floor and reaches a 10-foot high dock. How long is the ramp? How long would a ramp placed at a 45° angle have to be?

20 feet and 14.1 feet, respectively.