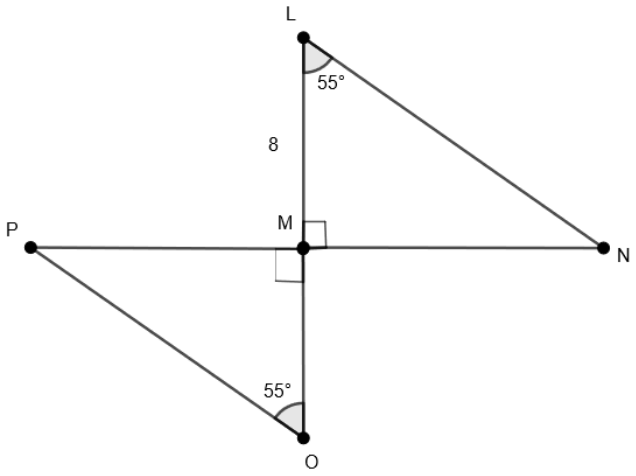
Date Completed: _____
Mentor Initials: _____

Properties of Triangles

Multiple Choice

1.



In the figure shown, triangles LMN and OMP are right triangles. Which of the following can be determined from the given information?

I. The length of $\overline{NM}$
II. The length of $\overline{MP}$

A) I only
B) II only
C) I and II
D) Neither I nor II

2. In triangle ABC, the measure of angle A is 30°. Which of the following additional pieces of information is(are) sufficient to prove that the measure of angle C is 60°?

I. Angle B is a right angle.

II. Side BC is one half the length of side AC.

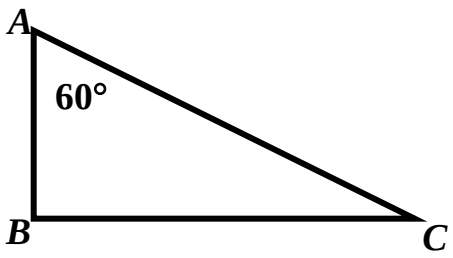
A) I is sufficient, but II is not.
B) II is sufficient, but I is not.
C) I is sufficient, and II is sufficient.
D) Neither I nor II is sufficient.

3. Triangle XYZ is a right triangle, where angle Y is a right angle. Which of the following measurements is(are) needed to determine all the side lengths of triangle XYZ?

I. The measure of one of the acute angles of the triangle
II. The length of one of the sides of the triangle.

A) I only
B) II only
C) I and II
D) Neither I nor II

4. In right triangle ABC shown below, the length of side $\overline{AC}$ is 2. What are the lengths of sides $\overline{AB}$ and $\overline{BC}$?



A) $AB = 1, BC = \sqrt{3}$
B) $AB = \sqrt{3}, BC = 1$
C) $AB = 1, BC = 1$
D) $AB = 2, BC = 2$

5. Triangles ABC and DEF each have a corresponding angle measuring $35°$ and a corresponding angle measuring $50°$. Which additional piece of information is sufficient to determine whether triangle ABC is congruent to triangle DEF ?

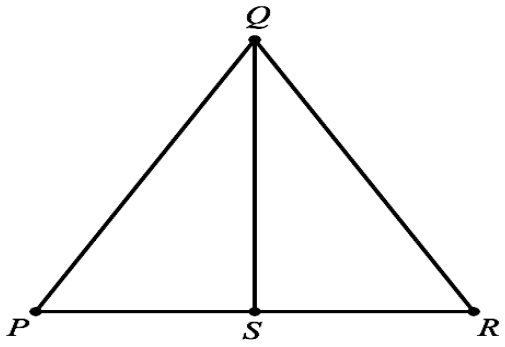
A) The perimeter of triangle ABC
B) The area of triangle DEF
C) The length of one pair of corresponding sides from the two triangles
D) No additional piece of information is necessary to determine whether the two triangles are congruent.

6. Triangles ABC and GHI are similar, where A corresponds to G, and B corresponds to H. The measure of angle A is 17°, and $AB = 6$. Which statement(s) must be true?

I. The measure of angle G is 17°.
II. $GH = 6$.

A) I only
B) II only
C) I and II
D) Neither I nor II

7. In triangle PQR shown below, $\angle QSR$ is a right angle, sides $\overline{QS}$ and $\overline{SR}$ are congruent, and the length of side $\overline{QR}$ is 6. What is the length of $\overline{SR}$?



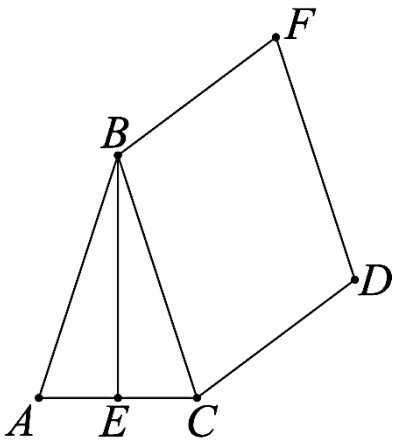
A) 2
B) 3
C) $3\sqrt{2}$
D) 6

8. Triangle ABC has side lengths of $6, 8,$ and x. Which of the following, if any, are possible values for x?

I. 9
II. 14

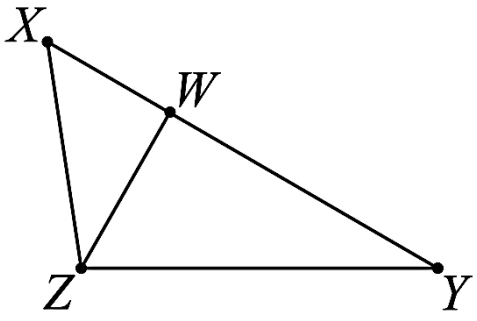
A) I only
B) II only
C) I and II
D) Neither I nor II

9. Kylie decides to go camping at Yosemite. The tent that she builds sits flat on the ground and has a triangular entrance made of three sides, $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$. Sides $\overline{AB}$ and $\overline{BC}$ are congruent, and $\angle BCE$ measures 72°. What is the measure of $\angle ABC$, in degrees?



A) 18
B) 36
C) 72
D) 108

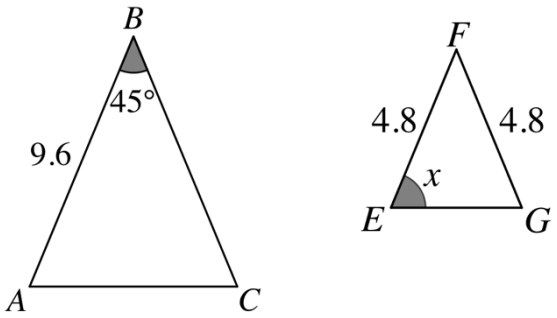
10. In triangle XYZ shown below, $\angle ZYW$ measures 30° and $\angle XWZ$ is a right angle. $\overline{ZW}$ is congruent to $\overline{XW}$. What is the measure of $\angle XZY$, in degrees?



A) 45
B) 60
C) 105
D) 110

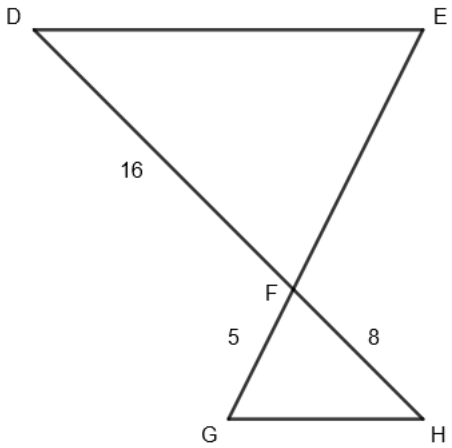
Grid-In

11. In the figures below, $\Delta ABC \sim \Delta EFG$, sides $\overline{EF}$ and $\overline{FG}$ are both 4.8 cm long, side $\overline{AB}$ is 9.6 cm long, and the measure of $\angle ABC$ is 45°. What is the measure of x, in degrees and rounded to the nearest tenth?



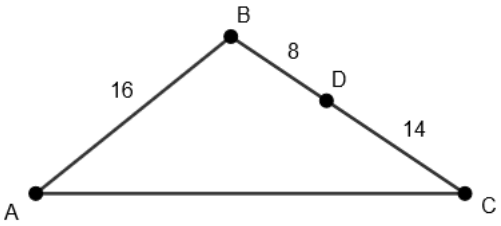
12. Triangle FGH is similar to triangle JKL, where F corresponds to J, and G corresponds to K. The measure of angle F is 16°, and $JK = 4FG$. What is the measure of angle J, in degrees?

13.



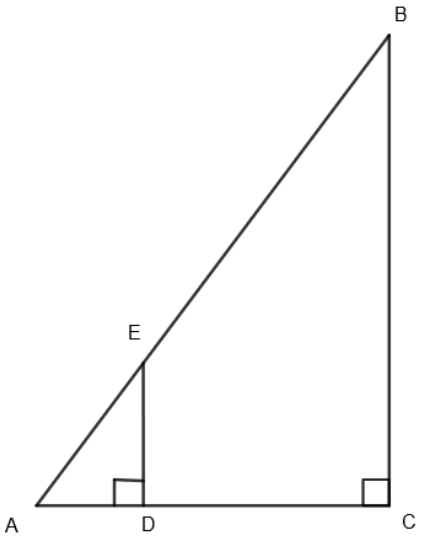
In the figure above, $\overline{DE} \parallel \overline{GH}$ and segment GE intersects segment DH at F. What is the length of segment FE?

14.



In triangle ABC above, point E (not shown) is x units from Point B on (AB). If triangle EBD is similar to triangle ABC, what is the value of x, rounded to the nearest whole number?

15.



In the figure above, $BC = 12$, and the length of line segment AD is half the length of line segment CD. What is the length of line segment DE?