

Geometry

Chapter 8
Section 8-2

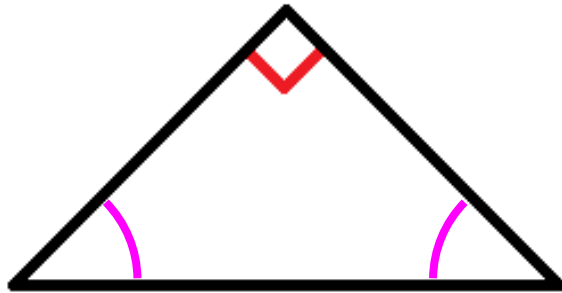
Special Triangles

What are two descriptions of the triangle?

Isosceles Right Triangle

If one leg length is s , what are the lengths of the other two sides?

s and $s\sqrt{2}$



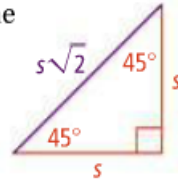
45° - 45° - 90°

take note

Theorem 8-5 45°-45°-90° Triangle Theorem

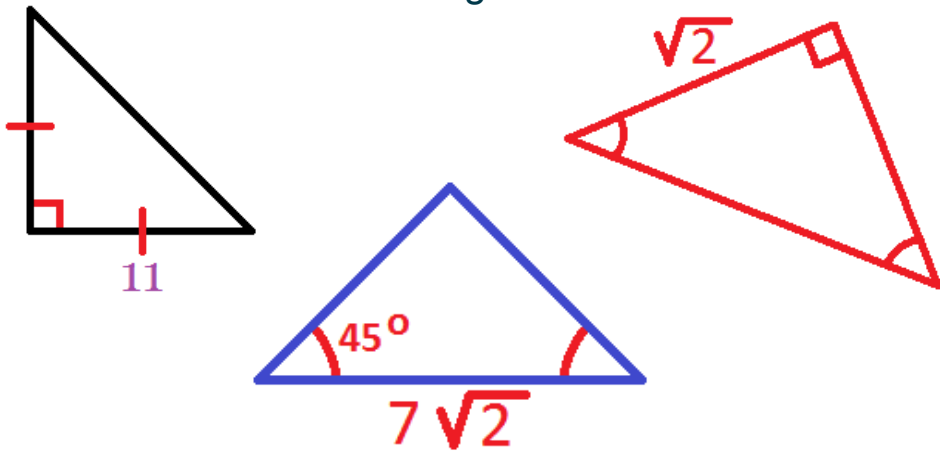
In a 45°-45°-90° triangle, both legs are congruent and the length of the hypotenuse is $\sqrt{2}$ times the length of a leg.

$$\text{hypotenuse} = \sqrt{2} \cdot \text{leg}$$



Find the Sides

What are the lengths of all sides?

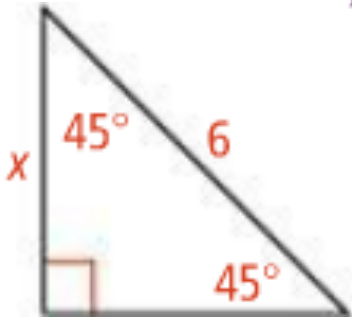


$11\sqrt{2}$ $7\sqrt{2}$ $\sqrt{2}$

11 7 $\sqrt{2}$

11 7 2

Finding the legs of an Isosceles Right Triangle



$$\text{hypotenuse} = \sqrt{2} \cdot \text{leg}$$

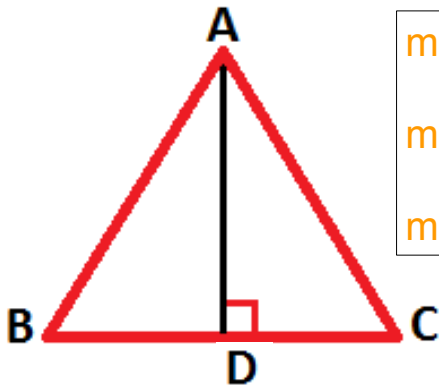
$$6 = \sqrt{2} \cdot x$$

$$\frac{6}{\sqrt{2}} = x$$

$$3\sqrt{2} = x$$

Using Equilateral Triangles

$\triangle ABC$ is equilateral (Draw an altitude from A)



$$m\angle B =$$

$$BD = s$$

$$m\angle BDA =$$

$$AB =$$

$$m\angle BAD =$$

$$AD =$$

$$m\angle B = 60$$

$$\text{If } BD = s$$

$$m\angle BDA = 90$$

$$AB = 2s$$

$$m\angle BAD = 30$$

$$AD = s\sqrt{3}$$

30° - 60° - 90°

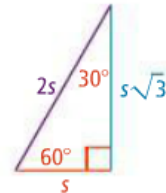
Take note

Theorem 8-6 30°-60°-90° Triangle Theorem

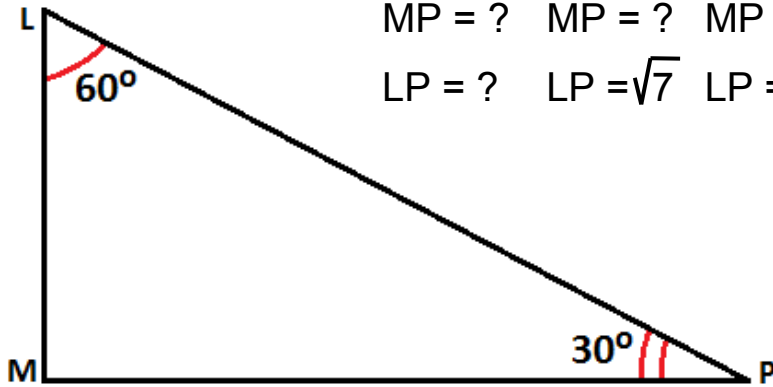
In a 30°-60°-90° triangle, the length of the hypotenuse is twice the length of the shorter leg. The length of the longer leg is $\sqrt{3}$ times the length of the shorter leg.

$$\text{hypotenuse} = 2 \cdot \text{shorter leg}$$

$$\text{longer leg} = \sqrt{3} \cdot \text{shorter leg}$$



Using 30° - 60° - 90°



$$LM = 5 \quad LM = ? \quad LM = ?$$

$$MP = ? \quad MP = ? \quad MP = 4$$

$$LP = ? \quad LP = \sqrt{7} \quad LP = ?$$

$$LM: \quad 5 \quad \sqrt{7} / 2 \quad 4\sqrt{3} / 3$$

$$MP: \quad 5\sqrt{3} \quad \sqrt{21} / 2 \quad 4$$

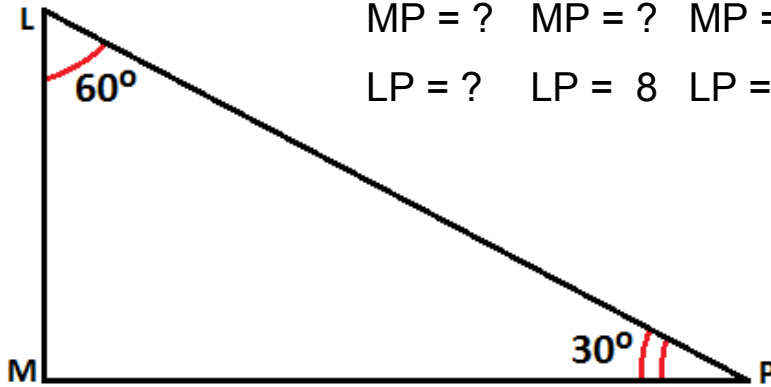
$$LP: \quad 10 \quad \sqrt{7} \quad 8\sqrt{3} / 3$$

Using 30° - 60° - 90°

$$LM = \sqrt{3} \quad LM = ? \quad LM = ?$$

$$MP = ? \quad MP = ? \quad MP = 4\sqrt{10}$$

$$LP = ? \quad LP = 8 \quad LP = ?$$



$$LM: \sqrt{3} \quad 4 \quad 4\sqrt{30} / 3$$

$$MP: \sqrt{6} \quad 4\sqrt{3} \quad 8\sqrt{10}$$

$$LP: 2\sqrt{3} \quad 8 \quad 8\sqrt{30} / 3$$

Homework

Pages 503 - 504

8 - 22 even, 21 - 29 odd