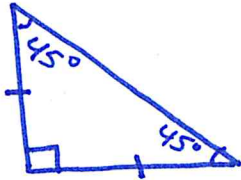


1- **Isosceles** (45-45-90) Right Triangle:

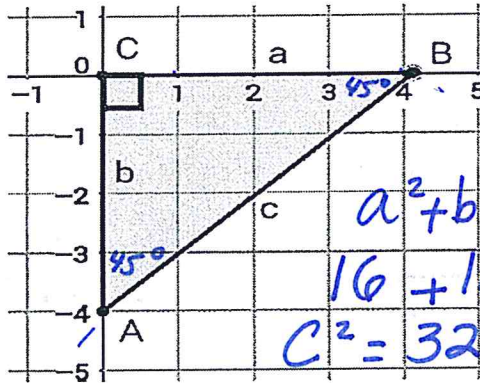
✓ Picture:



✓ Specifications: Two sides and two angles Congruent 45-45-90° angles.

✓ Investigation:

a = 4  
 b = 4  
 m∠C = 90°  
 m∠A = 45°  
 m∠B = 45°  
 c = 4√2

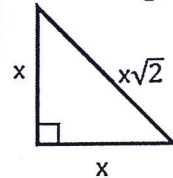


$a^2 + b^2 = c^2$   
 $16 + 16 = c^2$   
 $c^2 = 32 \Rightarrow c = \sqrt{16 \cdot 2} = 4\sqrt{2}$

Based on the answers above, what did you notice about the measurements of the sides in an isosceles triangle (how do they relate to each other?)

All sides have 4 and c is 4√2.

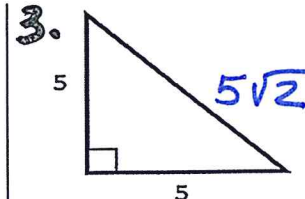
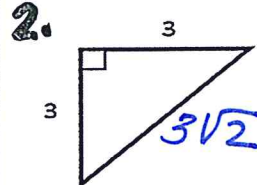
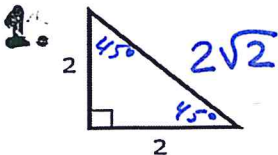
Isosceles Right (45-45-90) Triangle Shortcut



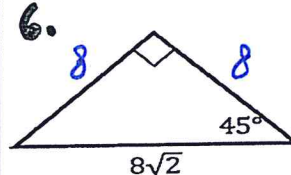
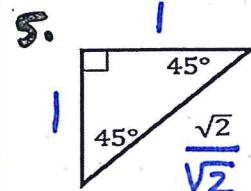
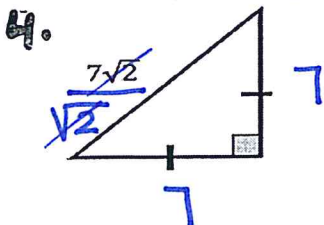
hypotenuse = leg  $\times \frac{\sqrt{2}}{1}$   
 leg = hypotenuse  $\div \frac{\sqrt{2}}{1}$

✓ Apply:

Find the hypotenuse of each of the isosceles right triangles.

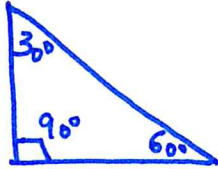


An isosceles right triangle is also known as a 45-45-90 triangle. Find the lengths of the legs of the 45-45-90 triangles.



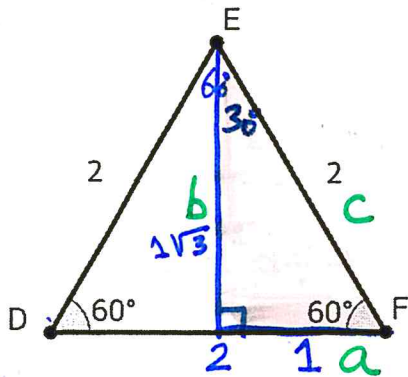
2- 30-60-90 Right Triangle:

✓ Picture:



✓ Specifications: each side and Angle is different.

✓ Investigation:



- 1- Draw an altitude from point E to DF
- 2- Label the new point with C
- 3- What are the measures of the angles that has been formed (label)
- 4- Looking at one of the two triangles that has been formed and find the length of all its sides

$$a^2 + b^2 = c^2$$

$$1 + b^2 = 4$$

$$b^2 = 3$$

$$b = \sqrt{3}$$

5- Based on the answers above, what did you notice about the measurements of the sides in a half an equilateral triangle (how do they relate to each other?)

Small leg is half of the hypotenus

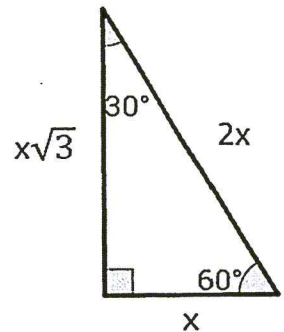
A 30-60-90 right triangle has two legs and a hypotenuse. The leg opposite the 30° angle is called the short leg. The leg opposite the 60° angle is called the long leg.

Hypotenuse = short leg × 2

Long leg = short leg × √3

Short leg = hypotenuse ÷ 2

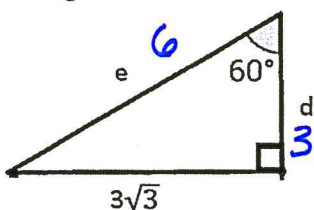
Short leg = long leg ÷ √3



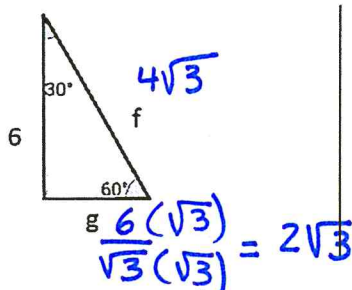
✓ Apply:

Find the missing sides.

1.



2.



3.

