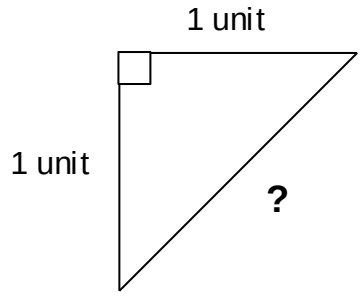
Geometry
Special Right Triangles
Classwork

Name _____

Date _____ Per _____

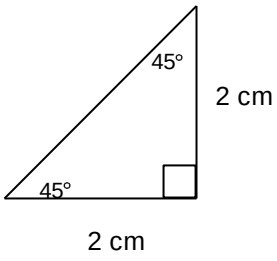
Remember the mini-orchard of radius 1 unit? In order to find out how big a tree could grow before it hit the line of sight, you had to know the length of the hypotenuse of the triangle below.



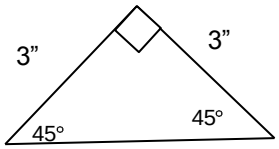
Again, find the *exact* value of the hypotenuse. (expressing it in radical form is necessary: "$\sqrt{\ }$").
Work:

A non-repeating decimal expression is not exact, it is an _____.
This triangle is an example of an Isosceles Right Triangle (or an 45-45-90 Triangle). Use the Pythagorean Theorem and Algebra to express the lengths of the missing sides in these Isosceles Right Triangles:

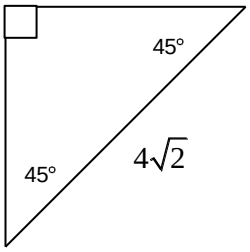
A.



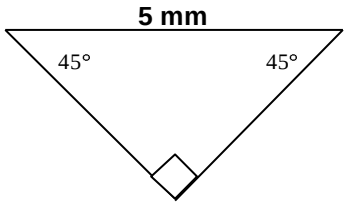
B.



C.



D.

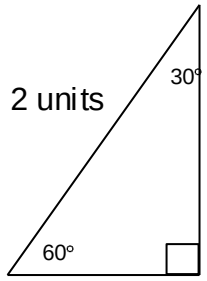


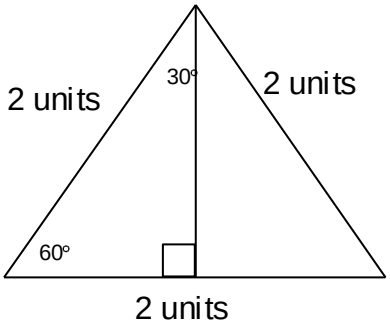
Now write a conjecture[1] describing the relationship between the legs and the hypotenuse of an Isosceles Right Triangle:

[1] A Conjecture is an unproven mathematical observation. If subsequently proven, it a conjecture becomes a theorem.

Here's another special right triangle. Can you find the length of the two missing sides?

HINT: What do you know about this triangle?

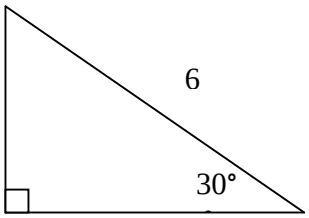




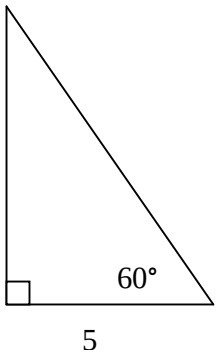
Again, find the exact value of the missing sides! (You will need a radical symbol again).

This triangle is an example of 30-60-90 Triangle. Use the Pythagorean Theorem and Algebra to express the lengths of the missing sides in these 30-60-90 Triangles:

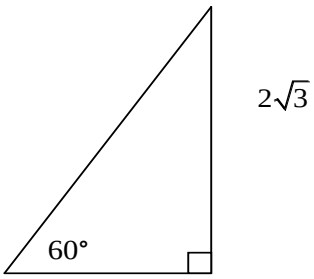
E



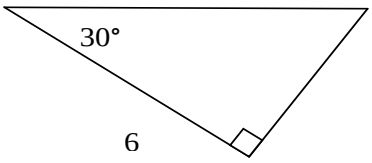
F.



G.



H.



Now write a conjecture describing the relationship between the short leg, the long leg and the hypotenuse of a 30-60-90 Triangle: