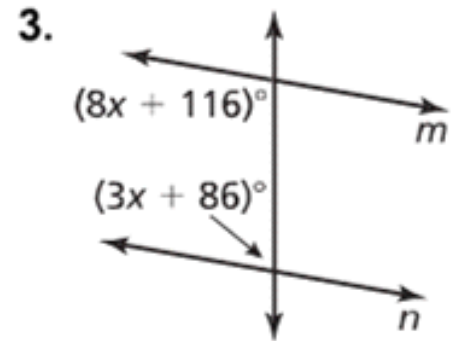
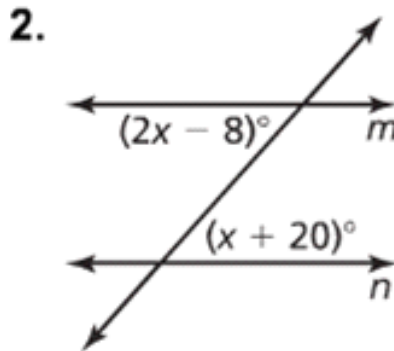
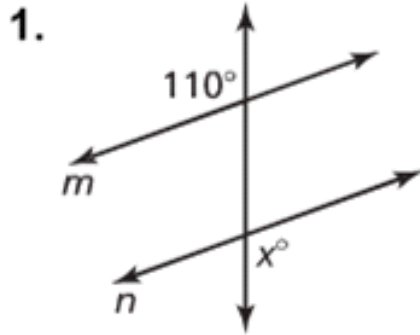


WARM UP

Find the value of x that makes $m \parallel n$.



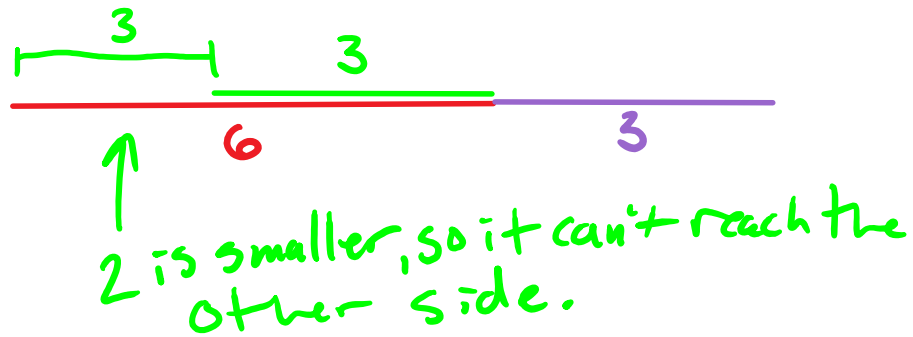
ESSENTIAL QUESTION

What are some relationships between the sides and angles of any triangle?

GOAL: "I CAN..."

Use theorems to compare the sides and angles of any triangle."

Is it possible to make a triangle using side lengths of 2, 3, and 6? Come up with an answer with your group and then find some way of proving your idea.



EXAMPLE 1

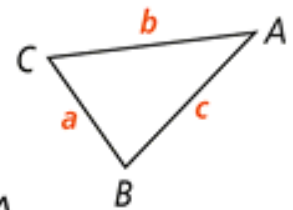
- Plot Triangle ABC with the following coordinates: A(0,0), B(3,6), C(12,0)
- Find the distance from A to B, from B to C and from C to A.
- Visually which angle appears to be the largest?
- Visually which angle appears to be second largest?
- Do you see a correlation between the size of the angle and the size of the side?
- Plot Triangle RST with the following coordinates: R(0,0), S(0,9), T(4,0)
- Repeat the steps from above to see if you see a correlation between angle size and size of the side. (Because there is.)

If two sides of a triangle are not congruent, then the larger angle lies opposite the longer side.

PROOF: SEE EXERCISE 13.

If... $b > a$

Then... $m\angle B > m\angle A$

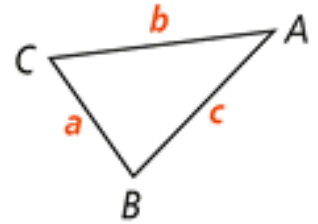


If two angles of a triangle are not congruent, then the longer side lies opposite the larger angle.

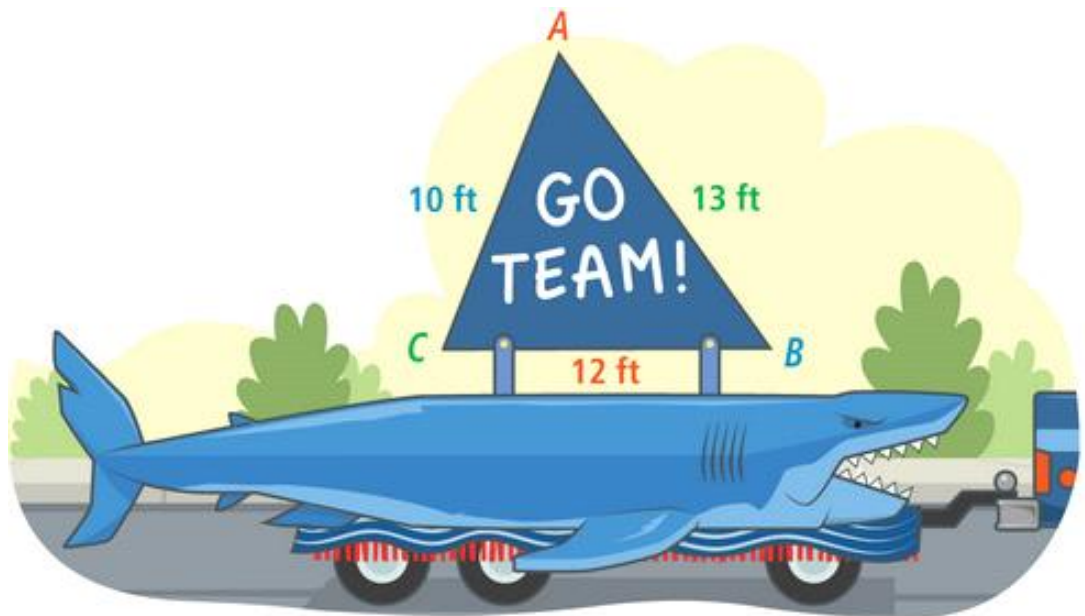
PROOF: SEE EXAMPLE 3.

If... $m\angle B > m\angle A$

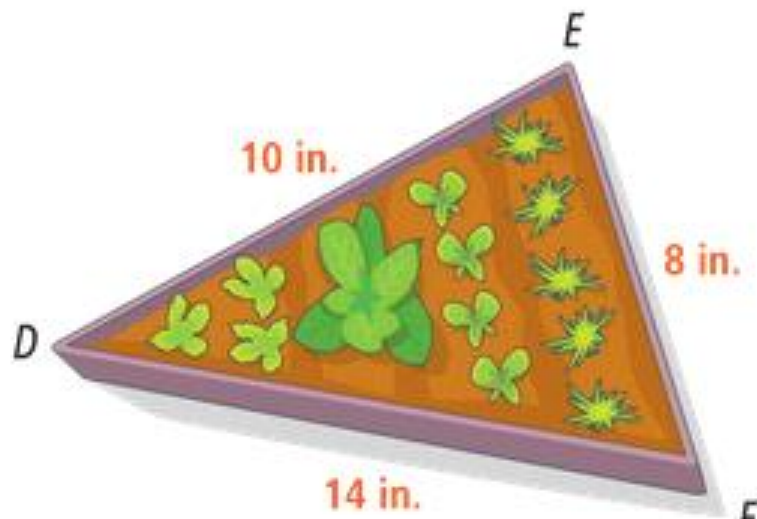
Then... $b > a$



To support a triangular piece of a float, a brace is placed at the largest angle and a guide wire is placed at the smallest angle. Which angle is the largest? Which angle is the smallest?



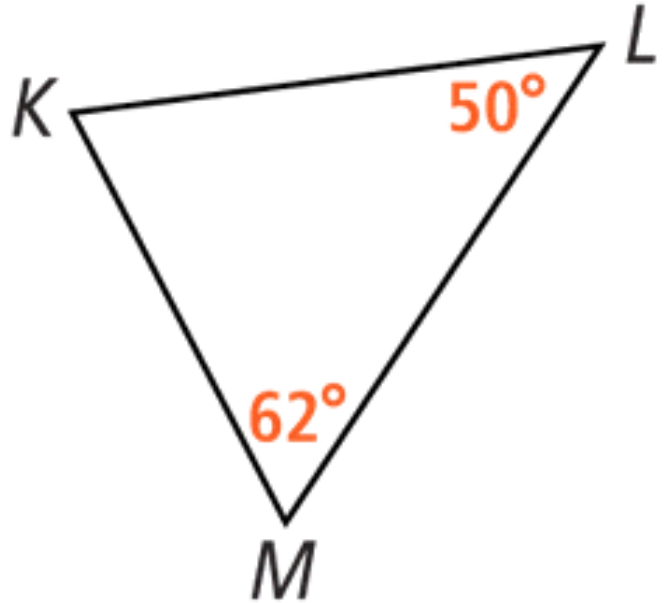
Based on the diagram of the triangular garden box, which angle is the largest? Which angle is the smallest?



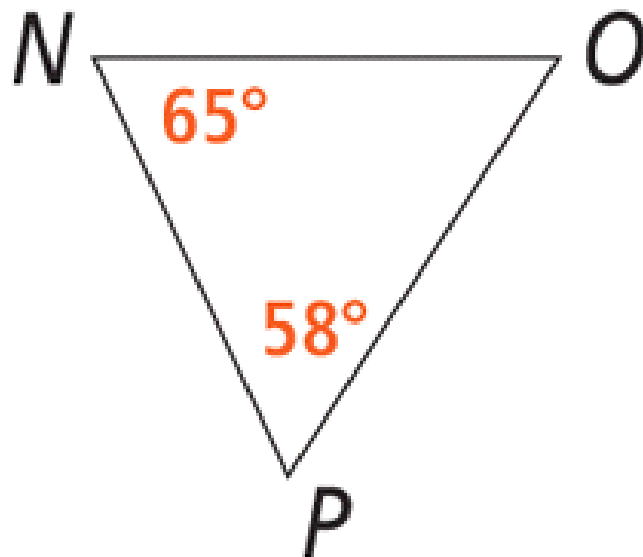
14 in.

F

Which side of $\triangle KLM$ is the longest?



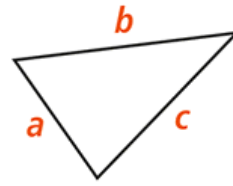
List the side lengths from shortest to longest.



The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

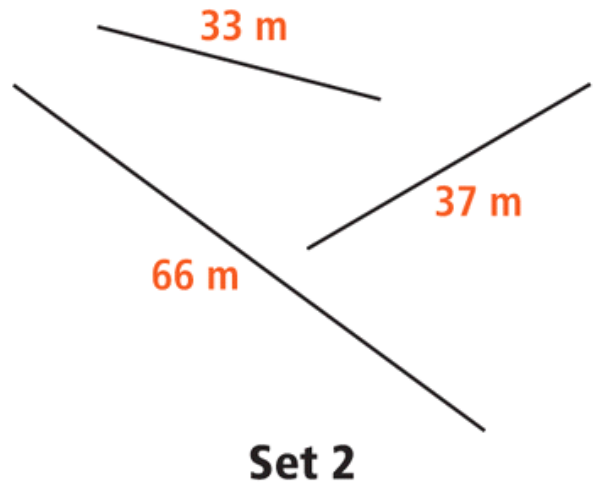
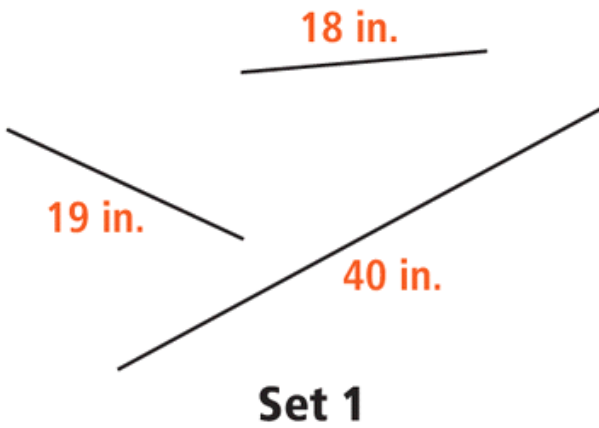
PROOF: SEE EXERCISE 14.

If...

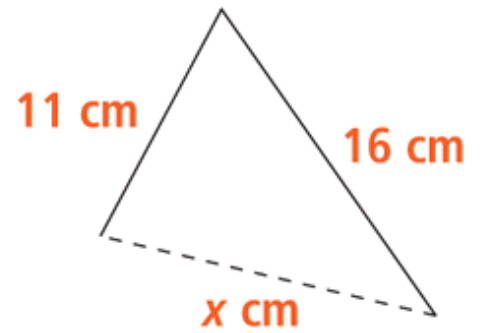


Then... $a + b > c$
 $a + c > b$
 $b + c > a$

Which of the following sets of segments could be the sides of a triangle?



What is the range for the values of x in the following triangle?



Could a triangle have a side length 16m, 39m, and 28m?

A triangle has side lengths of 30 in. and 50 in. What are the possible lengths of the third side?

HOMework

Pg. 231
13, 16, 18-29, 35
