

Inquiry Lab

Create Triangles

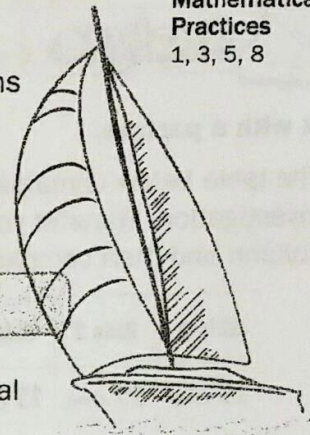


WHAT do you notice about the measures of the sides or the measures of the angles that form triangles?



Content Standards
MCC7.G.2
Mathematical Practices
1, 3, 5, 8

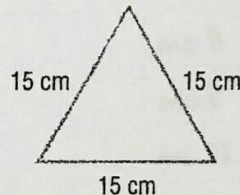
Sailing Dennis has a sailboat. The sail on his boat is in the shape of a triangle with side lengths of 6 feet, 8 feet, and 10 feet. These dimensions work to form a triangle, but not just any three lengths form a triangle. Complete the Investigation below to determine which side lengths form triangles.



Investigation 1

Step 1 Measure and cut several plastic straws into lengths that equal 3, 4, 4, 5, 8, 8, 8, 13, 15, 15, 15, and 15 centimeters.

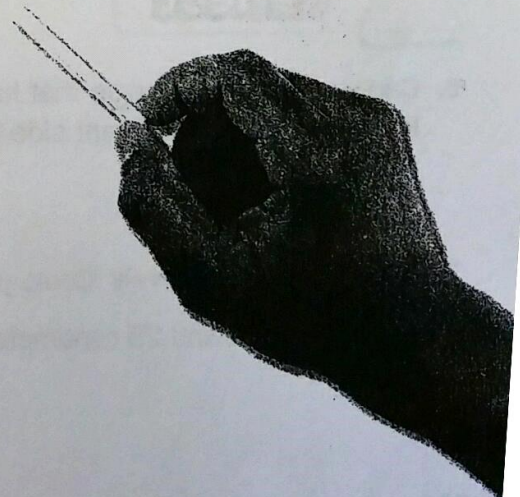
Step 2 Arrange three of the pieces that each measure 15 centimeters to see if you can form a triangle.



So, you can form a triangle with side lengths of 15 centimeters, 15 centimeters, and 15 centimeters.

Step 3 Continue using pieces of straw to try to form triangles using the different combinations of side lengths given. Determine whether or not the lengths form a triangle. Complete the table.

Side 1	Side 2	Side 3	Do the sides form a triangle?
15 cm	15 cm	15 cm	yes
3 cm	4 cm	5 cm	
8 cm	8 cm	13 cm	
3 cm	4 cm	8 cm	
4 cm	4 cm	5 cm	
8 cm	3 cm	15 cm	
4 cm	8 cm	15 cm	





Collaborate

Work with a partner. Try to create triangles using the given side lengths. Circle yes if you can make a triangle or no if you cannot.

1. 5 cm, 8 cm, 15 cm

Yes or No

2. 13 cm, 8 cm, 15 cm

Yes or No

3. 13 cm, 4 cm, 4 cm

Yes or No



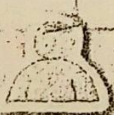
Analyze

Work with a partner.

4. The table below contains the dimensions you used in Step 3 of the Investigation. Transfer your results from the Investigation into the fourth column and then complete the fifth column.

Side 1	Side 2	Side 3	Do the sides form a triangle?	Is Side 1 + Side 2 greater than or less than Side 3?
15 cm	15 cm	15 cm	yes	greater than
3 cm	4 cm	5 cm		
8 cm	8 cm	13 cm		
3 cm	4 cm	8 cm		
4 cm	4 cm	5 cm		
8 cm	3 cm	15 cm		
4 cm	8 cm	15 cm		

5. What do you notice about the figures with a Side 1 and Side 2 sum that is less than the length of Side 3?



Reflect

6. Can you create a triangle that has the same shape as the triangle in the Investigation, but different side lengths? Explain.

7. Reason Inductively Could you form a triangle using the side lengths of 7, 8, and 25 centimeters? Explain.