IS IT A TRIANGLE? – SAMPLE RESPONSE

With your partner, use the provided GeoGebra activity to complete the table below. If a set of sides do not make a triangle, write “not a triangle” in the third column.   
GeoGebra link: <https://www.geogebra.org/m/tgwg6tnj>.

| **Number Sets** | **Is It a Triangle?  (Yes/No)** | **What Type of Triangle? (Acute, Obtuse, Right)** | ***a+b*** | **>**  **<**  **=** | ***c*** |
| --- | --- | --- | --- | --- | --- |
| **3, 4, 5** | ***Yes*** | ***Right*** | ***7*** | ***>*** | ***5*** |
| **1, 2, 3** | ***No*** | ***Not a Triangle*** | ***3*** | ***=*** | ***3*** |
| **6, 5, 10** | ***Yes*** | ***Obtuse*** | ***11*** | ***>*** | ***10*** |
| **12, 16, 18** | ***Yes*** | ***Acute*** | ***28*** | ***>*** | ***18*** |
| **7, 3, 12** | ***No*** | ***Not a Triangle*** | ***10*** | ***<*** | ***12*** |

How do we know if three line segments make a triangle?

***When constructing a triangle, all three sides must meet the other at their endpoints. There cannot be any overlap or gaps.***

What algebra can help us calculate this?

| **Notation** | ***a + b > c*** |
| --- | --- |

How do we know what type of triangle a set of segments creates?   
***When constructing a triangle, you can use a protractor to determine the type of triangle you have.***  
What algebra can help us calculate this?

| **Type of Triangle** | **Notation** |
| --- | --- |
| **Right** | ***=*** |
| **Acute** | ***>*** |
| **Obtuse** | ***<*** |

IS IT A TRIANGLE? (TEACHER GUIDE)

**Example Solutions for Lesson Slides**

|  |  |
| --- | --- |
| **Slide 19: 5, 12, 13**  **Step 1:** Ask yourself: Is it a triangle?  *a* + *b* > c 5 + 12 > 13 ***This statement is true, therefore it’s a triangle.***  **Step 2:** Classify the triangle.  (Which symbol goes in the box? =, <, >)  25 + 144 ☐ 169  169 = 169 ***Because the two sides of the expression equal each other, it is a right triangle.*** | **Slide 23: 3, 3, 4**  **Step 1:** Ask yourself: Is it a triangle?  *a + b > c* 3 + 3 > 4 ***This statement is true, therefore it’s a triangle.***  **Step 2:** Classify the triangle.  (Which symbol goes in the box? =, <, >)  9 + 9 ☐ 16  18 > 16 ***Because the left side is larger than the right, it is an acute triangle.*** |
| **Slide 27: 3, 4, 7**  **Step 1:** Ask yourself: Is it a triangle?  *a + b > c* 3 + 4 > 7 ***This statement is true, therefore it’s a triangle.***  **Step 2:** Classify the triangle.  (Which symbol goes in the box? =, <, >)  9 + 16 ☐ 49  25 < 49 ***Because the left side is less than the right, it is an obtuse triangle.*** |  |