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* > c5 + 12 > 13***This statement is true, therefore it’s a triangle.*****Step 2:** Classify the triangle.(Which symbol goes in the box? =, <, >)25 + 144 ☐ 169169 = 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 ☐ 1618 > 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 ☐ 4925 < 49***Because the left side is less than the right, it is an obtuse triangle.*** |  |