Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_

**Triangle Exploration: adapted from Mathalicous.com**

Widescreen TVs like the one below have an aspect ratio of 16:9. Based on this:

 TV 1: TV 2:

 

|  |  |
| --- | --- |
| 1a. If the screen of TV 1 is 40 inches wide, how tall must it be? | 1b. If the screen of TV2 is 40 inches tall, how wide must it be? |

2. Draw in one diagonal for each of the tv’s above.

3. What type of triangles do you create when you do this? Justify your answer.

**FACT: The size of a TV screen is measured diagonally, for instance, a 55-inch TV is 55 inches from corner to corner.**

4. Based on the lengths of your sides what do you predict is the size of TV1 and TV2? Justify your answer.

**FACT: You can find the exact size of the tv using the following formula:**

 **Size of TV =** $\sqrt{\left(width\right)^{2}+\left(height\right)^{2}}$

|  |  |
| --- | --- |
| 5a) Use the formula above to find the exact size of TV 1. Then sketch a picture of the tv with the width, length and diagonal labeled. | 5b) Use the formula above to find the exact size of TV 2. Then sketch a picture of the tv with the width, length and diagonal labeled. |

**FACT: 16:9(widescreen) isn’t the only aspect ratio. Televisions also come in 4:3(standard) and 21:9(cinema).**

|  |  |
| --- | --- |
| 6) Using what you have learned so far, what is the size of a (standard) television that has a width of 40 inches. Sketch a picture of the tv with the width, length and diagonal labeled. | 7) Using what you have learned so far, what is the size of a (cinema) television that has a width of 40 inches. Sketch a picture of the tv with the width, length and diagonal labeled. |

8) Which tv is largest from problem 5a, 6, and 7, based on the size of the tv screen?