Name: Activity - Discovering Trig Activity

**Triangle #1**

**In the box, draw a right triangle with legs of 3 inches, 4 inches and a hypotenuse of 5 inches.**



**Triangle #2**

**In the box, draw the same triangle as Triangle #1 but dilated by a scale factor of 2.**



**Triangle #3**

**In the box, draw the same triangle as Triangle #1 but dilated by a scale factor of 3.**



Answer the following question:

 ***How are triangles #1, #2 and #3 related?***

*Using the triangles #1, #2 and #3, follow the steps for each triangle.*

***For Triangle #1:***

**Step 1:** Measure all of the sides and angles.

**Step 2:** Label a as the smallest side, b as the middle length side and c as the hypotenuse.

**Step 3:** Fill in the chart below

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure of side a | Measure of side b | Measure of side c | $$\frac{Side a}{Side c}$$ | $$\frac{Side b}{Side c}$$ | $$\frac{Side a}{Side b}$$ |
|  |  |  |  |  |  |

***For Triangle #2:***

**Step 1:** Measure all of the sides and angles.

**Step 2:** Label a as the smallest side, b as the middle length side and c as the hypotenuse.

**Step 3:** Fill in the chart below

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure of side a | Measure of side b | Measure of side c | $$\frac{Side a}{Side c}$$ | $$\frac{Side b}{Side c}$$ | $$\frac{Side a}{Side b}$$ |
|  |  |  |  |  |  |

***For Triangle #3:***

**Step 1:** Measure all of the sides and angles.

**Step 2:** Label a as the smallest side, b as the middle length side and c as the hypotenuse.

**Step 3:** Fill in the chart below

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure of side a | Measure of side b | Measure of side c | $$\frac{Side a}{Side c}$$ | $$\frac{Side b}{Side c}$$ | $$\frac{Side a}{Side b}$$ |
|  |  |  |  |  |  |

**Answer the following questions:**

1. For all four triangles, compare this ratio: $\frac{Side a}{Side c}$
2. For all four triangles, compare this ratio: $\frac{Side b}{Side c}$
3. For all four triangles, compare this ratio: $\frac{Side a}{Side b}$
4. If we created a fourth triangle, do you believe that the ratios would still be the same or similar?

**Class Notes**: Label the sides opposite A, adjacent to A and the hypotenuse

**List the name for each ratio: (In reference to Angle A)**

$\frac{Side a}{Side c}$:

 = $ \frac{Opp}{Hyp}$: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

$\frac{Side b}{Side c}$:

= $\frac{Adj}{Hyp}$: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

$\frac{Side a}{Side b}$:

= $\frac{Opp}{Adj}$: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Homework*

1. Kyla is out today! Write her an email explaining how we discovered sine, cosine and tangent using the activity above.

Dear Kyla: