***Wheel of Theodorus Art Project* Due date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Assignment:**

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Create a wheel of Theodorus neatly and in color. Mark the unit measures of all your triangle sides. Decorate your wheel in a way that demonstrates this spiral in the real world (turn it into something!). Attach a lined sheet of paper to your project with your calculations for all triangles.

**Instructions:**

1. Using a template (index card) for a particular unit length (1 inch), and a right angle, create an isosceles right triangle.
2. Using your template again, add another unit length and right angle to the hypotenuse of your original right triangle.
3. Make a right triangle out of the new unit lengths and the previous hypotenuse.
4. Keep adding a new unit length to the previous hypotenuse at right angles to build new right triangles.
5. When you get to the stage where your right triangles will overlap previous right triangles, draw your hypotenuse *toward the center of the spiral* but do not mark over the previous drawings.
6. Remember to label your figure with all of the dimensions of your successive right triangles. If a hypotenuse has a length that is a rational number, demonstrate that you recognize this fact. (For example, since $\sqrt{4}$ = 2, show this on your project.)
7. Transform the Wheel of Theodorus into something you might see in the real world.

**Requirements:**

* Include a title for your picture
* On the front of your picture, include your signature and the date.
* Label all triangle legs and hypotenuses with appropriate lengths.
* Conjoin each new right triangle with the hypotenuse of the previous right triangle.
* Make sure your project is neat.
* Use color unless you mean to emphasize contrast by using black and white.
* Write your lables using radicals unless they can be simplified to rational numbers. For example, you might label a hypotenuse $\sqrt{9}$ = 3.
* Connect all your hypotenuses to the same central point.
* Draw at least 16 triangles
* Attach a lined sheet of paper to your art containing your calculations to find lengths of segments (using the Pythagorean Theorem) for all triangles.

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|  | **0 points** | **5 points** | **10 points** |
| **Drawing of Wheel of Theodorus** | Student’s Wheel of Theodorus was not constructed correctly and little effort was given. The lines are not straight, the angles are not 90 degrees and the leg measurements are incorrect. | Student put in some effort to construct the Wheel of Theodorus, but not all directions were followed. Some lines are not straight, some angles are not 90 degrees and some leg measurements are incorrect. | Student’s Wheel of Theodorus was constructed correctly and carefully. The lines are all straight, the angles measure 90 degrees and the leg measurements are correct. |
| **Triangles** | Student constructed less than 9 triangles of the Wheel of Thoedorus. | Student constructed less than 12 triangles in the Wheel of Theorodorus. | Student constructed all 16 or more required triangles of the Wheel of Theodorus. |
| **Creativity** | Student made no attempt to creatively turn their Wheel of Theodorus “into” anything. | Student made some effort to creatively turn their Wheel of Theodorus “into” something. | Student showed obvious effort to creatively turn their Wheel of Theodorus “into” something. |
| **Color** | Student made no attempt to color the Wheel of Theodorus. | Student made some effort to color the Wheel of Theodorus. | Student put in a lot of effort to color the Wheel of Theodorus. |

**Wheel of Theordorus Grading Rubric**

**Total points earned: \_\_\_\_\_/40**