

**Investigation into the Sine graph and transformations of the Sine graph**

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**Time required** 50+ minutes

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**Activity Overview**

*This activity leads the students through an investigation into the zeroes, domain and range of the sine graph. It continues investigating the transformations of the sine graph thus leading to the sinusoidal graph*

$$y = a \sin(b(x - h)) + k$$

**Concepts**

*List of mathematics concepts included in the activity:*

Domain, Range, Amplitude, Period, Phase Shift, Vertical Shift, Sinusoidal Graphs

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**Teacher Preparation**

*Students should be familiar with graphing using transformations. This activity is a lead in to the study of the sine curve. Students should have graphed a sine curve by hand before doing this activity. Students should also be familiar with how to operate the Nspire calculator.*

**Classroom management tips**

*Have students work with partners so that they can discuss their observations.*

**TI-Nspire Applications**

*Graphs and Geometry application is used in this activity*

*Use the worksheet for the students.*

**Assessment and evaluation:**

- *Use the worksheet for this activity to lead the students through the investigation*
- *Assessment will be done through their written conclusions and the graphing exercises included in the activity.*

**Activity extensions**

- *Students could then do application problems that require them to write their own sinusoidal function.*
- *This activity could be applied to other trigonometric graphs.*

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**Student TI-Nspire Document (Word Document)**

*Investigation into the sine graph, the amplitude, period, phase shift, and vertical shifts.*