## Unit 6 Lesson 15: Features of Trigonometric Graphs (Part 1)

### 1 Notice and Wonder: Musical Notes (Warm up)

#### Student Task Statement

Here are pictures of sound waves for two different musical notes:



What do you notice? What do you wonder?

### 2 Equations and Graphs

#### Student Task Statement

Match each equation with its graph. More than 1 equation can match the same graph.

Equations:

1. $y=-cos\left(θ\right)$
2. $y=2sin\left(θ\right)−3$
3. $y=cos\left(θ+\frac{π}{2}\right)$
4. $y=3sin\left(θ\right)−2$
5. $y=sin\left(θ−\frac{π}{2}\right)$
6. $y=sin\left(θ+π\right)$

A



B



C



D



### 3 Double the Sine

#### Student Task Statement

1. Complete the table of values for the expression $sin\left(2θ\right)$

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| * $θ$
 | * 0
 | * $\frac{π}{12}$
 | * $\frac{π}{6}$
 | * $\frac{π}{4}$
 | * $\frac{π}{2}$
 | * $\frac{3π}{4}$
 | * $π$
 | * $\frac{5π}{4}$
 | * $\frac{3π}{2}$
 | * $\frac{7π}{4}$
 | * $2π$
 |
| * $sin\left(2θ\right)$
 | *
 | *
 | *
 | *
 | *
 | *
 | *
 | *
 | *
 | *
 | *
 |

1. Plot the values and sketch a graph of the equation $y=sin\left(2θ\right)$. How does the graph of $y=sin\left(2θ\right)$ compare to the graph of $y=sin\left(θ\right)$?
* 
1. Predict what the graph of $y=cos\left(4θ\right)$ will look like and make a sketch. Explain your reasoning.
* 

#### Activity Synthesis



#### Images for Activity Synthesis







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