

Algebra 2 Honors

Exploring Periodic Data



Lesson 1: Exploring Periodic Data

Verbal Vocabulary

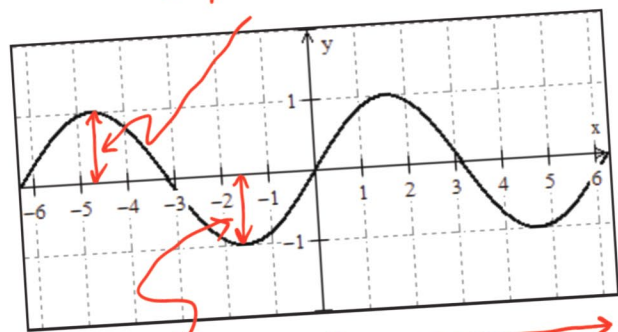
Periodic function – any function that repeats a pattern of y-values at regular intervals.

Cycle – one complete pattern of the y-values for a periodic function.

Period – the horizontal length of one cycle for a periodic or repeating function.

Visual Vocabulary

Use the graph below to label and identify the vocabulary terms.



Completely Editable 11.1

Lesson II.I: Exploring Periodic Data

Verbal Vocabulary

Periodic function – any function that repeats a pattern of y-values at regular intervals.

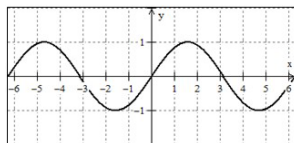
Cycle – one complete pattern of the y-values for a periodic function.

Period – the horizontal length of one cycle for a periodic or repeating function.

Amplitude – half the difference between the maximum and minimum values of the function.

Visual Vocabulary

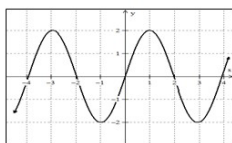
Use the graph below to label and identify the vocabulary terms.



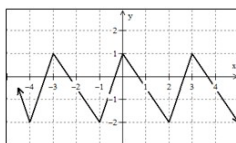
Identifying Cycles and Periods

EX #1: For each function, identify one cycle in two different ways. Then determine the period of the function.

A.



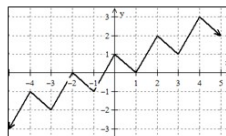
B.



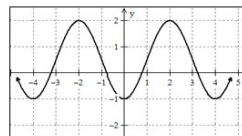
Identifying Periodic Functions

EX #2: Determine whether each function is or is not periodic. If it is, find the period.

A.



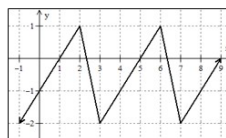
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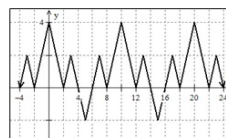
Finding Amplitude of a Periodic Function

EX #3: Find the amplitude of each function.

A.

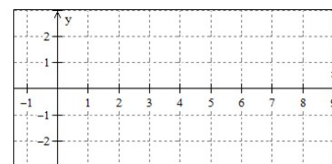


B.



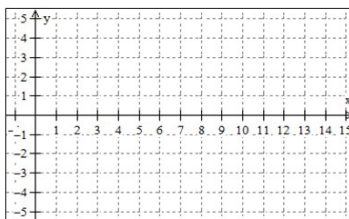
Real-World Connections

EX #4: Sound waves are produced by periodic changes in air pressure. Sketch the graph of a sound wave with a period of 0.004 second and an amplitude of 2.



Graphing Periodic Functions

EX #5: One cycle of a sound wave occurs from 0.002 sec. to 0.008 sec. The maximum value of the function is 4, and the minimum value is -4 . Sketch two complete cycles of the graph.



Putting It All Together

EX #6: Answer each of the following:

- A. A periodic function goes through 5 complete cycles in 4 minutes. What is the period of the function?

function's maximum value?

NOTES

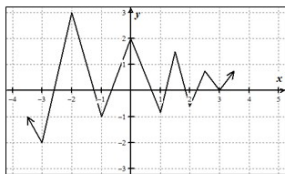
Name _____ Date _____

III

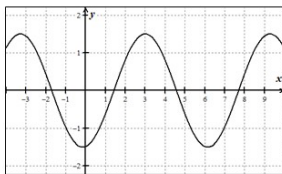
Exploring Periodic Data Practice

Problems 1 – 4, determine whether each function *is* or *is not* periodic. If it is, find the period.

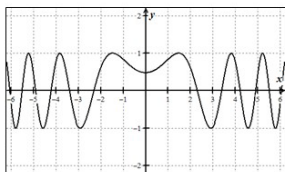
1.



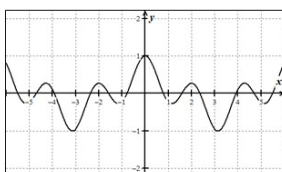
2.



3.

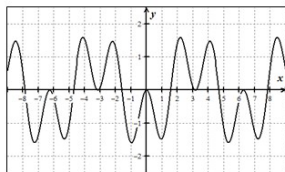


4.

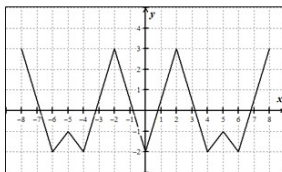


Problems 5 – 6, identify one cycle in two different ways. Then determine the period of the function.

5.

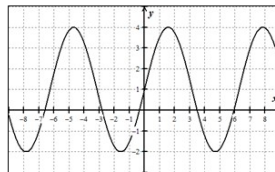


6.

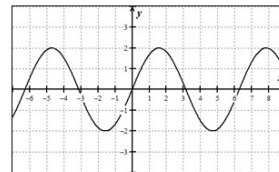


Problems 7 – 12, find the period and amplitude of each periodic function.

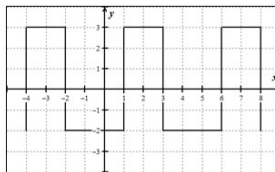
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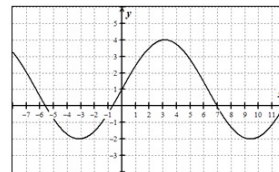
8.



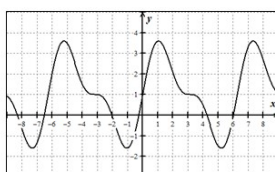
9.



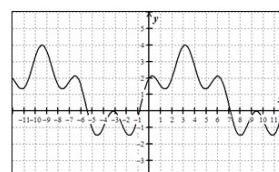
10.



11.

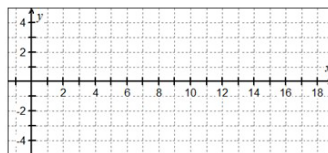


12.

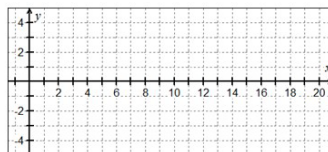


Problems 13 – 16, solve.

13. Sound waves are created by periodic changes in air pressure. Sketch two cycles of the graph of a sound wave with a period of 0.008 second and an amplitude of 3.



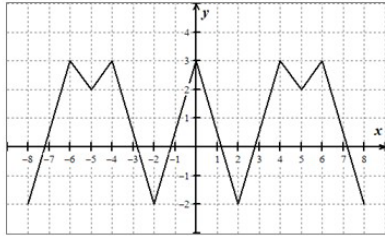
14. Your boat is bobbing slowly in the ocean over the waves while you are fishing. The range of the swells are 4 feet from the top of a swell to the bottom. If it takes you 10 seconds to travel from the top of one wave to the top of the next wave, sketch two complete cycles.



15. A periodic function goes through 14 complete cycles in 8 minutes. What is the period of the function?

Practice Sets

Lesson Warm-Ups



3. What is the value of the function at $x = 32$?

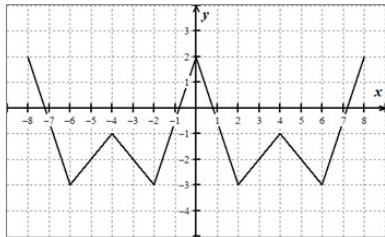
Name _____ Date _____ Period _____

Lesson II.I: Exploring Periodic Data

Warm-Up #2

1. Determine whether each function is or is not periodic. If it is, find the period.

2. Write the pattern of x -values where the y -values are -3 .

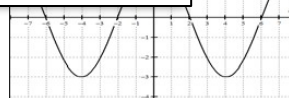


3. What is the value of the function at $x = 36$?

Form A

Period _____

Graph below to



1. Identify one cycle in two different ways.

2. Determine the period of the function.

3. State the amplitude of the function.

4. A periodic function goes through 4 complete cycles in 11 minutes. What is the period of the function?

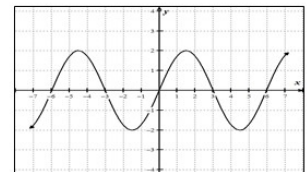
11.1 Exploring Periodic Data

Form B

Name _____

Date _____ Period _____

Questions #1-3: Use the graph below to answer the questions.



1. Identify one cycle in two different ways.

2. Determine the period of the function.

3. State the amplitude of the function.

4. A periodic function goes through 6 complete cycles in 21 minutes. What is the period of the function?

Daily Lesson Quiz

Grade: _____

Grade: _____