Last day's work: pp. 352-355 #1 – 8

Complete the cosine funcon sketch.

Note how it is different than y=sinx

Today's Learning Goal(s):

Date: _____

By the end of the class, I will be able to:

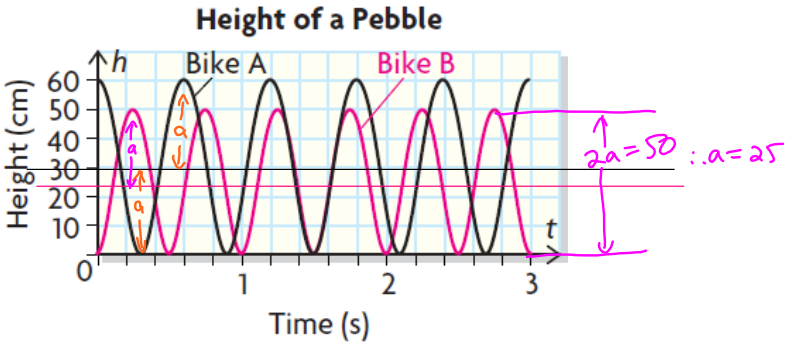
a) understand the properties and characteristics of sinusoidal functions.
b) relate the properties of sinusoidal functions to real world situations.

6.3 Interpreting Sinusoidal Functions

Date: May 16/18

Ex. 1

Two students are riding their bikes. A pebble is stuck in the tire of each bike. The two graphs show the heights of the pebbles above the ground (in terms of time).



1. What information can we get from these graphs? p.349 peak vs. trough
2. How are the graphs the same/different?
   Are both wheels the same diameter?
   Bike A: diameter = 60 cm Bike B: diameter = 50 cm
3. Calculate and compare:

a) the amplitude Bike A: amplitude = 30 cm Bike B: amplitude = 25 cm

$a = \frac{1}{2}(60 - 0)$
$= \frac{1}{2}(60)$

b) the period

Bike A: period = 0.6 sec
The pebble takes 0.6 s to complete 1 revolution.

Bike B: period = 0.5 sec
The pebble takes 0.5 s to complete 1 revolution.

Note: This is NOT the speed of the wheel!
We will compare speeds in part d)

c) the equation of the axis

Bike A: $\frac{60 + 0}{2} = 30$

The equation of the axis for Bike A is $h = 30$.

Bike A's wheel axle is 30 cm above the ground.

Bike B: $\frac{50 + 0}{2} = 25$

The equation of the axis for Bike B is $h = 25$.

Bike B's wheel axle is 25 cm above the ground.

d) the speed of each bike

Speed is equal to distance divided by time, so we first have to figure out how far each bike travels when the wheel completes one revolution. This distance is the circumference.

Circumference:

Bike A

$C_A = 2\pi r_A$
$C_A = 2\pi(30)$
$C_A = 60\pi$
$C_A \doteq 188.5$ cm
$C_A \doteq 1.885$ m

Speed:

$s_A = \frac{d}{t}$
$s_A = \frac{1.885}{0.6}$
$s_A \doteq 3.14$ m/s

Circumference:

Bike B

$C_B = 2\pi r_B$
$C_B = 2\pi(25)$
$C_B = 50\pi$
$C_B \doteq 157.1$ cm
$C_B \doteq 1.571$ m

Speed:

$s_B = \frac{d}{t}$
$s_B = \frac{1.571}{0.5}$
$s_B \doteq 3.14$ m/s

What does the amplitudes being different for these two graphs mean?
That the diameters for the two bike wheels are different

Are there any Homework Questions you would like to see on the board?

Last day's work: pp. 352-355 #1 – 8

Complete the cosine funcon sketch.

Note how it is different than y=sinx

Today's Homework Practice includes:

READ pp. 359-363 Ex.1 – "Need to Know"

(If time: ***Demo p.363 8a on TI-84*****)**

pp. 363-364 #1 – 4, 8, 9 [15,16]

pp. 370-372 #1 – 8, 13 [15]