

$$y = A \sin(Bx + C) + D$$

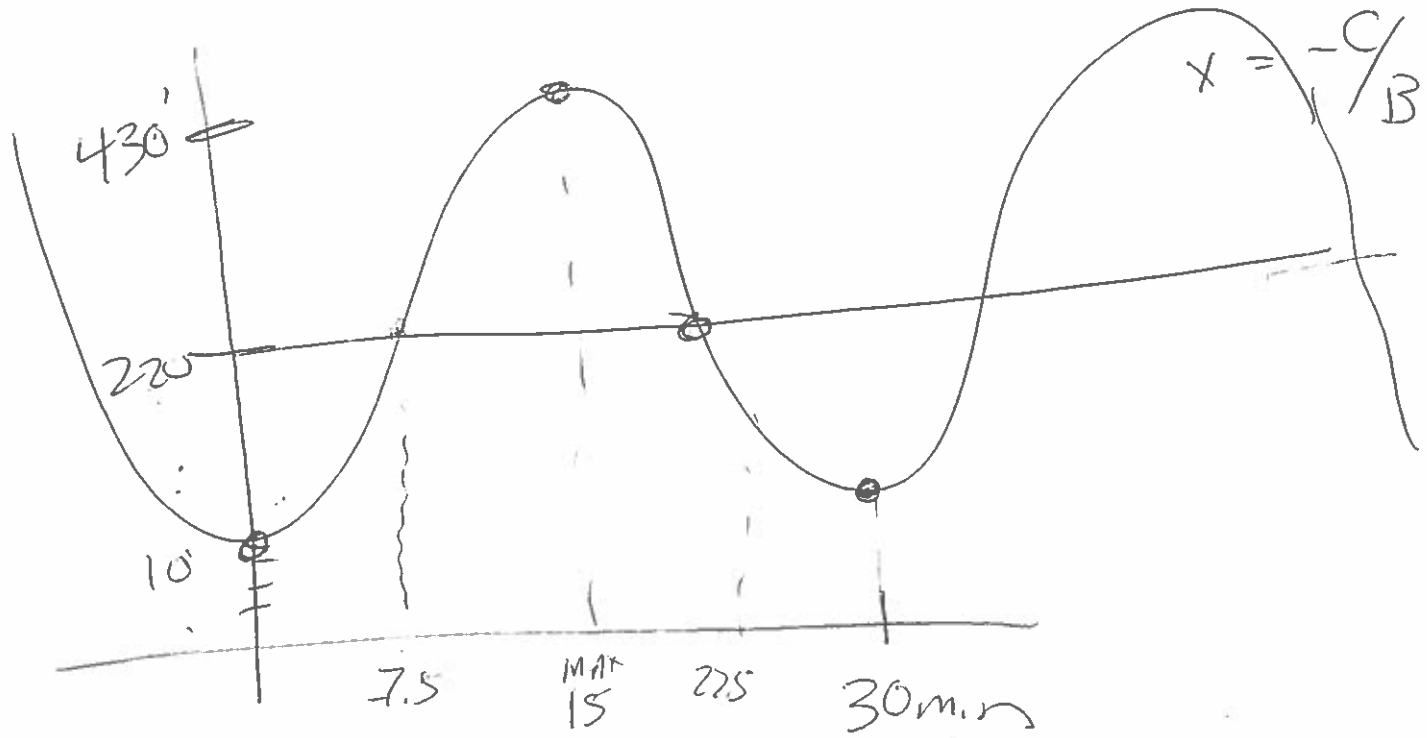
$$\text{Amp} = |A|$$

$$\text{Period} = \frac{2\pi}{|B|}$$

$$\text{P.S} = -C/B$$

$$\text{Phase} = D$$

$$\sin(\underline{\underline{Bx+c}}) \quad Bx+c=0$$



London Eye

$$30 = \frac{2\pi}{B}$$

Period: 30

$$\text{Amp} = \frac{\text{MAX} - \text{MIN}}{2}$$

$$= 210$$

$$y = 210 \sin\left(\frac{2\pi}{30}x + \frac{-\pi}{2}\right) + 220$$

$$\text{P.S.} = -c/B = 7.5$$

$$\text{Raised} \frac{\text{MAX} + \text{MIN}}{2}$$

$$= 220$$

$$c = -7.5 \cdot B$$

$$-7.5 \cdot \frac{2\pi}{30} = \frac{-\pi}{2} \quad \text{P.S.} = 7.5$$

$$\text{P.S.} = 7.5$$

$$y = 2 \cos\left(\frac{3}{2}x + \frac{\pi}{2}\right) - 0$$

1. Sm-sled by Period $\frac{2\pi}{\frac{3}{2}} = \frac{\pi}{3}$

2 Shifted Left by $-\frac{\pi}{3}$

$$\frac{3}{2}x + \frac{\pi}{2} = 0$$

$$3x + \pi = 0$$

$$x = -\frac{\pi}{3}$$

3 Stretched by 2

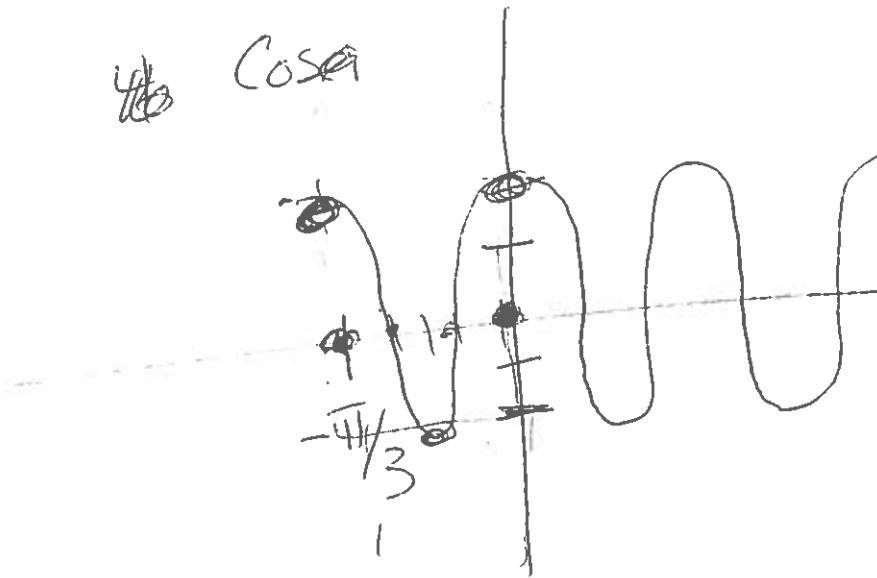
Period: $\frac{\pi}{3}$

P.S: $-\frac{\pi}{3}$

Amp: 2

Raise: 0

~~4~~ $\cos x$



$$\frac{-\pi}{3}$$

$$-\frac{\pi}{3} + \frac{1}{4}\left(\frac{\pi}{3}\right)$$

$$= \frac{\pi}{12}$$

$$-\frac{\pi}{3} + \frac{1}{2}\left(\frac{\pi}{3}\right)$$

$$= -\frac{\pi}{6}$$

$$-\frac{\pi}{3} + \frac{3}{4}\left(\frac{\pi}{3}\right)$$

$$= \frac{\pi}{12}$$

$$-\frac{\pi}{3} + \frac{\pi}{3}$$

$$= 0$$

Sin Recy

$$A = 210$$

$$B = .209$$

$$C = -1.57$$

$$D = 220$$

$$\text{Per} : 2\pi/B = 30$$

$$\text{Amp} : 210$$

$$\text{PS} : -C/B = 7.5$$

$$\text{Rounded } (D) 220$$

<p>GROUP NAME: <u>MATH Jellies</u></p> <p>Date: <u>8/24</u></p>	<p>Student Names (First and Last)</p> <p>Speaker/Presenter: <u>_____</u></p>
<p>Independent Variable (x-axis): <u>Rate</u></p> <p>Dependant Variable (y-axis): <u>Cost</u></p>	<p>Writer/Prep: <u>_____</u></p> <p>Leader/Collaborator: <u>_____</u></p>

Conclusion (in words):

Supporting Work:

[Faint handwritten notes]

$y = a \sin(bx + c) + d$

$a = 7.705$
 $b = 1.105$
 $c = -2.129$
 $d = 25.916$

Period = $2\pi / 1.125$
 Shift/Phase = $+ 2.129 / 1.125$
 $a = 7.705$
 Phase 25.916



GROUP NAME: We Love Math
 Date: 4/15/18
 Independent Variable (x-axis): Time (years)
 Dependent Variable (y-axis): Number of Prescription Drug Prescriptions in Trenton

Student Names (First and Last)
 Speaker/Presenter: Craig Susskind
 Writer/Prep: Zachary Labbanz
 Leader/Collaborator: —

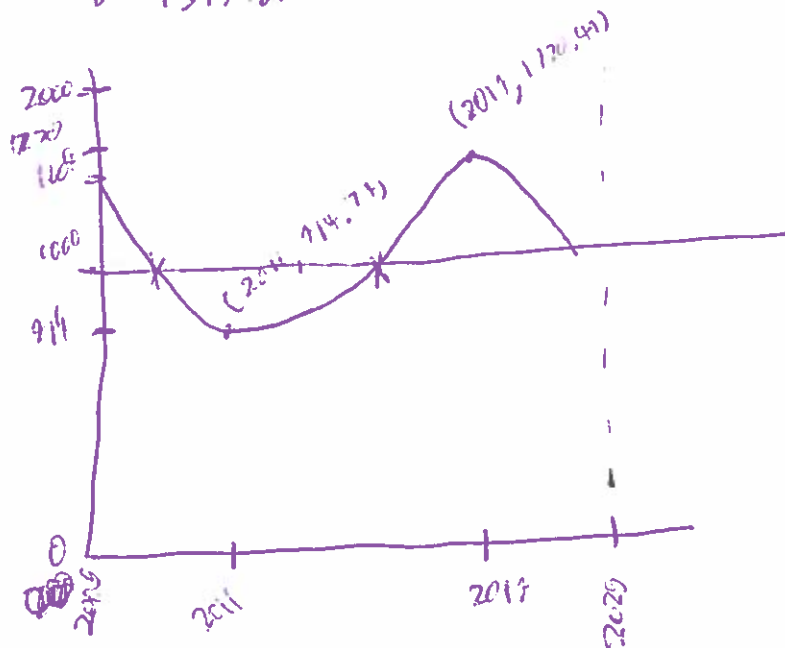
Conclusion (in words):

Supporting Work:

X	Y
2007	1,157
2008	1,392
2009	1,099
2010	854
2011	731
2012	1,012
2013	1,025

$$y = 402.87 \cdot \sin(.3977x + .387) + 1317.61$$

$a = 402.87$
 $b = .3977$
 $c = .387$
 $d = 1317.61$



Amplitude: 402.87
 Period: 15.99
 Phase shift: -.185
 Raised: 1317.61

Intersects $y = 1000$ @
 $x = 2012.7$ and $x = 2004.33$

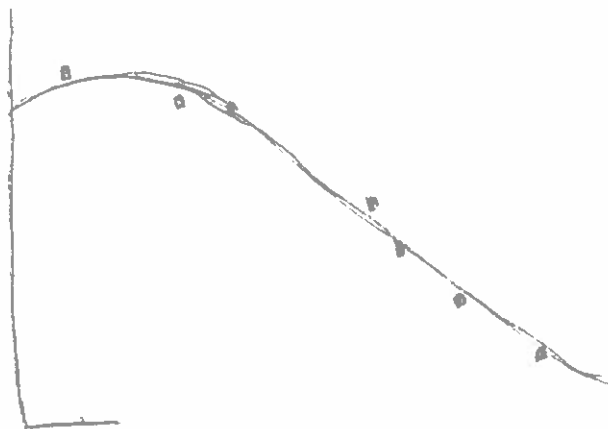
GROUP NAME: _____	Student Names (First and Last) _____
Date: _____	Speaker/Presenter: _____
Independent Variable (x-axis): <u>Price of product</u>	Writer/Prep: <u>Clifford V.</u>
Dependant Variable (y-axis): <u>Sale of Price</u>	Leader/Collaborator: _____

Conclusion (in words):

Supporting Work:

X	Y
20	70
25	75
30	70
35	50
40	30
45	20
50	10

$y = a \sin(bx + c) + d$
 $a = 37.5$
 $b = 0.005591062$
 $c = 710 - 19.555$
 $d = 50.05$



Amplitude $\rightarrow 37.5$
 period $\rightarrow \frac{2\pi}{b}$
 $\Rightarrow 220$

GROUP NAME:	Student Names (First and Last)
Date: <u>4/15/14</u>	Speaker/Presenter: <u>Melissa Scarpatti</u>
Independent Variable (x-axis): <u>Time (hours)</u>	Writer/Prep: <u>Angelina Ippolito</u>
Dependant Variable (y-axis): <u>Wait Time (mins)</u>	Leader/Collaborator: <u>Victor Enriquez</u>

Conclusion (in words):

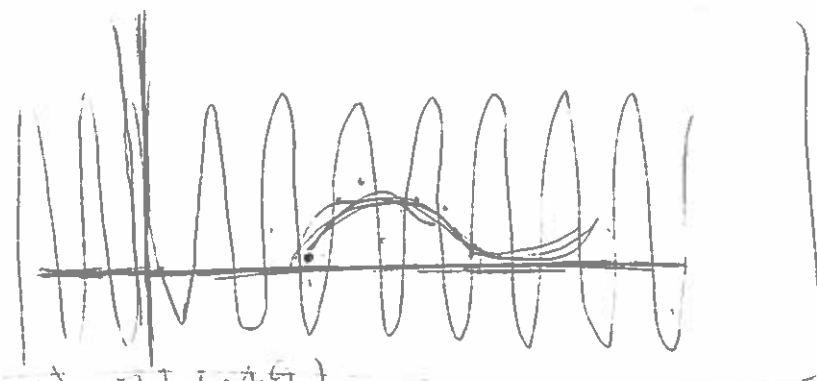
Supporting Work:

$$a = 74.6491$$

$$b = 1.5625$$

$$c = 1.5589$$

$$d = 31.3151$$



amplitude: $(|a|) = 74.6491$

period: $(2\pi/b) = \frac{2\pi}{1.5625}$ (in calc) = 1.1816...

enter vars 2nd enter

phase shift: $(-\frac{c}{b})$ (enter into calc)

negative $\left(\frac{\text{vars: } 2 \text{nd } c \text{ enter}}{\text{vars: } 2 \text{nd } b \text{ enter}} \right) = -1.0375$

divided by

vertical shift: $(d) = 31.3151$

Sin reg 1, L1, L2, 16, 1

GROUP NAME: Precalc Smadley

Date: 4/15/14

Student Names (First and Last)

Speaker/Presenter: Dorian Thomas

Writer/Prep: Alicia Contreras

Leader/Collaborator: Zelboe Baerzjev

Independent Variable (x-axis): years

Dependant Variable (y-axis): New York Pop. Growth

Conclusion (in words):

Supporting Work:

Amplitude = 1.201

Raised by 11.741....

Period = $\frac{2\pi}{1.7705} = 3.54...$

Phase Shift = $(-1.5076 / 1.7705) = -0.8517...$

$$y = a \cdot \sin(b(x+c)) + d$$

$a = 1.2013$
 $b = 1.7705018468$
 $c = -1.5076$
 $d = 11.7410746$



GROUP NAME:

Date: Team Chem

Student Names (First and Last)

Benjamin T. ...

Speaker/Presenter:

Benjamin T. ...

Independent Variable (x-axis):

Years

Writer/Prep:

Kevin Leonard

Dependent Variable (y-axis):

Sales of cigarettes in N.J.

Leader/Collaborator:

Eli Amponza

Conclusion (in words):

Supporting Work:

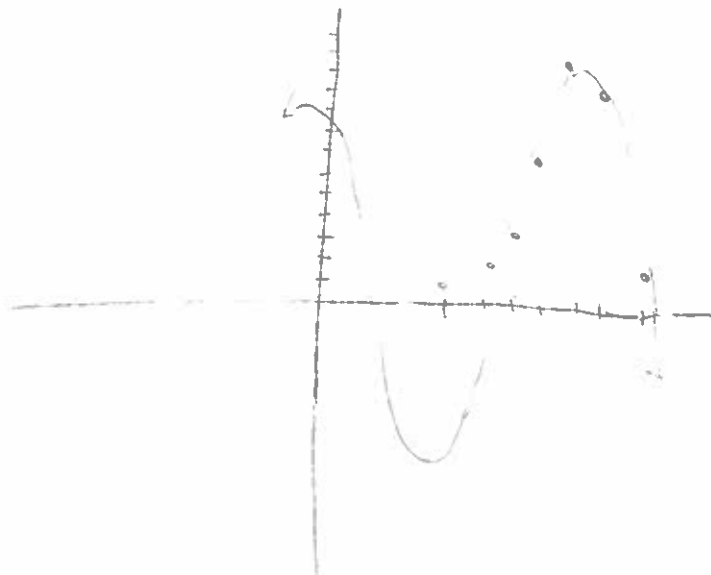
x	y
2000	1.8
2002	2.5
2004	4.8
2006	12.7
2008	19.4
2010	17.8
2012	3.2

x: years

y: sales of cigarettes (in millions) in New Jersey

2 reg

$$2339.9... \approx (4.52...x - 2.39...) + 10.4$$



GROUP NAME: <u>This Group</u> Date: <u>4/15/14</u> <u>Best Group</u>	Student Names (First and Last) Speaker/Presenter: <u>Jesse Schrumman</u>
Independent Variable (x-axis): <u>Time in Months</u> Dependant Variable (y-axis): <u>Price of Bitcoins</u>	Writer/Prep: <u>Billy Bafferty</u> Leader/Collaborator: _____

Conclusion (in words):

Supporting Work:

Sin Regression $y = a \cdot \sin(bx + c) + d$

$$a = 177.444\dots$$

$$b = .906\dots$$

$$c = .492\dots$$

$$d = 125.125\dots$$

Intersections

$$x = 0 \text{ At } 1.718\dots$$

$$x = 0 \text{ At } 4.588\dots$$

$$\text{Amplitude} = 177.444\dots \quad \text{New} = ~~493.00~~ 510.317\dots$$

$$\text{Period} = \frac{2\pi}{b} = 6.9329\dots \quad \text{New} = 20$$

$$\text{Phase Shift} = \frac{-c}{b} = -.5437\dots \quad \text{New} = 8.153\dots$$

$$\text{Raised} = 125.125\dots \quad \text{New} = 459.327$$

GROUP NAME: Love science

Date: 04/15

Student Names (First and Last)

Speaker/Presenter: Lore Kenneh

Writer/Prep: Yvette Aguilar

Leader/Collaborator: Marta Truszkowski

Independent Variable (x-axis): _____

Dependant Variable (y-axis): _____

Conclusion (in words):

Supporting Work:

sin neg

$a = 25.66$

$b = 0.03$

$c = -2.45$

$d = 51.40$

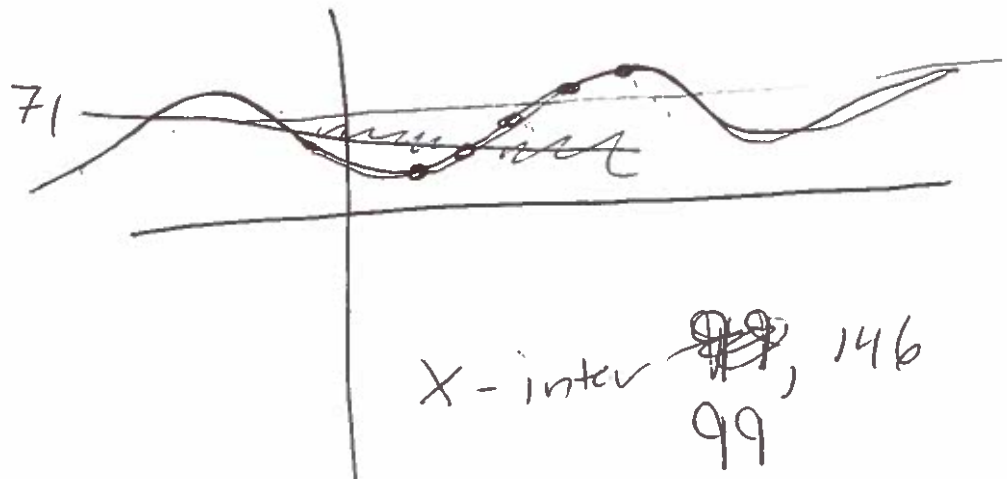
period = $2\pi/B = 209.44$

amp = 25.66

p.s. = $-c/B = 81.67$

raised = 51.40

X	Y
24	24
48	35
72	47
96	67
120	78



GROUP NAME: Newbies

Student Names (First and Last)

Date: 4/15/14

Speaker/Presenter: _____

Independent Variable (x-axis): price of widgets

Writer/Prep: Li-Yang Lin

Dependant Variable (y-axis): Revenue

Leader/Collaborator: Khrystyna Pavlyuchenko

Conclusion (in words):

Supporting Work:

Date	Revenue
400	4000
900	14000
1000	17000
1250	27500
2000	28000
3000	15000

$$y = a \sin(bx + c) + d$$

$$a = 13451.68$$

$$b = 0.002637$$

$$c = 69501$$

$$d = 25255.617$$

$$\text{Amplitude} = 13451.68$$

$$\text{Period} = \frac{2\pi}{0.002637} = \frac{1727.28}{0.002637} = 65157$$

$$\text{Phase shift} = -536.11$$

$$\text{Raised} = 25255.617$$

$$\text{first intersection} = x = 1290.7577 \quad y = 30000$$

$$\text{second} \quad \dots \quad = x = 1955.71924 \quad y = 30000$$

