

Howard Seeherman: Solutions

Problem #1

Since one liter = 1000 ml, then 3 liters per hour = 3000 milliliters per hour.

Since there are 60 minutes in an hour, divide by 60 to get the number of milliliters per minute (3000/60 gives 50 milliliters per minute).

Since each milliliter is 10 drops, multiply by 10 to get the number of drops per minute (50 x 10 gives 500 drops per minute).

3*1000	3000
3000/60	50
50*10	500

Problem #2A

Approximate the points on the graph and place the values in L1 and L2 where L1 represents the speed and L2 represents the Heart Rate.

(10, 40), (15, 43.33), (20,46.66), (25, 50), (30, 53.33)

L1	L2	L3	2
10	40	-----	
15	43.33		
20	46.66		
25	50		
30	53.33		








L2(6) =			

EDIT	TESTS
1:	1-Var Stats
2:	2-Var Stats
3:	Med-Med
4:	LinReg(ax+b)
5:	QuadReg
6:	CubicReg
7:	QuartReg

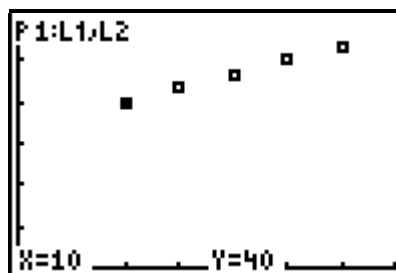
```
LinReg(ax+b) L1,  
L2,Y1
```

```
LinReg  
y=ax+b  
a=.6666  
b=33.332  
r2=.99999997299  
r=.999999865
```

Graph the points from the STATPLOT menu

```
Plot2 Plot3  
Off  
Type:     
    
Xlist:L1  
Ylist:L2  
Mark:  + .
```

```
WINDOW  
Xmin=0  
Xmax=35  
Xscl=5  
Ymin=0  
Ymax=60  
Yscl=10  
Xres=1
```

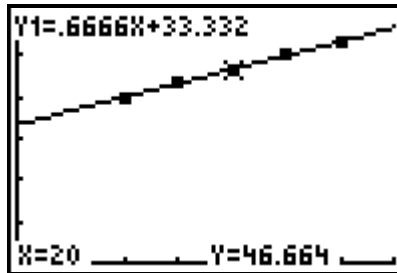


Computed linear regression of the line through the points shown above.

```

2101 Plot2 Plot3
\Y1=.6666X+33.33
2
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
    
```

Graph the line through the points and check for predicted accuracy by tracing.



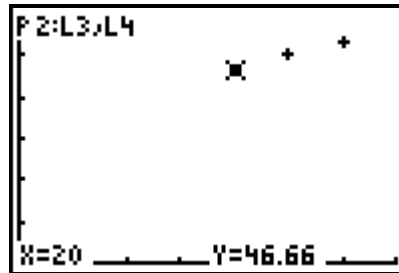
Problem #2B

Find the equation of the parabola that fits three points on this curve.

L3	L4	L5	5
20	46.66		
25	50		
30	53.33		
-----	-----		
L5(1)=			

```

Plot1 2102 Plot3
On 0:0
Type: [ ] [ ] [ ]
      [ ] [ ] [ ]
Xlist:L3
Ylist:L4
Mark: [ ] [ ] .
    
```



```

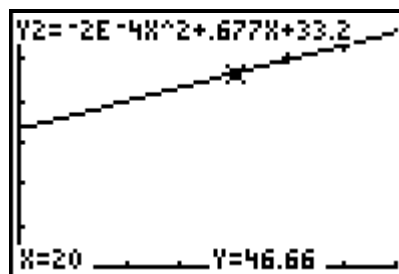
QuadReg
y=ax2+bx+c
a=-2E-4
b=.677
c=33.2
R2=1

```

```

Plot1 Plot3
\Y1=
+Y2=-2E-4X2+.677X+33.2
\Y3=
\Y4=
\Y5=
\Y6=

```



How close does this come to fitting all five points? Very close at this range.

```

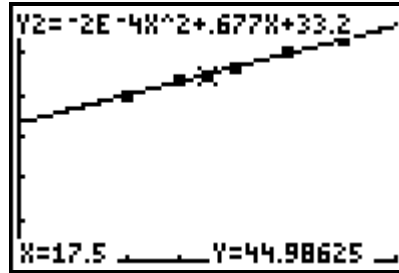
WINDOW
Xmin=0
Xmax=35
Xscl=5
Ymin=0
Ymax=60
Yscl=10
Xres=1

```

```

ZOOM1 ZOOM2 Plot3
\Y1=.6666X+33.33
2
\Y2=-2E-4X^2+.67
7X+33.2
\Y3=
\Y4=
\Y5=

```



The "A" value of the parabola is close to zero, the difference in the x-coefficients and the constant values is a very small value. Thus, in this range, the parabola is quite similar to the linear function.

But in a larger range, the differences in the equations may be observed.

```

WINDOW
Xmin=-1000
Xmax=1000
Xscl=100
Ymin=-600
Ymax=600
Yscl=100
Xres=1

```

