

# Data for the hanging slinky

## Spring 2023

```
In[*]:= measurements = {2 + 5/8, 5 + 1/8, 7 + 3/8, 9 + 3/4, 12, 14 + 1/4, 16 + 5/8,
    18 + 5/8, 20 + 5/8, 22 + 1/2, 24 + 1/2, 26 + 1/8, 27 + 7/8, 29 + 3/4, 31 + 1/2,
    33, 34 + 1/2, 35 + 3/4, 37 + 1/4, 38 + 5/8, 39 + 7/8, 41 + 1/8, 42 + 1/4,
    43 + 1/4, 44 + 1/4, 45 + 1/4, 46 + 1/8, 46 + 7/8, 47 + 5/8, 48 + 1/4, 48 + 7/8}
```

```
Out[*]:= { $\frac{21}{8}$ ,  $\frac{41}{8}$ ,  $\frac{59}{8}$ ,  $\frac{39}{4}$ , 12,  $\frac{57}{4}$ ,  $\frac{133}{8}$ ,  $\frac{149}{8}$ ,  $\frac{165}{8}$ ,  $\frac{45}{2}$ ,  $\frac{49}{2}$ ,  $\frac{209}{8}$ ,  $\frac{223}{8}$ ,  $\frac{119}{4}$ ,  $\frac{63}{2}$ , 33,  $\frac{69}{2}$ ,
 $\frac{143}{4}$ ,  $\frac{149}{4}$ ,  $\frac{309}{8}$ ,  $\frac{319}{8}$ ,  $\frac{329}{8}$ ,  $\frac{169}{4}$ ,  $\frac{173}{4}$ ,  $\frac{177}{4}$ ,  $\frac{181}{4}$ ,  $\frac{369}{8}$ ,  $\frac{375}{8}$ ,  $\frac{381}{8}$ ,  $\frac{193}{4}$ ,  $\frac{391}{8}$ }
```

```
In[*]:= oludata = {48 + 1/2, 49, 49.5, 50, 50 + 3/8, 50 + 7/8, 51, 51 + 1/4};
```

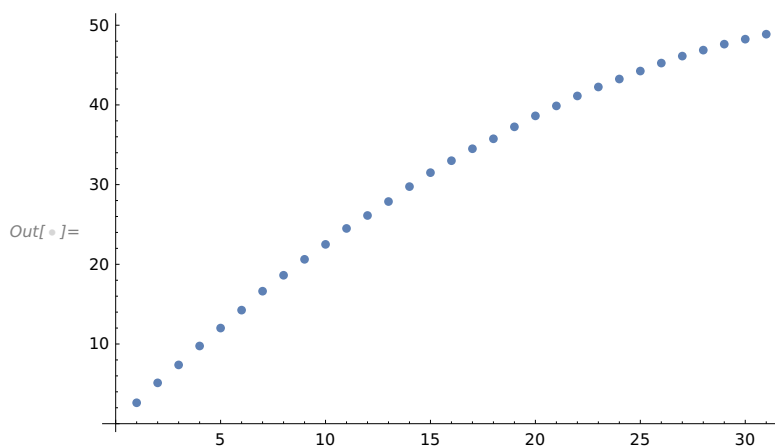
Olu's data overlaps mine. This will be something for you to figure out.

```
sabrinadata = {51 + 3/8, 51 + 5/8}
```

If we have 42 measurements, then 51+5/8 is the last and forty-second. If so, then 51+3/8 is taken as the thirty-seventh should be 51+3/8 with four intervening coil measurements.

That is to say, Sabrina has made two measurements; one is the measurement of the very (lowest) end of the slinky. The other is not the previous coil measurement, but there are five coils "bunched" at the end, and it is not easy/practical to measure the position of those coils.

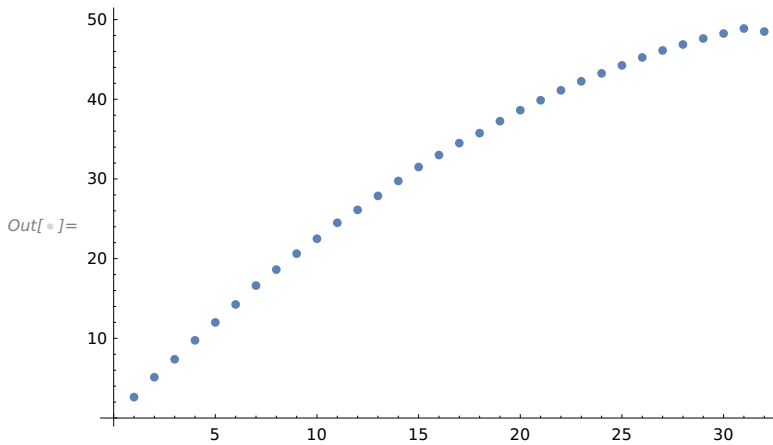
```
In[*]:= ListPlot[measurements]
```



In[\*]:= Append[measurements, oludata[[1]]]

Out[\*]=  $\left\{ \frac{21}{8}, \frac{41}{8}, \frac{59}{8}, \frac{39}{4}, 12, \frac{57}{4}, \frac{133}{8}, \frac{149}{8}, \frac{165}{8}, \frac{45}{2}, \frac{49}{2}, \frac{209}{8}, \frac{223}{8}, \frac{119}{4}, \frac{63}{2}, 33, \frac{69}{2}, \frac{143}{4}, \frac{149}{4}, \frac{309}{8}, \frac{319}{8}, \frac{329}{8}, \frac{169}{4}, \frac{173}{4}, \frac{177}{4}, \frac{181}{4}, \frac{369}{8}, \frac{375}{8}, \frac{381}{8}, \frac{193}{4}, \frac{391}{8}, \frac{97}{2} \right\}$

In[\*]:= ListPlot[Append[measurements, oludata[[1]]]

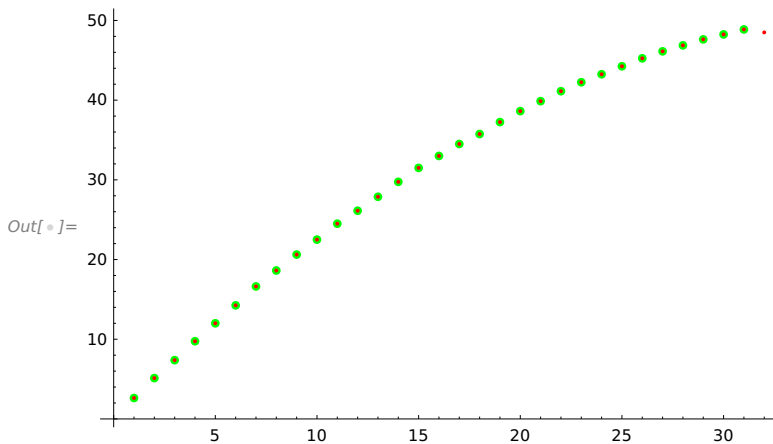


In[\*]:= olulast = {48 + 1/2, 49, 49.5, 50, 50 + 3/8, 50 + 7/8, 51, 51 + 1/8};

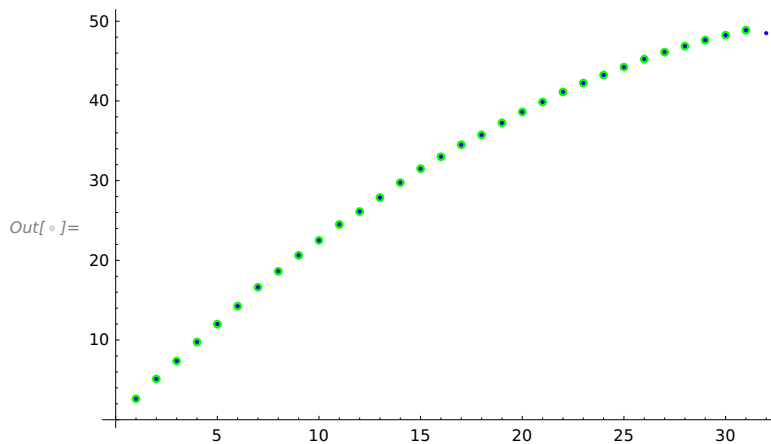
oluplus = Append[measurements, oludata[[1]]];

In[\*]:= lastplus = Append[measurements, olulast[[1]]];

In[\*]:= end = Show[ListPlot[measurements, PlotStyle -> Green],  
 ListPlot[Append[measurements, oludata[[1]]],  
 PlotStyle -> {Red, AbsolutePointSize[2]}, PlotRange -> All]



```
In[ ]:= Show[end, ListPlot[lastplus, PlotStyle -> {Blue, AbsolutePointSize[2]}, PlotRange -> All]
```



Something clearly looks strange with the last data point here. This must have something to do with the overlap, but I will leave it to you to figure that out. (I will do the same, but I haven't done it yet.)

Keep a couple things in mind: (1) The data may need to be critically evaluated to determine if any errors in measurement might have been made, or were made.

(2) We can go back and attempt to verify and/or correct the data by measuring again.