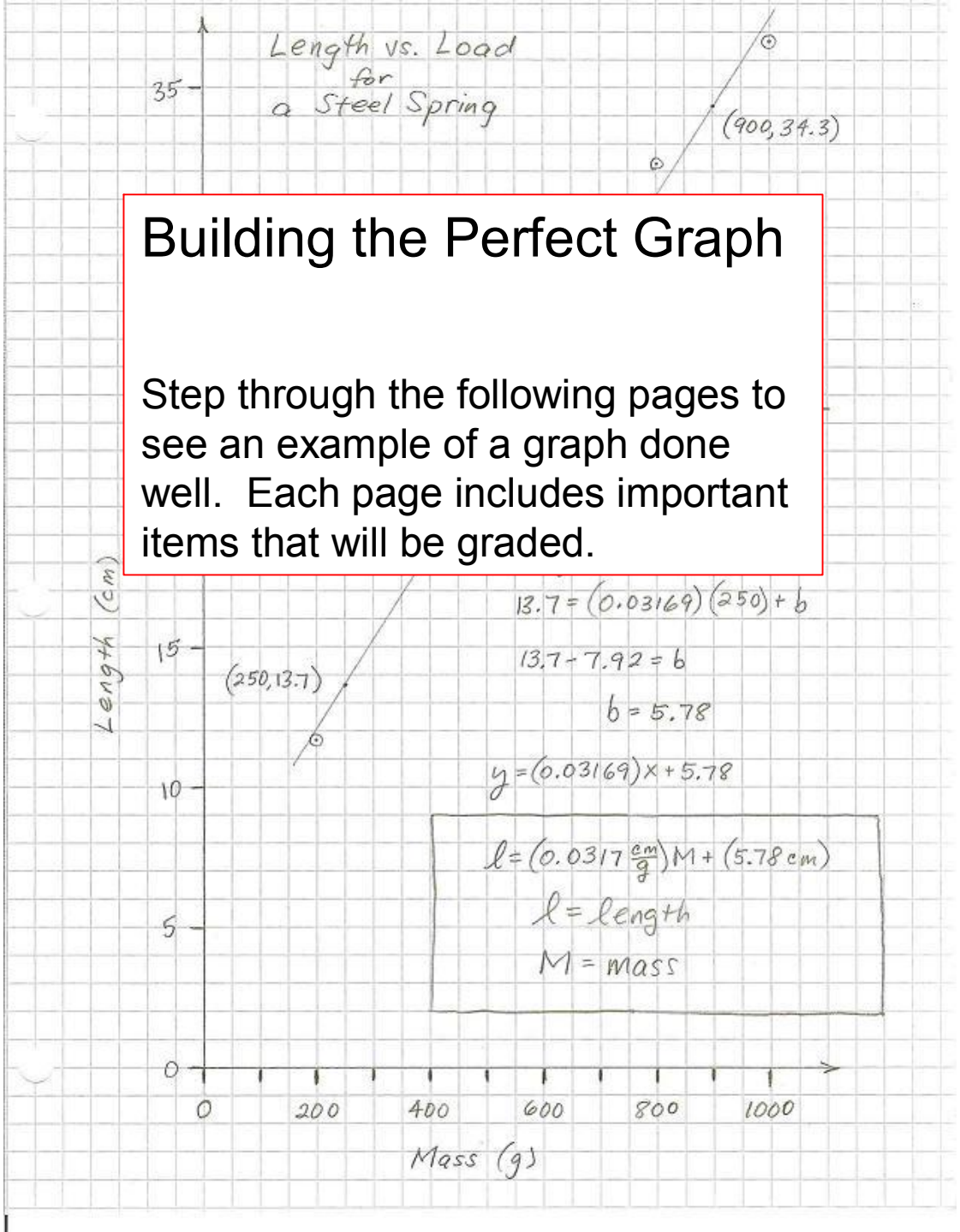
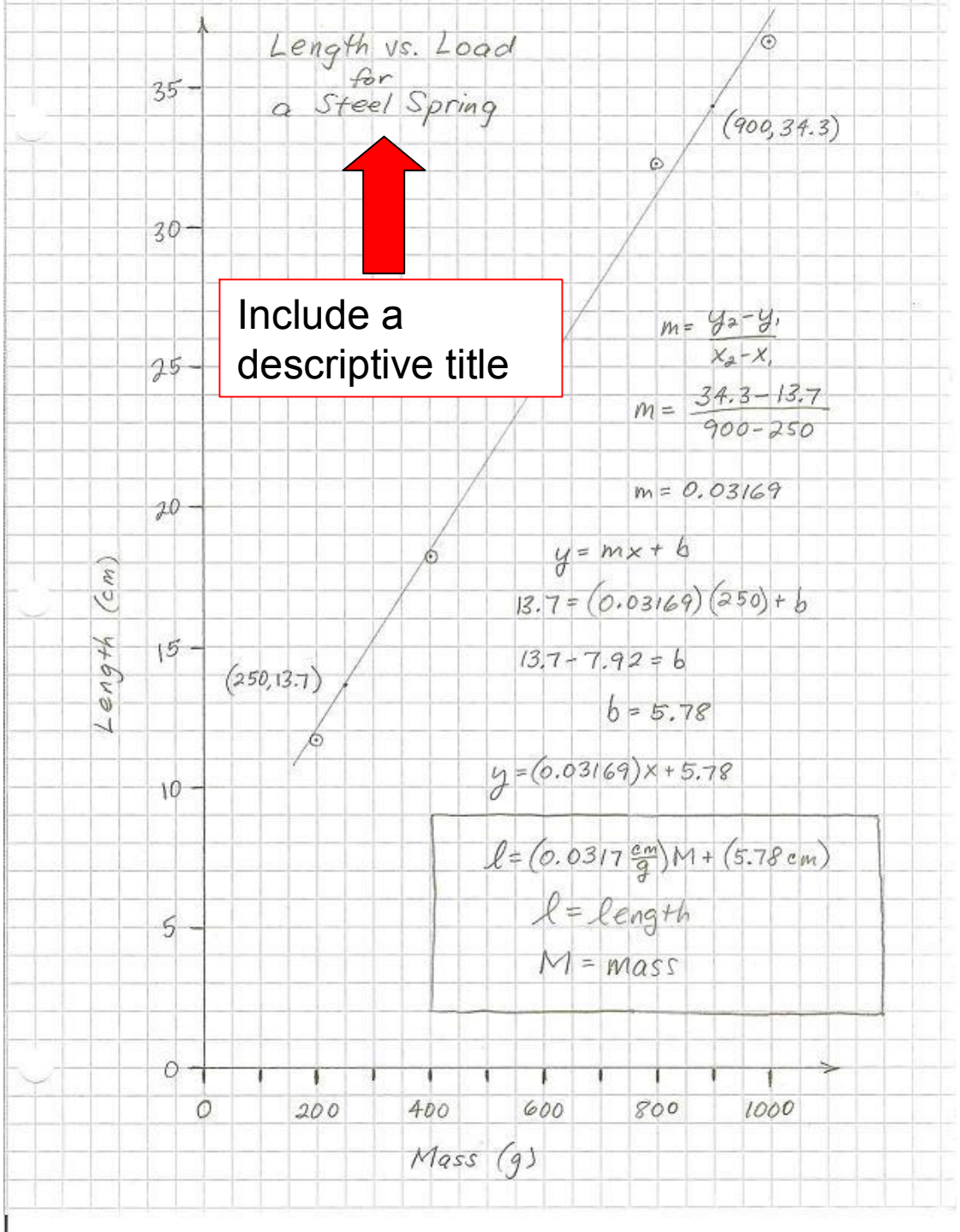
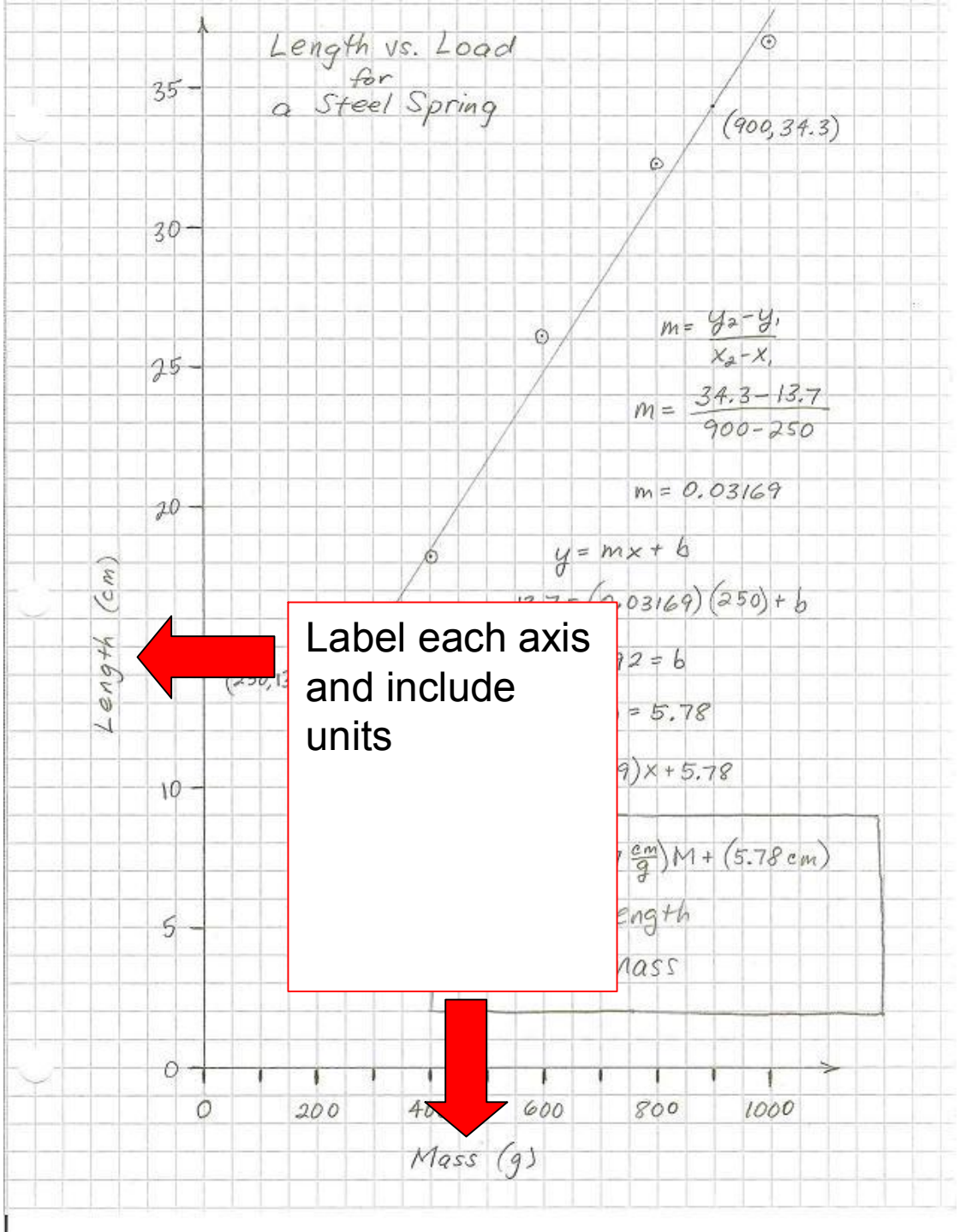
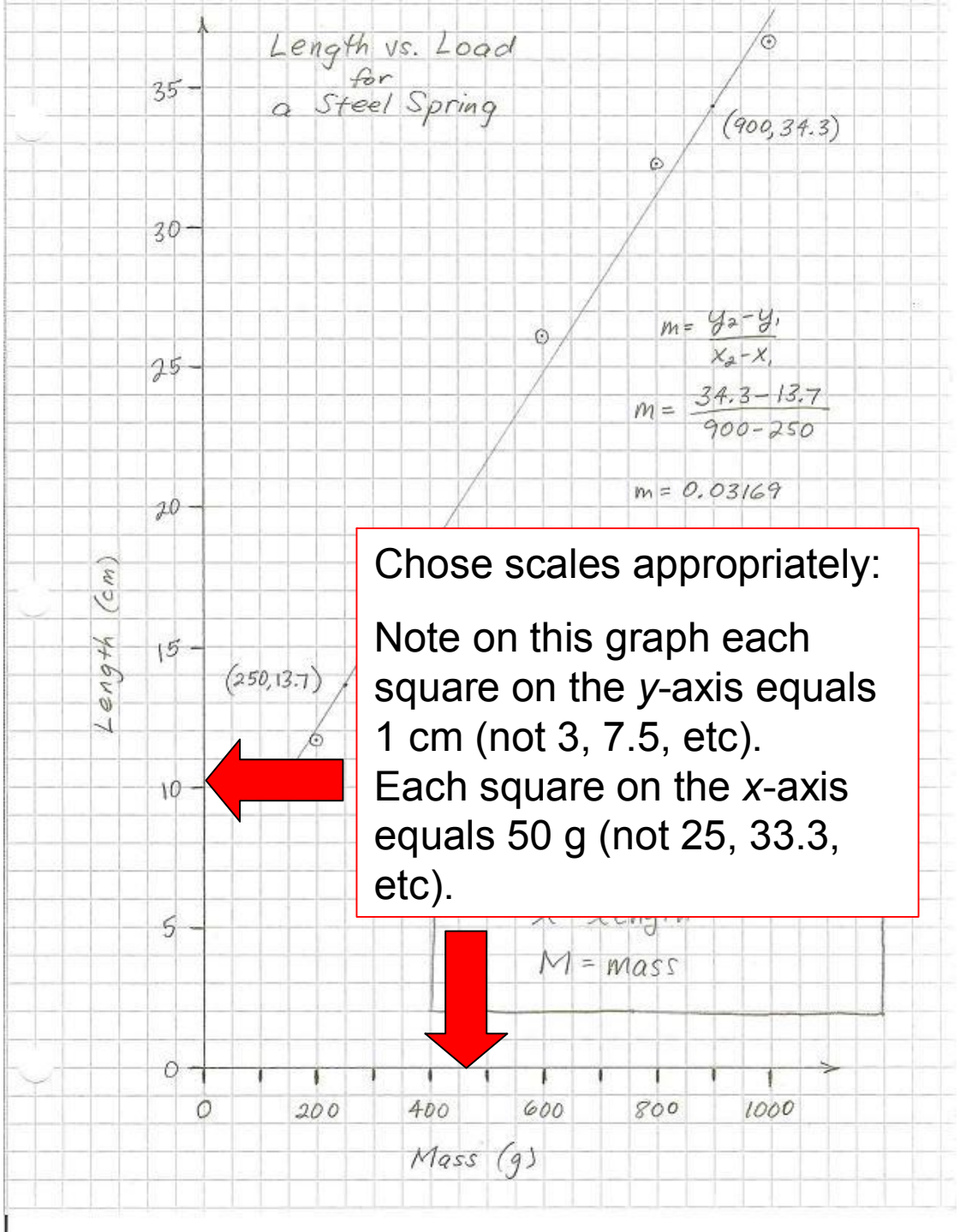

Length vs. Load
for
a Steel Spring
35
(900,34.3)
Building the Perfect Graph
Step through the following pages to see an example of a graph done well. Each page includes important items that will be graded.
Length (cm)
15
(250,13.7)
13.7 = (0.03169)(250) + b
13.7 - 7.92 = b
b = 5.78
y = (0.03169)x + 5.78
ℓ = (0.0317 cm/g)M + (5.78 cm)
ℓ = length
M = mass
10
5
0
0
200
400
600
800
1000
Mass (g)

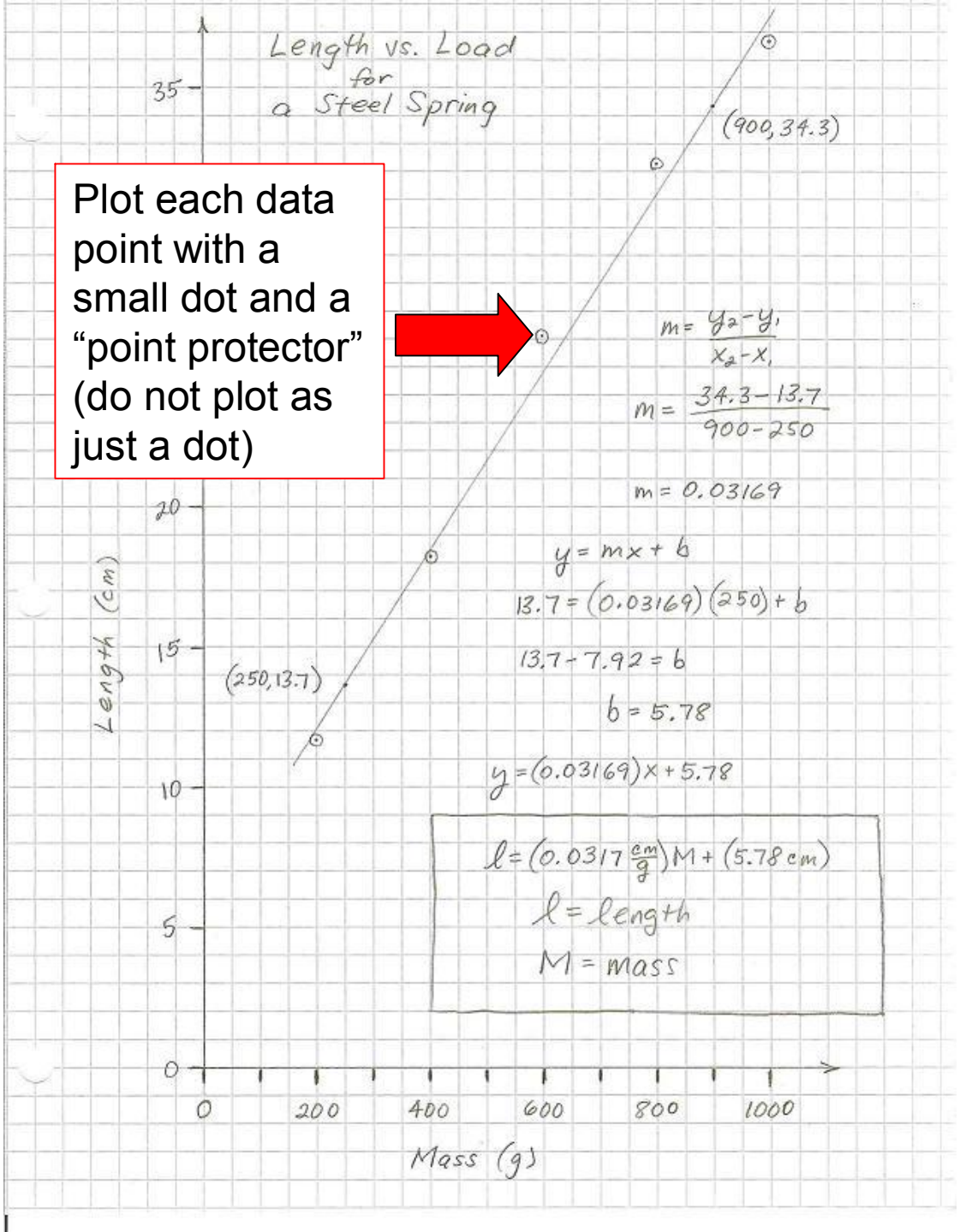

Length vs. Load
for
a Steel Spring
Include a descriptive title
(900, 34.3)
(250, 13.7)
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{34.3 - 13.7}{900 - 250}$
$m = 0.03169$
$y = mx + b$
$13.7 = (0.03169)(250) + b$
$13.7 - 7.92 = b$
$b = 5.78$
$y = (0.03169)x + 5.78$
$\ell = (0.0317 \frac{cm}{g})M + (5.78\,cm)$
ℓ = length
M = mass
Length (cm)
Mass (g)
0
5
10
15
20
25
30
35
0
200
400
600
800
1000


Length vs. Load
for
a Steel Spring
(900, 34.3)
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{34.3 - 13.7}{900 - 250}$
$m = 0.03169$
$y = mx + b$
$= 5.78$
$)x + 5.78$
$\frac{cm}{g})M + (5.78\,cm)$
ength
lass
Length (cm)
Mass (g)
0
5
10
20
25
30
35
0
200
600
800
1000
Label each axis and include units

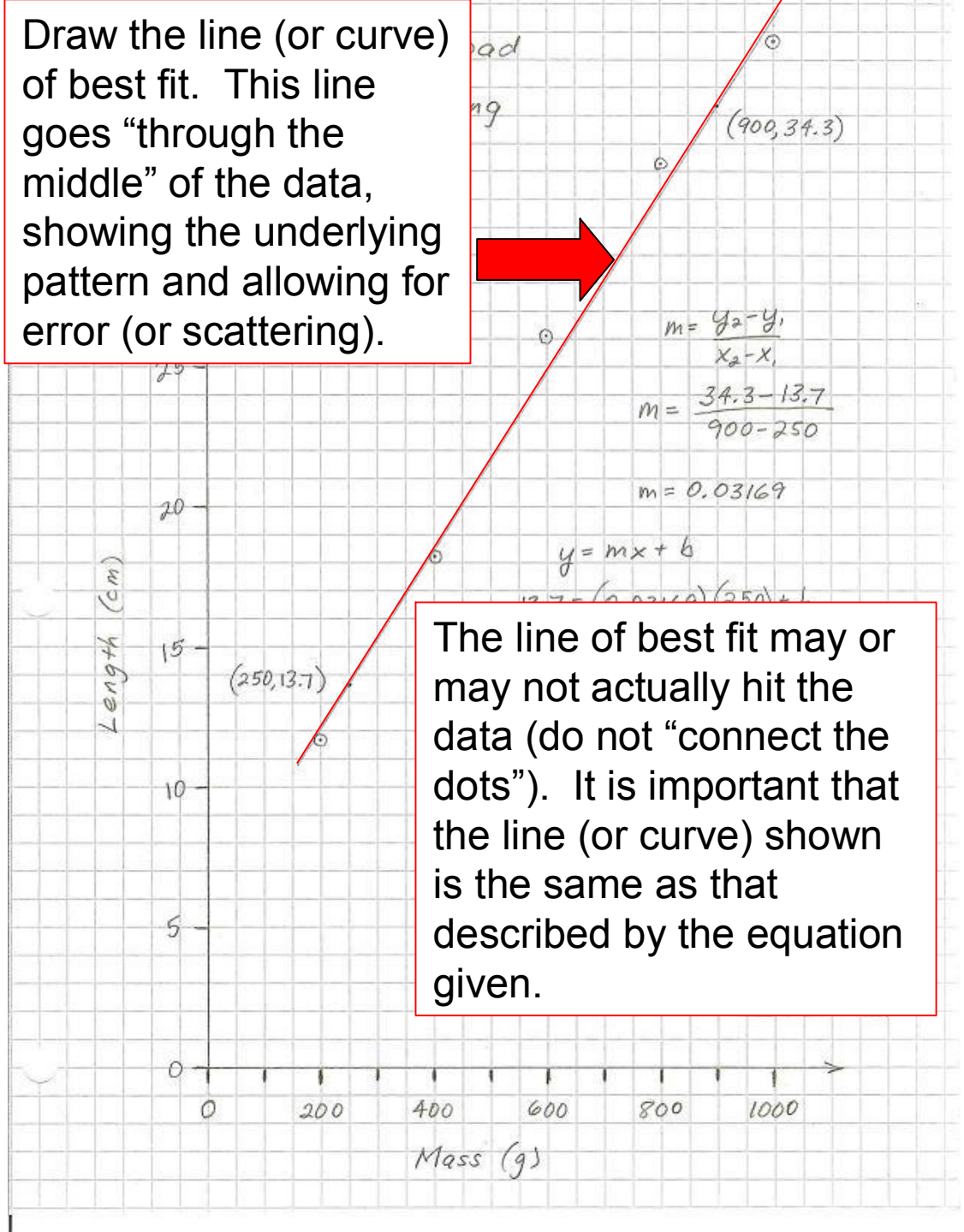


Chose scales appropriately:

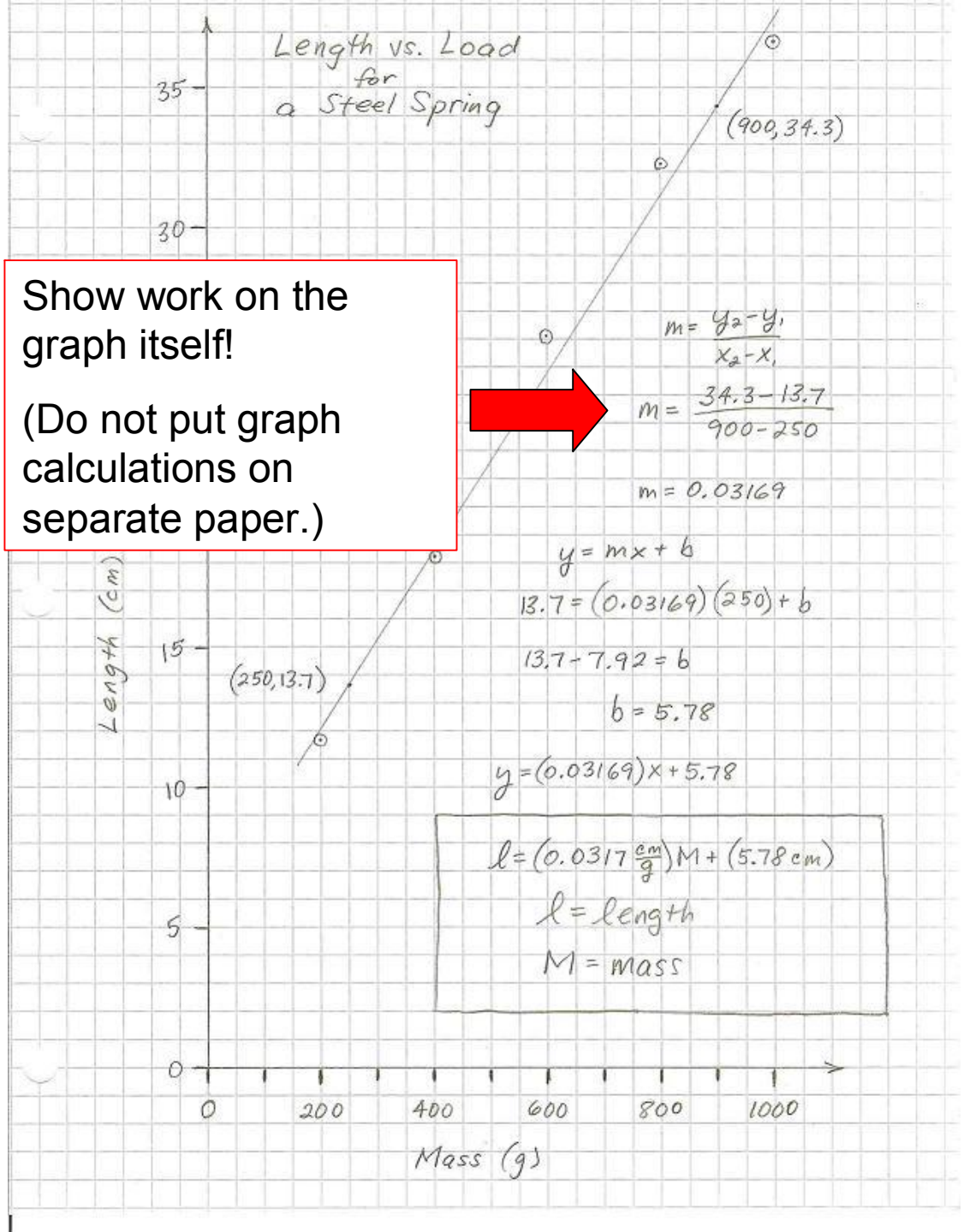
Note on this graph each square on the *y*-axis equals 1 cm (not 3, 7.5, etc).
Each square on the *x*-axis equals 50 g (not 25, 33.3, etc).

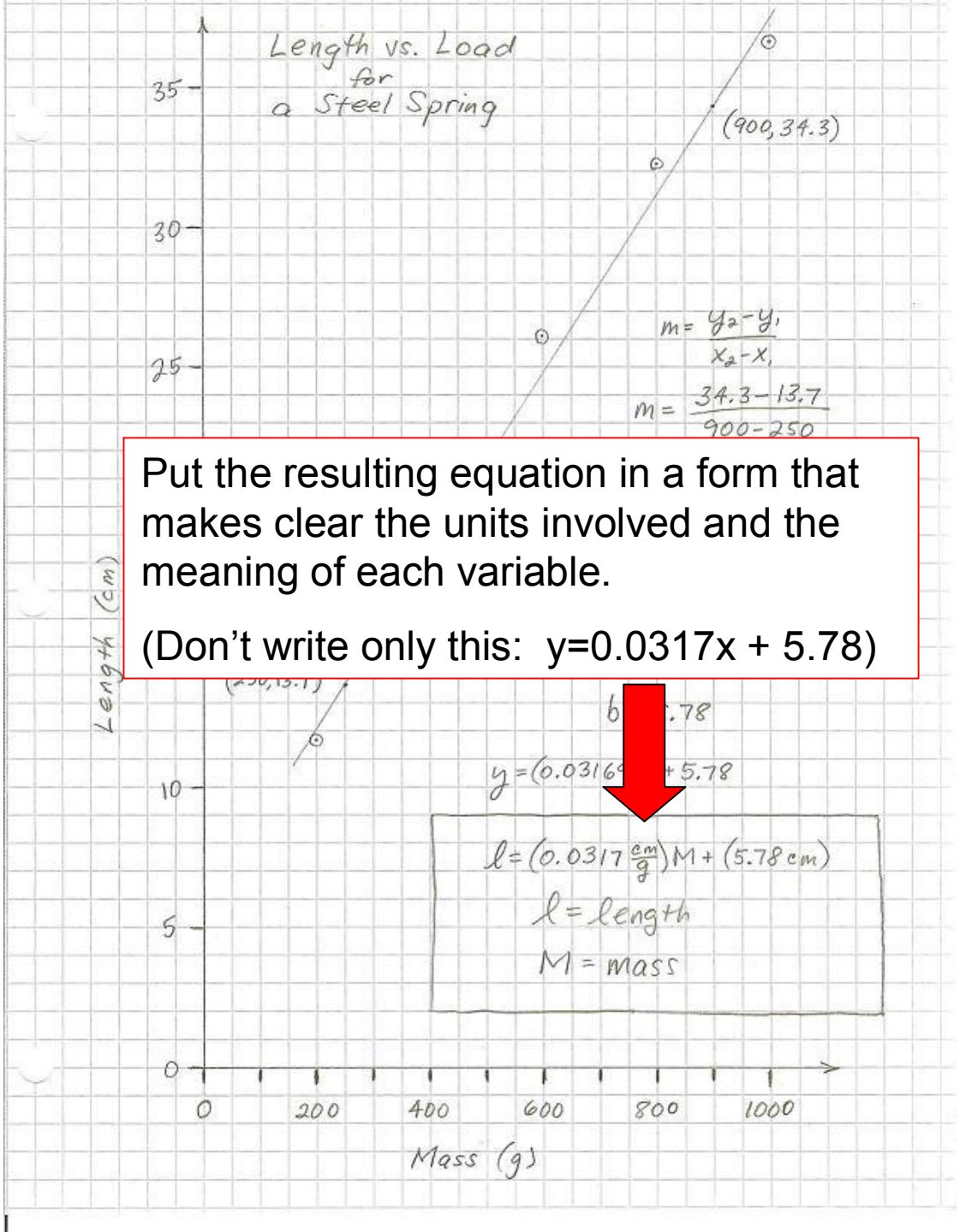

Length vs. Load
for
a Steel Spring
Plot each data point with a small dot and a "point protector" (do not plot as just a dot)
(900, 34.3)
(250, 13.7)
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{34.3 - 13.7}{900 - 250}$
$m = 0.03169$
$y = mx + b$
$13.7 = (0.03169)(250) + b$
$13.7 - 7.92 = b$
$b = 5.78$
$y = (0.03169)x + 5.78$
$\ell = (0.0317 \frac{cm}{g})M + (5.78\,cm)$
ℓ = length
M = mass
Length (cm)
Mass (g)
0
5
10
15
20
0
200
400
600
800
1000

Draw the line (or curve) of best fit. This line goes "through the middle" of the data, showing the underlying pattern and allowing for error (or scattering).



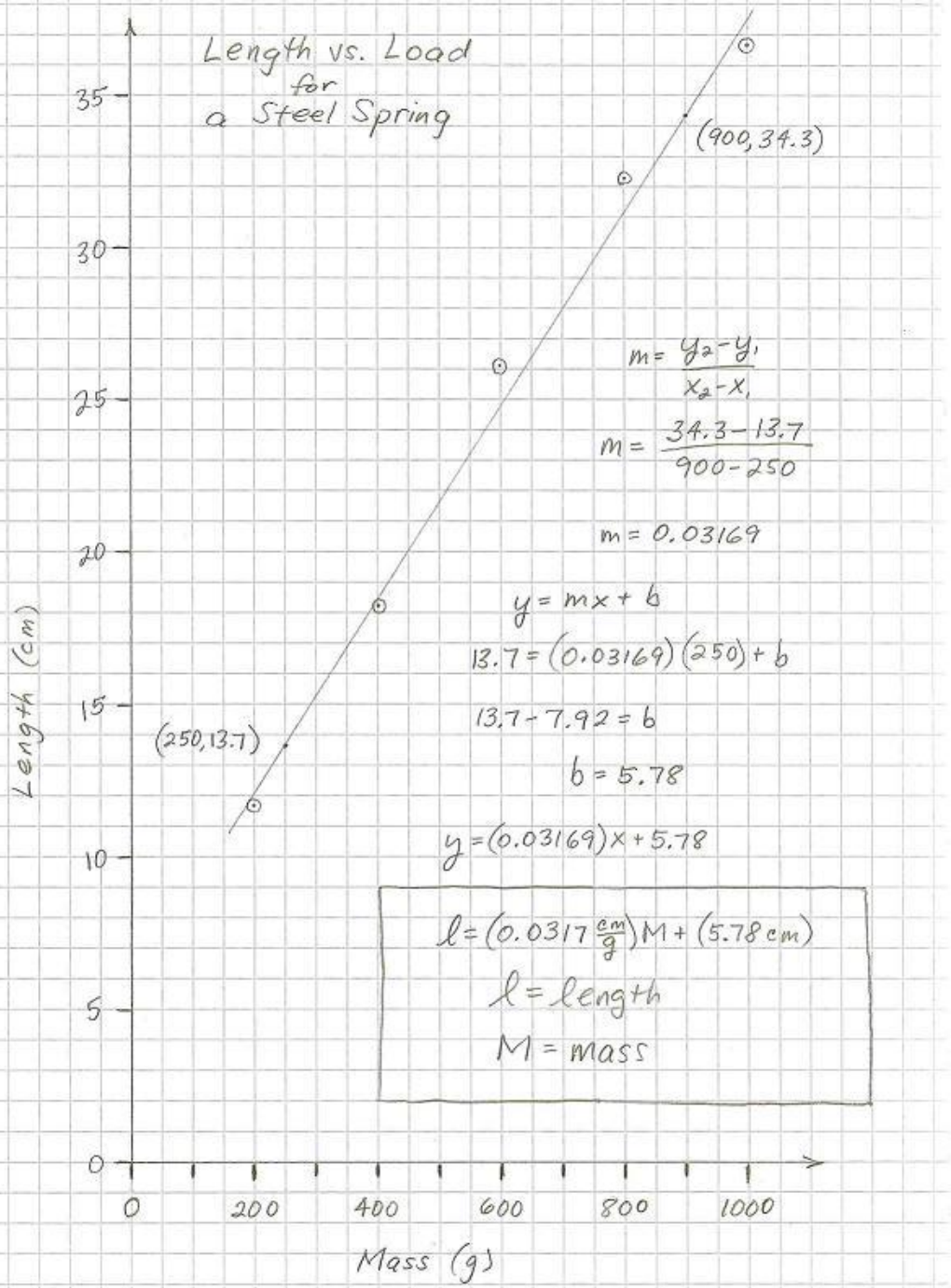
The line of best fit may or may not actually hit the data (do not "connect the dots"). It is important that the line (or curve) shown is the same as that described by the equation given.


Length vs. Load
for
a Steel Spring
35
30
15
10
5
0
0
200
400
600
800
1000
Length (cm)
Mass (g)
(900, 34.3)
(250, 13.7)
Show work on the graph itself!
(Do not put graph calculations on separate paper.)
$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{34.3 - 13.7}{900 - 250}$
$m = 0.03169$
$y = mx + b$
$13.7 = (0.03169)(250) + b$
$13.7 - 7.92 = b$
$b = 5.78$
$y = (0.03169)x + 5.78$
$\ell = \left(0.0317 \frac{cm}{g}\right) M + (5.78\ cm)$
ℓ = length
M = mass



Put the resulting equation in a form that makes clear the units involved and the meaning of each variable.

(Don't write only this: y=0.0317x + 5.78)



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{34.3 - 13.7}{900 - 250}$$

$$m = 0.03169$$

$$y = mx + b$$

$$13.7 = (0.03169)(250) + b$$

$$13.7 - 7.92 = b$$

$$b = 5.78$$

$$y = (0.03169)x + 5.78$$

$$\ell = \left(0.0317 \frac{cm}{g}\right) M + (5.78\ cm)$$

ℓ = length

M = mass

This graph was created using Desmos graphing calculator. The title and the equation box were added using Google Docs. Both of these applications are free online tools that work in a browser window. The finished product was exported as a pdf file that can be read on any device. This demonstrates that it is possible to produce a high quality scientific graph using readily available resources. This graph meets all criteria described previously.