Warm Up

Evaluate the following if $a = -3$, $b = 8$, **and** $c = -4$

1. $9a - 2ab$

21, -58, -20, 56

-76

$9(-3)\,(-2)\,(-3)(8)$ → Negative always sticks with the number it's in front of.

$-27 + 48$

$\boxed{21}$

Or

$9(-3) - 2(-3)(8)$

$-27 + {}^+ 48$

21

2. $a^2 + 7c - 1$

-18, -20, 79

$(-3)^2 + 7(-4) - 1$

$9 + {}^-28 - 1$

$\vee$

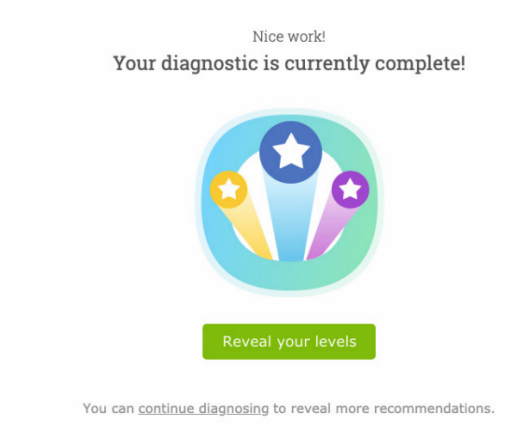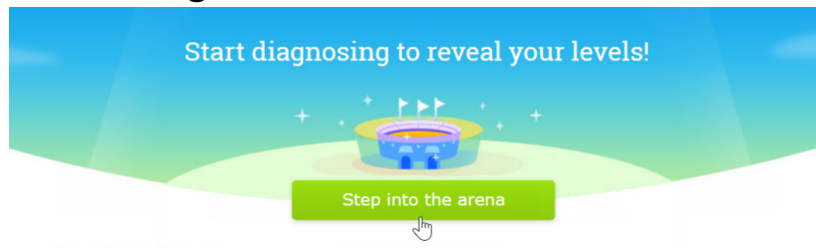$-19 - 1$

$\boxed{-20}$

Weekly IXL assignments

- Will be assigned on Tuesdays

- Due the following Tuesday

- You must score at least 80%

This week's assignment:

Go into the Diagnostic Arena from the Assessments tab.

Start diagnosing to reveal your levels!

Step into the arena

Nice work!

Your diagnostic is currently complete!

Reveal your levels

You can continue diagnosing to reveal more recommendations.

Inv. 1.1 Recap

Class Data

Thickness (# of layers)	1	2	3	4	5
# of pennies Group 1	5	10	19	26	29
# of pennies Group 2	3	10	16	20	34
# of pennies Group 3	4	11	21	29	42
# of pennies Group 4	4	9	12	18	41
# of pennies Group 5	3	6	12	23	24

?

What do you notice?

° The more layers the more weight it can hold

° Increase by 5 to 7 pennies for each new layer

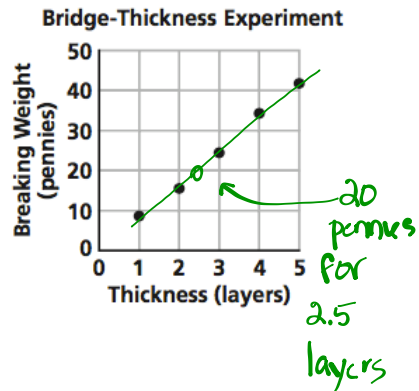Variation can be due to experimental error:
- how you folded
- how pennies were dropped
- was cup in center
- was there the 1" overlap on the book

Sample data:

Bridge-Thickness Experiment +1

Thickness (layers)	1	2	3	4	5
Breaking Weight (pennies)	9	16	24	34	42

+7 +8 +10 +8

Bridge-Thickness Experiment
Breaking Weight (pennies) vs Thickness (layers)

20 pennies for 2.5 layers

B Does the relationship between the number of layers and the breaking weight seem to be linear or nonlinear? How do the graph and the table show this relationship?

not linear because there is not a steady pattern

Great description! We later discussed that because this is real life data and there may be experimental error this would probably be considered linear.

C Suppose you could split layers of paper in half. What breaking weight would you predict for a bridge 2.5 layers thick? Explain.

(2.5, 20)
° check the differences on the table, divide by 2

D Predict the breaking weight for a bridge 6 layers thick. Explain your reasoning.   average

Find the mean of the differences of the breaking weights and added to the weight for 5 layers.   ~ 50 pennies

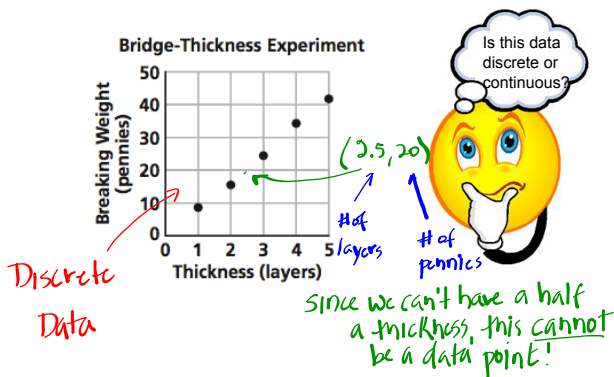predictions can be made using both the table and graph

Problem 1.1 Wrap Up

Sample data:

Bridge-Thickness Experiment +1

Thickness (layers)	1	2	3	4	5
Breaking Weight (pennies)	9	16	24	34	42

Check Changes

+7 +8 +10 +8

Should we connect our data points?

Bridge-Thickness Experiment

Is this data discrete or continuous?

(2.5, 20)

# of layers

# of pennies

Discrete Data

since we can't have a half a thickness, this cannot be a data point!

What is a line?

Infinite # of points all grouped together
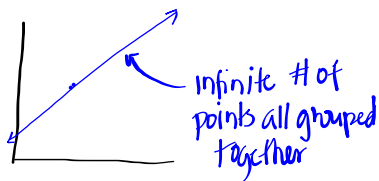
Each point represents an actual data point

You can only connect your data points if you can have fractions of your units. } *Continuous Data*

Discrete Data

Because in our experiment we cannot have a portion of a thickness of a sheet of paper, or a portion of a penny, we **cannot** connect our data points.

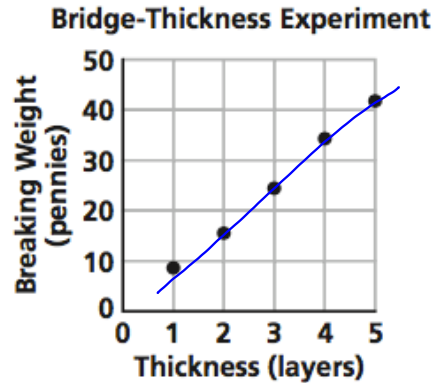*Always look at units if you want to know if you can connect your data points*

You cannot connect if you cannot have a fraction of either of your units.

Sample data:

Bridge-Thickness Experiment

+1 +1 +1 +1

Thickness (layers)	1	2	3	4	5
Breaking Weight (pennies)	9	16	24	34	42

+7 +8 +10 +8

Bridge-Thickness Experiment

B Does the relationship between the number of layers and the breaking weight seem to be linear or nonlinear? How do the graph and the table show this relationship?

C Suppose you could split layers of paper in half. What breaking weight would you predict for a bridge 2.5 layers thick? Explain.

2.5 , 20

D Predict the breaking weight for a bridge 6 layers thick. Explain your reasoning.
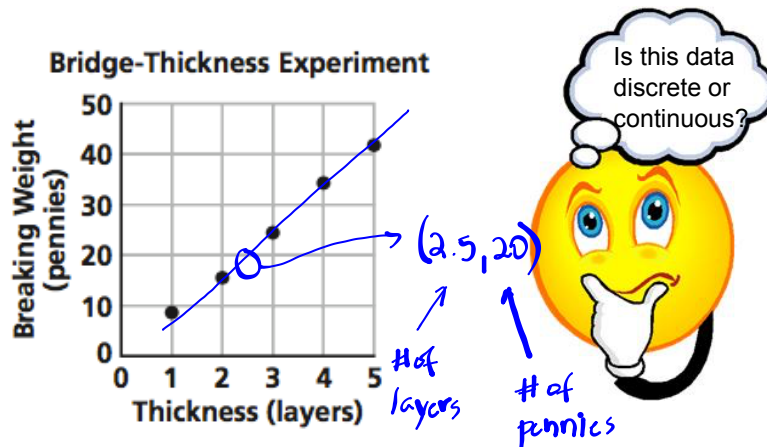
average

Find the mean of the differences of the breaking weights and added to the breaking weight for 5 layers.
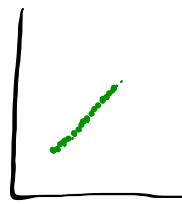
Problem 1.1 Wrap Up

Sample data:

Bridge-Thickness Experiment

Thickness (layers)	1	2	3	4	5
Breaking Weight (pennies)	9	16	24	34	42

Bridge-Thickness Experiment

Is this data discrete or continuous?

(2.5, 20)

# of layers

# of pennies

← a line is an infinite # of data points

Discrete Data - individual points not connected

Is it discrete or not?

Discrete if you can't have fractions of your units

2. A group of students conducted the bridge-thickness experiment with construction paper. The table below contains their results.

Bridge-Thickness Experiment

Number of Layers	1	2	3	4	5	6
Breaking Weight (pennies)	12	20	29	42	52	61

a. Make a graph of the (number of layers, breaking weight) data. Describe the relationship between breaking weight and number of layers.

b. Suppose it is possible to use half-layers of construction paper. What breaking weight would you predict for a bridge 3.5 layers thick? Explain.

⭐ **c.** Predict the breaking weight for a construction-paper bridge of 8 layers. Explain how you made your prediction.

Homework

Finish Classwork