MATH

Shift: Rigor

Practice(s): MP1, MP4

Domain/level: MD/ SP Levels B, C (potential for all levels)

CCRS Teacher Workout

Notice and Wonder About Data: Using Slow Reveal Graphs

Time needed: 25- 45 minutes

Goals:

- Interpret information
- Recognize trends
- Predict information
- Make decisions from data

Guiding Questions

- What does it mean for something to be disproportionate (or out of proportion)?
- How can visual representations be used to predict, influence, or make decisions?

Materials

- Images A, B, C, D and Practice Problem (included below): **Note: IMAGES TO BE SHARED AT 1 TIME!** Each should be provided on a separate sheet of paper or shared virtually one at a time.
- Additional graphs and resources are available (including graphs related to current events and social justice issues)
    - https://slowrevealgraphs.com/
    - https://slowrevealgraphs.files.wordpress.com/2019/05/incarceration-unit-plan-connie-rivera-1.pdf

Notes

- Depending on the kind of graph and level of students, there may be various levels of reveal.
- After doing this kind of activity with students, you could create a table to help students track reveals - or if students are struggling with organizing their thoughts.
- **Do not rush this process.** Part of the magic in this experience is when you learn more about a graph and how it changes over time.
- You may need to model thinking aloud for students who aren't used to thinking critically when looking at a graph. Generic "Notice and Wonder" prompts may also be helpful.

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Some sample prompts:

- I notice _____.
  Based on _____ I think _____.
  I wonder what_____ is telling us.
  Why is there _____. Etc...

Introduction

1. Show group **ONLY Image A**. Provide participants with a few moments to look at the image and identify things they notice and what they wonder about it.
2. Gather participants thinking about what they notice and wonder.
   a. The goal at this point is to identify that they are looking at points, maybe a graph, start to describe what the line is doing, and maybe predict what it may be about. No "notice and wonder" suggestion would be wrong at this point. Encourage participants to offer any thoughts. It might be as simple as "I see dots and lines" or "dots seem to be connected by lines".
3. Show **Image B**. Provide participants with an opportunity to reflect on the new information they have been given and if it changes their initial thoughts.
   a. Collect responses and indicate evolution of thoughts/ideas with arrows, color or other markings- *do not erase or cross out.*
4. Show **Image C**. Provide participants with an opportunity to reflect on the new information they have been given and if it changes their initial thoughts.
   a. Collect responses and indicate evolution of thoughts/ideas with arrows, color or other markings- *do not erase or cross out.*
5. Based on the entire graph reveal, discuss:
   a. What do we know now? What were our misconceptions? How does looking at the full picture change our interpretation and understanding?
   b. What predictions can we make about this graph now? How can what we know help us make decisions about/using this information
6. Look at **Image D** and work in pairs to solve the problem.
   a. Discuss how spending time with the graph prior to attempting to solve the problem impacts the problem solving process.

i. What prior knowledge do you now have? How are you connecting to other problems you have done in the past? Where are you starting? How will you know when you're done? What will you do if you get stuck?

Practice

1. In pairs or small groups, provide participants with the Practice Problem.
    a. In groups, discuss the graph and the intent of the question.
2. Groups will identify how they will break the graph apart and the goals for each layer of the reveal.
    a. What would Image A look like? What would they want students to notice and wonder with this information?
    b. What would Image B look like? What new information would you want them to see? What prompts might be needed to help guide them if needed?
    c. Repeat as necessary.
3. Share Images, goals, and prompts for each part of the reveal with the large group.
4. Discuss potential differences or similarities in how participants approached their graphs.

Wrap Up

1. In pairs, discuss how they would describe a 'slow reveal graph' to a peer.
2. As a large group, discuss the benefits of slowing down to look at graphs in this way.
    a. What connections can be made to current events, news, multiple content areas (graphs are on multiple parts of the TABE, CASAS, GED, ACCUPLACER, etc).
3. Identify additional places/resources to find graphs to use with students.

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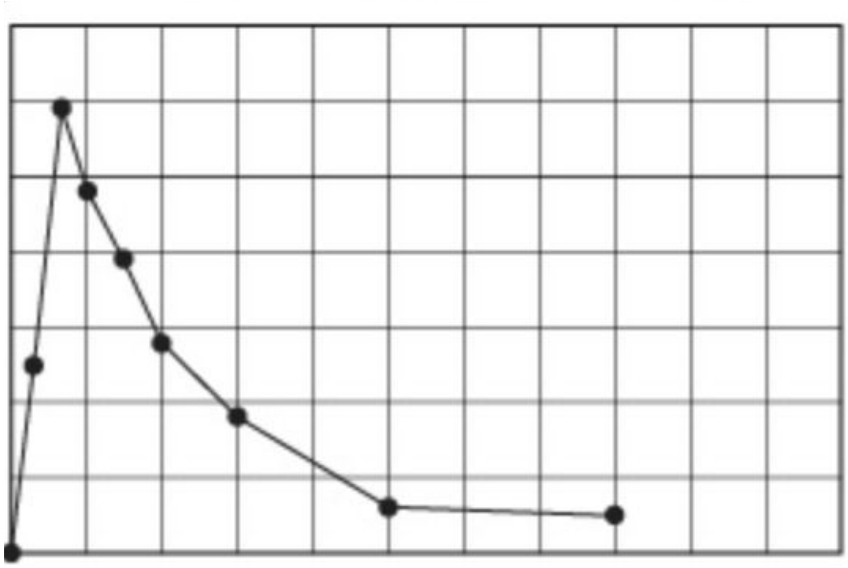
Image A



What do you notice?

What do you wonder?

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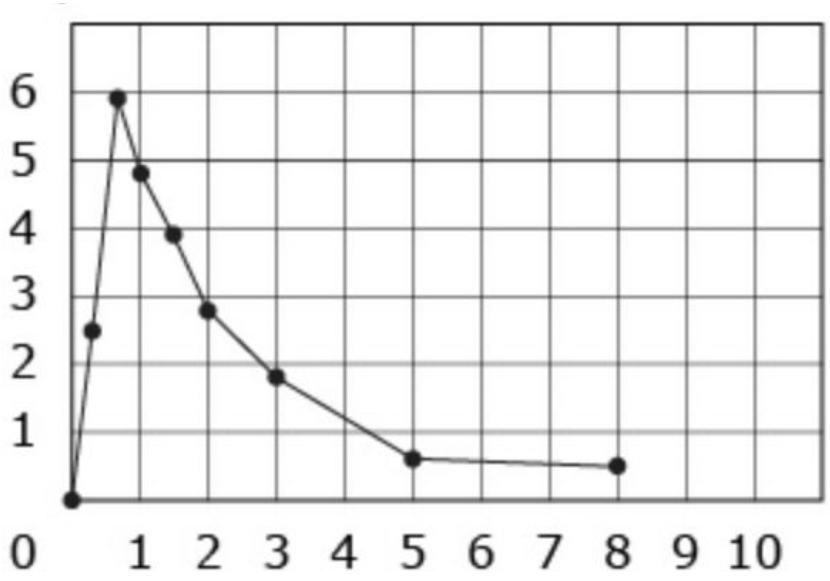
Image B



What do you notice?

What do you wonder?

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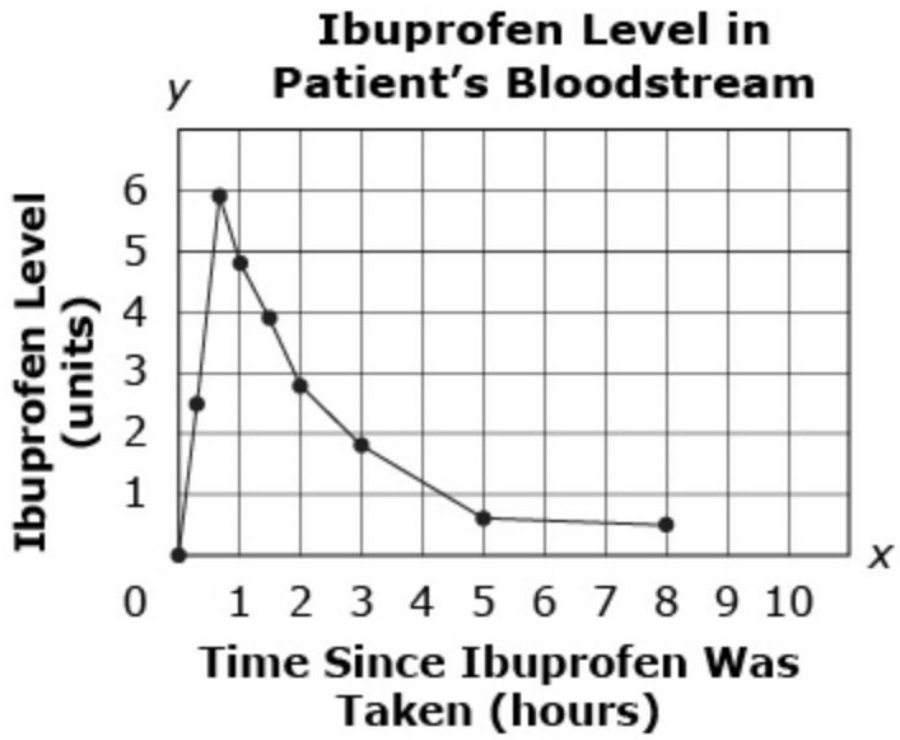
Image C



What do you notice?

What do you wonder?

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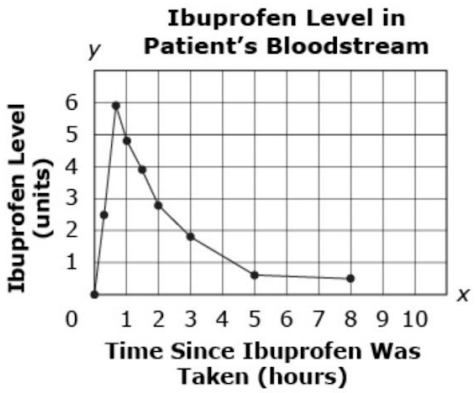
Image D

(Graph taken from GED 2012 Practice Math Test: https://ged.com/practice-test/en/math/start.html)

The graph shows the level of ibuprofen, *y* units, in a patient's bloodstream *x* hours after the ibuprofen was taken.



The level of ibuprofen in the patient's bloodstream increased from Select... hours to Select... hours.

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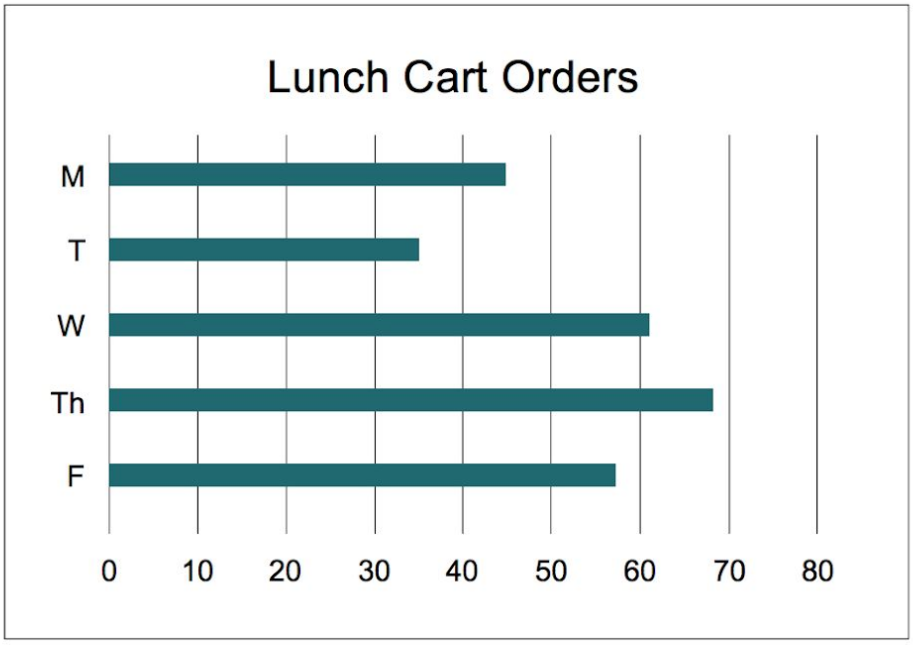
Practice Problem



5. According to the graph, about how many people ordered from the lunch cart on Tuesday?

   A. 35

   B. 45

   C. 60

   D. 70

(Sample taken from Level A/B Math GOALS Sample Items 2019)