CCSS Advanced Algebra 3-4 Graphing Stories Extension

Slide #3: The Playground.

1. On Slide #3 of the Graphing Stories Desmos, why is the graph horizontal from around 7 seconds to 12 seconds. What does that part of the graph represent?

2. Suppose the mathematical model for Slide #3 is labeled p(x). What is p(5), approximately? What does p(5) tell you about the situation in the video?

3. Why does it make sense that p(0)=p(15)? Explain your answer.

4. Solve the equations p(x)=5. What do the solutions to this equation represent about the video?

Slide #8: The Bowl.

5. Let the mathematical model for Slide #8 of Graphing Stories be labeled b(x). Solve or evaluate each of the following:
   a. b(0) b. b(7) c. b(15)
   d. b(x)=2, x = ? e. b(x)=5, x = ?

6. b(x) is called a <u>piecewise function</u> because it is made up of multiple different functions. In this case it can be represented by

$$b(x) = \begin{cases} 0.17x + 1 & 0 \le x < 7 \\ 0.32x - 0.05 & 7 \le x < 12 \\ 0.17x + 1.75 & 12 \le x \le 15 \end{cases}$$

   Why does this equation make sense for Slide #8? What does the 0.17 and the 0.32 in the function represent? Be specific.

7. Use the equation to find b(15). How does this result compare to the answer to 5(c)?

8. Use the equation to solve b(x)=2. How does this result compare to the answer to 5(d)?

Slide #9: Eggs

9. Let the graph on Slide #9 be represented by $e(x)$; use the graph to explain why $e(x) = 2.5$ has no solution.

10. What do the open circles on the right side of each horizontal segment represent?

11. Based on your answer to the previous question, what is $e(12)$?

12. Write a piecewise function to fit this graph.

Slide #10: Merry-Go-Round

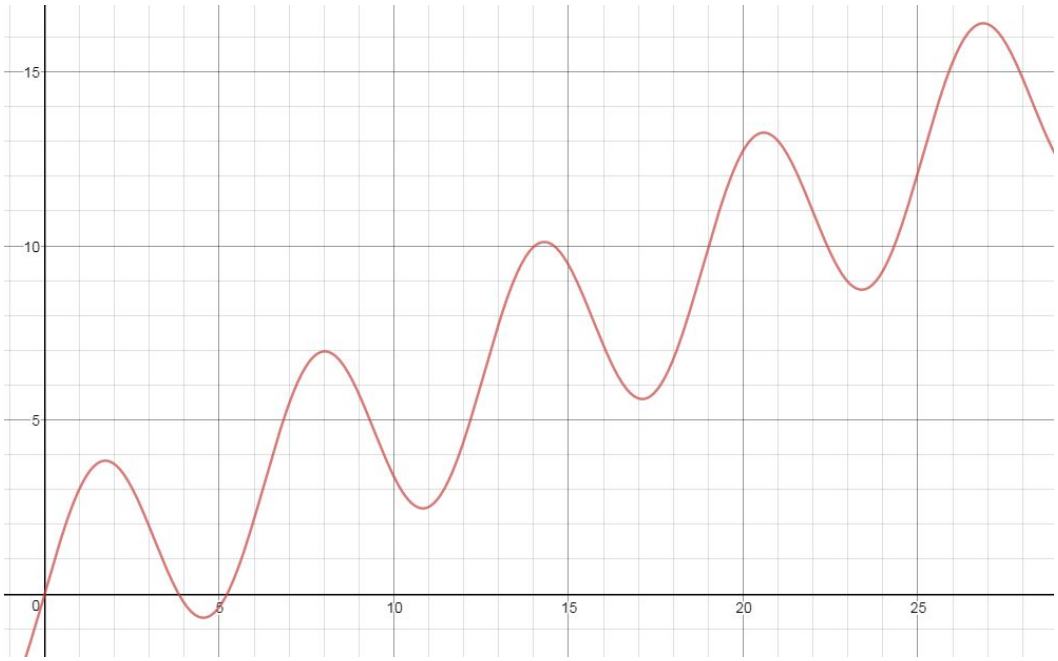
13. Let the graph on Slide #11 be labeled $m(x)$. How many solutions does the equation $m(x) = 6$ have? Explain your answer in the context of the video.

14. For the part of the graph when $0 \leq x \leq 10,$ what is the range of the function shown? What does this range tell you about the merry-go-round?

15. Use the graph to determine the number of seconds it takes the rider to make one full revolution on the merry-go-round.

Generalization:

16. How can you use a graph to solve an equation like $f(x) = 10$? Be specific in your description.



17. Can you be as accurate using a graph to solve equations as you could solving by hand? Explain why or why not.

18. Are there situations in which solving an equation by graph is the only option? Explain your thinking.