Lesson 21 Practice Problems

1. The table shows the height of a ball after different numbers of bounces.

n	1	2	3	4	5
h	83	61	46	35	26

a. Can the height, h, in centimeters, after n bounces be modeled accurately by a linear function? Explain your reasoning.

b. Can the height, h, after n bounces be modeled accurately by an exponential function? Explain your reasoning.

c. Create a model for the height of the ball after n bounces and plot the predicted values with the data.

d. Use your model to estimate the height the ball was dropped from.

e. Use your model to estimate how many bounces it takes before the rebound height is less than 10 cm.

(From Unit 5, Lesson 11.)

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2. Mai used a computer simulation to roll number cubes and count how many rolls it took before all of the cubes came up sixes. Here is a table showing her results.

d, number of cubes	1	2	3	4
r, number of rolls	5	31	143	788

Would a linear or exponential function be appropriate for modeling the relationship between d and r? Explain how you know.

(From Unit 5, Lesson 11.)

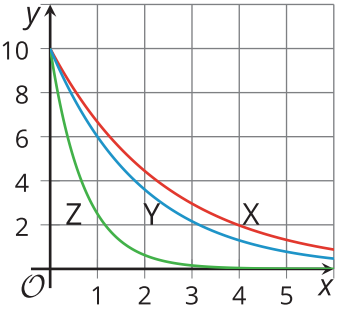
3. A ramp is two meters long. Priya wants to investigate how the distance a basketball rolls is related to the location on the ramp where it is released.

Recommend a way Priya can gather data to help understand this relationship.

(From Unit 5, Lesson 11.)

4. Here are the graphs of three functions.

Which of these functions decays the most quickly? Which one decays the least quickly?



(From Unit 5, Lesson 12.)

5. The bungee jump in Rishikesh, India is 83 meters high. The jumper free falls for 5 seconds to about 30 meters above the river.

   a. Draw a graph of the bungee jump in Rishikesh.

   b. Identify and describe three pieces of important information you can learn from the graph of the bungee jump.

(From Unit 4, Lesson 8.)

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