

Constructing graphs

Student Activity Sheet 3; *Exploring* “Focus on the action”

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The table shows data from Matthew’s recent baseball drill. Use this table to answer questions 1 and 2.

1. Sketch your prediction for the graph of the height of the ball as a function of time since it was thrown.

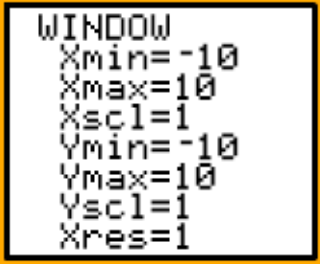
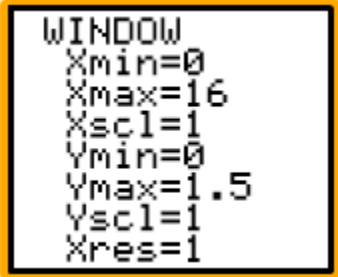
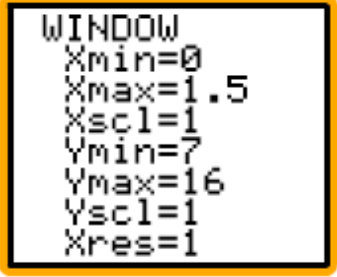
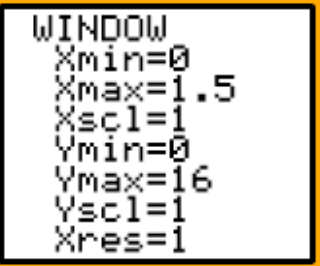
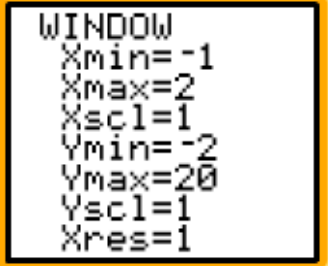
Elapsed time from the beginning of throw in seconds	Ball height in feet
0	7
0.3	12
0.6	16
0.9	16
1.2	12
1.5	7

2. Sketch your calculator graph of height as a function of time. Record the window you used to make your graph. How does this graph compare to your original sketch?

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3. Look at the possible windows for the baseball data.
 - a. Which window shown would provide the best graph of the data? Why?
 - b. Explain why the other windows are not a good choice when graphing the data.

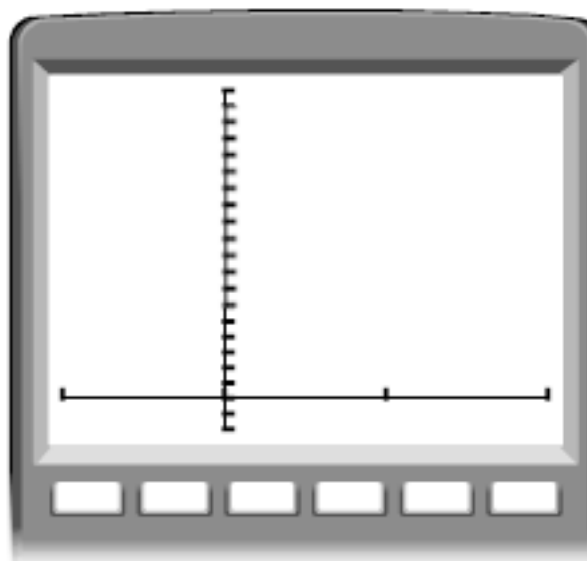
1	2	3
		
4	5	
		

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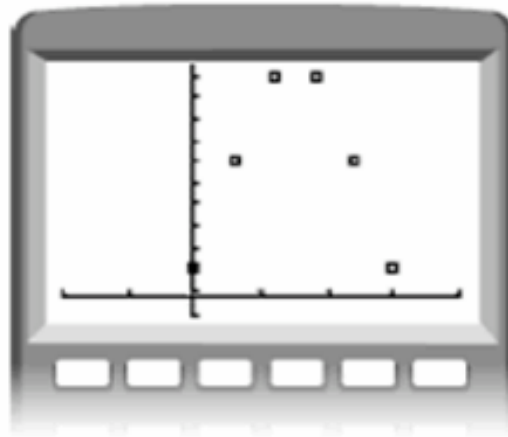
4. Graph the baseball data using the window shown.

```
WINDOW
Xmin=-1
Xmax=2
Xscl=1
Ymin=-2
Ymax=20
Yscl=1
Xres=1
```



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5. What does this graph indicate about the behavior of the ball over time?

6. Matthew and his teammates decide to order pizza. Pizzas cost \$8 each.

a. Complete the table to show the relationship between cost and number of pizzas ordered.

Number of pizzas	Cost in dollars
1	
2	
3	

b. What will be the total cost for 10 pizzas at \$8 each?

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7. Consider the boys’ pizza-ordering scenario.
 - a. What are the two variables?

 - b. Which variable would be the independent variable in this scenario? Which variable would be the dependent variable? Why?

8. Now think back to Matthew’s baseball throw. Write three questions Matthew might ask based on his representation, and use his representation to answer them.

9. Write three questions someone else might ask about the baseball scenario if the dependency between time and height is reversed so that height is the independent variable.

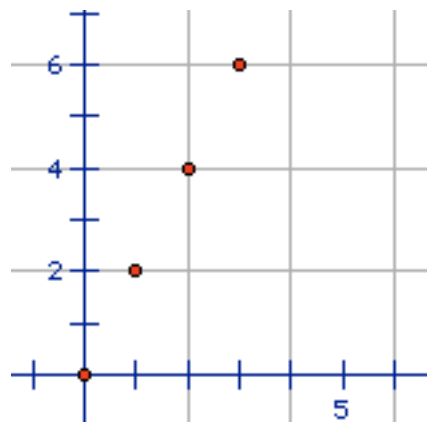
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10. **REINFORCE** Explain what it means to say that two functions are **inverses**. Then give an example to justify your explanation.

11. **REINFORCE** Is this graph an accurate representation of the data shown in the table? Explain your answer.

x	y
0	0
1	2
2	4
3	6
4	8
5	8
6	8



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12. **REINFORCE** Sandra’s science class launches a fireworks rocket upward from the ground. In a table, they record the height of the rocket in feet above the ground at specific times after launch.

Time in seconds	0	1	2	3	4	5	6	7
Height in feet	0	144	256	336	384	400	384	336

- a. Create a graph of these data, treating height as the dependent variable.

- b. Create a graph of these data, treating time as the dependent variable.

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13. **REINFORCE** A drug company created a new medicine. To measure the effectiveness of the new medicine, a doctor administers 600 mg of the drug orally to a patient. The doctor then takes blood samples every 30 minutes to measure the concentration of the medicine in the bloodstream. The table shows the data gathered.

Time (hrs)	Concentration (µg/L)
0	0
0.5	22
1	95
1.5	104
2	85
2.5	70
3	63
3.5	51
4	40
4.5	36
5	31
5.5	28
6	24

a. Which variable would you choose to be the independent variable in this scenario? Which would be the dependent variable? Why?

b. Suppose you were to graph the data on a calculator. Fill in the blanks with values that you would use to create the best graph of the data.

WINDOW

Xmin = _____

Xmax = _____

Xscl= _____

Ymin = _____

Ymax = _____

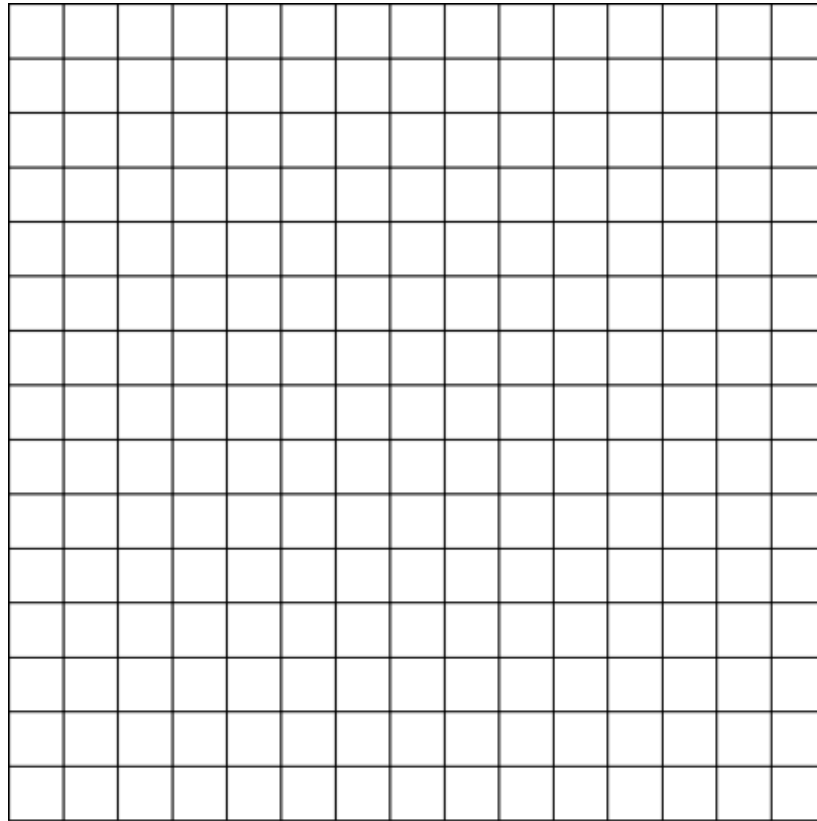
Yscl = _____

Xres = 1

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c. Sketch this graph.

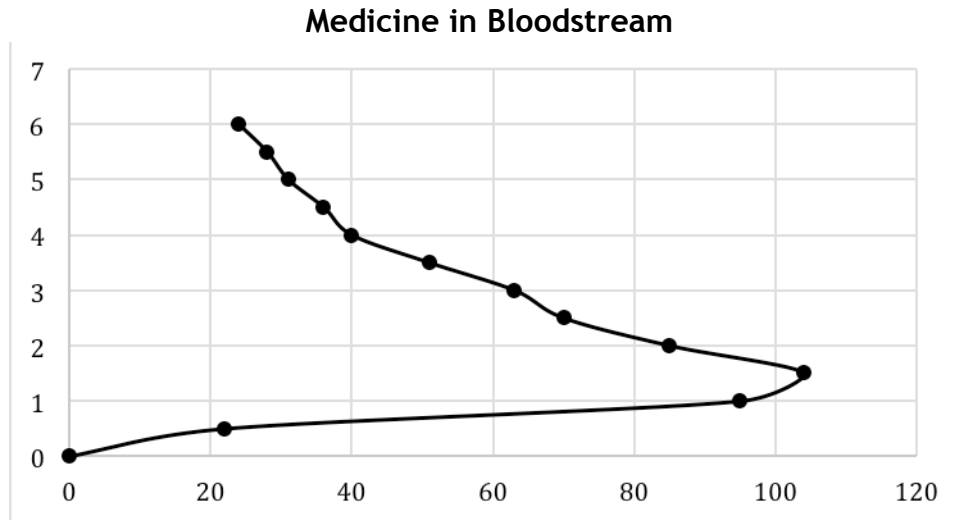


d. What does the graph indicate about the amount of medicine in the patient’s bloodstream?

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14. **REINFORCE** Bob chose to create a new graph using the medicine data. His graph is shown here.



- a. Which variable did Bob choose as the independent variable? Which variable did Bob choose as the dependent variable? How do you know?

- b. Write a question that could be easily answered by Bob’s graph. Use his graph to answer that question.