

## Constructing graphs

Student Activity Sheet 3; use with *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. Which window shown would provide the best graph of the data? Why?

1	2	3
<pre> WINDOW Xmin=-10 Xmax=10 Xscl=1 Ymin=-10 Ymax=10 Yscl=1 Xres=1                     </pre>	<pre> WINDOW Xmin=0 Xmax=16 Xscl=1 Ymin=0 Ymax=1.5 Yscl=1 Xres=1                     </pre>	<pre> WINDOW Xmin=0 Xmax=1.5 Xscl=1 Ymin=7 Ymax=16 Yscl=1 Xres=1                     </pre>
4	5	
<pre> WINDOW Xmin=0 Xmax=1.5 Xscl=1 Ymin=0 Ymax=16 Yscl=1 Xres=1                     </pre>	<pre> WINDOW Xmin=-1 Xmax=2 Xscl=1 Ymin=-2 Ymax=20 Yscl=1 Xres=1                     </pre>	

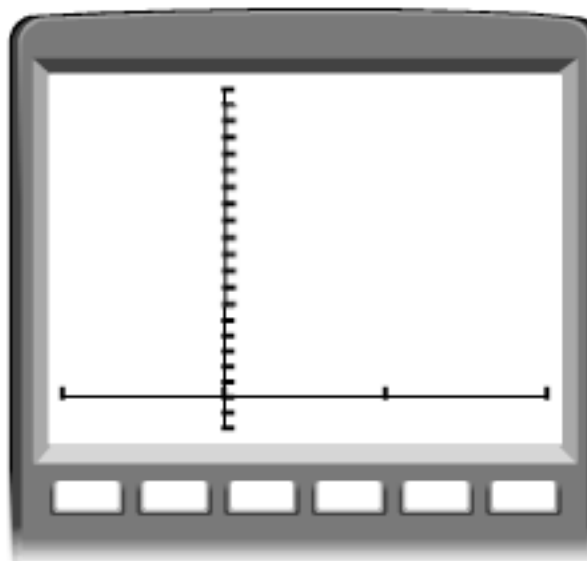
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4. Graph the baseball data using the window shown.

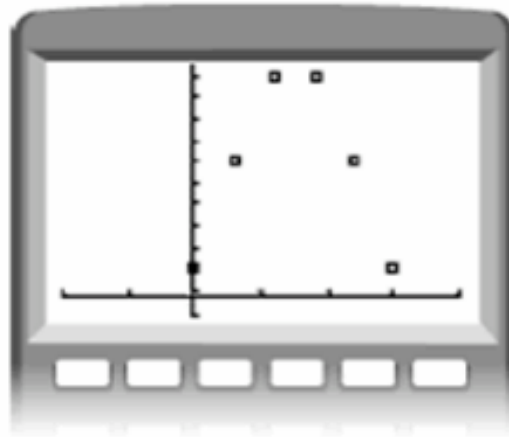
```
WINDOW
Xmin=-1
Xmax=2
Xscl=1
Ymin=-2
Ymax=20
Yscl=1
Xres=1
```



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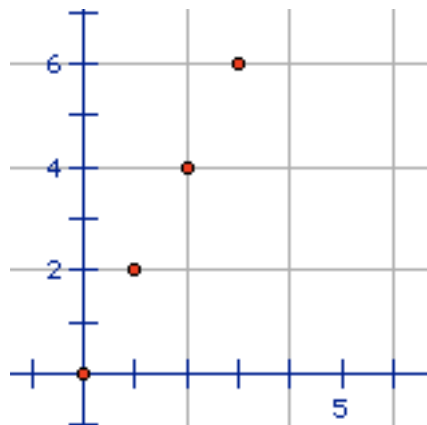
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10. **REINFORCE** Explain what it means to say that two functions are **inverses**. Then give an example to justify your explanation.

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.

<b>Time in seconds</b>	0	1	2	3	4	5	6	7
<b>Height in feet</b>	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 painkiller. To measure the effectiveness of the new painkiller, 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 painkiller 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

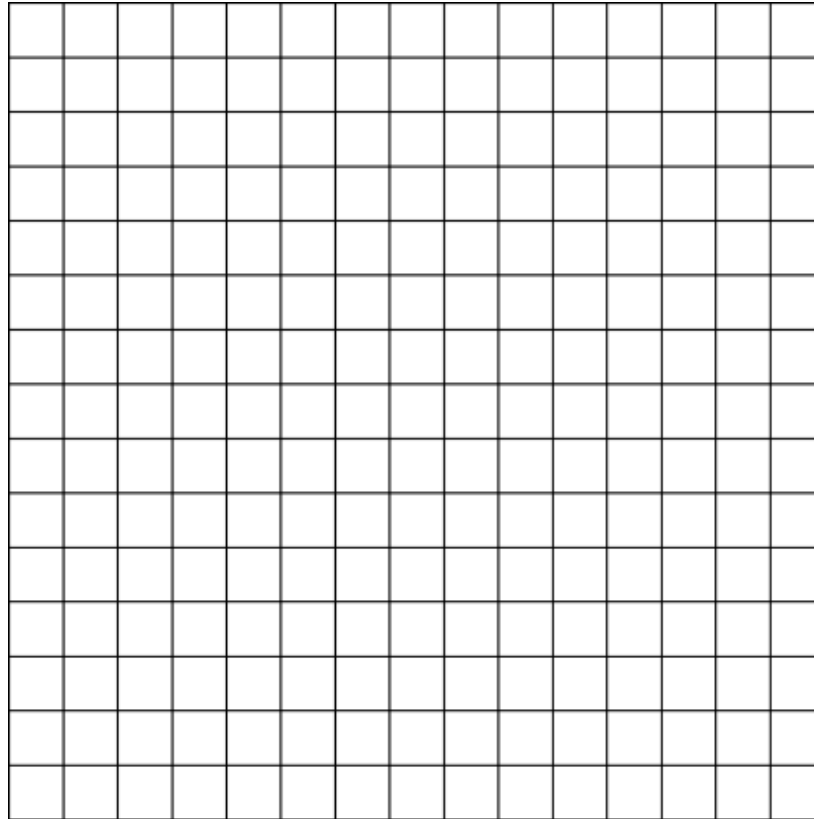


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c. Sketch this graph.



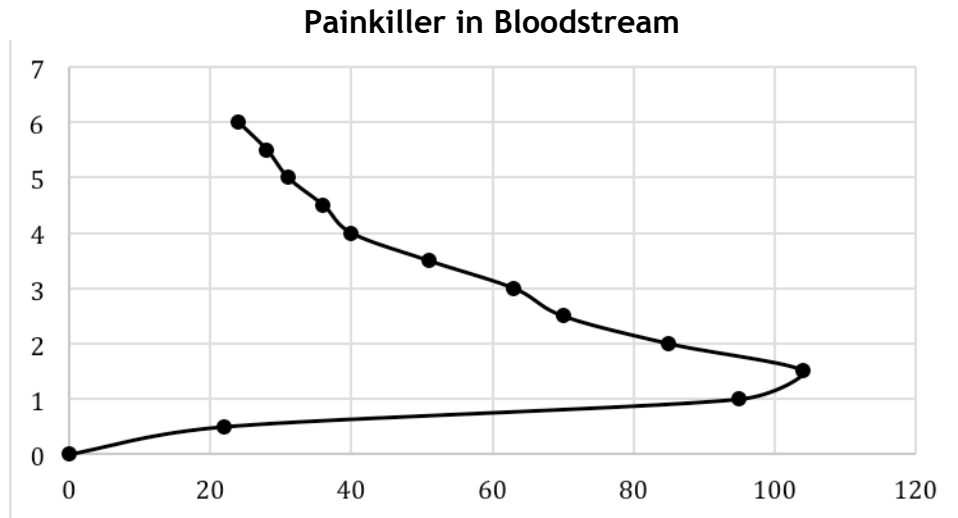
d. What does the graph indicate about the amount of painkiller in the patient’s bloodstream?

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14. **REINFORCE** Bob chose to create a new graph using the painkiller 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.