

Name _____

Line Plots

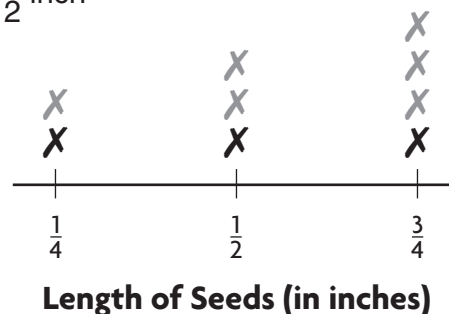
A **line plot** is a graph that shows the shape of a data set by placing Xs above each data value on a number line. You can make a line plot to represent a data set and then use the line plot to answer questions about the data set.

Students measure the lengths of several seeds.
The length of each seed is listed below.

$\frac{1}{2}$ inch, $\frac{3}{4}$ inch, $\frac{1}{2}$ inch, $\frac{1}{4}$ inch, $\frac{3}{4}$ inch, $\frac{3}{4}$ inch, $\frac{3}{4}$ inch, $\frac{1}{4}$ inch, $\frac{1}{2}$ inch

What is the combined length of the seeds that are $\frac{1}{4}$ inch long?

Step 1 To represent the different lengths of the seeds, draw and label a line plot with the data values $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$. Then use an X to represent each seed. The line plot has been started for you.



Step 2 There are 2 Xs above $\frac{1}{4}$ on the line plot.

Multiply to find the combined length of the seeds:

$$\underline{2} \times \underline{\frac{1}{4}} = \underline{\frac{2}{4}}, \text{ or } \underline{\frac{1}{2}} \text{ inch}$$

The combined length of the seeds that are $\frac{1}{4}$ inch long is $\frac{1}{2}$ inch.

You can use the same process to find the combined lengths of the seeds that are $\frac{1}{2}$ inch long and $\frac{3}{4}$ inch long.

Use the data and the line plot above to answer the questions.

1. What is the total length of all the seeds that the students measured?
2. What is the average length of one of the seeds that the students measured?

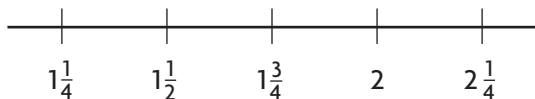
Name _____

Exploring the Average

For 12 days, Keisha keeps track of how much water she drinks per day. Her results are shown below.

$1\frac{1}{2}$ quarts, $2\frac{1}{4}$ quarts, 2 quarts, $1\frac{1}{2}$ quarts, $1\frac{3}{4}$ quarts, $1\frac{1}{2}$ quarts,
 $1\frac{1}{4}$ quarts, 2 quarts, $2\frac{1}{4}$ quarts, $1\frac{1}{2}$ quarts, 2 quarts, $1\frac{1}{2}$ quarts

- Use the data to make a line plot.



Keisha's Daily Water Consumption (in quarts)

- What is the total amount of water that Keisha drinks during the 12 days?

- What is the average amount of water that Keisha drinks per day?

- On how many days did Keisha drink at least the average amount of water?

- Stretch Your Thinking** On Day 13, Keisha drinks 1 quart of water. How does this affect the average amount of water she drinks? **Explain.**

Name _____

Ordered Pairs

A coordinate grid is like a sheet of graph paper bordered at the left and at the bottom by two perpendicular number lines. The **x-axis** is the horizontal number line at the bottom of the grid. The **y-axis** is the vertical number line on the left side of the grid.

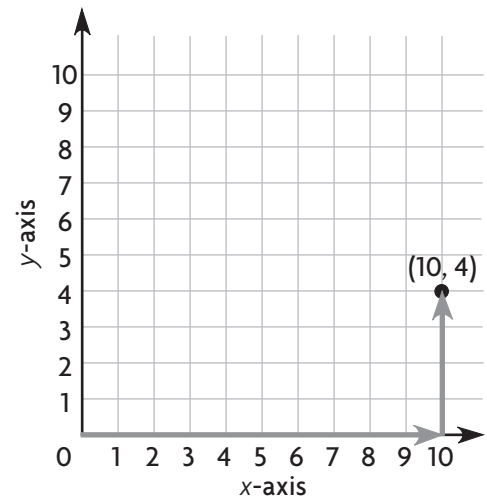
An ordered pair is a pair of numbers that describes the location of a point on the grid. An ordered pair contains two coordinates, x and y . The **x-coordinate** is the first number in the ordered pair, and the **y-coordinate** is the second number.

$(x, y) \longrightarrow (10, 4)$

Plot and label $(10, 4)$ on the coordinate grid.

To graph an ordered pair:

- Start at the origin, $(0, 0)$.
- Think: The letter x comes before y in the alphabet. Move across the x -axis first.
- The x -coordinate is 10, so move 10 units right.
- The y -coordinate is 4, so move 4 units up.
- Plot and label the ordered pair $(10, 4)$.



Use the coordinate grid to write an ordered pair for the given point.

1. G _____ 2. H _____

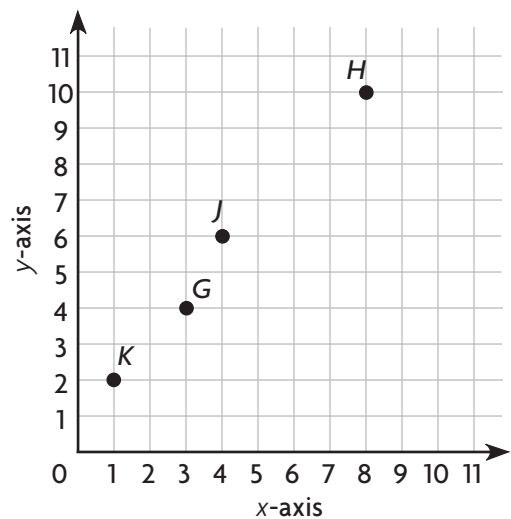
3. J _____ 4. K _____

Plot and label the points on the coordinate grid.

5. $A(1, 6)$ 6. $B(1, 9)$

7. $C(3, 7)$ 8. $D(5, 5)$

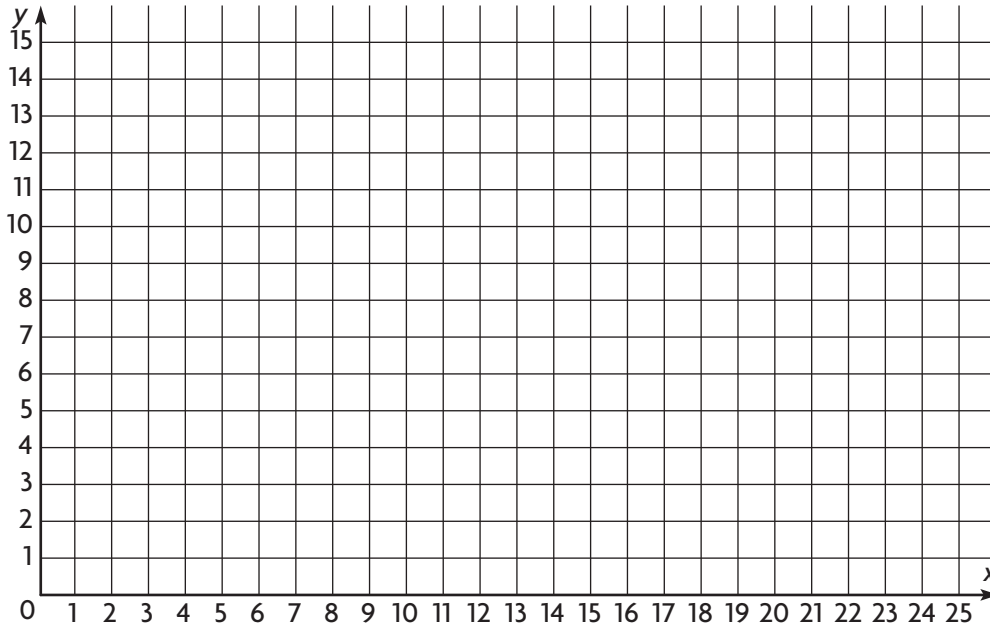
9. $E(9, 3)$ 10. $F(6, 2)$



Name _____

Coordinate Grid Graphing Riddle

Plot the ordered pairs on the coordinate grid below.
Then connect points 1–14 in the order in which you plotted them.



- | | | |
|----------------|----------------|--|
| 1. $T(2, 11)$ | 2. $C(4, 9)$ | 3. $U(7, 10)$ |
| 4. $P(10, 12)$ | 5. $N(12, 10)$ | 6. $R(20, 9)$ |
| 7. $A(21, 8)$ | 8. $L(20, 7)$ | 9. $F(21, 6)$ |
| 10. $J(16, 5)$ | 11. $I(13, 4)$ | 12. $Z(13, 6)$ |
| 13. $S(4, 7)$ | 14. $K(2, 5)$ | 15. $H(19, 8)$
(H is a separate point) |

After you've connected points 1–14, use the names of the points in the odd-numbered exercises to spell the answer to the riddle.

Riddle: What marine animal can tune musical instruments?

A _ _ _ _ _ _ _ _

Name _____

Graph Data

Graph the data on the coordinate grid.

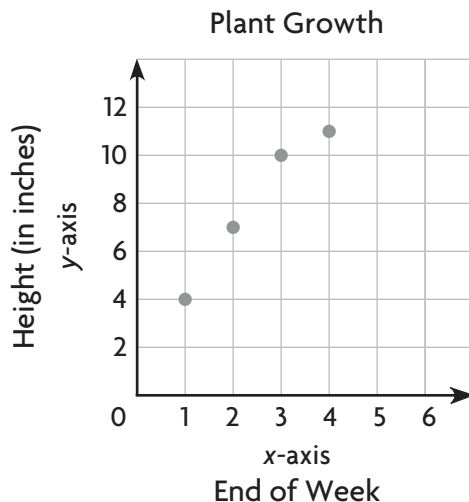
Plant Growth				
End of Week	1	2	3	4
Height (in inches)	4	7	10	11

- Choose a title for your graph and label it. You can use the data categories to name the x- and y-axis.
- Write the related pairs of data as ordered pairs.

(1, 4), (2, 7)

(3, 10), (4, 11)

- Plot the point for each ordered pair.



Graph the data on the coordinate grid. Label the points.

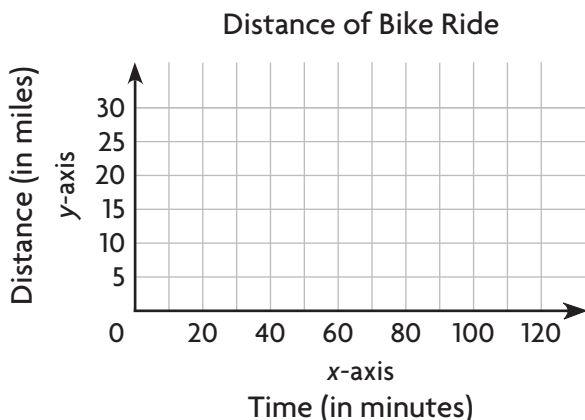
1.

Distance of Bike Ride				
Time (in minutes)	30	60	90	120
Distance (in miles)	9	16	21	27

Write the ordered pair for each point.

(_____, _____), (_____, _____)

(_____, _____), (_____, _____)



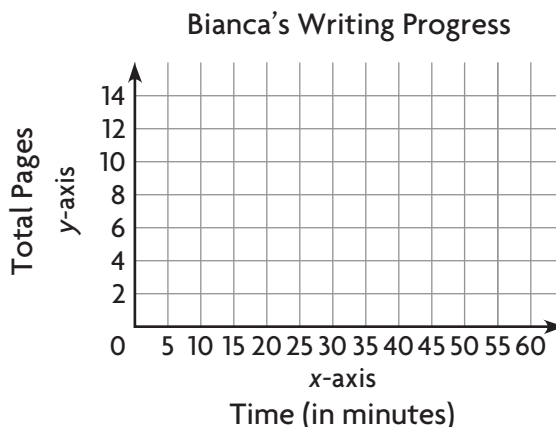
2.

Bianca's Writing Progress				
Time (in minutes)	15	30	45	60
Total Pages	1	3	9	11

Write the ordered pair for each point.

(_____, _____), (_____, _____)

(_____, _____), (_____, _____)



Name _____

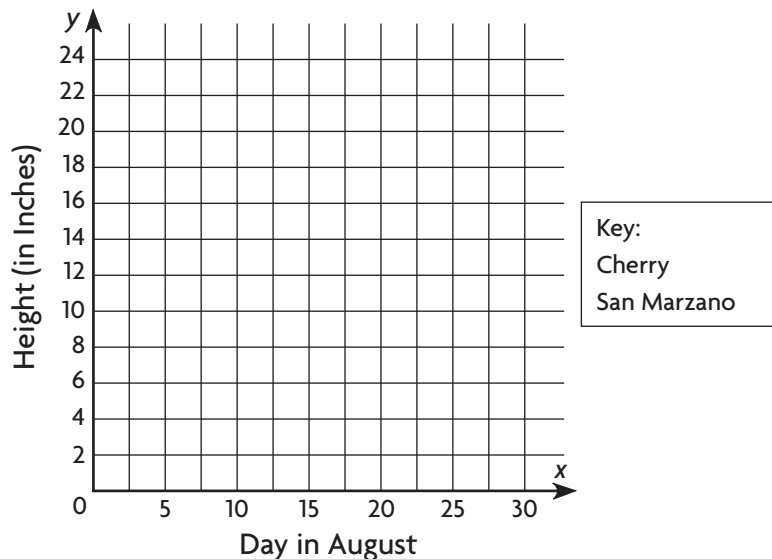
Graphing and Analyzing Tomato Plant Data

Rafael has two plants: a cherry tomato plant and a San Marzano tomato plant. Every 5 days in August, Rafael records the height of his cherry tomato plant. He knows that the San Marzano tomato plant grows exactly 2 inches every 5 days.

Day in August	Cherry Plant Height (in inches)	San Marzano Plant Height (in inches)
5	6	8
10	10	
15	14	
20	15	
25	18	
30	23	

- Graph Rafael's cherry tomato plant data on the coordinate grid.
- Complete the table above by filling in the height of the San Marzano plant.
- Use the completed table. Graph Rafael's San Marzano tomato plant data on the same coordinate grid. You may want to use a different color than you used in Exercise 1.

Heights of Rafael's Tomato Plants



4. Stretch Your Thinking What do you notice about the two sets of data you graphed?

Name _____

Line Graphs

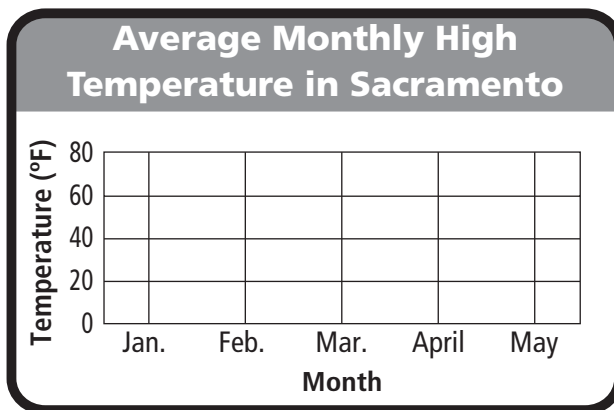
A **line graph** uses a series of line segments to show how a set of data changes over time. The **scale** of a line graph measures and labels the data along the axes. An **interval** is the distance between the numbers on an axis.

Use the table to make a line graph.

- Write a title for your graph. In this example, use **Average Monthly High Temperature in Sacramento**.
- Draw and label the axes of the line graph. Label the horizontal axis **Month**. Write the months. Label the vertical axis **Temperature (°F)**.
- Choose a scale and an interval. The range is 53–80, so a possible scale is 0–80, with intervals of 20.
- Write the related pairs of data as ordered pairs: **(Jan, 53); (Feb, 60); (Mar, 65); (April, 71); (May, 80)**.

Average Monthly High Temperature in Sacramento, California					
Month	Jan.	Feb.	Mar.	April	May
Temperature (°F)	53	60	65	71	80

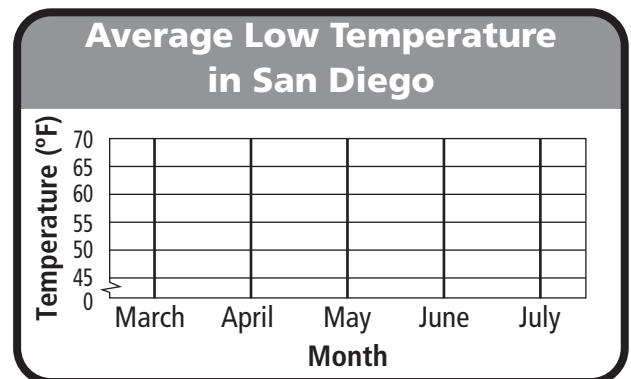
1. Make a line graph of the data above.



Use the graph to determine between which two months the least change in average high temperature occurs.

2. Make a line graph of the data in the table.

Average Low Temperature in San Diego, California					
Month	Mar.	April	May	June	July
Temperature (°F)	51	51	60	62	66



Use the graph to determine between which two months the greatest change in average low temperature occurs.

Name _____

Relating Graphs and Tables

For 5 months, the Department of Fish & Game counted the number of fish that were stocked in the county lakes, but the department mixed up their tables and graphs. Match each table to the correct line graph.

1. Lake: _____

Monthly Number of Fish Stocks in County Lakes					
Month	1	2	3	4	5
Fish Stocks	150	195	225	280	340

2. Lake: _____

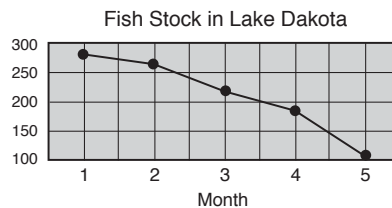
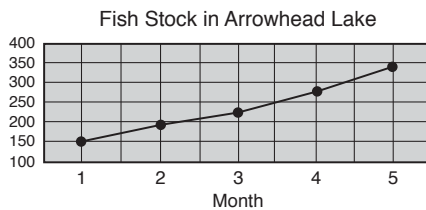
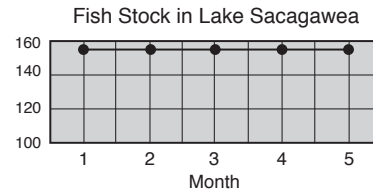
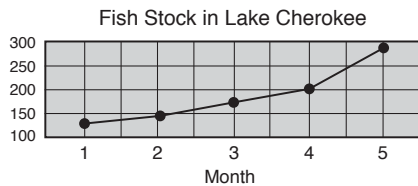
Monthly Number of Fish Stocks in County Lakes					
Month	1	2	3	4	5
Fish Stocks	153	153	153	153	153

3. Lake: _____

Monthly Number of Fish Stocks in County Lakes					
Month	1	2	3	4	5
Fish Stocks	280	265	220	185	110

4. Lake: _____

Monthly Number of Fish Stocks in County Lakes					
Month	1	2	3	4	5
Fish Stocks	130	145	175	205	290



Stretch Your Thinking

5. Use the line graphs above to describe the overall changes in the numbers of fish stocks in each lake.

Name _____

Numerical Patterns

A soccer league has 7 teams. How many players are needed for 7 teams? How many soccer balls are needed by the 7 teams?

	Number of Teams	1	2	3	4	7
Add <u>8</u> .	Number of Players	8	16	24	32	56
Add <u>4</u> .	Number of Soccer Balls	4	8	12	16	28

Step 1 Find a rule that could be used to find the number of players for the number of teams.

Think: In the sequence 8, 16, 24, 32, you add 8 to get the next term.

As the number of teams increases by 1, the number of players increases by 8. So the rule is to add 8.

Step 2 Find a rule that could be used to find the number of soccer balls for the number of teams.

Think: In the sequence 4, 8, 12, 16, you add 4 to get the next term.

As the number of teams increases by 1, the number of soccer balls needed increases by 4. So the rule is to add 4.

Step 3 For 7 teams, multiply the number of players by $\frac{1}{2}$ to find the number of soccer balls.

So, for 7 teams, 56 players will need 28 soccer balls.

Complete the rule that describes how one sequence is related to the other. Use the rule to find the unknown term.

Number of Teams	1	2	3	4	8	10
Number of Players	15	30	45	60	120	
Number of Bats	5	10	15	20		50

1. Divide the number of players by _____ to find the number of bats.
2. Multiply the number of bats by _____ to find the number of players.

Name _____

Patterns in Tables

For the first sequence, use the rule to write the unknown terms. Then, find a rule that relates one sequence to the other and use it to find the unknown terms in the second sequence.

1.

Rule: Add 3.

3				
	18		36	45

Multiply by _____.

2.

Rule: Add 10.

10				
5	10	15		

Divide by _____.

3.

Rule: Subtract 4.

20				
40		24		8

Multiply by _____.

4. **Stretch Your Thinking** Make your own pattern table. Use addition, subtraction, or multiplication rules. Fill in all the unknown terms.

Rule: _____

Name _____

Problem Solving • Find a Rule

Samantha is making a scarf with fringe around it. Each section of fringe is made of 4 pieces of yarn with 2 beads holding them together. There are 42 sections of fringe on Samantha's scarf. How many wooden beads and how many pieces of yarn are on Samantha's scarf?

Read the Problem	Solve the Problem																										
<p>What do I need to find? Possible answer: I need to find the number of beads and the number of pieces of yarn on Samantha's scarf.</p>	<table border="1"> <tr> <td data-bbox="858 621 1007 705">Sections of Fringe</td> <td data-bbox="1015 621 1078 705">1</td> <td data-bbox="1086 621 1150 705">2</td> <td data-bbox="1158 621 1222 705">3</td> <td data-bbox="1230 621 1294 705">4</td> <td data-bbox="1302 621 1366 705">6</td> <td data-bbox="1374 621 1461 705">42</td> </tr> <tr> <td data-bbox="858 716 1007 800">Number of Beads</td> <td data-bbox="1015 716 1078 800">2</td> <td data-bbox="1086 716 1150 800">4</td> <td data-bbox="1158 716 1222 800">6</td> <td data-bbox="1230 716 1294 800">8</td> <td data-bbox="1302 716 1366 800">12</td> <td data-bbox="1374 716 1461 800">84</td> </tr> <tr> <td data-bbox="858 810 1007 894">Pieces of Yarn</td> <td data-bbox="1015 810 1078 894">4</td> <td data-bbox="1086 810 1150 894">8</td> <td data-bbox="1158 810 1222 894">12</td> <td data-bbox="1230 810 1294 894">16</td> <td data-bbox="1302 810 1366 894">24</td> <td data-bbox="1374 810 1461 894">168</td> </tr> </table>						Sections of Fringe	1	2	3	4	6	42	Number of Beads	2	4	6	8	12	84	Pieces of Yarn	4	8	12	16	24	168
Sections of Fringe	1	2	3	4	6	42																					
Number of Beads	2	4	6	8	12	84																					
Pieces of Yarn	4	8	12	16	24	168																					
<p>What information do I need to use? Possible answer: I need to use the number of sections on the scarf, and that each section has 4 pieces of yarn and 2 beads.</p>	<p>Possible answer: I can multiply the number of sections by 2 to find the number of beads. Then, I can multiply the number of sections by 4, or the number of beads by 2, to find the number of pieces of yarn. So, Samantha's scarf has 2×42, or 84 beads, and 4×42, or 168 pieces of yarn.</p>																										
<p>How will I use the information? I will use the information to search for patterns to solve a simpler problem.</p>																											

1. A rectangular tile has a decorative pattern of 3 equal-sized squares, each of which is divided into 2 same-sized triangles. If Marnie uses 36 of these tiles on the wall behind her kitchen stove, how many triangles are displayed?

2. Leta is making strawberry-almond salad for a party. For every head of lettuce that she uses, she adds 5 ounces of almonds and 10 strawberries. If she uses 75 ounces of almonds, how many heads of lettuce and how many strawberries does Leta use?

Name _____

Simply Equated

Look for a pattern to solve each problem.


1. Amanda puts two rectangles together to form a new rectangle. Both rectangles have a height of 3 inches. The base of one rectangle is 2 inches. The base of the other is 4 inches. If Amanda puts 10 of each rectangle together, end to end, what will be the distance around the new figure?

3. Brandon wants to join a video game club. The membership costs \$47, and every game that he rents will cost \$2. If Brandon rents 17 games, how much money will he spend in all?

2. Carlos joins a DVD club. The membership costs \$49 per year. Each DVD costs \$4. Suppose Carlos buys 28 DVDs this year. How much money will he spend on the DVD club?

4. The table shows how much money Eduardo earns as a golf coach. He charges a flat fee of \$38, plus \$22 per hour. Complete the table. If Eduardo coaches for 8 hours, how much money will he make?

Number of Hours	1	2	3	4
Amount Earned (\$)	60			

5.  Look back at Problem 4. Describe a rule for determining how much money Eduardo earns by coaching.

6. **Stretch Your Thinking** Look back at Problem 3. Rewrite it so that Brandon spends a total of \$76.

Name _____

Graph and Analyze Relationships

The scale on a map is 1 in. = 4 mi. Two cities are 5 inches apart on the map. What is the actual distance between the two cities?

Step 1 Make a table that relates the map distances to the actual distances.

Map Distance (in.)	1	2	3	4	5
Actual Distance (mi)	4	8	12	16	?

Step 2 Write the number pairs in the table as ordered pairs.

(1, 4), (2, 8), (3, 12), (4, 16), (5, ?)

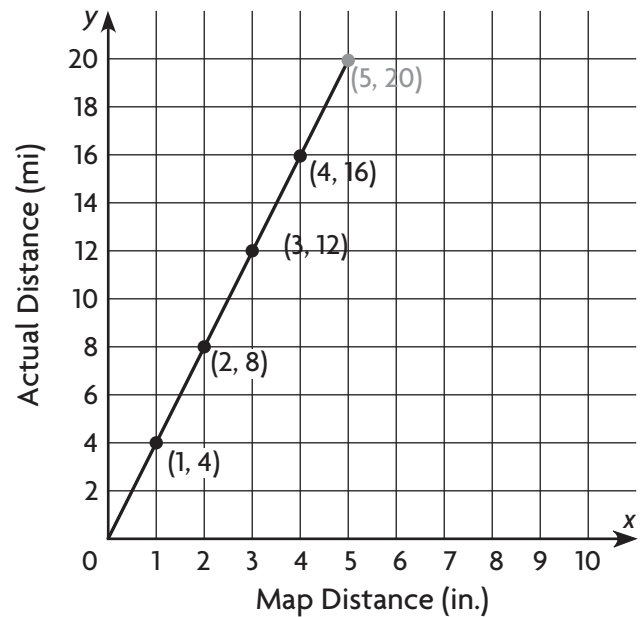
Step 3 Graph the ordered pairs. Connect the points with a line from the origin.

Possible rule: Multiply the map distance by 4 to get the actual distance.

Step 4 Use the rule to find the actual distance between the two cities.

So, two cities that are 5 inches apart on the map are actually 5×4 , or 20 miles apart.

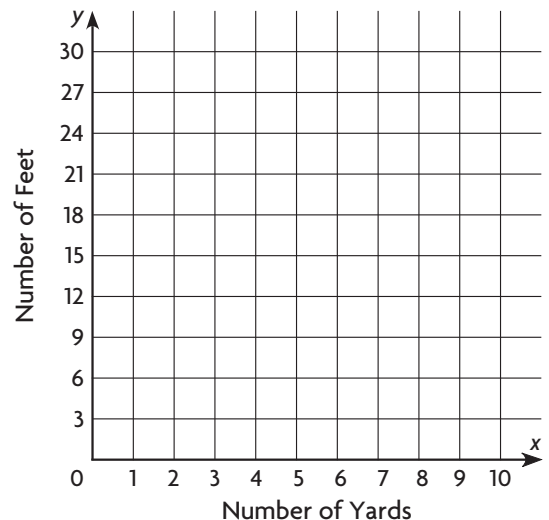
Plot the point (5, 20) on the graph.



Graph and label the related number pairs as ordered pairs. Then complete and use the rule to find the unknown term.

- Multiply the number of yards by _____ to find the number of feet.

Number of Yards	1	2	3	4	5
Number of Feet	3	6	9	12	



Name _____


Graph Sense

Elaine and Sandy both like lemonade. Elaine has a 16-tablespoon box of lemonade mix and uses 2 tablespoons of mix for each glass of lemonade. Sandy has an 18-tablespoon box of lemonade mix. He likes his lemonade stronger, and uses 3 tablespoons of mix for each glass of lemonade. Who will run out of mix first, Elaine or Sandy?

- Complete the chart to find how many glasses of lemonade each person can make from her or his box of mix. Draw extra columns as needed.

Number of Glasses						
Lemonade Mix (tbsp) Elaine						
Lemonade Mix (tbsp) Sandy						

- Use the grid at the right. Graph the related number pairs as ordered pairs. Label your graph.

-  **Write Math** Who runs out of lemonade mix first, Elaine or Sandy? **Explain** how you used your graph to decide.

