Name _____ Date _____

Using Patterns in Data

Self-Check

Use the questions in the menu to select practice representing patterns in graphs and using those patterns to make predictions and solve problems.

- Look at each row in the table.
- For each row, decide whether you are "Working On It," you are "Getting It," or you already "Got It."
- Remember, you may feel you are "Working On It" for one row, but for another row, you already "Got It."
- On this table, draw a circle around each set of problems you decide to do.
- If one set of problems seems too easy or too hard, choose a different set from the same row.

Workshop Menu

Can I Do This?	▲ Working On It!	● Getting It!	■ Got It!
			
Make a point graph and draw a best-fit line.	**Questions 3, 13**	**Questions 3, 10, 13**	**Questions 10, 13**
Make predictions and generalizations using tables and graphs.	**Questions 4–5, 14**	**Questions 5–7, 14**	**Questions 6–9, 14**
Use multiplicative patterns to solve problems.	**Question 12**	**Questions 11–12**	**Questions 12, 15**

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Discuss

1. When Jessie's family went on a trip in their car, they drove an average of about 50 miles each hour. How long did it take Jessie's family to drive 500 miles? Show or tell how you know.

2. In 1993 the winning speed at the Indy 500 was 157 miles per hour.

A. In 1911 the winning speed was 75 miles per hour. About how many times faster did the winner drive in 1993 than in 1911?

B. The speed limit on freeways in cities is usually 55 miles per hour. About how many times faster did the winning 1993 car travel during the race than a car travels on a freeway?

Use the *Winning Speeds at the Indianapolis 500* graph to help you answer the following questions.

▲●□ **3.** Use a ruler to draw a best-fit line on the graph for the years in which the points suggest a line.

▲□□ **4.** There were no races in 1917 or 1918 during World War I.

A. Use the graph to estimate the winning speed if there had been a race in 1917.

B. Explain how you made your estimate.

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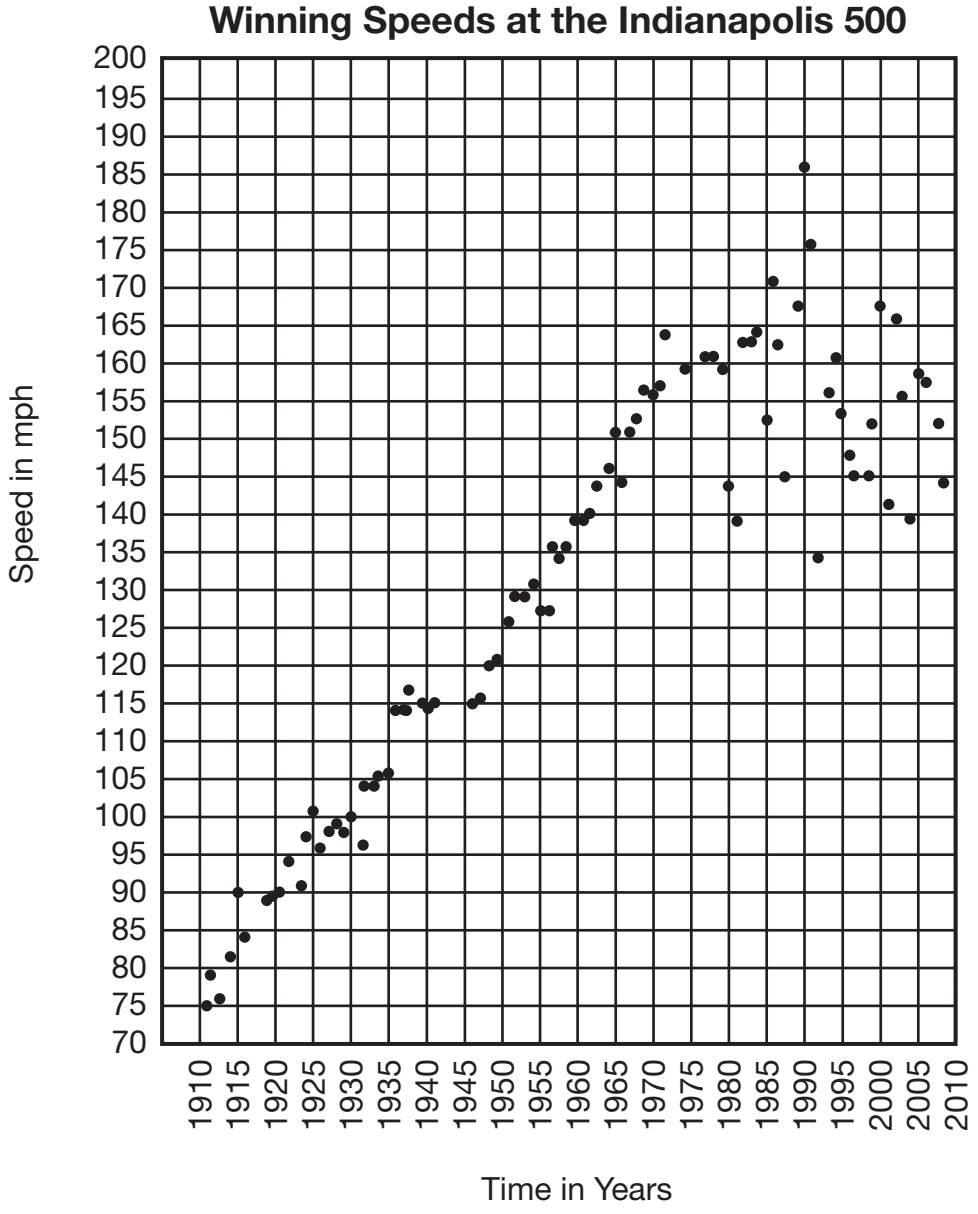
Speeds at the Indianapolis 500

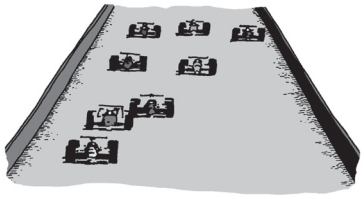
The Indianapolis 500 is a famous car race that takes place every Memorial Day weekend in Indianapolis, Indiana. It is sometimes called the Indy 500. The cars race around an oval track until they have gone 500 miles. The graph shows the average speed in miles per hour for the winner of each race.

The drivers go as fast as possible unless they are given a yellow light. This is a signal that the track is dangerous due to an accident or rain. The cars must slow down and maintain their race position until the track is safe again.



Name _____ Date _____

5. There were no races from 1942–1945 during World War II.



A. Use the graph to estimate the winning speed if there had been a race in 1943.

B. Explain how you made your estimate.

C. Did you use interpolation or extrapolation?

6. In 1979, the yellow light rule was changed. Starting in 1979, when a yellow light is on, a pace car leads all the cars at the slower speed. The cars still maintain their positions as before, but they may not pass the pace car. Do you think the rule change made a difference to the average winning speed? Why do you think so?

7. Looking at the data, what do you think might have happened in 1990? Does the 1990 data point fit more with the data before 1979 or the data after 1979? Explain your answer.

8. A. Can you use the graph to make an accurate prediction about the winning speed in 2015? Why or why not?

B. If so, what is your prediction?

C. Did you use interpolation or extrapolation?

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9. Write a short paragraph that tells the story of the graph. In your paragraph, describe the graph. What does the graph tell you about the speeds of the winning cars over the years?

10. Here is part of the graph. This part shows the winning speeds from 1980 to 2008.

A. Describe this part of the graph.

B. Can you draw a best-fit line for this part of the graph? Why or why not?

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11. A. A driver must complete 200 laps to finish the race. Complete the table.

B. Describe any patterns you see in the table.

C. If you know the number of laps, how can you find the number of miles the race car has traveled?

L Number of Laps	*D* Distance in Miles
2	5
4	10
6	15
8	
10	25
20	
40	100
60	
	200
100	
200	500

Check-In: Questions 12–15

12. In 1915, the fifth year of the race, the winning speed was about 90 miles per hour.

A. Complete the table.

B. Describe any patterns you see in the table.

T Time in Hours	*D* Distance in Miles
1	90
2	
3	
	360
5	450
6	

C. If you know the time in hours, how can you find the number of miles the race car has traveled?

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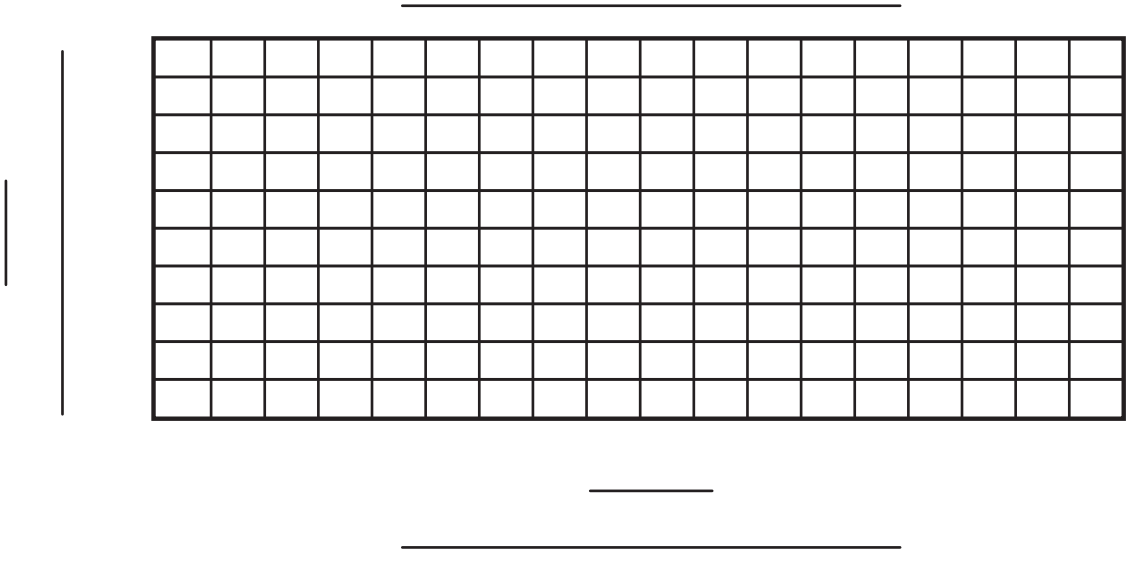
▲●■ **13.** Mr. Sabol drove to see the Indianapolis 500. It usually takes him about 6 hours to get there. He kept track of how far he had driven after each hour and put the data for the first four hours in this table.

T Time in Hours	*D* Distance in Miles	*(T, D)* Ordered Pairs
1	62	
2	122	(2, 122)
3	176	
4	240	

A. Write the ordered pairs for each data point.

B. Make a point graph of Mr. Sabol's data. Choose a scale for each axis that will leave room to make predictions.

C. If the points lie close to a line, use a ruler to draw a best-fit line. Extend the line in both directions.



▲●■ **14.** If Mr. Sabol lives about 350 miles away, will he get there in six hours? Show how you know using your graph.

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15. A. Describe any patterns you see in the table in Question 14.

B. If you know the number of hours that Mr. Sabol has traveled, how can you estimate the distance he has traveled?