

lesson twenty-eight - student resource sheet

Lesson Objective: Construct line graphs and solve word problems involving line graphs.

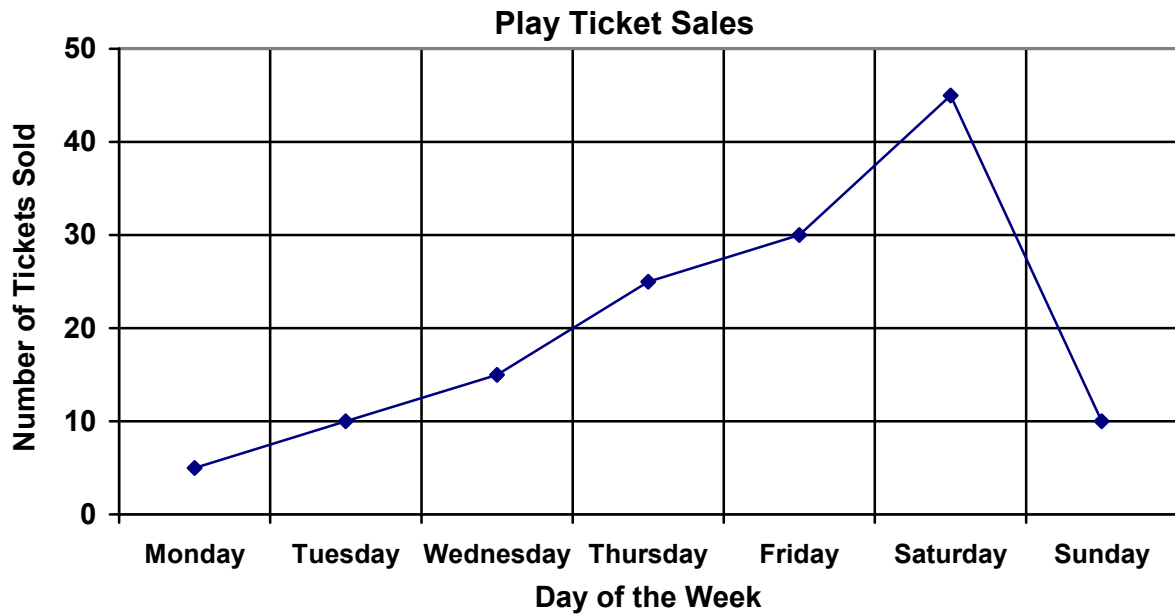
Vocabulary Box

line graph – A graph that uses a line to show how data change over time.

Example: The graph below is a line graph.

scale – A series of numbers written along one side, or axis, of a graph to show the range of data on a graph. It begins at zero and ends at a number higher than the greatest data value on the graph. Example: The scale on the graph below is zero through 50.

intervals – The differences between pairs of ordered numbers on a graph's scale. Every interval on a single graph should be equal. Example: The intervals on the graph below are 10.

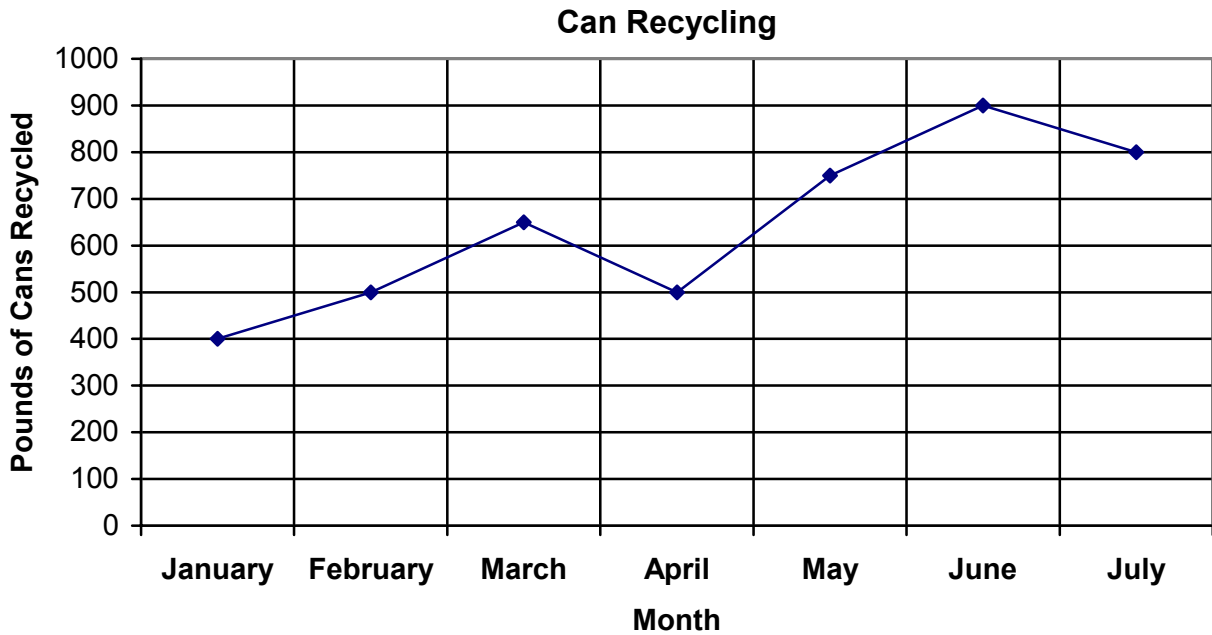




Guided Practice

Directions: Please complete the following practice problems. Your teacher will review the answers. Make sure you show all your work.

I. Use the line graph below to answer each question. You may work with a partner.

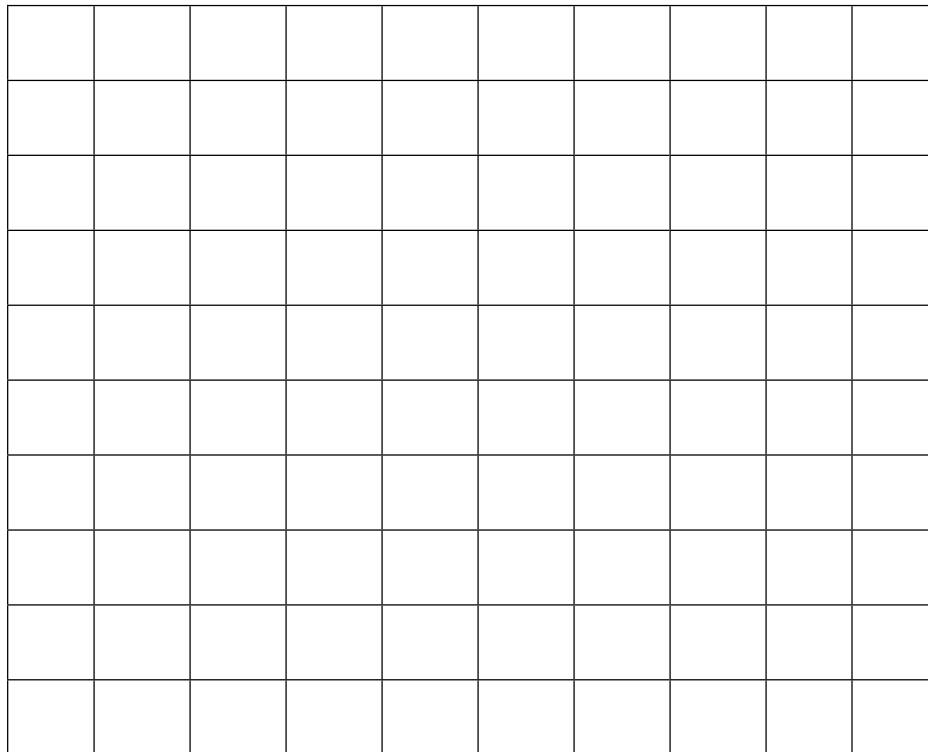


1. How many pounds of cans were recycled in January? _____
2. In which month was the greatest amount of cans recycled? _____
3. How many more pounds of cans were recycled in June than in July? _____
4. How many pounds of cans were recycled in April? _____
5. In which month was the least amount of cans recycled? _____
6. In which month were more cans recycled, February or March? How much more? _____

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- II. Display the data given in the table below on the blank line graph that follows. Follow the steps: Write a title, label the bottom and left side, and choose the interval and scale. When you are finished, check your line graph for all the parts, using the word *tails*. You may work with a partner, but each of you must complete your own line graph.

TREE GROWTH	
Year	Height (in feet)
2000	4
2001	6
2002	7
2003	10
2004	14
2005	19



III. Use your completed line graph, above, to answer the following questions. Please work independently.

1. How many feet did the tree grow during the six years shown on the graph?

2. Between which two years did the tree grow the most?

3. Suppose the tree was 23 feet tall in 2006. Could you display that height on this line graph? Explain.



Summary/Closure

A. Vocabulary Words

Directions: Circle the letter of the correct answer.

1. A graph that shows how data change over time is called a _____.

- A. bar graph
- B. circle graph
- C. line graph
- D. pictograph

2. The left side of a graph is labeled 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, and 4. What is the interval of this graph's scale?

- A. 0.5
- B. 1
- C. 2
- D. 5

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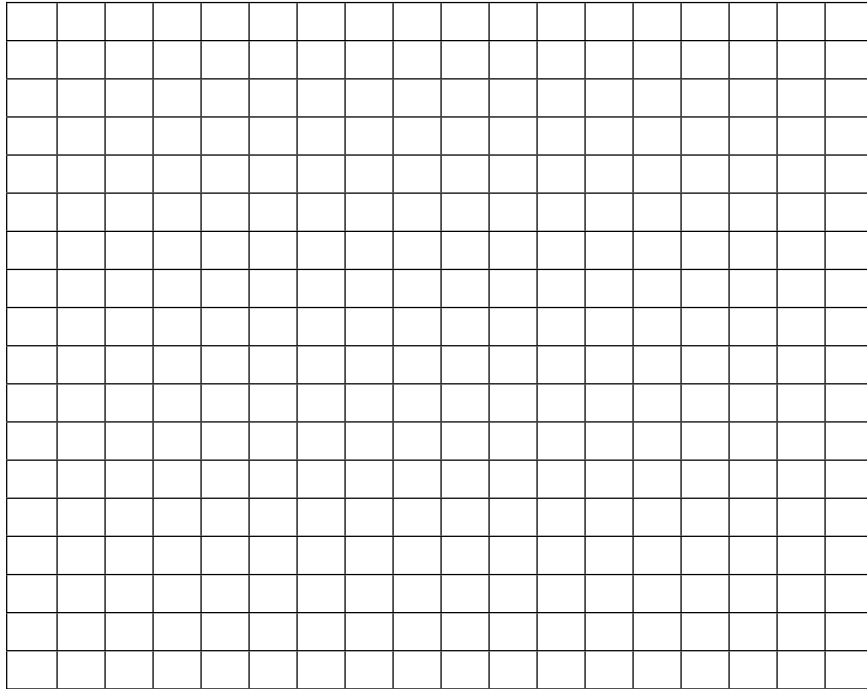
3. You need to graph the data shown below. What would be the best scale for your graph?

DATA: 23, 16, 9, 37, 18, 14, 5, 20

- A. 0–20
 - B. 0–23
 - C. 0–40
 - D. 0–100
4. Which of these data sets would be best displayed on a line graph?
- A. the U.S. population, by age group
 - B. the areas of the five largest U.S. states
 - C. the populations of the five largest U.S. states
 - D. the U.S. population growth, from 1900 to 2000

B. Summarize What We Learned Today

Draw an example of a line graph. Then, label the parts of the graph and explain how the word *tails* helps you draw line graphs. Write a question that can be answered by reading your graph. Answer the question, and explain how you used the graph to find the answer. You will use these notes as a personal reminder.



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Lesson Objective: Construct line graphs and solve word problems involving line graphs.

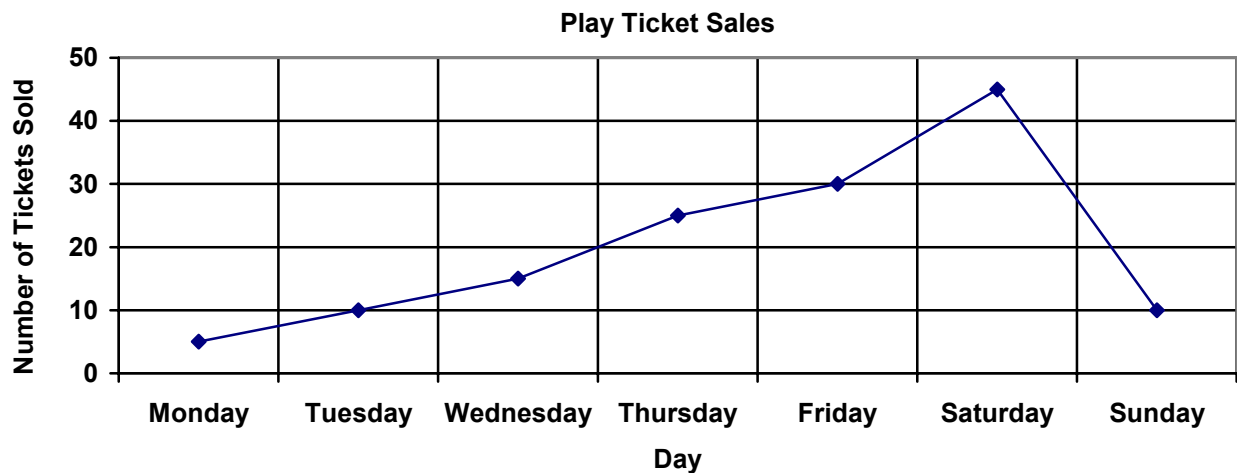
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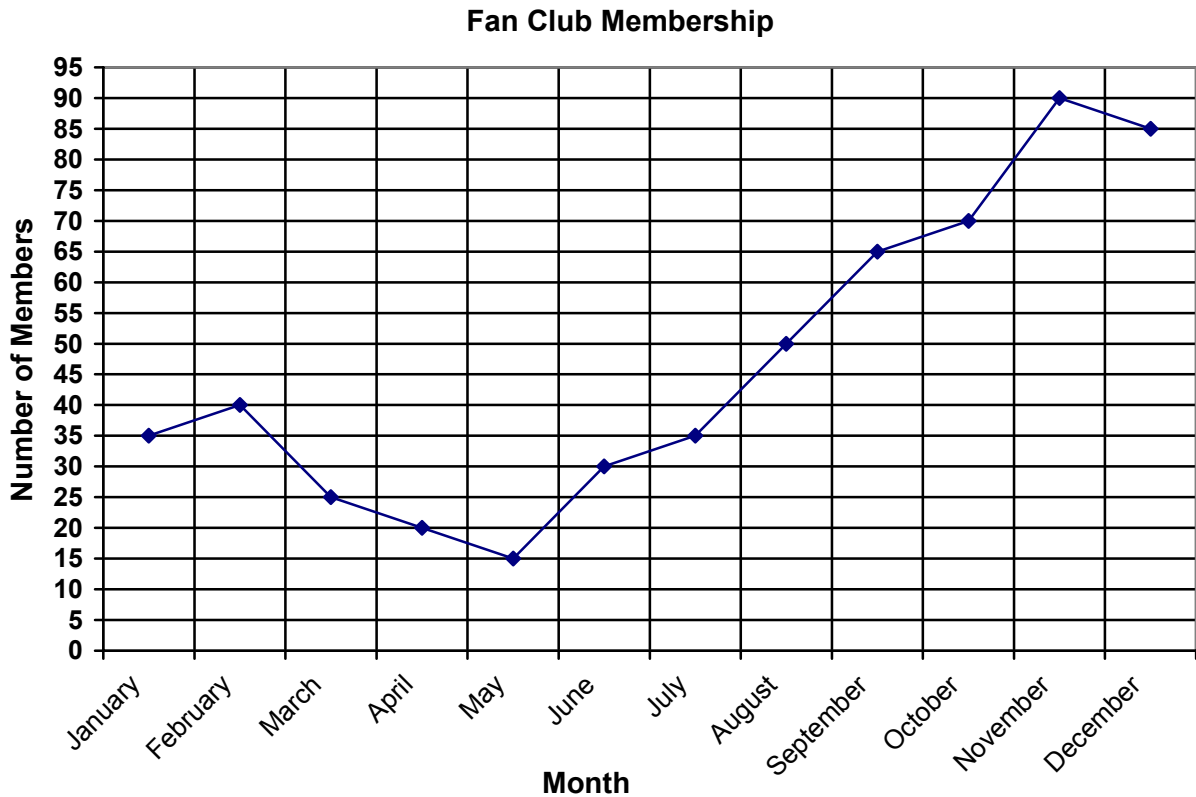




Independent Practice

Directions: Complete the following practice problems on your own. Your teacher will review the answers.

I. Use the line graph below to answer each question.



1. How many members did the fan club have in February?

2. In which month did the club have the most members?

3. How many more people were in the club in August than in May?

4. How many people belonged to the club in September?

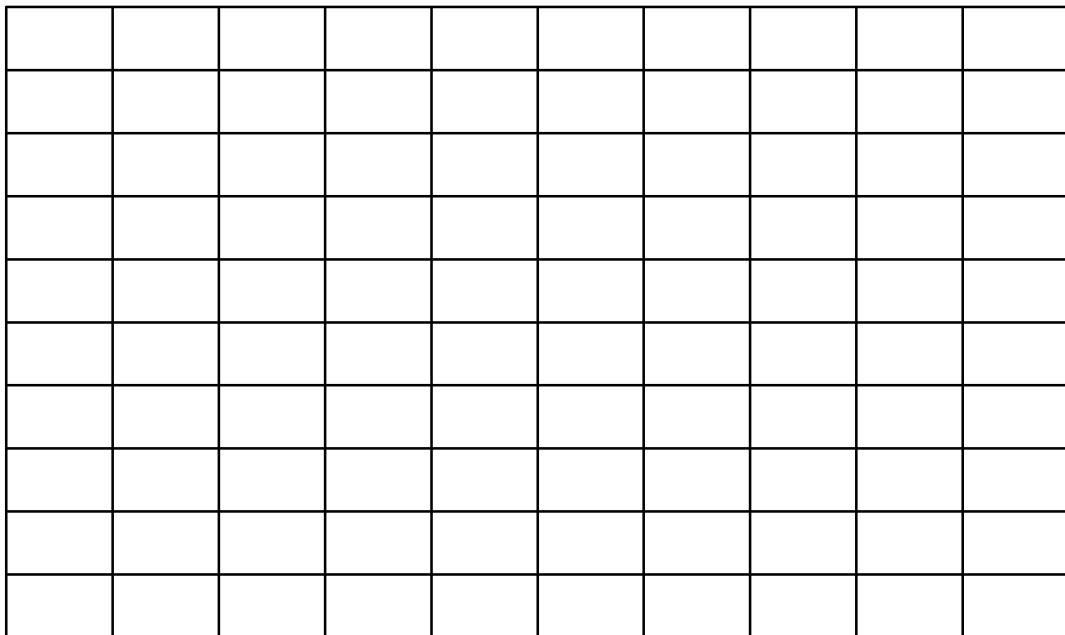
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5. In which two months did the club have the same number of members?

6. In which month did the club have more members, March or April? How many more?

II. Display the data given in the table below on the blank line graph that follows.

COMMUNITY SOCCER LEAGUE	
Year	Number of Teams
1998	14
1999	11
2000	12
2001	15
2002	17
2003	15
2004	18
2005	19



BONUS?

Directions: Write three questions about the soccer league line graph in part II of the Independent Practice section. Then use the graph to answer each question.

1. Question:

Answer:

2. Question:

Answer:

3. Question:

Answer:

Problem Solving

Daniel lives in Miami, Florida. He just finished a project for the science fair. In his project, Daniel measured how much rain fell at his house each day for nine months. Then, he used the data to find the average amount of rain that fell each month. The results are shown in the table below.

1. Daniel wants to display his data on a line graph. What is a good scale to use for his graph?
2. Daniel wants to use whole numbers for his scale intervals. What is the best interval for him to use?
3. Make a line graph to show the data.

[illegible]

4. Based on the data that Daniel collected for April through December, what can you predict about the amount of rain Miami will receive in January? Explain.



Directions: Use what you know about line graphs to answer the questions.

1. What is a line graph?
2. Look at the graph you constructed in the Problem Solving section to describe the average Rainfall in Miami.

Which month did it rain the most?

Which two months had the same rainfall?

3. Name five parts that all line graphs have.

lesson thirty - student resource sheet

Lesson Objective: Choose and use an appropriate problem-solving strategy.



Guided Practice on Problem Solving Strategies

Directions: Complete the following practice problems with your partner. Your teacher will review the answers. Make sure you show all your work, check your answers, and write your answers in complete sentences.

1. Gina bought a long piece of ribbon for an art project. She cut the ribbon in half. Then she cut each of those halves into fourths. After that, she cut each of those pieces into thirds. How many pieces of ribbon does Gina have?

Step 1: What do you need to find out? _____

Step 2: What do you know? _____

She bought one long piece of ribbon.

She cut the ribbon in _____.

Then she cut each half into _____.

Then she cut each fourth into _____.

Step 3: Choose a strategy to solve the problem and plan how to use it.

Strategy: _____

Step 4: Use the strategy to solve the problem.

Draw a long rectangle to represent the whole piece of ribbon.

Draw a line to show how Gina cut the ribbon in half.

Draw lines to show how Gina cut each half into fourths.

Draw lines to show how Gina cut each fourth into thirds.

Now, count the total number of parts in your rectangle picture to find how many pieces of ribbon Gina ends with.

Step 5: Check your answer and write the answer in a complete sentence.

Work backward through each cut to check your answer.

Pieces of ribbon before cut into thirds: $\underline{\hspace{1cm}} \times \frac{1}{3} = \underline{\hspace{1cm}}$

Pieces of ribbon before cut into fourths: $\underline{\hspace{1cm}} \times \frac{1}{4} = \underline{\hspace{1cm}}$

Pieces of ribbon before cut into halves: $\underline{\hspace{1cm}} \times \frac{1}{2} = \underline{\hspace{1cm}}$

Answer:

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2. Calvin just finished designing his garden. The garden is a square, and each side of the garden measures eight feet. Calvin divided the garden in half. He will use one of those halves to plant vegetables. How much space will the vegetable section of the garden cover?

Step 1: What do you need to find out? _____

Step 2: What do you know?

The garden has the shape of a _____.

Each side of the garden measures _____.

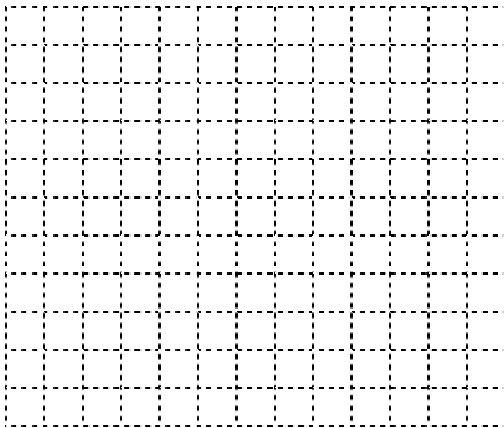
Calvin used _____ of the garden for the vegetable section.

Step 3: Choose a strategy to solve the problem and plan how to use it.

Strategy: _____

Step 4: Use the strategy to solve the problem.

Draw a picture of the entire garden on the grid paper shown below. Then, draw a line on your square to divide it in half. Label one of those halves "Vegetables."



Count the number of grid squares that cover the section of your drawing that you labeled "Vegetables" to find the amount of space the vegetable section of the garden covers.

The vegetable section covers _____ grid squares.

Each grid square represents _____ square foot.

So, the vegetable section covers _____ square feet.

Step 5: Check your answer and write the answer in a complete sentence.

Use the formula for the area of a rectangle to check your answer.

Find the area of the entire garden:

Area = length \times width

Area = _____ \times _____

Area = _____ square feet

Divide the total area by two to find the area of the vegetable section.

_____ \div 2 = _____

Answer: _____

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Problem **Solving**

Directions: Complete the following practice problems on your own. Your teacher will review the answers. Make sure you show all your work, check your answers, and write your answers in complete sentences.

1. Nevin bought an extra long submarine sandwich for his birthday party. He cut the sandwich into four equal pieces. Then he cut each of those pieces in half. Finally, he cut each of those pieces in half to serve at the party. How many pieces of sandwich did Nevin have to serve?

What do you need to find out? _____

What do you know? _____

What strategy will you use to solve the problem? _____

How will you use that strategy to solve the problem? _____

Use your strategy to solve the problem in the space below.

How can you check your answer? _____

Answer: _____

2. Ellen made a birthday present for Nevin. She made a frame for a photograph of them together. The photograph is a rectangle that is five inches long and four inches wide. Ellen put a two inch matte around the photo. Then she made a rope frame around the matte. How much rope did Ellen use?

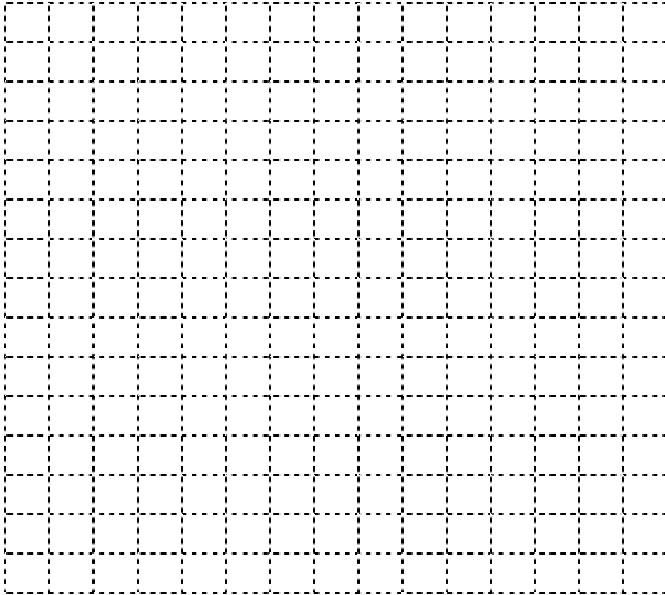
What do you need to find out? _____

What do you know? _____

What strategy will you use to solve the problem? _____

How will you use that strategy to solve the problem? _____

Use your strategy to solve the problem on the grid below. Let each side of a single grid square represent 1 inch.



How can you check your answer? _____

Answer: _____

