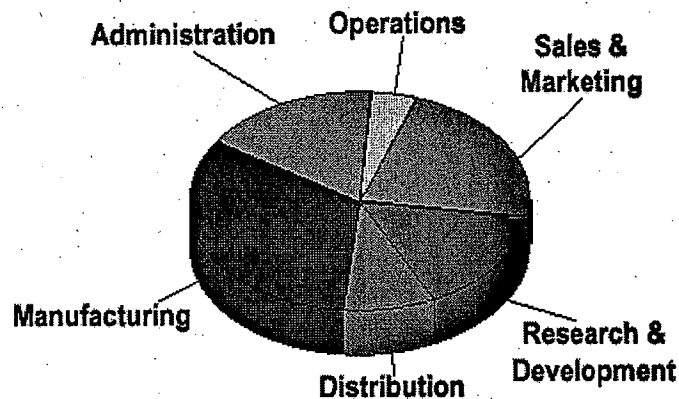


Far West Region GREAT Center

Mathematics Academy 2007

Part I: Focus on Reading and Interpreting Graphs, Charts, and Tables Computer Lab and Activities



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QAR Strategy – A Six-Step Process

- **Read the question –** Stress that students read the question and not the answer choices. Reading the question is an age-old test-taking strategy that helps students focus on important information as they read. However, students often become distracted by the choices. They look at the choices, quickly cross-reference the choices with the data in the graphic and then gravitate to any matches that they noted, even if the choices do not accurately answer the question asked.
- **Review the graphic –** Have students read the title, labels, and units and then reflect on the type of graphic used.
- **Reread the question –** Now have students reread the question to remind themselves of the focus. Reading the question twice ensures that students focus on the specific information requested.
- **Assign a QAR –** At this step, have students identify the QAR strategy that they will use to determine a correct answer.
- **Answer the question –** Students often want to go straight to the answers and select their choice. Have students first answer the question without referring to the choices. This requires that students think more analytically and to troubleshoot the graphic if their answer is not one of the choices provided.
- **Locate the answer in the answer choices –** Finally, have students locate their answer in the answer choices.

Guide Sheet to Using QARs with Graphics

<p style="text-align: center;"><u>Right There</u></p> <p>The answer is in the graphic.</p> <p>The answer is usually easy to find. (You can put your finger on the page and point to the answer.)</p> <p>The words used to make up the question and the words or numbers used to answer the question are Right There in the graphic, often as one or more of the labels.</p>	<p style="text-align: center;"><u>Author and You</u></p> <p>The answer is not in the graphic.</p> <p>You can use the information you already know about the topic</p> <p style="text-align: center;">AND</p> <p>Any information the author has provided in the paragraph or graphic to answer the question.</p> <p>Use your knowledge and the author's information to answer the question.</p>
<p style="text-align: center;"><u>Think and Search</u></p> <p>The answer is in the graphic; however, you must put together different graphic elements (titles, legend, data) to reach the answer.</p> <p>The words in the question and the words or numbers needed to answer the question are not the same.</p> <p>Think and Search different sections or elements of the graphic to answer the question. More than one graphic may need to be consulted.</p>	<p style="text-align: center;"><u>On Your Own</u></p> <p>The answer is not in the graphic.</p> <p>Using the information you already know about the topic or based upon your experience, you can answer the question.</p> <p style="text-align: center;">HOWEVER</p> <p>Reading the graphic will usually expand your knowledge and will help you give a specific or clearer answer to the question.</p>

Adapted from Raphael, T. (1986). Teaching Question-Answer Relationships, Revised. *The Reading Teacher*, 39, 516-522 and Mesmer, H. A. E., & Hutchins, E. J. (2002). Using QARS with Charts and Graphs. *The Reading Teacher*, 56, 21-27.

Travel Trip Instructions

Step 1 - Travel Budget

Decide where you want to go on vacation. To help you decide, you need to have a vacation budget. Write your total trip budget on the *Travel Budget Allowance Sheet*. You will also need resource materials to help you make your decision. Visit the library travel section or check out the Internet for information. Area Chambers of Commerce or the AAA can also provide resources.



A good place to start is **Yahoo Travel Guides** at <http://travel.yahoo.com>. Each state is listed along with most cities in each state. If you are visiting a smaller city, use a common search engine, such as **Google** at <http://www.google.com> or **Dogpile** at <http://www.dogpile.com> or **AltaVista** at <http://www.altavista.com>. Just type in the city and state that you plan to visit.

Suggestions on the best restaurants, tourist sites, and parking places are offered for major cities in the United State with links to area news, sports, shopping and the arts can be found at **CitySearch** at <http://sidewalk.citysearch.com>. **Expedia** offers many travel deals at <http://www.expedia.com/daily/home>.

Step 2 - Trip Planning Worksheet

Use the Internet to find out about the city that you want to visit. Work through these questions:

- Find 3 attractions that you want to visit and information about each one.
- Find a hotel in the city you will be visiting that is the best value.
- Find 2 restaurants in the city where you would like to eat.
- Find out 3 things about the city that you didn't know before

Step 3 - Driving Directions

Go to one of the following sites and print out the driving directions from your home to your vacation destination.

<http://www.mapquest.com> or <http://www.freetrip.com> or <http://www.randmcnally.com>

You will need to know the origin of your trip (city and state where you live) and the destination of your trip (city and state where you are going on vacation).

Step 4 - Your Travel Budget

The above programs will figure the trip time and distance. Based on this information, complete your travel budget and answer the following questions:

- a. How long will it take you to get to your vacation destination?
- b. Round to the nearest 100 the number of miles you will have traveled after four hours of driving. Where will you be? Do the same for miles traveled after six hours of driving.
- c. In which direction will you primarily be traveling on this trip?
- d. If you average 60 miles per hour for the entire trip, how many hours would it take you? What if you average 65 miles per hour?
- e. If your car gets 25 miles per gallon and gas costs an average of 2.70 per gallon, how much will the gas for your trip cost?

Step 5 - Graph It!

Create a graph to display the cost of your trip. Share your Travel Trip graph with others in the group.



Trip Planning Worksheet

Find three attractions that you want to visit and information about each one. Name the attractions.

- Why do you want to visit these sites?
- What did you learn about these sites?
- What is the cost of admission for each one? The total cost for all three?
- Can you afford to go to all three attractions?

Find a hotel in the city that you will be visiting that has the best value for your money.

- What hotel did you pick and why?
- What is the cost per night? The total cost per trip?
- Are there additional charges such as a room tax? How much?
- Be sure to add this into your hotel costs.

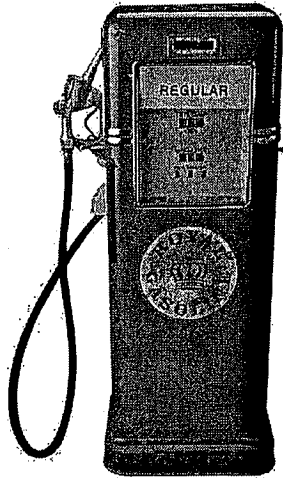
Find two restaurants in the city where you would like to eat. Name each one.

- What is the average tab for each restaurant?
- Could you afford to eat there every day?

Find out three things about the city that you didn't know before.

- 1.
- 2.
- 3.

Create a graph to display the different expenses you will incur on the trip.



CALCULATING MILES PER GALLON

Gas mileage means the number of miles a vehicle will travel on one gallon of gas.

1. Write down the odometer reading when the gas tank is filled up.
2. The next time the gas tank is filled, write down how many gallons of gas it takes.
3. Then write down the odometer reading again.
4. Subtract the first odometer reading (step 1) from the second odometer reading (step 3). This will tell you the number of miles traveled between the two fill-ups.
5. Divide the number of miles traveled (step 4) by the number of gallons of gas used (step 2). This number equals the gas mileage of your car.

Mileage Math

First fill up:

_____ = A
(odometer reading)

Second fill up:

_____ = B
(gallons of gas)

_____ = C
(odometer reading)

Calculating Miles Per Gallon

$C - A = D$ (miles traveled)

$D/B = \text{mpg}$ (miles per gallon)

Sample Travel Budget

Destination of Trip		
Goal of Trip		
Dates of trip		
Number of nights		
Number of days		
Total trip allowance		
Per day allowance		
Breakdown of Expenses	Per Day	Total
Hotel		
Airfare		
Car Rental		
Bus/Taxi		
Entertainment		
Gifts and Souvenirs		
Meals		
Gasoline/Tolls		
Other		
Other		
Other		
Other		
Other		
Other		
TOTAL		

Create Your Travel Graph!



Nutrition Facts

Serving Size 1/2 cup (75g)
Servings Per Container 6

Amount Per Serving

Calories 280 **Calories from Fat** 110

% Daily Value*

Total Fat 12g **18%**

Saturated Fat 1.5g **9%**

Trans Fat 0g

Polyunsaturated Fat 2g

Cholesterol 0mg **0%**

Sodium 20mg **1%**

Total Carbohydrate 43g **14%**

Dietary Fiber 10g **38%**

Sugars 5g

Protein 10g

Vitamin A 0% • Vitamin C 0%

Calcium 6% • Iron 20%

*Percent Daily Values are based on a
2,000 calorie diet.

INGREDIENTS: Oat Bran, Rolled
Oats, Barley, Rye, Sunflower
Seed, Flax Seed, Chia Seed,
Lecithin, Dried Apple, Apricots,
Raisins, Walnuts, Almonds,
Nutmeg, Vanilla

Nutrition Facts

Serving Size: 1 cup (55g)
Servings Per Container: About 7

Amount per Serving		
Size		
Calories Total	180	
from Fat	20	
% Daily Value*		
Total Fat	2.5 g	4%
Saturated Fat	0 g	0%
Cholesterol	0 mg	0%
Sodium	250 mg	10%
Total Carbohydrate	38 g	13%
Dietary fiber	11 g	44%
Sugars	10 g	
Protein	9 g	
% Daily Value for 2,000 Calorie Diet		
Vitamin A	IU	0%
Vitamin C	mg	0%
Calcium	mg	25%
Iron	mg	15%

<TD* Daily Value not established.
+ Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients:

Organic Whole Wheat Meal, Organic Whole Wheat Bran, Organic Soy Flour, Organic Evaporated Cane Juice, Organic Rice Flour, Organic Soy Fiber, Organic Barley Malt Extract, Organic Oat Bran, Organic Oat Flour, Organic Whole Kamut, Brand Wheat Flour, Sea Salt, Organic Whole Millet, Organic Whole Barley Flour, Rice Bran Extract, Organic Molasses, Organic Whole Quinoa, Calcium Carbonate, Natural Vanilla, Natural Almond Flavor, May Contain: Traces of Peanuts, Tree Nuts, Soy

Kellogg's® Rice Krispies®

Nutrition Facts

Serving Size **1 1/4 Cup (33g/1.2 oz.)**
Servings Per Container **About 10**

Amount Per Serving	Cereal with 1/4 Cup Vitamins A&B	
	Cereal	Fat Free Milk
Calories	120	180
Calories from Fat	0	0
	% Daily Value**	
Total Fat 0g*	0%	0%
Saturated Fat 0g	0%	0%
Trans Fat 0g		
Cholesterol 0mg	0%	0%
Sodium 320mg	13%	16%
Potassium 40mg	1%	7%
Total Carbohydrate 29g	10%	11%
Dietary Fiber 0g	0%	0%
Sugars 3g		
Other Carbohydrate 26g		
Protein 2g		
Vitamin A	10%	15%
Vitamin C	10%	10%
Calcium	0%	15%
Iron	50%	50%
Vitamin D	10%	25%
Thiamin	25%	30%
Riboflavin	25%	35%
Niacin	25%	25%
Vitamin B6	25%	25%
Folic Acid	25%	25%
Vitamin B12	25%	35%
Phosphorus	4%	15%

* Amount in cereal. One half cup of fat free milk contributes an additional 40 calories, 65mg sodium, 6g total carbohydrates (6g sugars), and 4g protein.

** Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories 2,000	2,500
Total Fat	Less than 65g	80g
Saturated Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Potassium	3,500mg	3,500mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g

Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4

INGREDIENTS: RICE; SUGAR; SALT; HIGH FRUCTOSE CORN SYRUP; MALT FLAVORING; VITAMINS AND IRON: IRON; ASCORBIC ACID (VITAMIN C); NIACINAMIDE; PYRIDOXINE HYDROCHLORIDE (VITAMIN B6); RIBOFLAVIN (VITAMIN B2); THIAMIN HYDROCHLORIDE (VITAMIN B1); VITAMIN A PALMITATE; FOLIC ACID; VITAMIN B12 AND VITAMIN D. TO MAINTAIN QUALITY, BHT HAS BEEN ADDED TO THE PACKAGING.

Exchange: 2 Carbohydrates
The dietary exchanges are based on the Exchange Lists for Meal Planning, ©2003 by The American Diabetes Association, Inc. and The American Dietetic Association.

NLI#02907

Activity 1 - Create a Graph!

Create a sample graph using one of the following programs or you may wish to use Excel to create a graph. Use the information from one of the data sites to create your graph. You may create any type of graphic. Print the graph when you are done.

NCES

<http://nces.ed.gov/nceskids/createagraph/>

Statistics Canada

<http://www.statcan.ca/english/edu/power/ch9/create/create.htm>

Charts and Graphs. Educational Resources for Adult

<http://www.fodoweb.com/erfora/readtext.asp?txtfile=communications/charts.toc>

Handling Data. BBC

http://www.bbc.co.uk/schools/ks2bitesize/maths/handling_data.shtml

Data Sources for Your Graph – Select data from one of the following sites:

U. S. Census Bureau

<http://www.census.gov/>

Weekly Nielson Ratings

<http://www.cnn.com/SHOWBIZ/TV/top10/content.html>

FedStats

<http://www.fedstats.gov/>

Sports Stats

<http://sportsillustrated.cnn.com/baseball/mlb/ml/stats/>

NFL Stats

<http://www.nfl.com/stats/>

NBA Stats

<http://aol.nba.com/statistics/index.html>

Activity 2 – Preview a WebQuest on Charts and Graphs

Spend about five minutes looking at the type of activities available for your students through these three webquests.

<http://fc.portage.k12.wi.us/~caulumj/lesson1.html>

[http://ib005.k12.sd.us/Excel%20WebQuest/charts and graphs.htm](http://ib005.k12.sd.us/Excel%20WebQuest/charts%20and%20graphs.htm)

<http://www.bhsonline.org/teachers/dube/patswebquest.htm#Process%20for%20Activity%201.%20Task>

Activity 3 – Plot That Coordinate!

Part 1

Plot the following coordinates on the grid. What letters did you create?

<http://www.shodor.org/interactivate/activities/simpleplot/>

-2, -4

-2, 4

2, -4

2, 4

-4, 8

-4, -8

6, -8

0, -7

-3, 0

3, 0

Part 2

Create a letter or shape with coordinates. Give the person next to you the coordinates. See if they plot the coordinates accurately to obtain the correct letter or shape.

Part 3

Play the Coordinates Game. Plot the coordinates. See how many points you can get.

<http://www.shodor.org/interactivate/activities/GeneralCoordinates/>

Part 4

Time out for a little fun. Play the Bug Game!!!!

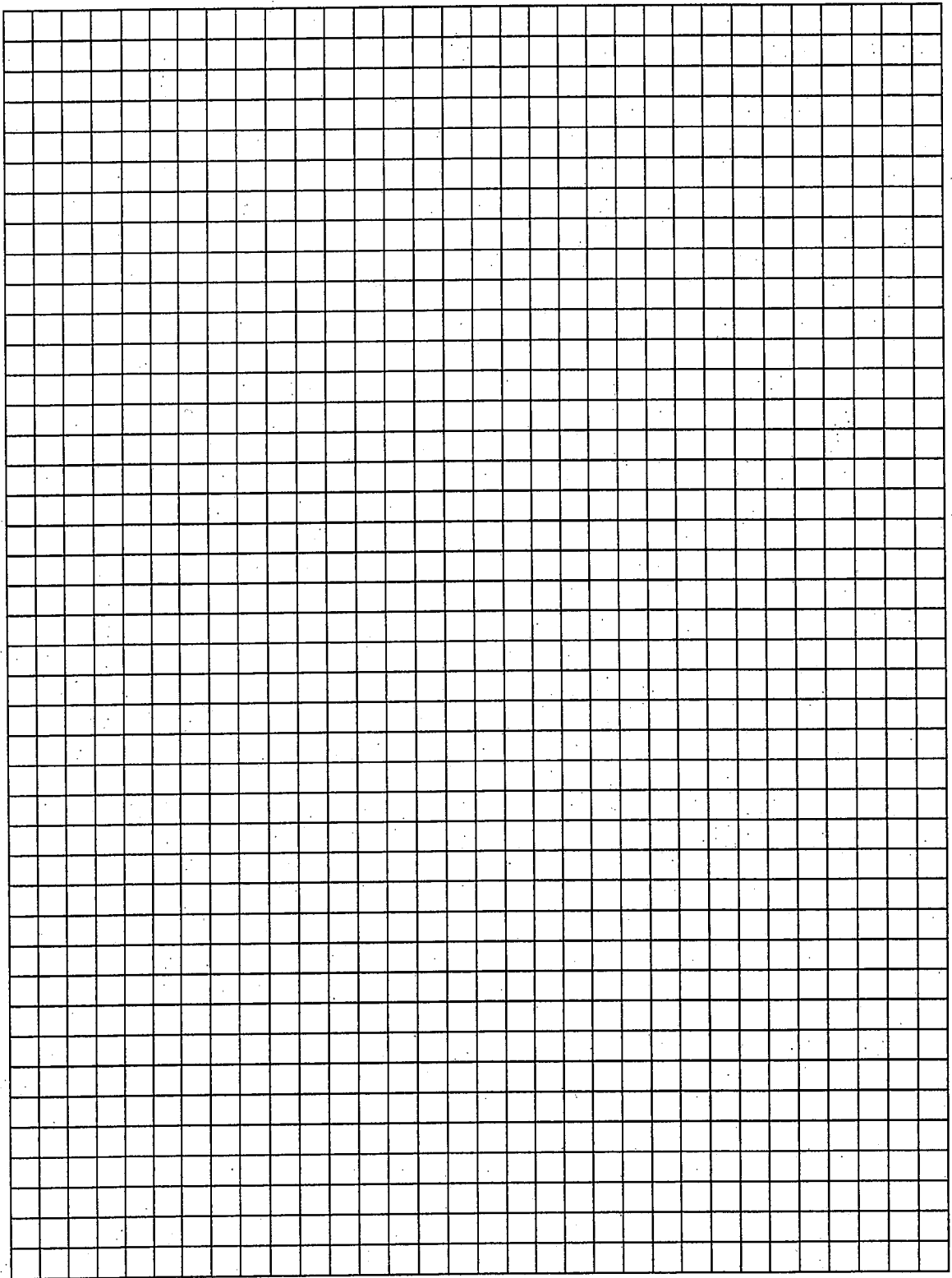
<http://pbskids.org/cyberchase/games/bargraphs/bargraphs.html>

Where Am I?

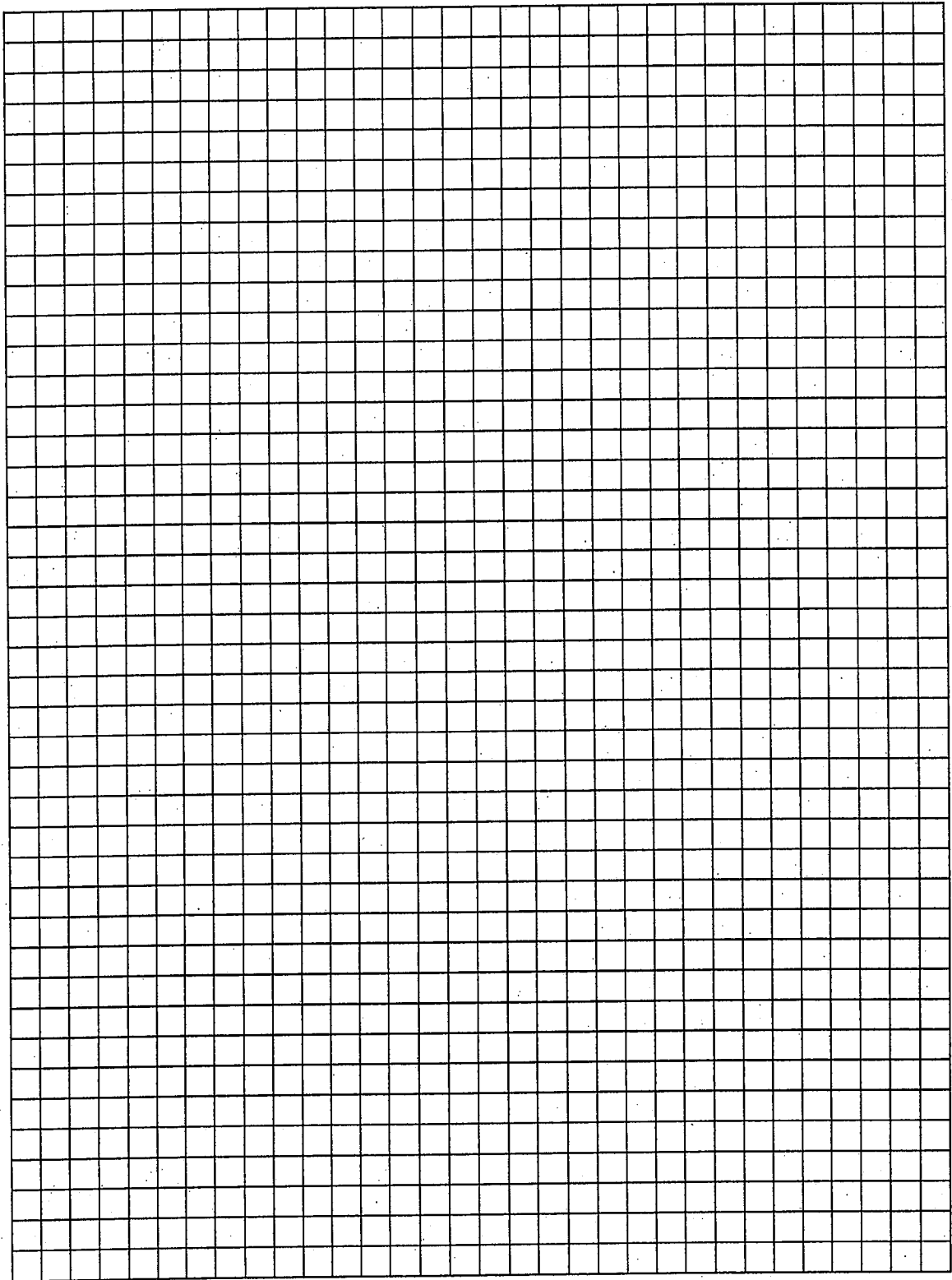
Directions: Identify each of the following coordinates with a dot on your grid. Then connect them in order. If completed, correctly you will be able to identify a map of a familiar geographic location.

1. (0, -3)
2. (1, -5)
3. (2, -6)
4. (3, -7)
5. (4, -7)
6. (4, -5)
7. (5, -3)
8. (7, -2)
9. (8, -1)
10. (9, -1)
11. (9, 0)
12. (8, 1)
13. (8, 2)
14. (8, 3)
15. (7, 5)
16. (6, 6)
17. (5, 5)
18. (4, 5)
19. (3, 5)
20. (2, 6)
21. (1, 6)
22. (0, 6)
23. (0, 9)
24. (-4, 9)
25. (-4, 6)
26. (-4, 3)
27. (-9, 3)
28. (-6, 0)
29. (-5, -2)
30. (-4, -3)
31. (-3, -1)
32. (-2, -1)
33. (-1, -2)
34. (0, -3)

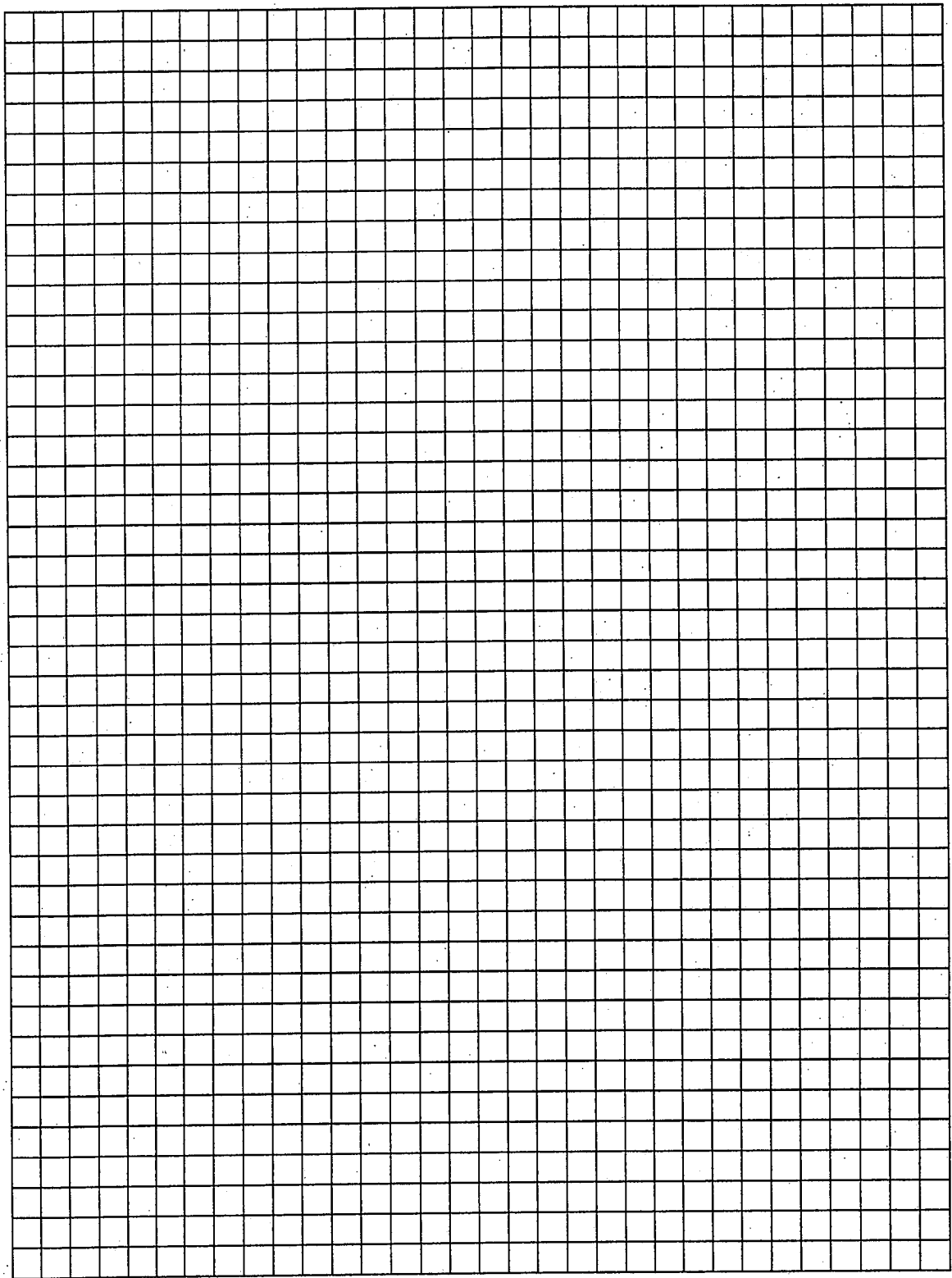
Graph Paper



Graph Paper



Graph Paper



Graph It!



Graph It!