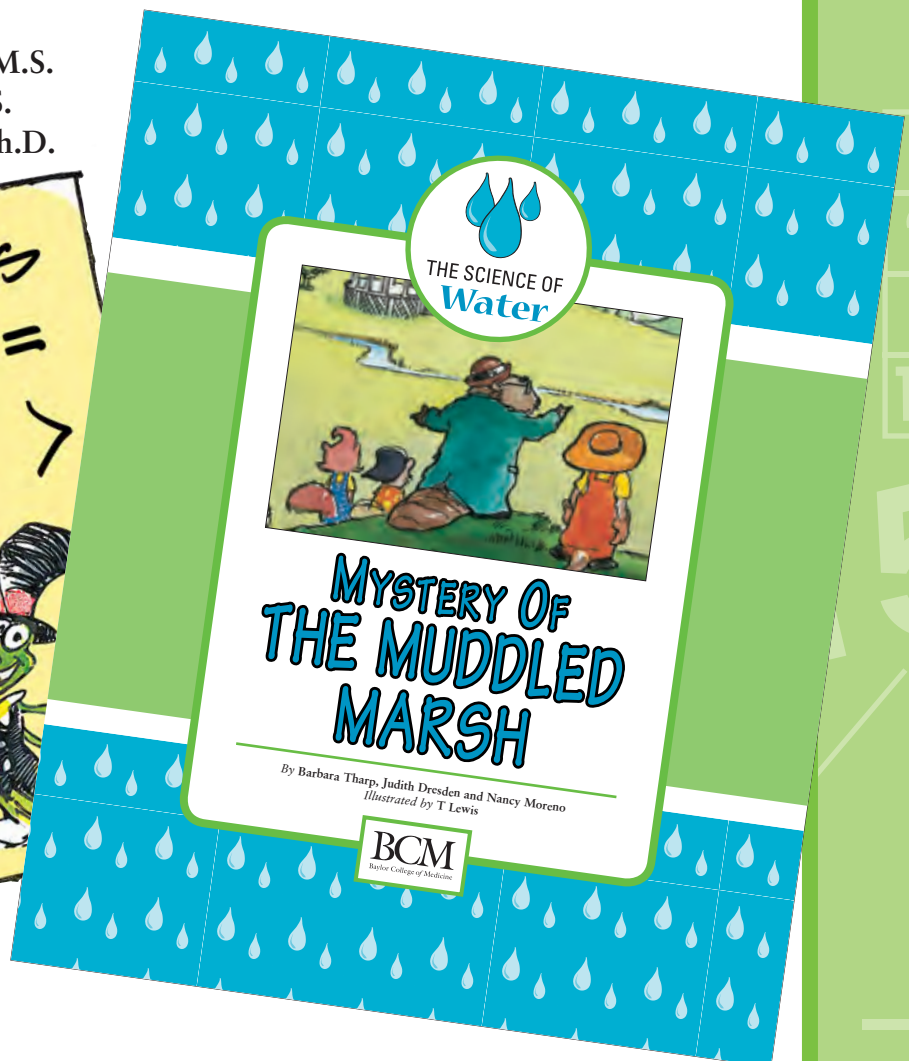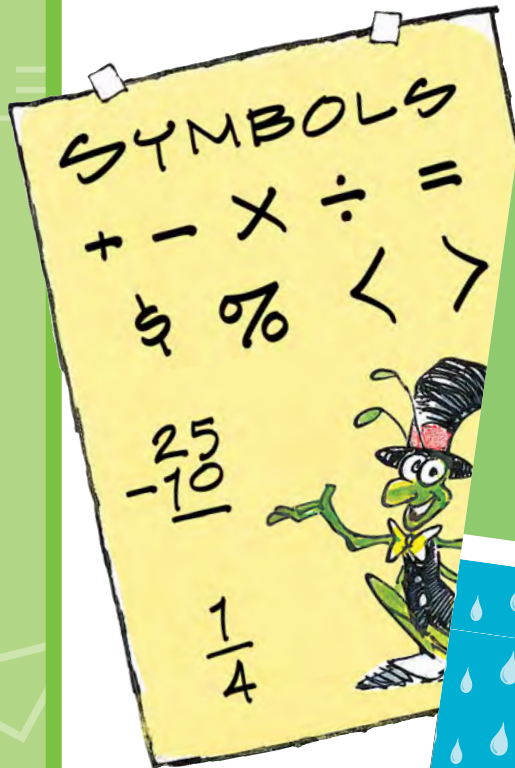# THE MATH LINK

for *The Science of Water Teacher's Guide* and *Mystery of the Muddled Marsh*

Written by
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SYMBOLS
+ − × ÷ =
$ % < >

$-\frac{25}{10}$

$\frac{1}{4}$

THE SCIENCE OF
Water

MYSTERY OF THE MUDDLED MARSH

By Barbara Tharp, Judith Dresden and Nancy Moreno
Illustrated by T Lewis

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This Math Link contains ready-to-use mathematics activities that are aligned with The Science of Water integrated unit. It is not intended to represent a comprehensive mathematics program. The activities are related to mathematics objectives common to many curricula and cover a range of grade and ability levels. Teachers may wish to select from these activities those that are most appropriate for their own students.

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Ordering Whole Numbers

Name _____

1. Riff and Rosie counted many lily pads growing in Marigold Marsh. Look at the numbers given for each group of lily pads. Put the numbers in order from least to greatest. Write the numbers on the lily pads. Start on the left.

Group A.　　8　5　9　3　6　2　7　1
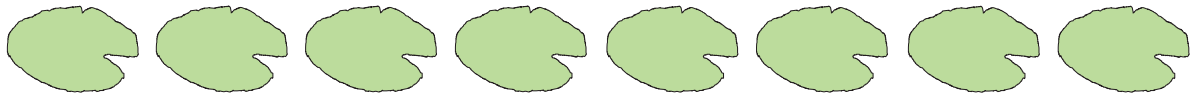
Group B.　　12　23　26　75　27　10　32　61
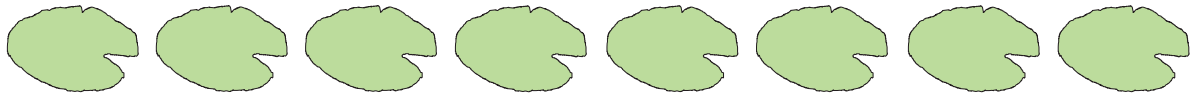
Group C.　　207　188　376　253　462　245　500　675

2. Look at the numbers on each group of lily pads. Find the number that is out of sequence (order) in each group. Draw an "X" over the number that is not in sequence.

Group A.

2　3　9　5　6　7　8　10

Group B.

26　29　30　38　74　43　48　50

Structure and Patterns
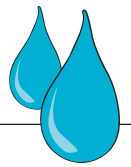
Name _____

Different animals live in Bright Water Corners. Use what you know about the animals below to make each number sentence correct.
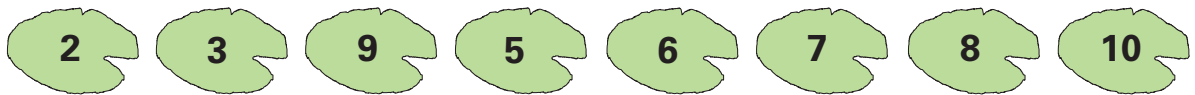
1. 1 dragonfly = _____ wings

    3 dragonflies = _____ wings

    _____ dragonflies = 20 wings

    _____ dragonflies = 28 wings

2. 2 ducks = _____ feet

    3 ducks = _____ feet

    _____ ducks = 8 feet

    _____ ducks = 12 feet

3. 10 salamanders = _____ tails

    15 salamanders = _____ tails

    _____ salamanders = 20 tails

    _____ salamanders = 25 tails

Bonus:
4. 2 dust mites = _____ legs

    5 dust mites = _____ legs

Estimating and Measuring

Name _____

1. Riff races his paper boats on Beaver Pond. How far might one of Riff's paper boats travel? Fill in the circle by the item that best answers the question.
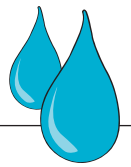
   ❍ 1 kilometer   ❍ 1 centimeter   ❍ 10 meters

2. Why do you think your answer above would be the best estimate? Record your answer below.

   _____

   _____

3. Read the sentences below. Write your answer to each question in the form of a **number sentence**.

   a. The wind caught Riff's and Rosie's boats. Riff's boat floated to Mr. Slaptail's dam in 20 seconds. Rosie's boat reached the dam in 30 seconds. How many seconds slower was Rosie's boat than Riff's?

   _____ − _____ = _____

   b. On their first race, Riff's boat sailed 8 meters. Rosie's boat sailed 3 meters farther. How many meters did Rosie's boat travel?

   _____ + _____ = _____

   c. Riff's favorite paper boat was 20 centimeters long. Rosie's favorite boat was only 15 centimeters long. How many centimeters longer was Riff's boat than Rosie's boat?

   _____ − _____ = _____

4. Use a ruler to draw a line below that is exactly as long as Rosie's boat.

Lines of Symmetry
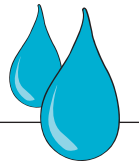
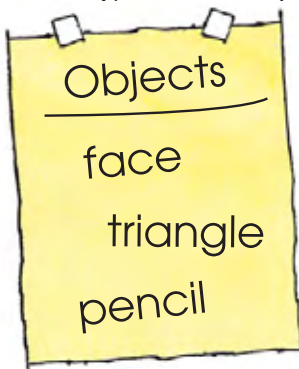Name _____

An object has **symmetry** when it can be divided into equal halves. Both halves are exactly the same size and shape. A line dividing the object in half is called the **line of symmetry**. The two identical sides are said to be **symmetrical**.

1. Draw a circle around each picture below that is symmetrical. Draw a line to divide each symmetrical object into equal halves.
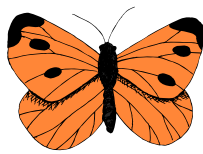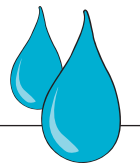
2. Find a symmetrical object in your classroom. Draw it in the space to the right. Draw a line of symmetry through the object.

3. Draw each object on the list in the space below. Draw a line of symmetry through each object.

Objects

face

triangle

pencil

4. Draw a picture of something that is not symmetrical.

Addition

Name _____

1. Find the numbers in Marigold Marsh. Draw a circle around each number.

2. Solve each problem by choosing a number from the marsh. Choose a number that will make the problem correct. The numbers found in the marsh can be used more than once.

a.
$$12 + 3 = 15 \qquad 7 + 2 \qquad 1 + 8 \qquad 3 + 4 \qquad 10 + 3 \qquad 5 + 5 \qquad 6 + 4$$

b.
$$11 + 4 = 15 \qquad 2 + \_\_ = 11 \qquad 7 + \_\_ = 12 \qquad 2 + \_\_ = 4 \qquad 1 + \_\_ = 3 \qquad 10 + \_\_ = 12 \qquad 4 + \_\_ = 6$$

c. $1 + 8 = \underline{9}$ $\qquad$ $6 + \_\_ = 9$ $\qquad$ $4 + \_\_ = 9$

d. $7 + 2 = \_\_$ $\qquad$ $5 + \_\_ = 9$ $\qquad$ $3 + \_\_ = 9$

Subtraction

Name _____

1. Find the numbers in Clear Creek Park. Draw a circle around each number.

2. Solve each problem by choosing a number from the park. Choose a number that will make the problem correct. The numbers found in the park can be used more than once.
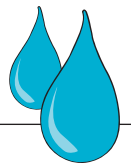
a.
$$8 - 4 = 4 \qquad 9 - 5 \qquad 10 - 5 \qquad 13 - 8 \qquad 2 - 1 \qquad 15 - 11 \qquad 13 - 3$$

b.
$$11 - 2 = 9 \qquad 10 - \_\_ = 2 \qquad 9 - \_\_ = 7 \qquad 8 - \_\_ = 3 \qquad 15 - \_\_ = 8 \qquad 6 - \_\_ = 1 \qquad 14 - \_\_ = 10$$

- -

c. $12 - \underline{2} = 10 \qquad 21 - \_\_\_ = 10 \qquad 14 - 3 = \_\_\_$

d. $11 - \_\_\_ = 8 \qquad 19 - \_\_\_ = 12 \qquad 13 - 11 = \_\_\_$

Reading a Graph
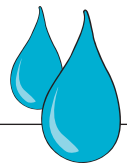
Name _____

A **bar graph** compares different numbers of items. Use the information from the graph to answer the questions below.

FISH CAUGHT IN BEAVER POND
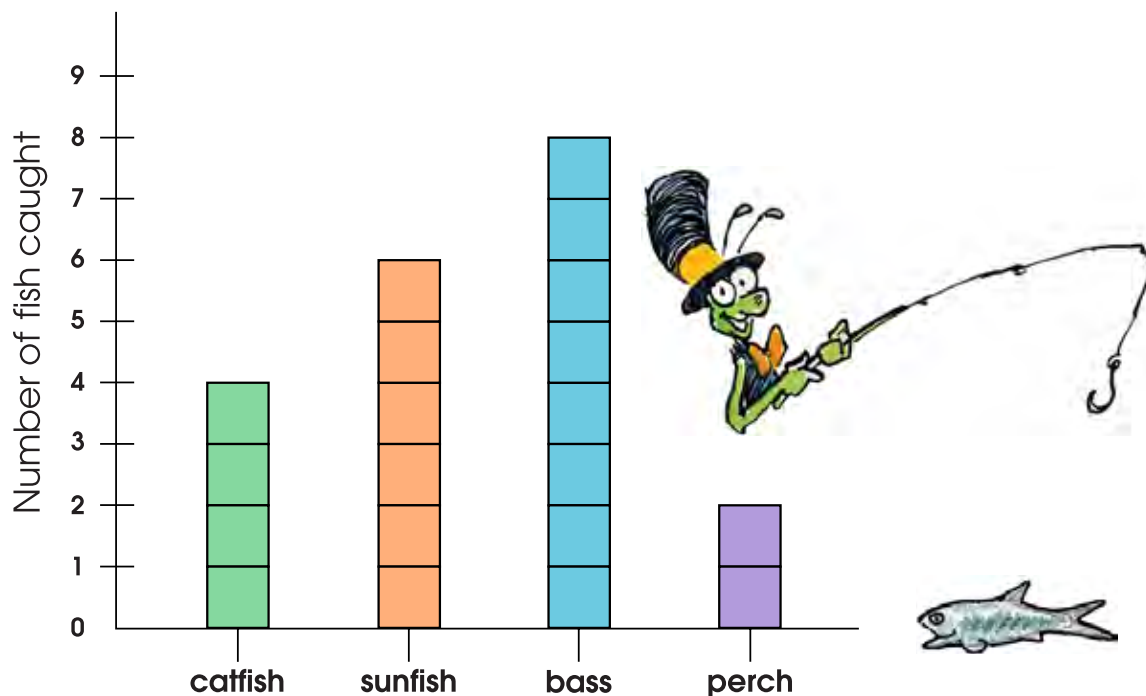
1. What is the title of the graph?

   _____

2. How many rows are on the graph?

   _____

3. How many columns are on the graph?

   _____

4. What is at the bottom of each column?

   _____

5. What do the numbers tell you?

   _____

6. In all, how many fish were caught?

   _____

7. Without counting, how can you tell which fish were caught the most?

   _____

Pictographs
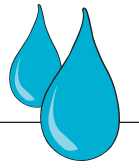
Name _____

Ricardo Raccoon and Oscar Otterbee both like to catch and eat lots of fish. Lately, their daily catch is less and less. The graphs below show how many fish Ricardo and Oscar caught each day in one week.

RICARDO RACCOON'S FISH

Number of Fish vs. Day of the Week

OSCAR OTTERBEE'S FISH

Number of Fish vs. Day of the Week
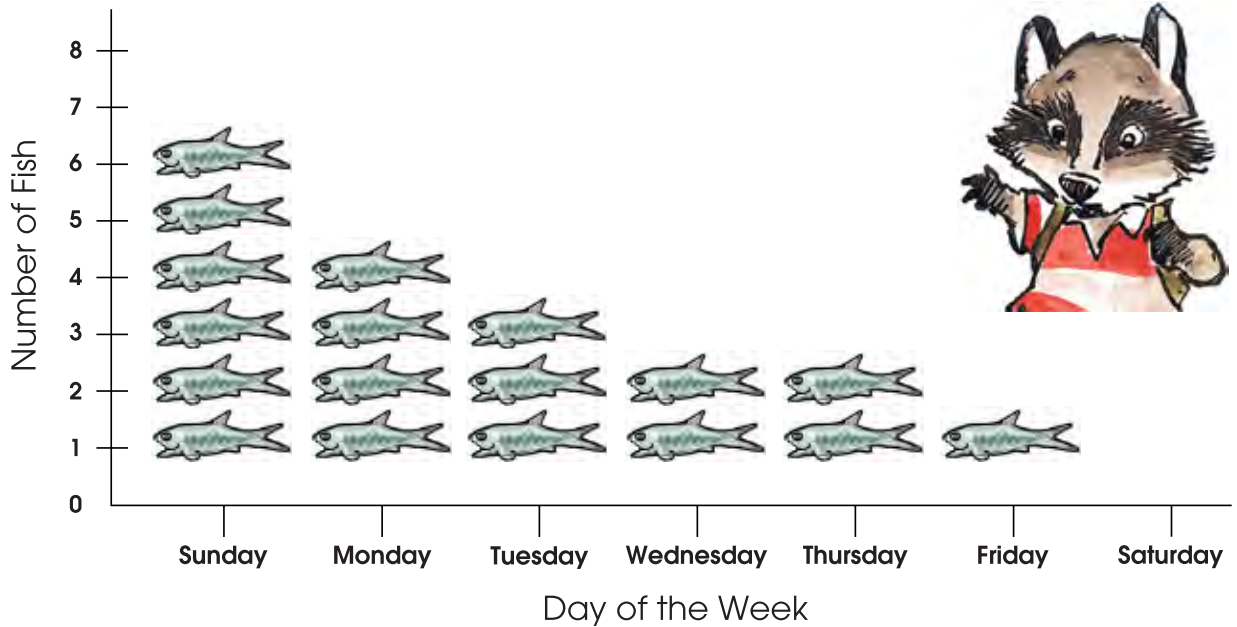
Pictographs (cont.)
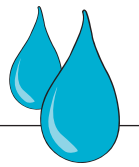
Name _____

Use the information from the graphs on page 8 to answer the following questions.

1. Who usually catches more fish? _____

2. How many fish did Oscar catch on Monday? _____

3. How many more fish did Oscar catch on Wednesday than Ricardo? Write your answer in the form of a number sentence.

    _____ — _____ = _____

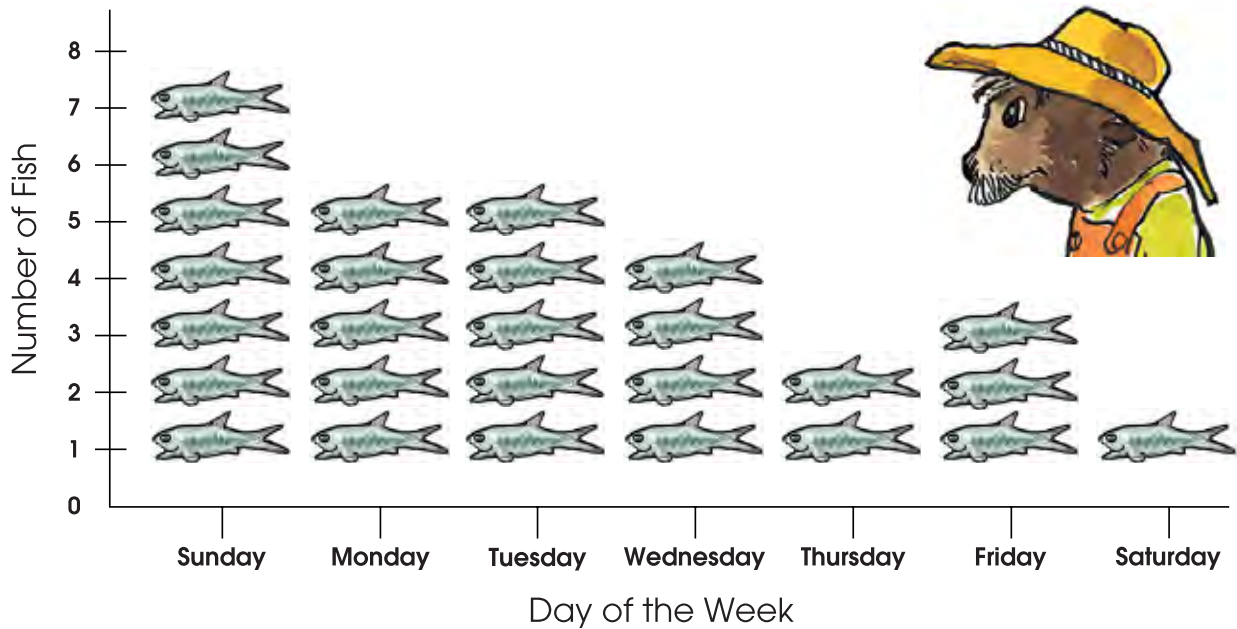4. On which two days did Oscar catch the same number of fish?

    _____

5. On which two days did Ricardo catch the same number of fish?

    _____

6. How many fish did Oscar and Ricardo catch all together on Monday? Write your answer in the form of a number sentence.

    _____ + _____ = _____

Bonus:
7. How many fish did they catch all together for the entire week?

    _____

Making a Graph
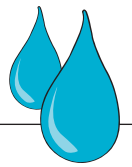
Name _____

Mr. Slaptail made a list of some animals that live in Bright Water Corners. Use the information on the list to complete the graph. Color in the correct number of boxes on the graph for each kind of animal. Then answer the questions on page 11.

Animals

35	Beavers
95	Ducks
30	Frogs
15	Otters
70	Racoons
20	Salamanders
30	Squirrels
110	Turtles

MR. SLAPTAIL'S NEIGHBORS

Number of Animals

30
20
10
0

Beavers

Kinds of Animals
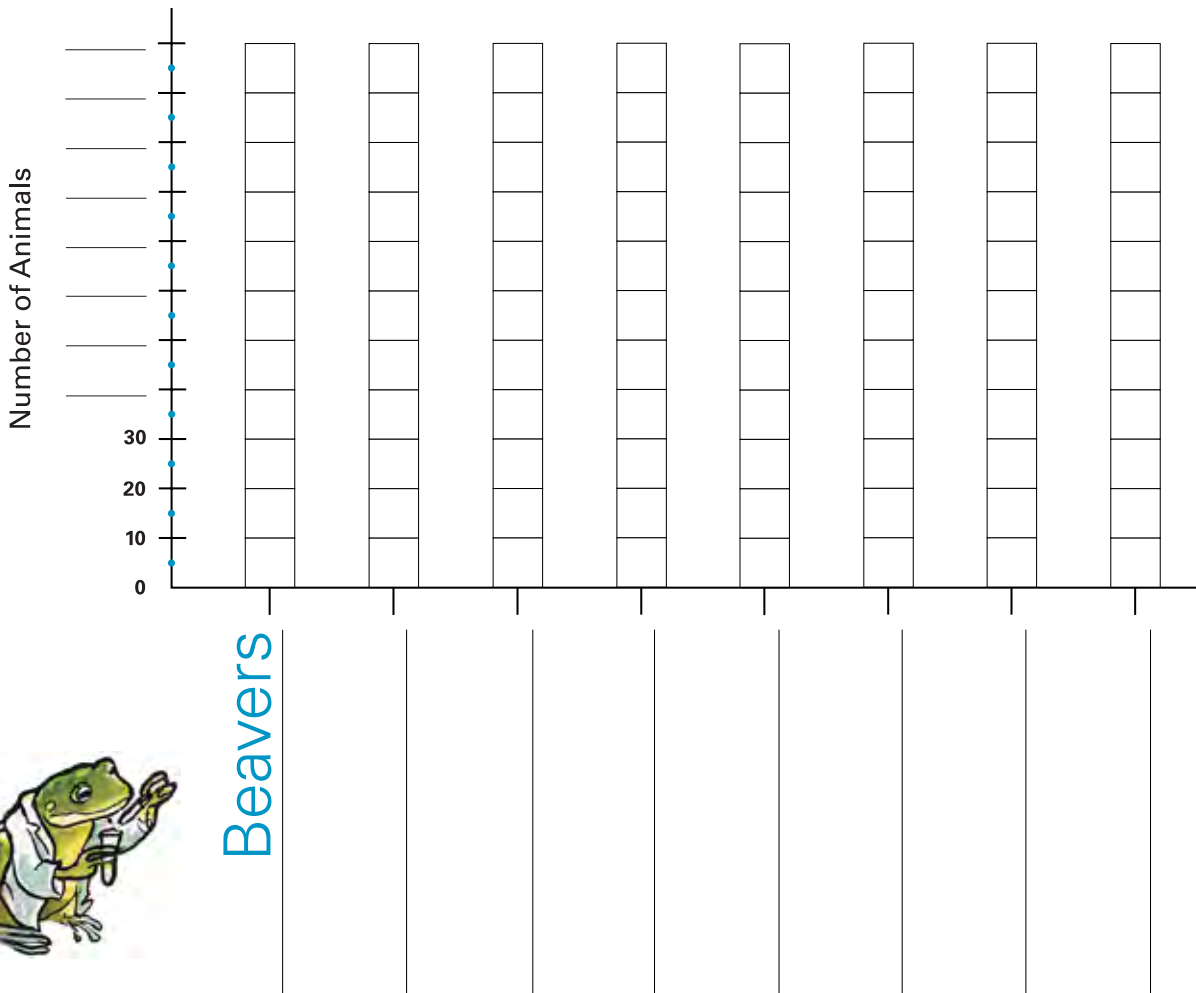
1. Which group of animals has the most members?_____

2. Which group of animals has the least members?_____

3. If 7 turtles moved away from Bright Water
   Corners, how many turtles would be left?_____

4. What is the total number of ducks, frogs and
   beavers that live in Bright Water Corners combined?_____

5. How many more raccoons are there than salamanders?_____

6. Which animal populations have odd numbers of members?

   _____

7. Which animal populations have even numbers of members?

   _____

8. What is the total number of
   animals counted by Mr. Slaptail? _____

Bonus:

9. Suzy Pondslider, Ruthie Red Ear and Barbara Boxer
   are female turtles. Suzy laid 50 eggs. Ruthie laid 20 more
   eggs than Suzy. Barbara laid 10 more eggs than Ruthie.
   How many turtle eggs did the three turtles lay in all? _____

10. If only $\frac{1}{4}$ of the eggs hatched, how
    many baby turtles would there be?_____

11. If $\frac{1}{2}$ of the turtles born are female, how
    many male turtles will there be?_____

Problem Solving with Maps

Name _____

Look at the map of Bright Water Corners. Use the information on it to answer the questions on page 13.

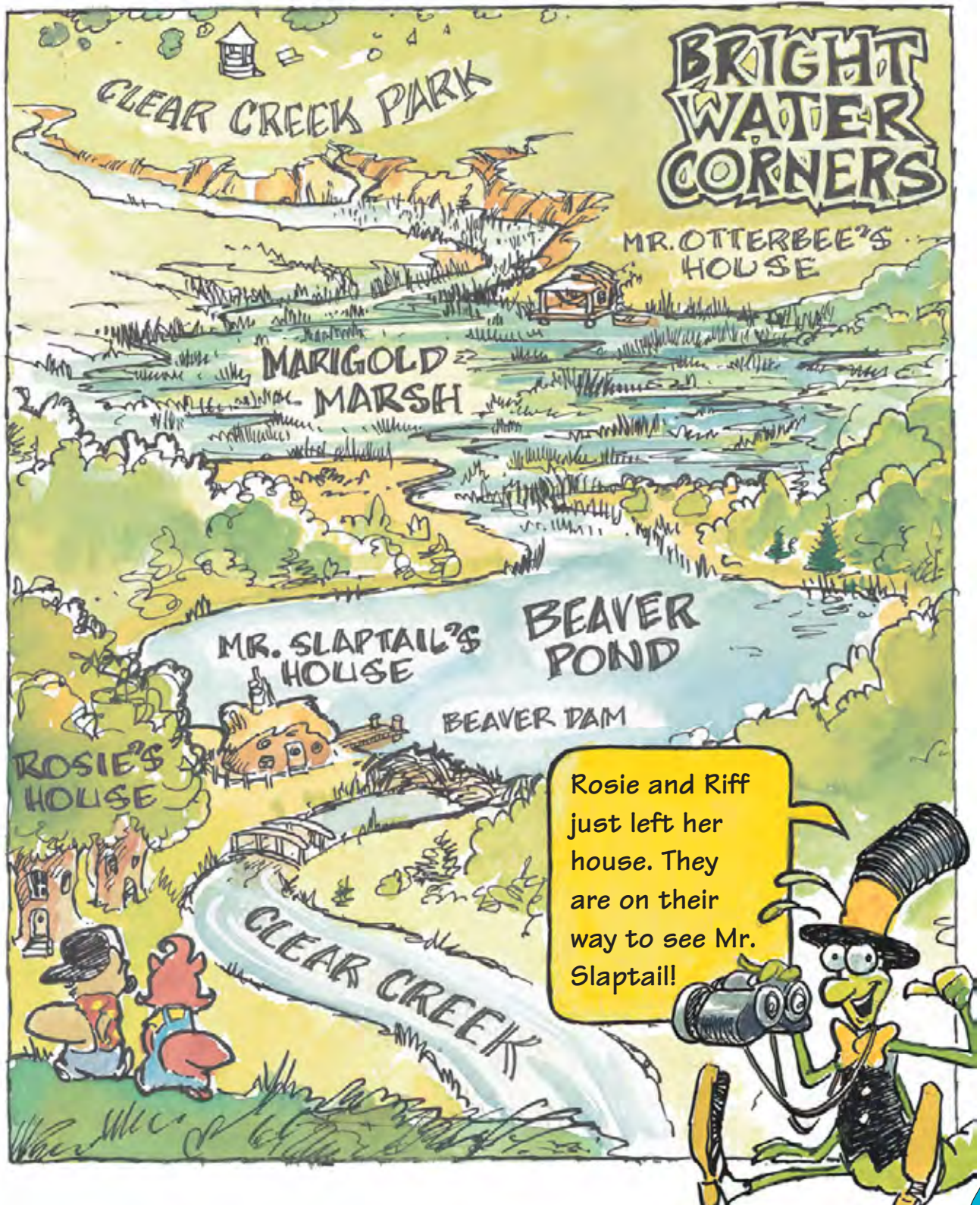It takes Riff and Rosie about 5 minutes to walk from Rosie's house to Mr. Slaptail's house. It takes them about 15 minutes to walk to Oscar Otterbee's house from Mr. Slaptail's house. From Oscar Otterbee's house, it takes about 20 minutes to walk all the way around Marigold Marsh and Beaver Pond back to Mr. Slaptail's house.

1. How long will it take them to walk from Rosie's house to Mr. Slaptail's house and then all the way around the pond? _____

2. Is this time closer to 1 hour or 1/2 hour? _____

3. Riff, Rosie and Mr. Slaptail are going to visit Oscar Otterbee. Mr. Slaptail takes about 30 minutes to walk to Oscar's house. Riff and Rosie run ahead and make it to Oscar's house in only 10 minutes. How long will Riff and Rosie have to wait for Mr. Slaptail to catch up to them at Oscar's house? _____

4. It takes everyone 15 minutes to walk slowly from Oscar's house to Clear Creek Park. After they arrive, Rosie remembers that she left her paper boat at Oscar's house. How long will it take her if she hurries back for the boat and returns? Fill in the circle by the item that best answers the question. Explain your answer in the space below.
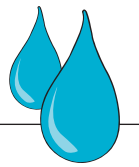
   ○ 20 minutes   ○ 30 minutes   ○ 45 minutes

   _____

   _____

   _____

Bonus:

5. How long would it take Riff to go from Rosie's house to Mr. Slaptail's, then to Oscar's and back home following the same path? _____

Reasoning

Name _____

Mr. Slaptail, Oscar Otterbee, Riff and Rosie each have a different favorite flower. The flowers are daisy, hyacinth, zinnia and tulip. To discover which flower is each character's favorite, complete the chart below.

1. Place the characters' names down the left side of the chart. Place the flowers' names across the top of the chart.

2. Read each clue in the list below. Put an **X** in the box for each flower that is **NOT** the characters' favorite.

   a. Mr. Slaptail loves hyacinths.
   b. Riff does not like daisies.
   c. Rosie doesn't like daisies or tulips.

3. According to the chart, who likes tulips? _____

Mr. Slaptail

_____

_____

_____

hyacinths