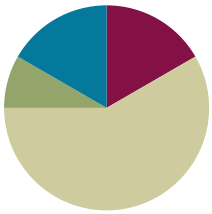
Lesson 1

Objective: Sort and record data into a table using up to four categories; use category counts to solve word problems.

Suggested Lesson Structure

Fluency Practice	(10 minutes)
Application Problem	(5 minutes)
Concept Development	(35 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



Fluency Practice (10 minutes)

- Count by 10 or 5 with Dimes and Nickels **2.NBT.2** (5 minutes)
- Grade 2 Core Fluency Differentiated Practice Sets **2.OA.2** (5 minutes)

Count by 10 or 5 with Dimes and Nickels (5 minutes)

Materials: (T) 20 dimes, 20 nickels

Note: This activity uses dimes and nickels as representations of tens and fives to help students become familiar with coins while providing practice with counting forward and back by 10 or 5.

- Arrange 10 nickels in a ten-frame formation, and count up by 5 from 50 to 100. Ask how many nickels make 100 cents, how many fives are in 100 cents, and how many ones are in 100 cents. Add and subtract by 5 as you place and take away nickels.
- Arrange 9 dimes in a ten-frame formation, and count up by 10 from 90 to 150. Ask how many dimes make 150 cents, how many tens are in 150 cents, how many fives are in 150 cents, and how many ones are in 150 cents. Continue counting to 200. Ask how many dimes make 200 cents, how many tens are in 200 cents, and how many ones are in 200 cents. Add and subtract by 10 as you place and take away dimes.

Grade 2 Core Fluency Differentiated Practice Sets (5 minutes)

Materials: (S) Core Fluency Practice Sets

Note: During Topic A and for the remainder of the year, each day's Fluency Practice includes an opportunity for review and mastery of the sums and differences with totals through 20 by means of the Core Fluency Practice Sets or Sprints. Five options are provided in this lesson for the Core Fluency Practice Set, with Sheet A being the most simple to Sheet E being the most complex. Start all students on Sheet A.

Students complete as many problems as they can in 120 seconds. The recommended goal is 100% accuracy and completion before moving to the next level. Collect any Practice Sets that have been completed within the 120 seconds, and check the answers. The next time Core Fluency Practice Sets are used, students who have successfully completed their sets can be provided with the next level. Keep a record of student progress.

Consider assigning early finishers a counting pattern and start number (e.g., count by fives from 195). Celebrate improvement as well as advancement. Students should be encouraged to compete with themselves rather than their peers. Discuss with students possible strategies to solve. Notify caring adults of each student's progress.

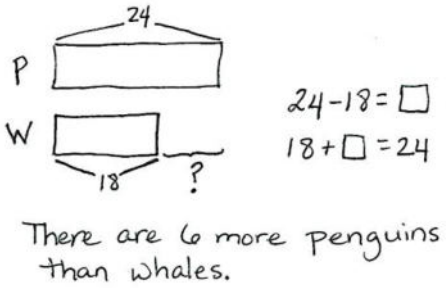
NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Scaffold the Application Problem for students who struggle by talking through it step-by-step and by asking questions, such as "How many penguins? How many whales? Are there more penguins or whales?" Watch students as they draw their tape diagrams to solve the problem, and insist that they represent the problem accurately.

Application Problem (5 minutes)

There are 24 penguins sliding on the ice. There are 18 whales splashing in the ocean. How many more penguins than whales are there?

Note: This problem's context leads into today's Concept Development, as students will be sorting animals by habitat. Also, it is a comparative problem type that lends itself to a tape diagram drawing. This sets the stage for students to notice the similarity between the bars of a tape diagram and the bars of a bar graph in Lesson 3.



Concept Development (35 minutes)

Materials: (T) 4 pieces of chart paper (see the chart list below) (S) Personal white board, 1 animal card from animal cards (Template) per pair

Note: Prior to this lesson, consider laminating the picture sheet to make reusable cards. Cut the sheet into individual pictures. Also, prepare the four charts listed below. Save these charts for work in this lesson and in Lessons 2 and 3.

Chart 1: Animal Characteristics with a tree map labeled *bird, mammal, reptile,* and *fish* (See the following page.)

Chart 2: Sentence frames to support language production

Chart 3: Animal Classification with a blank table labeled *bird, mammal, reptile,* and *fish*

Chart 4: Animal Habitats with a blank table labeled *arctic, woodland,* and *ocean*

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Support English language learners by introducing essential terms such as *characteristics*, *categories*, *data*, and *table* to them using visuals and multiple examples. Ask them to practice using the terms, pick out examples, and label pictures as examples of the different terms.

Have students sit on the carpet in a circle.

T: Let's play a guessing game!

T: I have two legs, wings, feathers, and I can fly. What am I? Whisper to your partner.

S: A bird!

T: Of course! I just described the characteristics of a bird. (Post Chart 1.) Where do you see the characteristics of a bird listed on this chart?

S: On the left! → Under the word *bird*.

T: (Show a picture of a fish. Point to Chart 2.) Use these sentence frames to tell your partner about this animal.

S: It is a fish. → A fish has scales and gills. → It can swim. → It can lay eggs.

T: What is this animal?

S: A fish!

T: So, what are the characteristics of a fish?

S: It has scales. → It has fins and gills. → It swims.

T: Yes! Let's sort animals into **categories**, or groups, based on their characteristics.

Chart 1

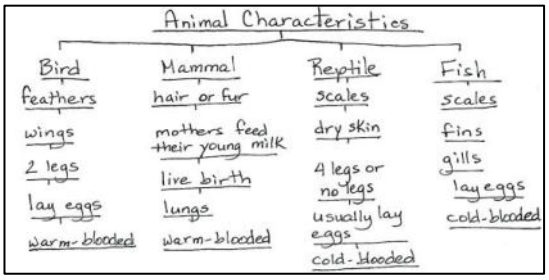


Chart 2

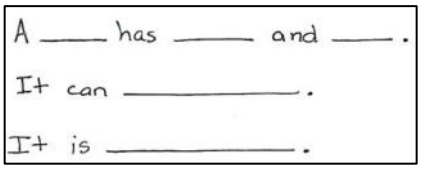
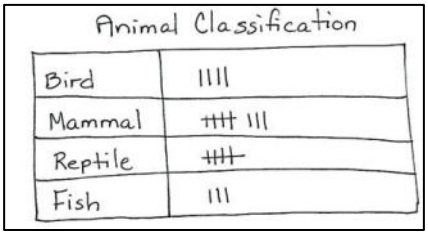


Chart 3



Pass out one picture card to each pair of students. Have partners take turns using the sentence frames and the Animal Characteristics chart to describe their animals to each other. Then, have students sort the pictures into piles by category in the middle of the circle.

T: (Display Chart 3.) Here is a **table**. How can we organize our information, or **data**, so it's easier to know how many animals are in each category?

S: We could tape the pictures down in the row where they belong. → We could count how many are in each group and write the number in that row. → We could use tally marks.

T: Those are all excellent ideas! Let's record our category counts on this table using tally marks.

T: Count with me, and make tally marks in the air as I record each amount.

T: How many birds do we have?

Call on volunteers to count each pile of pictures one by one. Make tally marks for each amount in the appropriate category as students make tally marks in the air and count aloud with the teacher.

T: Now that the data are organized in this table, is it easy to see and count how many animals belong to each category?

S: Yes!

T: Let's count the tally marks in each category while I record the totals as numbers directly on the table. (Record the numbers to the right of the tally marks.)

T: Now we can use the data to answer some questions.

Pose questions such as those below, and have students write their answers on their personal white boards. Then, invite students to pose questions to the class based on the data.

- How many categories does this table have?
- How many animals did we sort altogether?
- How many more birds and mammals are there than reptiles and fish?
- How many fewer birds and fish are there than mammals and reptiles?
- How would the table change if we counted four more birds?

T: What are some other ways we could organize these animals?

S: We could sort them by what they eat. → Or by where they live. → We could sort them by whether they are predators or prey!

T: I like your thinking! Let's sort them by their habitats, or where they live. (Display Chart 4.)

Chart 4

Animal Habitats		
Arctic	Woodland	Ocean
4	10	6

Repeat the process with animal habitats, but this time record numbers instead of tally marks.

Prompt students to discuss which recording is easier to read, tally marks or numbers. Some students may say numbers because the total is given so they do not have to count the tally marks. However, some students may reference the visual length of the tally marks as helpful, particularly with questions of most and least. This touches on the tally's resemblance to bars in a tape diagram, a relationship that is more pronounced when students create and use bar graphs in Lesson 3.

Make a quick drawing to show Chart 4 drawn vertically. Ask students whether the orientation of the table affects the data in any way.

After creating the table on Chart 4, have students write their answers to questions such as those below. Then, invite partners to ask and answer questions that they create.

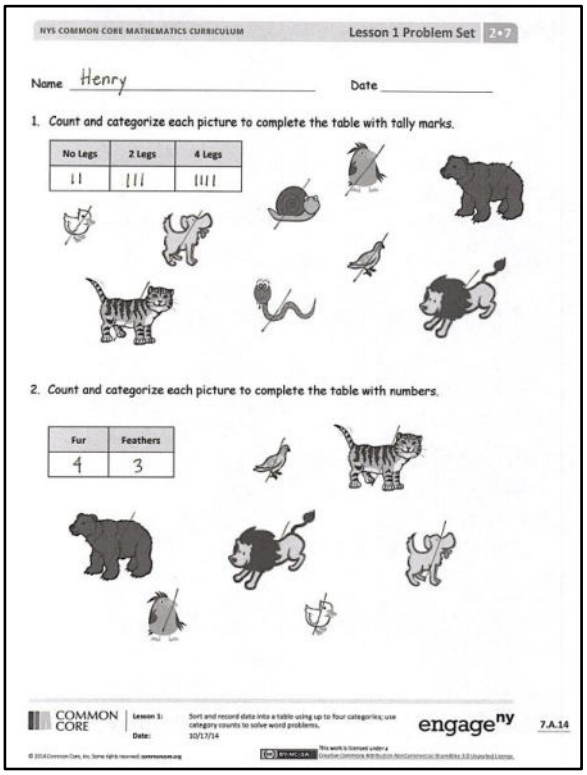
MP.1

- How many categories does this table have?
- Which category has the fewest animals? Which has the most?
- What is the total number of animals that live in the woodland and the ocean?
- How many fewer animals live in the arctic than in the ocean?
- How many more animals would need to be in the arctic category to have the same number as animals in the woodland category?
- How many more arctic and ocean animals are there than woodland animals? (Note that some students believe the wording *how many more* means there must be a difference. Have students who answer correctly explain their answers.)

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. Some problems do not specify a method for solving. This is an intentional reduction of scaffolding that invokes MP.5, Use Appropriate Tools Strategically. Students should solve these problems using the RDW approach used for Application Problems.

For some classes, it may be appropriate to modify the assignment by specifying which problems students should work on first. With this option, let the purposeful sequencing of the Problem Set guide your selections so that problems continue to be scaffolded. Balance word problems with other problem types to ensure a range of practice. Consider assigning incomplete problems for homework or at another time during the day.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 1 Problem Set 2•7

Name Henry Date

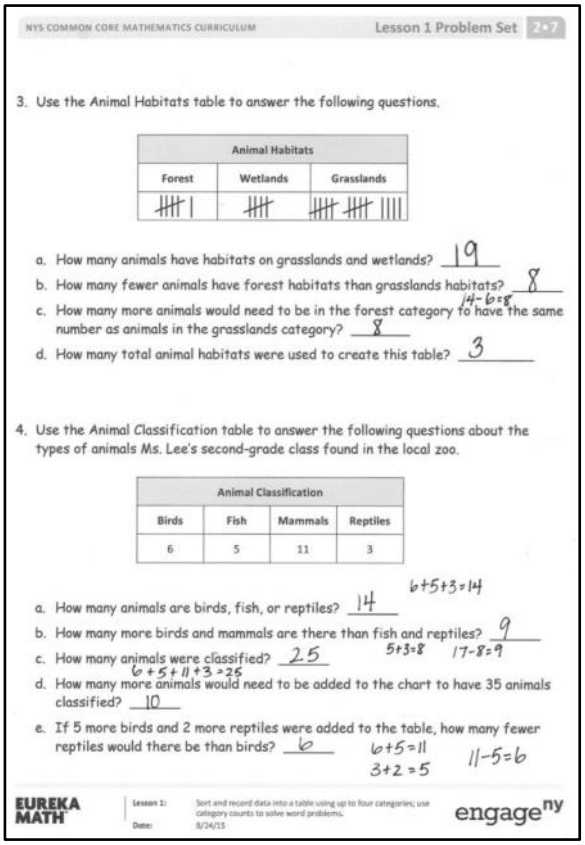
1. Count and categorize each picture to complete the table with tally marks.

No Legs	2 Legs	4 Legs
II	III	IIII

2. Count and categorize each picture to complete the table with numbers.

Fur	Feathers
4	3

COMMON CORE Lesson 1: Date: 10/17/14 Sort and record data into a table using up to four categories; use category counts to solve word problems. engage^ny 7.A.14


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 1 Problem Set 2•7

3. Use the Animal Habitats table to answer the following questions.

Animal Habitats		
Forest	Wetlands	Grasslands
IIII	IIII	IIII IIII II

a. How many animals have habitats on grasslands and wetlands? 19
b. How many fewer animals have forest habitats than grasslands habitats? 8 (14-6=8)
c. How many more animals would need to be in the forest category to have the same number as animals in the grasslands category? 8
d. How many total animal habitats were used to create this table? 3

4. Use the Animal Classification table to answer the following questions about the types of animals Ms. Lee's second-grade class found in the local zoo.

Animal Classification			
Birds	Fish	Mammals	Reptiles
6	5	11	3

a. How many animals are birds, fish, or reptiles? 14 (6+5+3=14)
b. How many more birds and mammals are there than fish and reptiles? 9 (5+3=8, 17-8=9)
c. How many animals were classified? 25 (6+5+11+3=25)
d. How many more animals would need to be added to the chart to have 35 animals classified? 10
e. If 5 more birds and 2 more reptiles were added to the table, how many fewer reptiles would there be than birds? 6 (6+5=11, 3+2=5, 11-5=6)

EUREKA MATH Lesson 1: Date: 11/24/15 Sort and record data into a table using up to four categories; use category counts to solve word problems. engage^ny

Student Debrief (10 minutes)

Lesson Objective: Sort and record data into a table using up to four categories; use category counts to solve word problems.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

- Look at your Problem Set with a partner. Do you both have the same number of tallies in the **table** about animal legs? If you have a different number of tallies, talk to your partner about why that is. (A possible misstep is making a tally mark for each leg as opposed to one tally for the animal with four legs.)

- Look at the next table on your Problem Set. Could I have drawn the table like this? (Draw the table vertically, and write the categories in the left column.) If I make the table like this, does it change the **data** inside the table? Why or why not?
- Look at Problem 3(b) about animal habitats. Tell your neighbor what counting strategy you used to figure out how many fewer animals have forest habitats than grasslands habitats. (Strategies might include subtraction, matched marks and counted the extra, drew a picture, or crossed out objects.)
- Think about the two ways we recorded the value of our groups of animals in the tables we made today. Tell your neighbor which way you like to record information in a table. Can the same group of things be recorded in different ways? If yes, will the tallies or numbers be different in each table?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

Name _____ Date _____

1.	10 + 2 =	21.	7 + 9 =
2.	10 + 7 =	22.	5 + 8 =
3.	10 + 5 =	23.	3 + 9 =
4.	4 + 10 =	24.	8 + 6 =
5.	6 + 11 =	25.	7 + 4 =
6.	12 + 2 =	26.	9 + 5 =
7.	14 + 3 =	27.	6 + 6 =
8.	13 + 5 =	28.	8 + 3 =
9.	17 + 2 =	29.	7 + 6 =
10.	12 + 6 =	30.	6 + 9 =
11.	11 + 9 =	31.	8 + 7 =
12.	2 + 16 =	32.	9 + 9 =
13.	15 + 4 =	33.	5 + 7 =
14.	5 + 9 =	34.	8 + 4 =
15.	9 + 2 =	35.	6 + 5 =
16.	4 + 9 =	36.	9 + 7 =
17.	9 + 6 =	37.	6 + 8 =
18.	8 + 9 =	38.	2 + 9 =
19	7 + 8 =	39.	9 + 8 =
20.	8 + 8 =	40.	7 + 7 =

Name _____ Date _____

1.	10 + 6 =	21.	3 + 8 =
2.	10 + 9 =	22.	9 + 4 =
3.	7 + 10 =	23.	_____ + 6 = 11
4.	3 + 10 =	24.	_____ + 9 = 13
5.	5 + 11 =	25.	8 + _____ = 14
6.	12 + 8 =	26.	7 + _____ = 15
7.	14 + 3 =	27.	_____ = 4 + 8
8.	13 + _____ = 19	28.	_____ = 8 + 9
9.	15 + _____ = 18	29.	_____ = 6 + 4
10.	12 + 5 =	30.	3 + 9 =
11.	_____ = 2 + 17	31.	5 + 7 =
12.	_____ = 3 + 13	32.	8 + _____ = 14
13.	_____ = 16 + 2	33.	_____ = 5 + 9
14.	9 + 3 =	34.	8 + 8 =
15.	6 + 9 =	35.	_____ = 7 + 9
16.	_____ + 5 = 14	36.	_____ = 8 + 4
17.	_____ + 7 = 13	37.	17 = 8 + _____
18.	_____ + 8 = 12	38.	19 = _____ + 9
19	8 + 7 =	39.	12 = _____ + 7
20.	7 + 6 =	40.	15 = 8 + _____

Name _____ Date _____

1.	13 – 3 =	21.	16 – 8 =
2.	19 – 9 =	22.	14 – 5 =
3.	15 – 10 =	23.	16 – 7 =
4.	18 – 10 =	24.	15 – 7 =
5.	12 – 2 =	25.	17 – 8 =
6.	11 – 10 =	26.	18 – 9 =
7.	17 – 13 =	27.	15 – 6 =
8.	20 – 10 =	28.	13 – 8 =
9.	14 – 11 =	29.	14 – 6 =
10.	16 – 12 =	30.	12 – 5 =
11.	11 – 3 =	31.	11 – 7 =
12.	13 – 2 =	32.	13 – 8 =
13.	14 – 2 =	33.	16 – 9 =
14.	13 – 4 =	34.	12 – 8 =
15.	12 – 3 =	35.	16 – 12 =
16.	11 – 4 =	36.	18 – 15 =
17.	12 – 5 =	37.	15 – 14 =
18.	14 – 5 =	38.	17 – 11 =
19	11 – 2 =	39.	19 – 13 =
20.	12 – 4 =	40.	20 – 12 =

Name _____ Date _____

1.	17 – 7 =	21.	16 – 7 =
2.	14 – 10 =	22.	17 – 8 =
3.	19 – 11 =	23.	18 – 7 =
4.	16 – 10 =	24.	14 – 6 =
5.	17 – 12 =	25.	17 – 8 =
6.	15 – 13 =	26.	12 – 8 =
7.	12 – 3 =	27.	14 – 7 =
8.	20 – 11 =	28.	15 – 8 =
9.	18 – 11 =	29.	13 – 5 =
10.	13 – 5 =	30.	16 – 8 =
11.	_____ = 11 – 2	31.	14 – 9 =
12.	_____ = 12 – 4	32.	15 – 6 =
13.	_____ = 13 – 5	33.	13 – 6 =
14.	_____ = 12 – 3	34.	_____ = 13 – 8
15.	_____ = 11 – 4	35.	_____ = 15 – 7
16.	_____ = 13 – 2	36.	_____ = 18 – 9
17.	_____ = 11 – 3	37.	_____ = 20 – 14
18.	17 – 8 =	38.	_____ = 20 – 7
19	14 – 6 =	39.	_____ = 20 – 11
20.	16 – 9 =	40.	_____ = 20 – 8

Name _____ Date _____

1.	11 + 9 =	21.	13 – 7 =
2.	13 + 5 =	22.	11 – 8 =
3.	14 + 3 =	23.	15 – 6 =
4.	12 + 7 =	24.	12 + 7 =
5.	5 + 9 =	25.	14 + 3 =
6.	8 + 8 =	26.	8 + 12 =
7.	14 – 7 =	27.	5 + 7 =
8.	13 – 5 =	28.	8 + 9 =
9.	16 – 7 =	29.	7 + 5 =
10.	17 – 9 =	30.	13 – 6 =
11.	14 – 6 =	31.	14 – 8 =
12.	18 – 5 =	32.	12 – 9 =
13.	9 + 9 =	33.	11 – 3 =
14.	7 + 6 =	34.	14 – 5 =
15.	3 + 9 =	35.	13 – 8 =
16.	6 + 7 =	36.	8 + 5 =
17.	8 + 5 =	37.	4 + 7 =
18.	13 – 8 =	38.	7 + 8 =
19	16 – 9 =	39.	4 + 9 =
20.	14 – 8 =	40.	20 – 8 =

Name _____ Date _____

1. Count and categorize each picture to complete the table with tally marks.

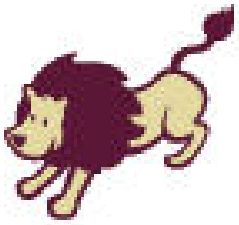
No Legs	2 Legs	4 Legs











2. Count and categorize each picture to complete the table with numbers.

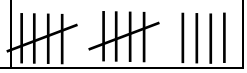
Fur	Feathers







3. Use the Animal Habitats table to answer the following questions.

Animal Habitats		
Forest	**Wetlands**	**Grasslands**
		

a. How many animals have habitats on grasslands and wetlands? ____

b. How many fewer animals have forest habitats than grasslands habitats? ____

c. How many more animals would need to be in the forest category to have the same number as animals in the grasslands category? ____

d. How many total animal habitats were used to create this table? ____

4. Use the Animal Classification table to answer the following questions about the types of animals Ms. Lee's second-grade class found in the local zoo.

Animal Classification			
Birds	**Fish**	**Mammals**	**Reptiles**
6	5	11	3

a. How many animals are birds, fish, or reptiles? _____

b. How many more birds and mammals are there than fish and reptiles? _____

c. How many animals were classified? _____

d. How many more animals would need to be added to the chart to have 35 animals classified? _____

e. If 5 more birds and 2 more reptiles were added to the table, how many fewer reptiles would there be than birds? _____

Name _____ Date _____

Use the Animal Classification table to answer the following questions about the types of animals at the local zoo.

Animal Classification			
Birds	**Fish**	**Mammals**	**Reptiles**
9	4	17	8

1. How many animals are birds, fish, or reptiles? ____

2. How many more mammals are there than fish? ____

3. How many animals were classified? ____

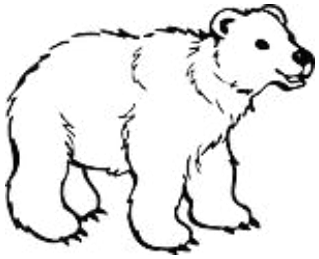
4. How many more animals would need to be added to the chart to have 45 animals classified? ____

Name _____ Date _____

1. Count and categorize each picture to complete the table with tally marks.

No Legs	2 Legs	4 Legs







2. Count and categorize each picture to complete the table with numbers.

Fur	Feathers







3. Use the Animal Habitats table to answer the following questions.

Animal Habitats		
Arctic	**Forest**	**Grasslands**
6	11	9

a. How many animals live in the arctic? ____

b. How many animals have habitats in the forest and grasslands? ____

c. How many fewer animals have arctic habitats than forest habitats? ____

d. How many more animals would need to be in the grasslands category to have the same number as the arctic and forest categories combined? ____

e. How many total animal habitats were used to create this table? ____

4. Use the Animal Classification table to answer the following questions about the class pets in West Chester Elementary School.

Animal Classification			
Birds	**Fish**	**Mammals**	**Reptiles**
7	15	18	9

a. How many animals are birds, fish, or reptiles? ____

b. How many more birds and mammals are there than fish and reptiles? ____

c. How many animals were classified? ____

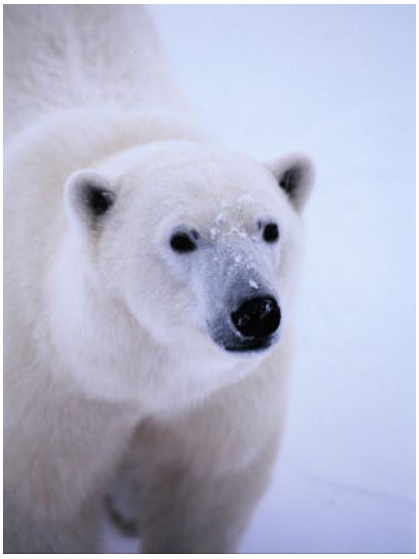
d. If 3 more birds and 4 more reptiles were added to the table, how many fewer birds would there be than reptiles? ____

African Penguin

The African penguin lays 2 eggs at a time.

Clown Anemonefish

The clown anemonefish has scales, fins, and gills.



Polar Bear

The polar bear's thick coat of insulated fur protects against the Arctic cold.

Barn Owl

The barn owl usually lays 4–7 eggs at a time.

Rough Green Snake

Rough green snakes lay 4–12 sticky eggs under a flat stone or log.

Seahorse

Male seahorses carry eggs in brood pouches. They swim using a small fin on their backs.

animal cards

Arctic Fox

The female Arctic fox can give birth to a litter of up to 14 pups.

Bottlenose Dolphin

Dolphins have lungs. They breathe air through a blowhole at the top of the head.

Brown Bear

Brown bear mothers give birth to cubs during hibernation. They don't even have to wake up!

Rabbit

Mother rabbits feed their babies milk once or twice a day.

Leopard Gecko

Leopard geckos are cold-blooded and absorb sunlight for warmth.

Green Iguana

Green iguanas often live in trees but come to the ground to lay eggs.

California Mountain King Snake

This snake is a cold-blooded animal with scales.

Bull Shark

Bull sharks' gills allow them to live in the shallow, warm waters of the ocean.

animal cards

Brown Field Mouse

Female field mice give birth to 4–7 babies at a time.

British Robin

Females lay 4–6 pale blue speckled eggs in a nest in the spring.

Rooster

These warm-blooded creatures are known for crowing at dawn.

Orca Whale

A baby orca, or calf, is born tailfirst and may weigh about 400 pounds.

Sea Turtle

Females lay eggs in a nesting hole in the sand.

Baby Harp Seal

Seal mothers give birth in the spring and can identify their babies by their smell.

animal cards