Problem Solving • Multiply 2-Digit Numbers

Essential Question How can you use the strategy *draw a diagram* to solve multistep multiplication problems?

Common Core
**Operations and Algebraic
Thinking—4.OA.A.3** *Also 4.NBT.B.5*
MATHEMATICAL PRACTICES
MP1, MP2, MP5

Unlock the Problem   Real World

During the 2010 Great Backyard Bird Count, an average of 42 bald eagles were counted in each of 20 locations throughout Alaska. In 2009, an average of 32 bald eagles were counted in each of 26 locations throughout Alaska. Based on this data, how many more bald eagles were counted in 2010 than in 2009?

Use the graphic organizer to help you solve the problem.

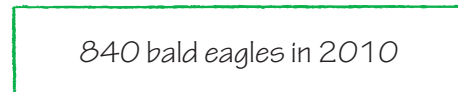| Read the Problem	Solve the Problem
What do I need to find? I need to find _____ bald eagles were counted in 2010 than in 2009.	• First, find the total number of bald eagles counted in 2010. _____ × _____ = _____ bald eagles counted in 2010
What information do I need to use? In 2010, _____ locations counted an average of _____ bald eagles each. In 2009 _____ locations counted an average of _____ bald eagles each.	• Next, find the total number of bald eagles counted in 2009. = _____ × _____ = _____ bald eagles counted in 2009
How will I use the information? I can solve simpler problems. Find the number of bald eagles counted in _____. Find the number of bald eagles counted in _____. Then draw a bar model to compare the _____ count to the _____ count.	• Last, draw a bar model. I need to subtract. ┌──────────────────────────┐ │ *840 bald eagles in 2010* │ └──────────────────────────┘ ┌──────────────────────┐ │ *832 bald eagles in 2009* │ └──────────────────────┘ ⌐‾⌐ ? $840 - 832 = $ _____ So, there were _____ more bald eagles counted in 2010 than in 2009.

🔑 Try Another Problem

Prescott Valley, Arizona, reported a total of 29 mourning doves in the Great Backyard Bird Count. Mesa, Arizona, reported 20 times as many mourning doves as Prescott Valley. If Chandler reported a total of 760 mourning doves, how many more mourning doves were reported in Chandler than in Mesa?

Mourning dove ▲

Read the Problem	Solve the Problem
What do I need to find?	
What information do I need to use?	
How will I use the information?	760 mourning doves in Chandler 580 mourning doves in Mesa ?

- Is your answer reasonable? Explain. _____

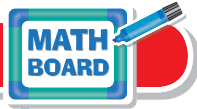_____

_____

Math Talk

MATHEMATICAL PRACTICES ②

Reason Abstractly What is another way you could solve this problem?

Name _____

Unlock the Problem

✓ Underline important facts.
✓ Choose a strategy.
✓ Use the Problem Solving MathBoard.

✓ **1.** An average of 74 reports with bird counts were turned in each day in June. An average of 89 were turned in each day in July. How many reports were turned in for both months? (Hint: There are 30 days in June and 31 days in July.)

First, write the problem for June.

_____

Next, write the problem for July.

_____

Last, find and add the two products.

_____ reports were turned in for both months.

✓ **2.** What if an average of 98 reports were turned in each day for the month of June? How many reports were turned in for June? Describe how your answer for June would be different.

_____

_____

_____

3. **GO DEEPER** There are 48 crayons in a box. There are 12 boxes in a carton. Mr. Johnson ordered 6 cartons of crayons for the school. How many crayons did he get?

_____

4. **MATHEMATICAL PRACTICE ①** **Make Sense of Problems** Each of 5 bird-watchers reported seeing 15 roseate spoonbills in a day. If they each reported seeing the same number of roseate spoonbills over 14 days, how many would be reported?

_____

WRITE ▸*Math* • **Show Your Work** • • • •

On Your Own

5. **THINK SMARTER** On each of Maggie's bird-watching trips, she has seen at least 24 birds. If she has taken 4 of these trips each year over the past 16 years, at least how many birds has Maggie seen?

_____

6. **MATHEMATICAL PRACTICE ①** **Make Sense of Problems**
There are 12 inches in a foot. In September, Mrs. Harris orders 32 feet of ribbon for the Crafts Club. In January, she orders 9 feet less. How many inches of ribbon does Mrs. Harris order? Explain how you found your answer.

_____

_____

7. **GO DEEPER** Lydia is having a party on Saturday. She decides to write a riddle on her invitations to describe her house number on Cypress Street. Use the clues to find Lydia's address.

_____

CLUES

★ My address is a 5-digit number.
★ The tens digit is 5 less than 7.
★ The thousands digit is twice the digit in the tens place.
★ The hundreds digit is the greatest even number that is less than 10.
★ The ones digit is the product of 7 and 1.
★ The ten thousands digit is the difference between the hundreds digit and the ones digit.

Personal Math Trainer

8. **THINK SMARTER +** A school is adding 4 rows of seats to the auditorium. There are 7 seats in each row. Each new seat costs $99. What is the total cost for the new seats? Show your work.

_____

Problem Solving • Multiply 2-Digit Numbers

Solve each problem. Use a bar model to help.

1. Mason counted an average of 18 birds at his bird feeder each day for 20 days. Gloria counted an average of 21 birds at her bird feeder each day for 16 days. How many more birds did Mason count at his feeder than Gloria counted at hers?

   Birds counted by Mason: **18 × 20 = 360**

   Birds counted by Gloria: **21 × 16 = 336**

   Draw a bar model to compare.

   Subtract. **360 − 336 = 24**

   360 birds counted by Mason

   336 birds counted by Gloria

   ?

   So, Mason counted ___24___ more birds.

2. The 24 students in Ms. Lee's class each collected an average of 18 cans for recycling. The 21 students in Mr. Galvez's class each collected an average of 25 cans for recycling. How many more cans were collected by Mr. Galvez's class than Ms. Lee's class?

3. At East School, each of the 45 classrooms has an average of 22 students. At West School, each of the 42 classrooms has an average of 23 students. How many more students are at East School than at West School?

4. **WRITE** *Math* Draw a bar model that shows how the number of hours in March compares with the number of hours in February of this year.

Lesson Check (4.OA.A.3)

1. Ace Manufacturing ordered 17 boxes with 85 ball bearings each. They also ordered 15 boxes with 90 springs each. How many more ball bearings than springs did they order?

_____

2. Elton hiked 16 miles each day on a 12-day hiking trip. Lola hiked 14 miles each day on her 16-day hiking trip. In all, how many more miles did Lola hike than Elton hiked?

_____

Spiral Review (4.OA.A.2, 4.NBT.A.1, 4.NBT.A.3, 4.NBT.B.5)

3. An orchard has 24 rows of apple trees. There are 35 apple trees in each row. How many apple trees are in the orchard?

_____

4. An amusement park reported 354,605 visitors last summer. What is this number rounded to the nearest thousand?

_____

5. Attendance at the football game was 102,653. What is the value of the digit 6?

_____

6. Jill's fish weighs 8 times as much as her parakeet. Together, the pets weigh 63 ounces. How much does the fish weigh?

_____

FOR MORE PRACTICE GO TO THE
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