Lesson 1

Understand the Meaning of Multiplication

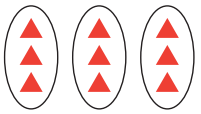
Name: _____

Prerequisite: How do you know if groups are equal?

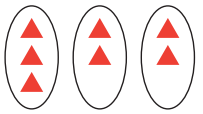
Study the example problem showing equal groups and unequal groups. Then solve problems 1–6.

Example

Tell whether each picture shows equal groups.



This picture shows equal groups.



This picture shows unequal groups.

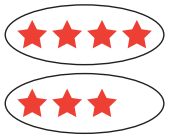
B 1 How many triangles are in each group in the first picture from the Example? 3

How many triangles are in each group in the second picture? 3, 2, 2

M 2 Why does the first picture show equal groups?

Possible answer: Each group in the first picture has the same number of triangles, so the groups are equal.

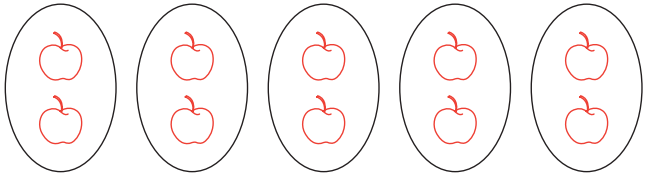
M 3 Look at the picture to the right. Does it show equal groups? How do you know?



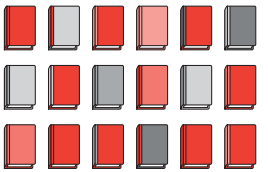
Possible answer: The picture does not show equal groups. One group has 4 stars but the other group has 3 stars.

Solve.

M 4 Becky has 5 groups of apples. Each group has 2 apples. Use the rings below. Draw all the apples to show the equal groups.



M 5 Mike has 3 shelves in his bookcase. Each shelf has 6 books on it. Mike drew an array to show how many books he has.



How many rows does the array have? 3

How many books are in each row of the array? 6

C 6 John earned 3 dollars 4 times.

Draw a picture to show this.

Students should draw 4 groups with $3 in each group.

Fill in the blanks to complete the addition sentence that describes your picture.

3 + 3 + 3 + 3 = 12

Vocabulary

array a set of objects arranged in equal rows and equal columns.

Key

B Basic **M** Medium **C** Challenge

Name: _____

Use Equal Groups to Think About Multiplication

Study the example problem showing a multiplication sentence to represent equal groups. Then solve problems 1–9.

Example

There are 2 leaves. There are 6 ladybugs on each leaf. How many ladybugs are there altogether? Write a multiplication sentence.

There are 2 equal groups of ladybugs. Each group has 6 ladybugs.

Multiplication sentence: $2 \times 6 = 12$

Use the picture below to answer problems 1–4.

B 1 How many equal groups are there? 3

B 2 How many ladybugs are in each group? 4

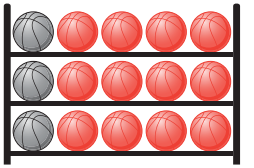
B 3 How many ladybugs are there altogether? 12

C 4 Write a multiplication sentence about the number of ladybugs.

3 × 4 = 12

Solve.

M 5 The basketball cart has 3 shelves. Each shelf can hold 5 basketballs. There is already 1 basketball on each shelf. Draw the rest of the basketballs to fill the cart.



M 6 Look at your picture of the basketballs on the cart. Think about the basketballs as an array.

How many rows are in the array? 3

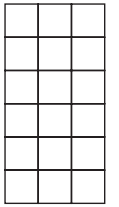
How many basketballs are in each row? 5

How many basketballs are on the cart? 15

M 7 Fill in the blanks to represent the array of basketballs with a multiplication sentence.

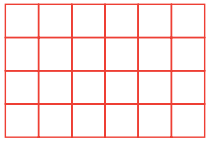
3 × 5 = 15

C 8 Write the multiplication sentence to represent the squares in the rectangle.



6 × 3 = 18

C 9 Draw an array of square tiles to show $4 \times 6 = 24$.



Name: _____

Reason and Write

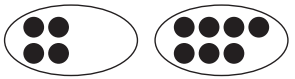
Study the example. Underline two parts that you think make it a particularly good answer and a helpful example.

Answers will vary. Note whether students incorporate the features they chose in their answer on the next page.

Example

Casey drew a picture to show 4 × 7. He wrote:

My picture shows that 4 × 7 = 11.

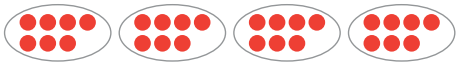


What did Casey do right? What did he do wrong?

Use pictures, words, and numbers to explain.

Casey drew loops to put models into equal groups. He knew that 4 and 7 were important numbers, but he modeled addition instead of multiplication. He drew a model for 4 + 7 instead of 4 × 7. He thought of 4 and 7 as addends instead of factors.

Casey should have shown 4 × 7 as 4 groups of 7 objects, so he needed to draw 4 loops with 7 objects in each loop. His drawing should look like this.



Then he would see that 4 × 7 = 28.

Where does the example . . .

- *use a picture to explain?*
- *use numbers to explain?*
- *use words to explain?*
- *give details?*

Solve the problem. Use what you learned from the example.

Jan found this picture of nests with eggs in them.

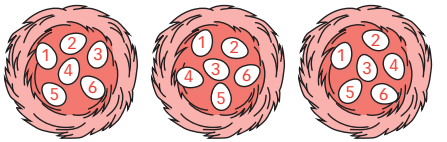
She wrote a multiplication sentence about the picture. She wrote:

3 × 5 = 15

Explain what Jan did right. What did she do wrong?

Show your work. Use pictures, words, or numbers to explain your answer.

Possible answer: Jan's multiplication sentence is a correct sentence, because 3 × 5 = 15. It is just not the right multiplication sentence for the picture. There are 3 groups of eggs, so the 3 is correct. There are an equal number of eggs in each nest, so multiplication is correct. But the number 5 doesn't match the number of eggs in each nest in the picture. There are 6 eggs in each nest.



Jan might have counted the number of eggs in each nest wrong. The multiplication sentence should be 3 × 6 = 18. This is because 3 × 6 means 3 groups of 6.

Did you . . .

- *use a picture to explain?*
- *use numbers to explain?*
- *use words to explain?*
- *give details?*