Lesson 3

Objective: Interpret the meaning of factors—the size of the group or the number of groups.

Suggested Lesson Structure

- Fluency Practice (15 minutes)
- Application Problem (5 minutes)
- Concept Development (30 minutes)
- Student Debrief (10 minutes)

Total Time (60 minutes)

Fluency Practice (15 minutes)

- Sprint: Add Equal Groups 3.OA.1 (9 minutes)
- Group Counting 3.OA.1 (3 minutes)
- Add to Multiply 3.OA.1 (3 minutes)

Sprint: Add Equal Groups (9 minutes)

Materials: (S) Add Equal Groups Sprint

Note: This Sprint reviews Lesson 1. See Lesson 2 for the directions for administering a Sprint.

Group Counting (3 minutes)

Note: Basic skip-counting skills from Grade 2 shift focus in this Grade 3 activity. Group counting reviews interpreting multiplication as repeated addition. Counting by twos and threes in this activity anticipates work with those factors in Topic B.

T: Let’s count by twos. (Direct students to count forward and backward to 20, periodically changing directions.)

T: Let’s count by threes. (Direct students to count forward and backward to 21, periodically changing directions. Emphasize the 9 to 12 and 18 to 21 transitions.)
Add to Multiply (3 minutes)

Materials: (S) Personal white board

Note: This activity reviews Lesson 2. Students directly relate repeated addition to multiplication. They interpret products using the array.

T: (Project a picture with 3 groups of 5 circled.) How many groups are circled?
S: 3.
T: How many are in each group?
S: 5.
T: Write it as an addition sentence.
S: (Write $5 + 5 + 5 = 15$.)
T: Write a multiplication sentence representing $3$ fives equals $15$.
S: $3 \times 5 = 15$.

Continue with this possible sequence: 3 groups of 10, 3 groups of 4, and 7 groups of 2.

Application Problem (5 minutes)

Robbie sees that a carton of eggs shows an array with 2 rows of 6 eggs. What is the total number of eggs in the carton? Use the RDW process to show your solution.

Note: This problem reviews writing multiplication sentences from arrays learned in Lesson 2. The egg carton provides a natural array for students to see 2 rows of 6.

Concept Development (30 minutes)

Materials: (S) Personal white board

The following opening activity should take about 5 minutes.

T: Here are the rules for our opening activity.
   1. Divide yourselves into 4 equal groups.
   2. Each group will stand in a corner of the room.
   3. Divide silently. You can use body movements to gesture, but no words.

T: Show thumbs up when your group is ready. Be sure to look around the room to double check that all 4 groups are equal before showing you’re ready.

S: (Move around the room silently until there are 4 equal groups, 1 in each corner.)

NOTES ON OPENING ACTIVITY:

Adjust the directions for the opening activity depending on the total number of students in the class. Avoid having students make 4 groups of four. Do this either by having students form groups near objects in the classroom rather than in corners to adjust the number of groups or by having an adult, teddy bear, etc., stand in to adjust the size of the groups.
Lesson 3: Interpret the meaning of factors—the size of the group or the number of groups.
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As time allows, continue with the following possible suggestions:
- 2 groups of 8
- 3 rows of 5
- Number bond showing 6 groups of 3
- The equation $5 \times 4 = 20$

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students should solve these problems using the RDW approach used for Application Problems.

Student Debrief (10 minutes)

Lesson Objective: Interpret the meaning of factors—the size of the group or the number of groups.

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.
- Why do you think I started the lesson by asking you to divide yourselves into equal groups in the corners of the room?
- Identify the factors and their meanings from each image in Problems 1–5.
- In Problem 6, discuss the two ways to draw the array and number bond with factors 2 and 3.
Module 1 introduces many new vocabulary words: row, array, multiply, multiplication, number of groups, size of groups, divide, factor, etc. Consider having students make a vocabulary page in their math journals.

Relate factors to their meaning: the size of the group or the number of groups. Have students share the definition in pairs. Then, ask students to write the word and a definition or example next to it in their journals.

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.
Add Equal Groups

1. $2 + 2 = $
2. 2 twos =
3. $5 + 5 =$
4. 2 fives =
5. $2 + 2 + 2 =$
6. 3 twos =
7. $2 + 2 + 2 + 2 =$
8. 4 twos =
9. $5 + 5 + 5 =$
10. 3 fives =
11. $5 + 5 + 5 + 5 =$
12. 4 fives =
13. 2 fours =
14. $4 + 4 =$
15. 2 threes =
16. $3 + 3 =$
17. 2 sixes =
18. $6 + 6 =$
19. 5 twos =
20. $2 + 2 + 2 + 2 + 2 =$
21. 5 fives =
22. $5 + 5 + 5 + 5 + 5 =$
23. $7 + 7 =$
24. 2 sevens =
25. $9 + 9 =$
26. 2 nines =
27. $8 + 8 =$
28. 2 eights =
29. $3 + 3 + 3 =$
30. 3 threes =
31. $4 + 4 + 4 =$
32. 3 fours =
33. $3 + 3 + 3 + 3 =$
34. 4 threes =
35. 4 fives =
36. $5 + 5 + 5 + 5 =$
37. 3 sixes =
38. $6 + 6 + 6 =$
39. 3 eights =
40. $8 + 8 + 8 =$
41. 3 sevens =
42. $7 + 7 + 7 =$
43. 3 nines =
44. $9 + 9 + 9 =$

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### Add Equal Groups

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Name ____________________________________________ Date ________________________

Solve Problems 1–4 using the pictures provided for each problem.

1. There are 5 flowers in each bunch. How many flowers are in 4 bunches?

   a. Number of groups: ___________ Size of each group: _____________
   
   b. 4 × 5 = __________
   
   c. There are _________ flowers altogether.

2. There are _______ candies in each box. How many candies are in 6 boxes?

   a. Number of groups: ___________ Size of each group: _____________
   
   b. 6 × __________ = ___________
   
   c. There are _________ candies altogether.

3. There are 4 oranges in each row. How many oranges are there in ______ rows?

   a. Number of rows: ___________ Size of each row: __________
   
   b. __________ × 4 = __________
   
   c. There are _________ oranges altogether.
4. There are _______ loaves of bread in each row. How many loaves of bread are there in 5 rows?
   
   a. Number of rows: ___________   Size of each row: ___________
   
   b. _______ × _________ = __________
   
   c. There are _________ loaves of bread altogether.

5. a. Write a multiplication equation for the array shown below.
   
   X X X
   X X X
   X X X
   X X X
   X X X

   b. Draw a number bond for the array where each part represents the amount in one row.

6. Draw an array using factors 2 and 3. Then, show a number bond where each part represents the amount in one row.
Name ____________________________ Date ________________

Draw an array that shows 5 rows of 3 squares. Then, show a number bond where each part represents the amount in one row.
Lesson 3 Homework

Name ___________________________________________ Date ______________________

Solve Problems 1–4 using the pictures provided for each problem.

1. There are 5 pineapples in each group. How many pineapples are there in 5 groups?

   ![Pineapple Groups]

   a. Number of groups: _____________  Size of each group: ____________
   b. 5 × 5 = _____________
   c. There are ____________ pineapples altogether.

2. There are ______ apples in each basket. How many apples are there in 6 baskets?

   ![Apple Baskets]

   a. Number of groups: _____________  Size of each group: ____________
   b. 6 × ____________ = ____________
   c. There are ____________ apples altogether.
3. There are 4 bananas in each row. How many bananas are there in ________ rows?

   a. Number of rows: ___________ Size of each row: __________

   b. ___________ × 4 = __________

   c. There are ___________ bananas altogether.

4. There are ___________ peppers in each row. How many peppers are there in 6 rows?

   a. Number of rows: ___________ Size of each row: __________

   b. ___________ × ___________ = __________

   c. There are ___________ peppers altogether.

5. Draw an array using factors 4 and 2. Then, show a number bond where each part represents the amount in one row.