**GRADE 3 FLUENCY ACTIVITIES: Module 1 - Multiplication & Division (properties/facts 2-5,10)**

Group Counting

Note: Basic skip-counting skills from Grade 2 shift focus in this Grade 3 activity. Group-counting lays a foundation for interpreting multiplication as repeated addition. When students count groups in this activity, they add and subtract groups of two when counting up and down.

T: Let’s count to 20 forward and backward. Watch my fingers to know whether to count up or down. A closed hand means stop. (Show signals as you explain.)

T: (Rhythmically point up until a change is desired. Show a closed hand then point down.)

S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0.

T: Let’s count to 20 forward and backward again. This time whisper every other number. Say the other numbers in a regular voice.

S: (Students whisper then speak every other number to 20 forward and backward.)

T: Let’s count to 20 forward and backward again. This time, hum every other number instead of whispering. As you hum, think of the number.

S: (Hum), 2, (hum), 4, (hum), 6, etc.

T: Let’s count to 20 forward and backward again. This time, think every other number instead of humming.

S: (Think), 2, (think), 4, (think), 6, etc.

T: What did we just count by? Turn and talk to your partner.

S: Twos.

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

Group Counting

Note: Basic skip-counting skills from Grade 2 shift focus in this Grade 3 activity. Group-counting lays a foundation for interpreting multiplication as repeated addition. When students count groups in this activity, they add and subtract groups of three when counting up and down.

T: Let’s count to 18 forward and backward. I want you to whisper, whisper, and then speak numbers.

T: Watch my fingers to know whether to count up or down. A closed hand means stop. (Show signals as you explain.)

T: (Rhythmically point up until a change is desired. Show a closed hand then point down.)

S: (Whisper 1, whisper 2, speak 3, etc.)

T: Let’s count to 18 forward and backward again. This time, think every number instead of whispering.

S: (Think), (think), 3, (think), (think), 6, (think), (think), 9, etc.

T: What did we just count by? Turn and talk to your partner.

S: Threes.

T: Let’s count by threes. (Direct students to count forward and backward to 18, periodically changing directions. Emphasize the 9 to 12 transition.)

Add Equal Groups

Materials: (S) Personal white boards

Note: This activity reviews Lesson 1. Students directly relate repeated addition to multiplication. They interpret products as the number of equal groups times the number of objects in each group.

T: (Project a picture array with 3 groups of 2 circled.) How many groups are circled?

S: 3.

T: How many are in each group?

S: 2.

T: Write this as an addition sentence.

S: (Write 2 + 2 + 2 = 6.)

T: Write a multiplication sentence for 3 twos equals 6.

S: (Write 3 × 2 = 6.)

Continue with possible sequence: 3 groups of 5, 5 groups of 10, and 3 groups of 4.

Group Counting

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

Materials: (S) Personal white boards

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

T: (Project a picture array 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 × 5 = 15.

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

Group Counting

Note: Group counting reviews interpreting multiplication as repeated addition. Counting by twos and threes in this activity anticipates work with those factors in this lesson.

T: Let’s count by twos. (Direct students to count forward and backward to 20, periodically changing directions, e.g., 2, 4, 6, 8, 10, 8, 10, 12, 10, 12, 14, 16, 18, 20, 18, 20, 18, 16, 14, 12, 10, 12, 10, 8, 10, 8, 6, 4, 2, 0.)

T: Let’s count by threes. (Direct students to count forward and backward to 24, periodically changing directions. Emphasize the 9 to 12 and 18 to 21 transitions, e.g., 3, 6, 9, 12, 9, 12, 9, 12, 15, 18, 21, 18, 21, 18, 21, 24, 21, 18, 21, 18, 15, 12, 15, 12, 9, 12, 9, 6, 3, 0.)

Array Multipication

Materials: (S) Personal white boards.

Note: This activity reviews Topic A’s objectives. Students directly relate repeated addition to multiplication. They interpret products using the array.

T: (Project a picture array with 3 groups of 2 circled.) Say the repeated addition sentence.

S: 2 + 2 + 2 = 6.

T: (Write 3 × \_\_\_\_ = \_\_\_\_.) On your personal boards, complete the multiplication sentence.

S: (Write 3 × 2 = 6.)

Continue with possible sequence: 4 groups of 10, 3 groups of 4, 7 groups of 3, and 8 groups of 2.

Divide Equal Groups

Materials: (S) Personal white boards.

Note: Students directly relate repeated addition to division. They interpret the number of groups as the unknown in division. This activity anticipates the lesson objective.

T: (Project an array with 2 groups of 5 circled.) How many groups are circled?

S: 2.

T: How many are in each group?

S: 5.

T: Say the total as a repeated addition sentence.

S: 5 + 5 = 10.

T: Write a division sentence for 10 divided into 2 equal groups.

S: (Write 10 ÷ 2 = 5.)

Continue with possible sequence 4 groups of 2, 3 groups of 4 and 2 groups of 6.

Alternate between students writing division sentences where the quotient represents either the number of objects in a group or the number of groups.

Multiply with Twos

Materials: (S) Personal white boards, Twos Array Template, blank paper

Note: Students unit count objects in an array and write multiplication sentences that match the count-by in anticipation of this lesson’s objective.

T: Slip your Twos Array Template into your personal white board.

T: Turn your board so that it’s vertical. Use your blank paper to cover all but the first row of dots.

T: How many twos show?

S: 1 two.

T: Say the multiplication sentence to represent the shown array and solve.

S: 1 × 2 = 2.

T: Uncover another row.

Continue this sequence having students uncover twos for 2 × 2, 3 × 2, 10 × 2, 5 × 2, 6 × 2, 7 × 2, 9 × 2, and
8 × 2.

**Group Counting**

Note: Group counting reviews interpreting multiplication as repeated addition. Counting by twos, threes and fours in this activity supports work with units of 2 and 3 in this topic, and anticipates work using units of 4 in Topic E.

T: Let’s count by twos to 20. Whisper then speak the numbers.

T: Let’s count by twos to 20 again. This time, hum the first number and then speak. As you hum, think of the number.

T: Let’s count by twos to 20. This time, instead of humming, think every other number.

T: What did we just count by?

S: Fours.

T: Let’s count by fours. (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 30, periodically changing directions. Emphasize the 9 to 12, 18 to 21, and 27 to 30 transitions.)

**Commutative Multiplying**

 Materials: (S) Personal white boards

Note: Practicing this topic that was taught in Lesson 7 helps students build confidence and automaticity with this concept.

T: (Project a picture of a 3 by 2 array.) How many groups of 2 do you see?

S: 3 groups of 2.

T: Write two different multiplication sentences for the picture.

S: (Write 3 × 2 = 6 and 2 × 3 = 6.)

Continue with possible sequence 3 by 5 and 4 by 3.

T: (Write 4 × 2 = 2 × \_\_\_.) On your boards, fill in the blank.

S: (Students write 4 × 2 = 2 × 4.)

Repeat process for 9 × 5 = 5 × \_\_\_ and 3 × 6 = 6 × \_\_\_.

**Multiply by 2**

Materials: (S) Multiply by 2 (1–5) Pattern Sheet

Note: This activity builds fluency with multiplication facts using units of 2. It works toward students knowing from memory all products of two one-digit numbers.

T: (Write 2 × 5 = ­­­­\_\_\_\_.) Let’s skip-count by twos to find the answer. (Count with fingers to 5 as students count.)

S: 2, 4, 6, 8, 10.

T: (Circle 10 and write 2 × 5 = 10 above it. Write 2 × 3 = \_\_\_\_.) Let’s skip-count up by twos again. (Count with fingers to 3 as students count.)

S: 2, 4, 6.

T: Let’s see how we can skip-count down to find the answer, too. Start at 10 with 5 fingers, 1 for each two. (Count down with your fingers as students say numbers.)

S: 10 (five fingers), 8 (4 fingers), 6 (3 fingers).

Repeat the process for 2 × 4.

T: Let’s practice multiplying by 2.

Directions for Administration of *Multiply By* Pattern Sheet

* Distribute *Multiply By* pattern sheet.
* Allow a maximum of 2 minutes for students to complete as many problems as possible.
* Direct students to work left to right across the page.
* Encourage skip-counting strategies to solve unknown facts.

Forms of Multiplication

Materials: (S) Personal white boards

Note: Students directly relate repeated addition to multiplication in preparation for using the distributive property in this Lesson.

T: (Project a 3 by 5 picture array.) Represent this array as a repeated addition sentence using 5 as the size of the groups.

S: (Write 5 + 5 + 5 = 15.)

T: (Project a 3 by 4 array. Write \_\_\_\_ fours = \_\_\_\_.) Complete the expression on your personal board.

S: (Write 3 fours = 12.)

T: (Project a 7 by 2 array.) Write 2 multiplication sentences for 7 groups of 2.

S: (Write 7 × 2 = 14 and 2 × 7 = 14.)

T: (Project a 6 by 3 array.) Write 18 = 6 × \_\_\_\_.) Complete the expression on your personal board.

S: (Write 18 = 6 × 3.)

T: (Project a 5 by 3 array. Write 5 threes = \_\_\_.) Complete the expression on your personal board.

S: (Write 5 threes = 15.)

T: (Add one more group of 3 to the array. Write 5 threes + 1 three = \_\_\_\_ threes = \_\_\_\_ ones.)

S: (Write 5 threes + 1 three = 6 threes = 18 ones.)

Multiply by 2

Materials: (S) Multiply by 2 (6­­­­–10) Pattern Sheet

Note: This activity builds fluency with multiplication facts using units of 2. It works toward students knowing from memory all products of two one-digit numbers. See *Directions for Administration of Multiply By Pattern Sheet* in Lesson 9.

T: (Write 2 × 7 = ­­­\_\_\_\_.) Let’s skip-count up by twos. (Count with fingers to 7 as students count.)

S: 2, 4, 6, 8, 10, 12, 14.

T: Let’s skip count by twos starting at 10.

S: (Show 5 fingers) 10, 12, 14. (Count with fingers to 7 as students count.)

T: Let’s see how we can skip-count down to find the answer, too. (Show 10 fingers) Start at 20. (Count down with your fingers as student say numbers.)

S: 20, 18, 16, 14.

Repeat the process for 2 × 9 and 2 × 8.

T: (Distribute Multiply By 2 pattern sheet.) Let’s get some practice multiplying by 2. Be sure to work left to right across the page.

Multiply By 3

Materials: (S) Multiply By 3 (1–5) Pattern Sheet

Note: This activity builds fluency with multiplication facts using units of 2. It works toward students knowing from memory all products of two one-digit numbers. See *Directions for Administration of Multiply By* *Pattern Sheet* in Lesson 9.

T: (Write 3 x 5 = ­­­­\_\_\_\_.) Skip-count by threes to find the answer. (Raise a finger for each number to track the count.)

S: 3, 6, 9, 12, 15.

T: (Circle 15 and write 3 x 5 = 15 above it. Write 3 x 4 = \_\_\_\_.) Skip-count up by threes to find the answer. (Track with fingers as students count.)

S: 3, 6, 9, 12.

T: Let’s count down to find the answer to 3 x 4, too. Start at 15. (Count down with your fingers as students say numbers.)

S: 15, 12.

T: Let’s practice multiplying by 3. Be sure to work left to right across the page. (Distribute Multiply By 3 pattern sheet.)

Group Counting

Note: Group counting reviews interpreting multiplication as repeated addition. Counting by twos and fours in this activity reviews multiplication with units of 2 from Topic C, and anticipates using units of 4 in Topic E.

Count by fours to 32 forward and backward. Focus on the 20 to 24 and 28 to 32 transitions.

Count by twos to 20 forward and backward.

Multiply by 3

Materials: (S) Multiply By 3 pattern sheet (6–10)

Note: This activity builds fluency with multiplication facts using units of 2. It works toward students knowing from memory all products of two one-digit numbers. See *Directions for Administration of Multiply By* in Lesson 9.

T: (Write 3 x 6 = ­­­\_\_\_\_.) Let’s skip-count up by threes to solve. (Count with fingers to 6 as students count.)

S: 3, 6, 9, 12, 15, 18.

T: Let’s skip-count down to find the answer, too. Start at 30. (Count down with fingers as students count.)

S: 30, 27, 24, 21, 18.

Repeat the process for 3 x 8 and 3 x 7.

T: Let’s practice multiplying by 3. Be sure to work left to right across the page. (Distribute Multiply By 3 pattern sheet.)

Divide

Materials: (S) Personal white boards

Note: This activity builds fluency with multiplication and division. It works toward the goal of students knowing from memory all products of two one-digit numbers, and reviews the objective of Lesson 11.

T: (Project a 2 by 4 array of objects.) Draw an array to match my picture.

S: (Draw 2 by 4 array.)

T: Skip-count by twos to find how many total objects there are. (Point as students count.)

S: 2, 4, 6, 8.

T: How many groups of 2 are there?

S: 4.

T: Say the total as a multiplication sentence starting with the number of groups.

S: 4 x 2 = 8.

T: (Write 4 x 2 = 8. Below it, write 8 ÷ 4 =\_\_.) Write the division sentence. Then divide your array into 4 equal groups to find the answer.

S: (Draw lines separating array into 4 groups of 2 and write 8 ÷ 4 = 2.)

T: Erase the lines that divided the array.

S: (Erase lines.)

T: Show 8 ÷ 4 by making groups of 4.

S: (Circle 2 groups of 4.)

Repeat process for possible sequence: 9 ÷ 3, 12 ÷ 2, 12 ÷ 3.

Divide

Materials: (S) Personal white boards

Note: This activity builds fluency with multiplication and division. It works toward students knowing from memory all products of two one-digit numbers.

T: (Write 2 x 3 = \_\_\_.) Say the multiplication sentence.

S: 2 x 3 = 6.

T: (Write 2 x 3 = 6. Directly below it, write \_\_\_÷ 3 = 2.) On your board, write the number that completes the division sentence.

S: (Write 6 ÷ 3 = 2.)

Repeat process for possible sequence: 3 x 3, 5 x 3, and 9 x 3.

Read Tape Diagrams/Bar Models/Bar Diagrams

Note: Students practice *reading* the difference between the value of the unit (the size of the groups) and the number of units. The activity anticipates using the tape diagram as a model for commutativity.

T: (Project a tape diagram partitioned into 5 equal units, drawing 2 stars in the first unit.) What is the value of each unit?

S: 2 stars.

T: How many units are there?

S: 5 units.

T: Write a multiplication sentence for this tape diagram.

S: (Write 5 × 2 = 10.)

Repeat the process, alternating between finding the number of groups and the size of the groups for 4 × 3 = 12, 8 ÷ 4 = 2, and 15 ÷ 3 = 5.

Multiply By 4

Materials: (S) Multiply By 4 pattern sheet (1–5)

T: (Write 4 x 5 = ­­­­\_\_\_\_.) Let’s skip-count by fours to find the answer. (Count with fingers to five as students count.)

S: 4, 8, 12, 16, 20.

T: (Circle 20 and write 4 x 5 = 20 above it. Write 4 x 4 = \_\_\_\_.) Let’s skip-count up by fours again. (Count with fingers to four as students count.)

S: 4, 8, 12, 16.

T: Let’s see how we can skip-count down to find the answer to 4 x 4. Start at 20. (Count down with your fingers as students say numbers.)

S: 20, 16.

Repeat process for 4 x 3.

T: Let’s practice multiplying by 4. Be sure to work left to right across the page. (Distribute Multiply by 4 pattern sheet)

Multiply By 4

Materials: (S) Multiply By 4 pattern sheet (6–10)

T: (Write 4 x 7 = ­­­\_\_\_\_.) Let’s skip-count up 7 times by fours. (Count with fingers to 7 as students count.)

S: 4, 8, 12, 16, 20, 24, 28.

T: Let’s skip count by fours starting at 5 fours or 20.

S: (Show 5 fingers to represent 5 fours, or 20.) 20, 24, 28. (Count with fingers up to 7 fours as students count.)

T: Let’s skip-count down to find the answer to 7 x 4. Start at 10 fours or 40. (Count down with your fingers as student say numbers.)

S: 40, 36, 32, 28.

Repeat the process of skip counting up from 5 fours and down from 10 fours to solve 9 x 4 and 8 x 4. Distribute Multiply By 4 pattern sheet (6–10)*.*

Read Tape Diagrams

Note: Students practice reading the difference between the value of the unit (the size of the groups) and the number of units. The activity reviews using the tape diagram as a model for commutativity.

T: (Project a tape diagram partitioned into 2 equal units. Draw 8 stars in each unit and bracket the total with a question mark.) Say the addition sentence.

S: 8 + 8 = 16.

T: Say the multiplication sentence starting with the number of groups.

S: 2 x 8 = 16.

T: Draw the tape diagram and label units with numbers instead of stars. Label the missing total. Beneath the diagram, write a multiplication sentence.

S: (Draw a tape diagram with 8 written inside both units and 16 written as the total. Beneath the diagram, they write 2 x 8 = 16.)

Repeat process for 3 x 7 and 4 x 6.

Group Counting

* Count by fours to 40, whisper and talk forward and backward.
* Count by sixes to 36 forward and backward. Emphasize the 24 to 30 transition.
* Count by threes to 30 forward and backward.
* Count by fives to 50 forward and backward.

Commutative Multiplying

Note: This activity reviews the commutativity of multiplication, learned in Lessons 7, 8, and 15.

T: (Write 3 x 2 = \_\_\_.) Say the multiplication sentence.

S: 3 x 2 = 6.

T: Flip it.

S: 2 x 3 = 6.

Repeat process for 5 x 2, 5 x 3, 3 x 4, 2 x 8, and 3 x 7.

Decompose and Multiply

Note: This activity anticipates multiplication using units of 6, 7, 8, and 9 by decomposing larger facts into smaller known facts. It reviews the distributive property strategy.

T: (Write 7 fours =\_\_\_.) Write the multiplication sentence.

S: (Write 7 fours = \_\_\_.)

T: (Write (5 fours) + (\_\_\_\_ fours) = below 7 fours =\_\_\_.) 7 fours is the same as 5 fours and how many fours?

S: 2 fours.

T: (Write (5 fours) + (2 fours) =. Below it, write 20 + \_\_\_\_ = \_\_\_\_.) Complete the equation.

S: (Write 7 fours = 28. Below it, write (5 fours) + (2 fours) = 28. Below that line, they write
20 + 8 = 28.)

Repeat for possible sequence: 8 x 3, 9 x 2, and 6 x 4. Change missing numbers that students need to fill in.

Compose and Multiply

Note: This activity anticipates multiplication using units of 6, 7, 8, and 9 by composing smaller known facts into larger unknown facts. It reviews the distributive property strategy.

T: (Write (5 x 3) + (2 x 3) =\_\_\_.) Write the number sentence on your personal white boards. Below the number sentence, write an addition sentence.

S: (Write (5 x 3) + (2 x 3) = 21. Below it, write 15 + 6 = 21.)

T: Write (5 x 3) + (2 x 3) as a single multiplication sentence.

S: (Write 7 x 3 = 21 above (5 x 3) + (2 x 3) = 21.)

Repeat for possible sequence: 8 x 2 and 9 x 4.

Multiply By Five

Materials: (S) Multiply By 5 pattern sheet (1–5)

Note: This activity builds fluency with multiplication facts using units of 5. It works toward students knowing from memory all products of two one-digit numbers. See *Directions for Administration of Multiply By Pattern Sheet* in Lesson 9.

T: (Write 5 x 5 = ­­­­\_\_\_\_.) Let’s skip-count by fives to find the answer. (Count with fingers to 5 as students count.)

S: 5, 10, 15, 20, 25.

T: (Circle 25 and write 5 x 5 = 25 above it. Write 5 x 3 = \_\_\_\_.) Let’s skip-count up by fives again. (Count with fingers to 3 as students count.)

S: 5, 10, 15.

T: Let’s see how we can skip-count down to find the answer, too. Start at 25. (Count down with your fingers as students say numbers.)

S: 25, 20, 15.

Repeat process for 5 x 9 and 5 x 8.

T: Let’s practice multiplying by 5. Be sure to work left to right across the page. (Distribute Multiply by Five pattern sheet.)

Commutative Multiplying

Note: This activity reviews the commutativity of multiplication, learned in Lessons 7, 8, and 15.

T: (Write 4 x 2 = \_\_\_.) Say the multiplication sentence.

S: 4 x 2 = 8.

T: Flip it.

S: 2 x 4 = 8.

Repeat process for 5 x 3, 9 x 2, 4 x 3, 2 x 7, and 3 x 8.