Seeing 5 x 7 as 5 Groups of 7

Teacher		**Class**	Grade 3
Subject	Math	**Topic**	Understanding multiplication
Date		**Room**	
Lesson length	60 minutes	**Country**	United States

Students learn that a product shows the total in equal groups. They build 5 x 7 with cups and counters and explain the groups and total.

Curriculum links

- Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each [1]
- Develop understanding of multiplication through activities involving equal-sized groups, with multiplication finding an unknown product [1]
- Multiplication represents the total number of objects in equal groups [2]

Learning objectives

- Students will interpret products of whole numbers as totals in equal groups.
- Students will identify groups, size, and total for a multiplication expression.
- Students will write equal groups as repeated addition to find totals.

Success criteria

- I can show what 5 x 7 means with equal groups.
- I can name groups, size, and total for a product.
- I can write equal groups as repeated addition.

What students already know

Hold up 3 fingers on one hand and 3 on the other. Ask: How many fingers in all? How did you count them? Listen for 3 and 3, 6 in all.

Key words

equal groups	collections that each have the same number of things [2]
factor	one of the numbers we multiply [3]
product	the answer when you multiply [15]
repeated addition	adding groups of the same size one after another [10]

Materials

- small paper cups
- counters or cubes
- number cards
- Slides 1-4 and 8-11
- Worksheet Task B copies
- paper, pencils and crayons

Before the lesson

- Print Worksheet Task B, one copy per student
- Make sets of small paper cups, counters or cubes, and number cards like 4 x 3 and 5 x 7
- Load Slides 1-4 and 8-11 and check they display
- Set up table trays with cups and counters for pairs

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- mini-whiteboards and markers

Lesson outline

0–10 min **Starter** 10 min · Whole class

Hook interest and recall what makes groups equal.

YOU DO

1. Welcome the class and show a tray of counters mixed in cups with unequal numbers.
2. Say the hook and show Slide 1: Groups Make Multiplication!
3. Show Slide 4 vote with 4 boxes with 6 crayons in each and 6 boxes with 4 crayons in each.
4. Take a quick vote: You see 4 x 6. Which picture helps you most?

STUDENTS DO

1. Look at the mixed cups and signal thumbs up or down for equal or not equal.
2. Vote on Slide 4 and tell a neighbor why they chose that picture.
3. Share ideas about what multiplication shows.

Say: My groups got all mixed up — can you rebuild them to show what my multiplication really means? Look at my cups. Tell me if the groups are fair and what multiplication you see.

Ask: Are my cups equal groups? How do you know? (No, some cups have more. Equal means each has the same number [2].) · For 4 x 6, what would 4 tell us and what would 6 tell us? (4 is the number of groups, 6 is the number in each group.)

Check understanding: Use thumbs up for equal and thumbs down for not equal. If split, recount one tray together cup by cup before moving on.

Support: Hold up two cups with 2 counters in each and count together: 2, 4. **Stretch:** Ask what would change if one more equal group joined the tray.

Use: Slides 1, 4

10–22 min **Teaching** 12 min · Whole class

Model that 5 x 7 means 5 groups of 7 and 35 in all.

YOU DO

1. Display Slide 2: From Groups to Product with 5 plates with 7 grapes each.
2. Point to plates and count: Add it up: 7 + 7 + 7 + 7 + 7, Shortcut it: 5 x 7, Count all: 35 grapes in total.
3. Display Slide 3 key words: equal groups, factor, product, and model each with the plates.
4. Think aloud the meaning of 5, 7, and 35 while drawing circles and dots.

STUDENTS DO

1. Follow the plates, count aloud by 7s, and repeat the sentence for 5 x 7.
2. Show 5 fingers for groups and 7 fingers tapped for size, then write 5 x 7 = 35 on whiteboards.
3. Read the key words with the teacher and point to each part.

Say: 5 x 7 means the total in 5 groups of 7 objects each [2]. The 5 tells how many groups and the 7 tells how many in each group. The product is the total, and multiplication is calculating the sum of groups of the same size [10].

Worked example: 5 x 7: Step 1 - first factor 5 means make 5 plates. Step 2 - second factor 7 means put 7 grapes on each plate. Step 3 - write 7+7+7+7+7. Step 4 - count 7, 14, 21, 28, 35, so 5 x 7 = 35.

Ask: In 5 x 7, how many groups? How many in each group? What is the total? (5 groups, 7 in each group, 35 in all.) · How does 7 + 7 + 7 + 7 + 7 match 5 x 7? (It adds 7 five times, which is adding equal groups one by one [10].)

Check understanding: All hold up whiteboards showing 5 groups, 7 in each, 35 total. Reteach with 2 x 4 if many show wrong counts.

Support: Keep to small facts like 2 x 4 and let students use fingers or tally marks to track each group [6].
Stretch: Ask why 5 x 7 and 7 x 5 use different groups but have the same total.

Use: Slides 2–3

22–42 min **Main activity** 20 min · Pairs

Build products with cups to show groups, size, and total.

YOU DO

1. Model Tray Groups: pick a card like 4 x 3, make 4 cups with 3 counters in each, and count the total.
2. Model saying: 4 x 3 means 4 groups of 3, 12 in all, because multiplication represents the total number of objects in equal groups [2].
3. Hand out cups, counters, and number cards and show Slide 8 task: Make 5 groups with 7 cubes in each.
4. Circulate, check each group is equal, and ask pairs to draw groups and write 7+7+7+7+7 and 5 x 7 = 35.

STUDENTS DO

1. Pick a number card, build cups with equal counters, and count the total.
2. Draw circles for trays and dots for objects, then label groups, size, and total.
3. Point to cups and say the meaning, like 4 x 3 means 4 groups of 3, 12 in all.

Say: Pick a card, build exactly what it means, then prove it. Make the right number of cups, put the same number in each cup, and count to find the product. Draw it and write the addition and the multiplication to match.

Worked example: Card 4 x 3: Step 1 - set out 4 cups for 4 groups. Step 2 - put 3 counters in each cup. Step 3 - count 3, 6, 9, 12. Step 4 - say 4 x 3 means 4 groups of 3, 12 in all, and write 3+3+3+3 = 12.

Ask: For your card, how many groups did you make and how many are in each? (For example, 5 groups with 7 in each.) · How do you know the total is right? (Each cup has the same number and counting all dots gives 35.)

Check understanding: Listen for the sentence ___ x ___ means ___ groups of ___, ___ in all. If groups are unequal, have pairs fix cups before drawing.

Support: Start with only 2 or 3 groups and use larger cubes so counting is easier. **Stretch:** Students build both 3 x 4 and 4 x 3 and explain how the groups look different but the total is the same.

Use: Slide 8

42–52 min **Practice** 10 min · On their own

Read multiplications as equal groups and find totals on paper.

YOU DO

1. Hand out Worksheet Task B: Read each multiplication as equal groups and find the total.
2. Model one item: 3 groups of 5 can be written as 3 x 5 = 15 [15] with 3 circles and 5 dots in each.
3. Give quiet work time and remind students to check that each group is equal [10].
4. Collect and spot-check for groups, size, and total labels.

STUDENTS DO

1. Complete Task B by drawing equal groups and writing totals.
2. Label number of groups, number in each group, and total counted from dots.
3. Check work with a partner by reading each item as groups.

Say: Read each multiplication as equal groups first, then find the total. Draw circles for groups and dots for objects. Make every group equal, then count and write the product.

Worked example: 2 x 6: Draw 2 cards with 6 stars on each card. Count 6, 12. Write 6+6 = 12 and 2 x 6 = 12.

Ask: What does 2 x 6 tell you to draw? (2 groups with 6 in each group.) · How does your drawing show the product? (All dots counted together give the total, 12.)

Check understanding: Quick scan of drawings for equal groups and correct totals. Pull a small group to rebuild with cubes if totals are off.

Support: Provide pre-drawn circles so students only add the same number of dots to each [13]. **Stretch:** Write the matching repeated addition and predict the total before counting.

Use: Worksheet Task B

52–60 min **Plenary** 8 min · Whole class

Check that students can tell equal from unequal and explain a product.

YOU DO

1. Show Slide 9: 3 groups of 4 with 4 + 4 + 4 = 12 and 3 x 4 = 12 as Equal - Yes, and Groups of 4, 5, and 3 as Not Equal.
2. Ask Slide 10: A student has 6 x 2 stickers. How many groups? How many in each? What is the total?
3. Use Slide 11 Quick quiz to review 5 groups with 7 in each, 35 in all and 3 plates have 2 cookies with 3 x 2 = 6 cookies in all.
4. Close by having class state what 5 x 7 means.

STUDENTS DO

1. Sort equal and not equal examples with thumbs up or down.
2. Think, pair, share the 6 x 2 stickers question.
3. Answer the quiz items and state the meaning of 5 x 7.

Say: Not every set can be multiplied. If groups are not equal, we cannot write it as repeated addition, so make them equal first. If they are equal, the first number tells groups, the second tells size, and counting all gives the product.

Worked example: Equal: 3 groups of 4 -> 4+4+4 = 12, so 3 x 4 = 12. Not equal: groups of 4, 5, and 3 cannot be written as one repeated addition until you make them equal.

Ask: Why can we write 3 x 4 for 4+4+4 but not for 4+5+3? (3 x 4 has 3 equal groups of 4; 4, 5, and 3 are not equal so adding over and over does not match [10].) · What does 5 x 7 mean? (5 groups with 7 in each, 35 in all.)

Check understanding: Exit on whiteboards: draw 3 x 4 as groups. If many draw unequal or 7 total, reteach 3 groups of 4 tomorrow with cubes.

Support: Use boards with only 2, 3, and 5 in each group and totals under 20. **Stretch:** Explain why 5 x 7 and 7 x 5 use different groups but have the same total.

Use: Slides 9–11

Common mistakes

Mistake	How to spot it	How to fix it
Adds the factors, such as 5 + 7 = 12 for 5 x 7	Total is far too small and drawing shows only two numbers, not groups	Rebuild 5 groups of 7 objects each [2] and count all to show the product is 35, not 12
Makes unequal groups but still writes a multiplication	Cups or drawing have different numbers in each group	Check each group has the same number, since multiplication is calculating the sum of groups of the same size [10]
Swaps groups and size, building 7 groups of 5 for 5 x 7	Student says 7 groups but card says 5 x 7	Point to first factor for number of cups and second for counters in each cup, then compare 5 groups of 7 with 7 groups of 5 [5]

Support

- Start with only 2 or 3 groups and use larger cubes so counting is easier.

Stretch

- Students build both 3 x 4 and 4 x 3 and explain how the groups look different but the total is the same.

- Provide pre-drawn circles so students only add the same number of dots to each.
- Students write their own story card for a new product within 100 with matching drawing.

For the LSE or teaching assistant

Stay with target pairs during Tray Groups. Help count counters into cups, prompt the sentence ___ x ___ means ___ groups of ___, and check each cup is equal before they draw.

Check for understanding

Question	Answer
What does 5 x 7 mean? How many groups, how many in each, and what total?	5 groups of 7 objects each, 35 in all.
Write 3 x 4 as an addition. What is the total?	4 + 4 + 4 = 12
3 plates have 2 cookies on each. Write the multiplication and total.	3 x 2 = 6 cookies in all.

Homework

Draw 4 x 2 as equal groups, write the repeated addition, and give the total.

Sources

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