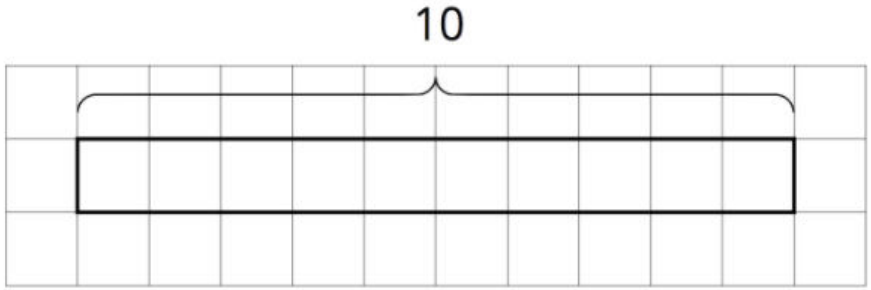
4-6: Learning Goals

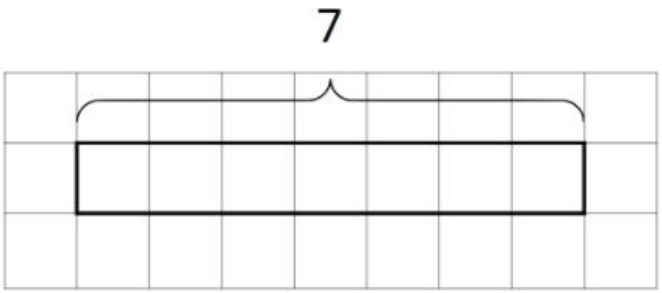
- Let’s draw tape diagrams to think about division with fractions.

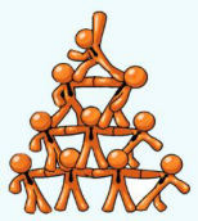
4-6-1: How Many of These in That?

1. We can think of the division expression $10 \div 2\frac{1}{2}$ as the answer to the question: "How many groups of $2\frac{1}{2}$s are in 10?" Complete the tape diagram to represent the question. Then answer the question.



2. Complete the tape diagram to represent the question: "How many groups of 2 are in 7?" Then answer the question.



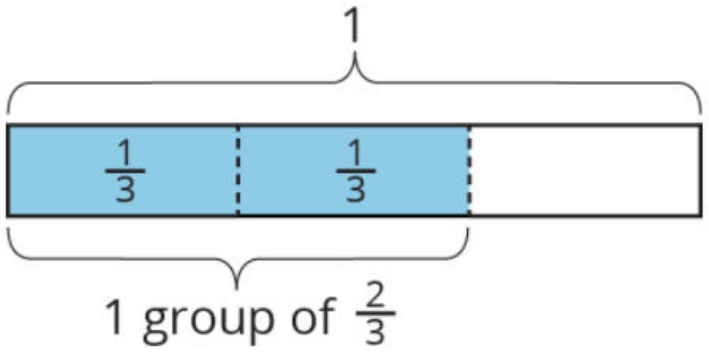


4-6-2: Representing Groups of Fractions with Tape Diagrams

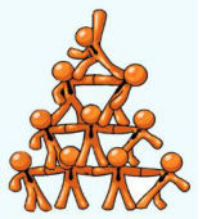
To make sense of the question "How many $\frac{2}{3}$s are in 1?," Andre wrote equations and drew a tape diagram.

$$? \cdot \frac{2}{3} = 1$$

$$1 \div \frac{2}{3} = ?$$



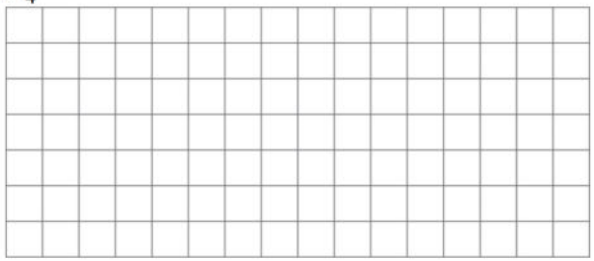
1. In an earlier task, we used pattern blocks to help us solve the equation $1 \div \frac{2}{3} = ?$. Explain how Andre's tape diagram can also help us solve the equation.



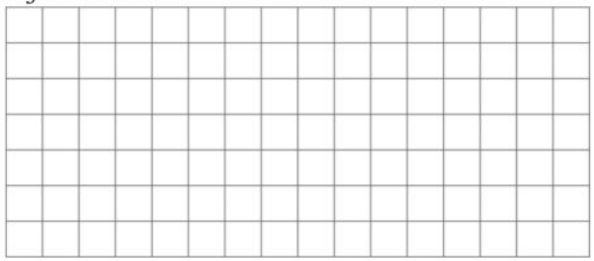
4-6-2: Representing Groups of Fractions with Tape Diagrams

2. Write a multiplication equation and a division equation for each of the following questions. Draw a tape diagram to find the solution. Use the grid to help you draw, if needed.

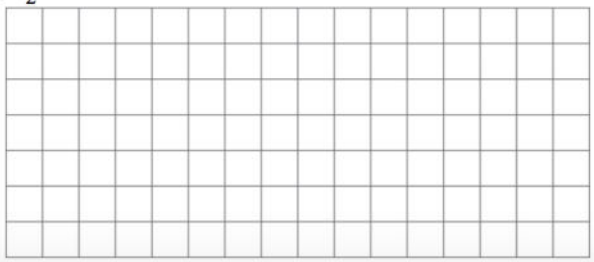
   a. How many $\frac{3}{4}$s are in 1?

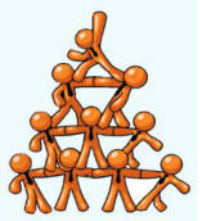


   b. How many $\frac{2}{3}$s are in 3?



   c. How many $\frac{3}{2}$s are in 5?





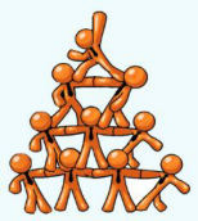
4-6-3: Finding Number of Groups

1. For each question, draw a diagram to show the relationship of the quantities and to help you answer the question. Then, write a multiplication equation or a division equation for the situation described in the question. Be prepared to share your reasoning.

   a. How many $\frac{3}{8}$-inch thick books make a stack that is 6 inches tall?

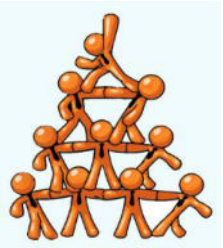
   b. How many groups of $\frac{1}{2}$ pound are in $2\frac{3}{4}$ pounds?

2. Write a question that can be represented by the division equation $5 \div 1\frac{1}{2} = ?$. Then answer the question. Show your reasoning.



4-6: Lesson Synthesis

- In the question 'how many ¾s are in 6?' (or 6÷¾ =?), what does each number represent?
- What would a tape diagram for this situation show?
- How does the diagram help us answer the question?
- What if that length cannot be broken equally into ¾s? How do we deal with the remainder?
- We have used pattern blocks, fraction strips, and other diagrams to help us think about division with fractions. How are tape diagrams and these other tools alike?
- How are tape diagrams different than those tools for reasoning about, say, 6÷¾ or 18÷⅖?



4-6: Learning Targets

- I can use a tape diagram to represent equal-sized groups and find the number of groups.

4-6-4: How Many in 2?

How many $\frac{3}{4}$s are in 2?

1. Write a multiplication equation and a division equation that can be used to answer the question.

2. Draw a tape diagram and answer the question. Use the grid to help you draw, if needed.