

Lesson stages and learning process	Learning activities; Anticipated flow of students' reasoning	Instructional points of consideration; Assessment
<p>1 Understand the problem and think about strategies. (3 minutes)</p> <p>2 Represent problems on their own and think about the relationships of numbers. (10 minutes)</p> <p>3 In small group, share each other's ideas. (5 minutes)</p>	<p>Which problem can be solved by $\frac{4}{7} \div \frac{5}{6}$?</p> <p>(1) To pour $\frac{4}{7}$ L of water, it takes $\frac{5}{6}$ minutes. How many minutes will it</p> <p>(2) A $\frac{5}{6}$ m long pipe weighs $\frac{4}{7}$ kg. How many kg will 1 m of the same pipe weigh?</p> <p>(3) With 1 dL of paint, we can paint $\frac{4}{7}$ m² of the board. How many m² of the board can we paint with $\frac{5}{6}$ dL?</p> <p>How should I tackle this?</p> <p>We should represent them in double number line diagrams.</p> <p>Let's draw 2 number lines and write numbers in.</p> <p>Let's use a box for the unknown.</p> <p>Let's show the difference using double number line diagrams.</p> <p>Draw arrows, too.</p> <p>(2) is solved by $\frac{4}{7} \div \frac{5}{6}$ (1) is $\frac{5}{6} \div \frac{4}{7}$, and (3) is $\frac{4}{7} \times \frac{5}{6}$</p> <p>The answers are different. I can see how to calculate from the diagrams.</p>	<p>Instructional points of consideration; Assessment</p> <ul style="list-style-type: none"> • Have worksheets ready so that students can begin promptly. • Have the problems written on the blackboard. <p><Teaching Strategy 1> # Pose 3 problems together so that students can think of differences by comparing them.</p> <ul style="list-style-type: none"> • By asking students what they should do, help them develop some strategies. • To support students who cannot devise a strategy: <ol style="list-style-type: none"> ① Draw the beginning of a diagram together so that they can complete it themselves. ② Multiplication: given how much for 1 unit, find the total for so many units. Division: Find how much for 1 unit. Provide hints so that students may see the similarities of the structures or inverse relationships among problems. <p><Teaching Strategy 2> # By sharing each other's ideas in groups of 3, help them improve, correct, and enhance their ideas based on others' ideas.</p>

4 In whole class discussion, listen to and critique each other's ideas. (7 minutes)

★5 Solve other problems using double number line diagrams. (10 minutes)

★6 Based on the problems they solved, create their own word problems. (10 minutes)

How do we know which expression is correct?

Division problems ask how much for 1 unit. Look at the arrow to see how many times as much. It may help to write an expression with \square

Let's solve other problems using double number line diagrams.

You need 2 number lines.
You need 3 numbers and \square

From Nami's house to a store, it takes $\frac{2}{7}$ hours on foot or $\frac{2}{25}$ hours by bike. How many times as much time does it take to walk to the store as it does by bike?

In 1 kg of rice, there is $\frac{3}{4}$ kg of starch. In $\frac{4}{5}$ kg of rice, how many kg of starch will there

With 1 dL of paint, we can paint $\frac{9}{10} \text{ m}^2$ of board. How many m^2 of board can we paint with $\frac{7}{6}$ dL of the same paint?

We can use double number line diagrams. Make sure you write the expression with \square correctly.

Now, let's write your own problems.

Let's change the numbers.

$\frac{8}{5}$ kg of beef cost 2400 yen. How many yen will the cost of 1 kg of the same beef be?

$\frac{4}{3}$ L of oil weigh $\frac{6}{5}$ kg. How many kg will 1L of the same oil weigh?

$\frac{4}{3}$ L of oil weigh $\frac{6}{5}$ kg. How many L of oil will weigh 1 kg?

As homework, solve your friends' problems.

- Help students realize that double number line diagrams can show the relationships of numbers by simply moving the position of \square .
- Help students see the values of tables and area diagrams as alternative strategies to verify their answers.

<Teaching Strategy 3>

Give problems that are either with the same numbers in different contexts from the previous problems or in the same contexts as earlier but with different numbers, and have students choose a problem.

- Teacher will check each student's answer.

[Skill] Were students able to set up the appropriate expression and find the answer using double number line diagrams? (Worksheet)

<Teaching Strategy 4>

By writing their own problems, students will deepen their understanding of problem structures.

- Help students select a problem with the appropriate level of difficulty by paying attention to the change in numbers or problem contexts.

[Skill] Were students apply their learning from prior problems to create appropriate word problems of their own? (Worksheet)