Lesson 5

Objective: Use addition and subtraction to solve multi-step word problems involving length, mass, and capacity.

Fluency Practice

Sprint: Convert to Kilograms and Grams

Convert Units

1 L 400 mL = \underline{1,400} mL

1 L 40 mL = \underline{1,040} mL

1 L 4 mL = \underline{1,004} mL

1 L 90 mL = \underline{1,090} mL
17,000g \times 5 = \underline{85} \text{ Kg}

17 \times 5 = 85

\wedge \overset{10}{7}
Unit Counting

- Skip count by 800 cm with no conversion to mixed units.
- Skip count by 800 cm converting only whole meters.
- Skip count by 800 cm converting all numbers to mixed units when appropriate.

- 800 cm, 1,600 cm, 2,400 cm, 3,200 cm, 4,000 cm, **3,200 cm**, 2,400 cm, 1,600 cm, 800 cm
- 800 cm, 1,600 cm, 2,400 cm, 3,200 cm, 4 m, **3,200 cm**, 2,400 cm, 1,600 cm, 800 cm
- 800 cm, 1 m 600 cm, 2 m 400 cm, 3 m 200 cm, 4 m, **3 m 200 cm**, 2 m 400 cm, 1 m 600 cm, 800 cm
**Concept Development**

1. **Model the problem.**
   - Can you draw something?
   - What can you draw?
   - What conclusions can you make from your drawing?

2. **Calculate to solve and write a statement.**

3. **Assess the solution for reasonableness.**
Problem 1: Solve a two-step problem involving grams.

The potatoes Beth bought weighed 3 kilograms 420 grams. Her onions weighed 1,050 grams less than the potatoes. How much did the potatoes and onions weigh together?

\[ \begin{align*}
3 \text{ Kg} & : 420 \text{ g} \\
-1 \text{ Kg} & : 50 \text{ g}
\end{align*} \]

\[ V \]

\[ \begin{align*}
3 \text{ Kg} & : 420 \text{ g} \\
2 \text{ Kg} & : 370 \text{ g}
\end{align*} \]

\[ V = 5 \text{ Kg} : 790 \text{ g} \]

Beth’s onions and potatoes weigh 5 Kg 790 g.

\[ \begin{align*}
3,420 & \approx 3,400 \\
+2,370 & \approx 2,400
\end{align*} \]

\[ \frac{5,800}{5,800} = 5 \text{ Kg} : 800 \text{ g} \]
Problem 2: Solve a two-step problem involving meters.

Adele let out 18 meters 46 centimeters of string to fly her kite. She then let out 13 meters 78 centimeters more before reeling back in 590 centimeters. How long was her string after reeling it in?

\[
\begin{align*}
\text{s} &= 32 \text{ m} 24 \text{ cm} \\
18 \text{ m} 46 \text{ cm} + 13 \text{ m} 78 \text{ cm} &= 32 \text{ m} 24 \text{ cm} \\
13 \text{ m} 78 \text{ cm} - 5 \text{ m} 90 \text{ cm} &= 26 \text{ m} 34 \text{ cm}
\end{align*}
\]
Problem 3

Solve a three-step problem involving liters.

Shyan’s barrel contained 6 liters 775 milliliters of paint. She poured in 1 liter 118 milliliters more. The first day Shyan used 2 liters 125 milliliters of the paint. After the second day, there were 1,769 milliliters of paint remaining in the barrel. How much paint did Shyan use on the second day?
Problem 4: Solve a three-step problem involving grams.

On Thursday, the pizzeria used 2 kilograms 180 grams less flour than they used on Friday. On Friday, they used 12 kilograms 240 grams. On Saturday, they used 1,888 grams more than on Friday. What was the total amount of flour used over the three days?
Model each problem with a tape diagram. Solve and answer with a statement.

1. The potatoes Beth bought weighed 3 kilograms 420 grams. Her onions weighed 1,050 grams less than the potatoes. How much did the potatoes and onions weigh together?

2. Adele let out 18 meters 46 centimeters of string to fly her kite. She then let out 13 meters 78 centimeters more before reeling back in 590 centimeters. How long was her string after reeling it in?
3. Shyan's barrel contained 6 liters 775 milliliters of paint. She poured in 1 liter 118 milliliters more. The first day Shyan used 2 liters 125 milliliters of the paint. At the end of the second day, there were 1,769 milliliters of paint remaining in the barrel. How much paint did Shyan use on the second day?
4. On Thursday, the pizzeria used 2 kilograms 180 grams less flour than they used on Friday. On Friday, they used 12 kilograms 240 grams. On Saturday, they used 1,888 grams more than on Friday. What was the total amount of flour used over the three days?

5. The gas tank in Zachary's car has a capacity of 60 liters. He adds 23 liters 825 milliliters gas to the tank, which already has 2,050 milliliters of gas. How much more gas can Zachary add to the gas tank?
6. A giraffe is 5 meters 20 centimeters tall. An elephant is 1 meter 77 centimeters shorter than the giraffe. A rhinoceros is 1 meter 58 centimeters shorter than the elephant. How tall is the rhinoceros?
Model each problem with a tape diagram. Solve and answer with a statement.

1. The capacity of Jose’s vase is 2,419 milliliters of water. He poured 1 liter 299 milliliters of water into the empty vase. Then, he added 398 milliliters. How much more water will the vase hold?

2. Eric biked 1 kilometer 125 meters on Monday. On Tuesday, he biked 375 meters less than on Monday. How far did he bike both days?
3. Zachary weighs 37 kilograms 95 grams. Gabe weighs 4,650 grams less than Zachary. Harry weighs 2,905 grams less than Gabe. How much does Harry weigh?
4. A Springer Spaniel weighs 20 kilograms 490 grams. A Cocker Spaniel weighs 7,590 grams less than a Springer Spaniel. A Newfoundland weighs 52 kilograms 656 grams more than a Cocker Spaniel. What is the difference, in grams, between the weights of the Newfoundland and the Springer Spaniel?

5. Marsha has three rugs. The first rug is 2 meters 87 centimeters long. The second rug has a length 98 centimeters less than the first. The third rug is 111 centimeters longer than the second rug. What is the difference in centimeters between the length of the first rug and third rug?
6. One barrel held 60 liters 868 milliliters of sap. A second barrel held 20,089 milliliters more sap than the first. A third barrel held 40 liters 82 milliliters less sap than the second. If the sap from the three barrels was poured into a larger container, how much sap would there be in all?