



# GRADE 3 SUPPLEMENT

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## Set D7 Measurement: Masses & Volumes

### Includes

- ★ Activity 1: Animals at the Zoo D7.1
- ★ Independent Worksheet 1: Word Problems with Masses D7.7
- ★ Independent Worksheet 2: Word Problems with Volumes D7.9

### Skills & Concepts

- ★ Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings to represent the problem.
- ★ Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

**Bridges in Mathematics Grade 3 Supplement**

**Set D7** Measurement: Masses & Volumes

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*Bridges in Mathematics* is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

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# Set D7 ★ Activity 1



## ACTIVITY

### Animals at the Zoo

#### Overview

Students solve one step word problems involving masses and volumes. They use pictures, numbers and words to show their solution strategies.

#### Skills & Concepts

- ★ Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings to represent the problem
- ★ Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

#### You'll need

- ★ Solving Word Problems: Masses & Volumes (page D7.4, run one copy for display)
- ★ Student Math Journal or Journal Grid Page (page D7.5 optional, run copies as needed)
- ★ (Optional) Word Resource Cards: gram, kilogram, ounce, pound

#### Instructions for Animals at the Zoo

1. Display problem 1 from Solving Word Problems: Masses & Volumes and ask students to label their journal page with the title: Word Problems, and today's date. Invite students to consider what units we use to weigh things. Post the matching Word Resource Cards if you have them.
2. Read the first problem out loud, and ask students to consider how they would solve the problem (what operation they would use) and what a reasonable answer might be. Have students pair-share their thinking and then invite three student pairs to share with the class.

Set D7 Measurement: Masses & Volumes Blackline Run 1 copy for display

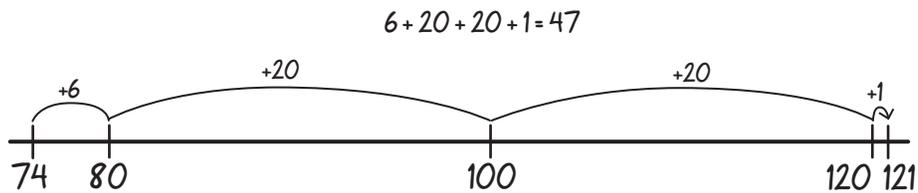
#### Solving Word Problems Masses and Volumes

- 1 The female arctic wolf in the zoo weighs 74kg. The female black bear weighs 121 kg. How much more does the female bear weigh?

**Student** What is kg?

**Teacher** A gram is about one paper clip. A kilogram is 1,000 paper clips! An apple weighs about one kilogram. A third grade girl weighs about 20 kilograms. Does that help you imagine the size of this wolf?

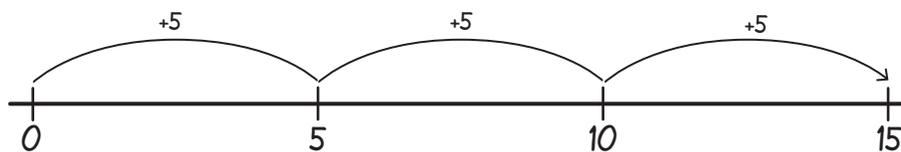
**Students** So the wolf is bigger than us! And the bear is about twice as much as us. Hmm, we think you should add up from 74 to get to 121 with an open number line.



**Students** We subtracted too but used another method.  $121 - 74$  is like  $120 - 70 = 50$ , then add the 1 back in;  $50 + 1 = 51$ , then subtract  $51 - 4 = 47$ .

$$\begin{aligned} 121 - 74 &= ? \\ 120 - 70 &= 50 \\ 50 + 1 &= 51 \\ 51 - 4 &= 47 \end{aligned}$$

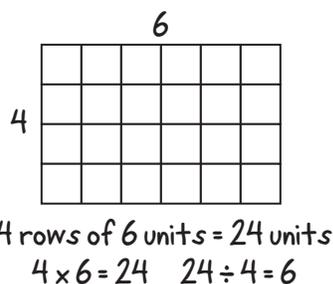
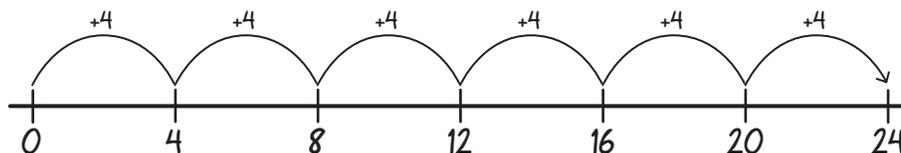
3. Pose the second problem and repeat the same instructional sequence, including a discussion of the operation students will use and a reasonable estimate. Occasionally students might solve the word problem with addition or subtraction, multiplication or division, or addition or multiplication. Take this opportunity to discuss the inverse operations and related solution strategies.



$$\begin{aligned} \text{repeated addition: } 5 + 5 + 5 &= 15 \\ \text{or multiplication } 3 \times 5 &= 15 \text{ kg} \end{aligned}$$

4. Pose the third problem and repeat the same instructional sequence, discussing the operation and strategies for estimating a reasonable result.

**Student**  $4 \times 6 = 24$ , that's counting by 4 six times.



5. Pose the fourth problem and repeat the same instructional sequence.

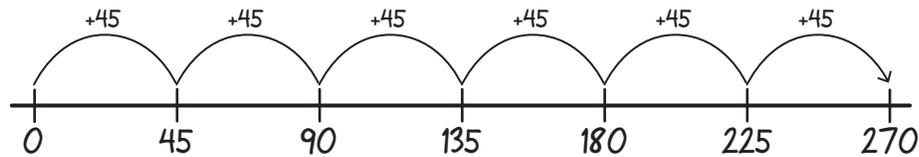
**Student** *If the bear drinks twice as much as the wolf, then it will take the wolf two days to drink the same amount the bear does in one day. That means the wolf will drink 8.2 liters in two days or only half that in one day. That's 4.1 liters.*

**Student** *Half of 8 is 4. Half of 2 is one. I see how you got it.*

$$8.2 \div 2 = 4.1$$

$$4.1 + 4.1 = 8.2 \text{ liters.}$$

6. Pose the fifth problem and repeat the same instructional sequence.



$$45 + 45 = 90 \quad \text{or} \quad 6 \times 50 = 300$$

$$90 + 90 = 180 \quad 300 - (6 \times 5) = 270 \text{ grams}$$

$$180 + 90 = 270$$

### Extension

Have students create their own word problems for masses and volumes and trade them with a partner to solve. Celebrate and showcase a range of student-generated strategies that demonstrate computational fluency—efficient, accurate and flexible approaches to solving problems. Encourage students to discuss the inverse operations and relationships among operations.



### INDEPENDENT WORKSHEET

Use Set D7 Independent Worksheets 1 & 2 on pages D7.7–D7.10 to provide students with more practice on solving word problems with masses and volumes.

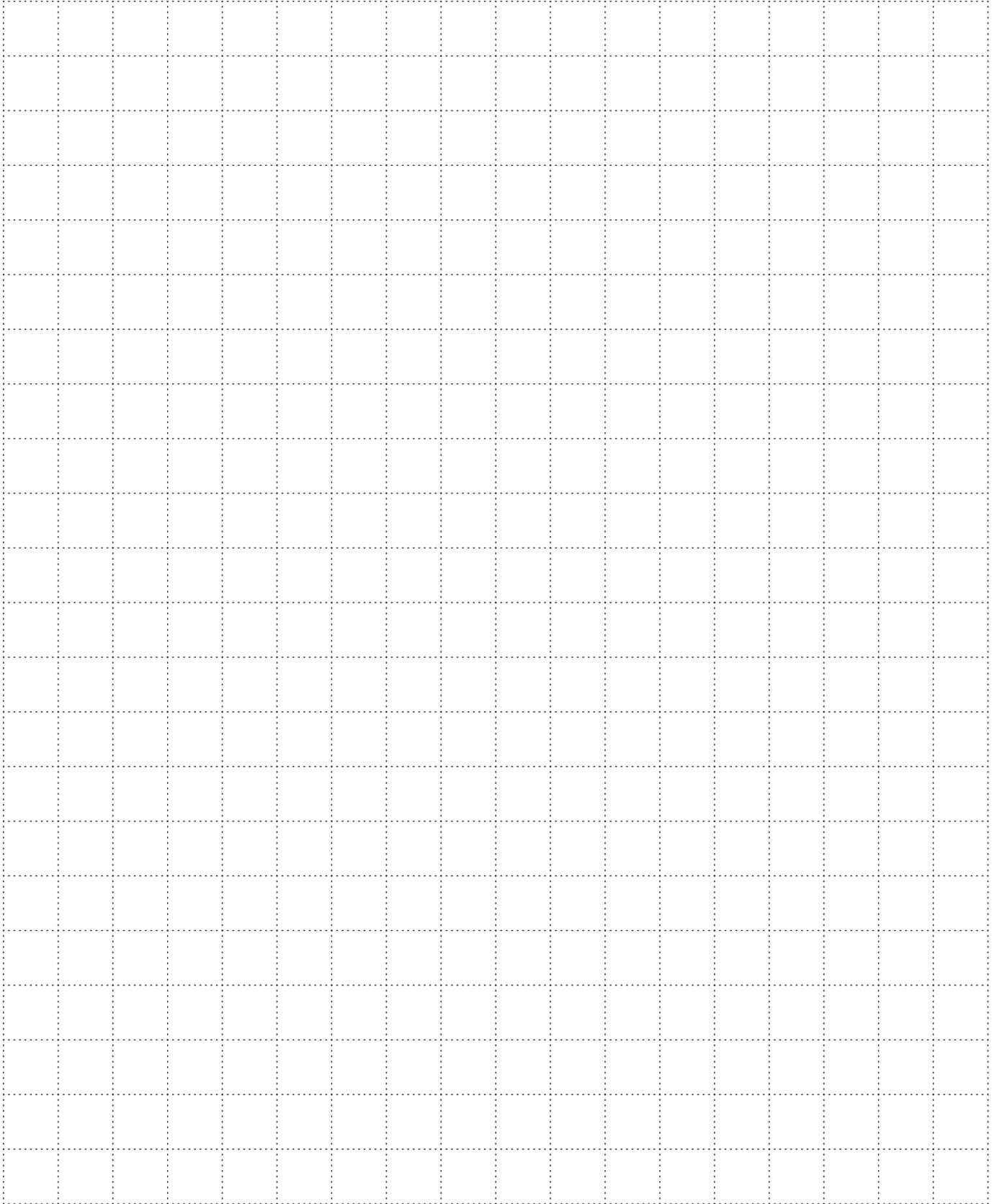
## Solving Word Problems Masses & Volumes

- 1** The female arctic wolf in the zoo weighs 74 kg. The female black bear weighs 121 kg. How much more does the female bear weigh?
  
- 2** The zoo-keeper said that a river otter weighs 3 times as much as a rabbit. If an average rabbit weighs 5 kg how much would a river otter weigh?
  
- 3** The zoo-keeper has a bin of 24 kg of food for the black bear. The bear eats about 4 kg of food a day. How many days will the food last?
  
- 4** An arctic wolf drinks about half the water a black bear does. If the bear drinks 8.2 liters of water each day, how much water does an arctic wolf drink?
  
- 5** The zoo has to plan a new habitat for 6 raccoons. Each raccoon weighs about 12 kg and eats about 45 grams of food per day. How much food total should she prepare for the raccoons' first day at the zoo?

NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Journal Page Grid





NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Set D7 ★ Independent Worksheet 1



## INDEPENDENT WORKSHEET

### Word Problems with Masses

Choose at least 3 of the problems below to solve in your journal. Record each problem number, then show your thinking using a visual model and equation.

g = gram

kg = kilogram

1 kilogram = 1000 grams

**1** A duck weighs 743 g. A kingfisher weighs 148 g. What is the combined weight of these two birds?

**2** A piglet weighs about 90 kg. How much do four piglets weigh?

(Continued on next page.)

**Word Problems with Masses** (cont.)

**3** Gretchen's cat weighs 4 kg. Her dog weighs 31 kg. How much heavier is the dog than the cat?

**4** Juan had a bag containing some bird seed. He added 130 grams of seed to the bag and then it weighed 375 grams. How heavy was the bag of seed to begin with?

**5** Brad loaded two sacks of potatoes into a box. The total weight of the two sacks is 309 kg. One sack weighs 67 kg. What is the weight of the other sack?

**6** A grocer receives a shipment of oranges weighing 32 kg. He divides the oranges equally among four small tubs. Each tub of oranges weighs the same amount. How many kilograms of oranges are in each tub?

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## Set D7 ★ Independent Worksheet 2



### INDEPENDENT WORKSHEET

#### Word Problems with Volumes

Choose at least 3 of the problems below to solve in your journal. Record each problem number, then show your thinking using a visual model and equation. Liters measure liquid volume. Juice, milk and water are often measured in cups, pints, quarts and gallons but can also be measured in liters.

l = liter

ml = millileter

1 liter = 1000 milliliters

**1** Kale's family loves orange juice. They drink 3 cartons of juice per week. A carton holds 1.75 liters. How much juice does Kale's family drink each week?

**2** Every morning a farmer fills a water tank that holds 21 liters of water. During the day his lambs drink all the water in the tank. If each lamb drinks about 3 liters of water, how many lambs are there?

(Continued on next page.)

**Word Problems with Volumes** (cont.)

**3** A goat drinks about 5 liters of water every day. If a rancher has a water tank that holds 60 liters of water for his six pet goats, how many days will the water last?

**4** A thermos of hot cocoa holds 500 ml. After one cup is poured, 235 ml of hot cocoa is left in the thermos. How much cocoa was poured into the cup?

**5** Kaitlynn's fish tank has a crack in it. She quickly removes 13 liters of water from the tank. If there are still 15 liters left, how much water was in the tank before Kaitlynn started to empty it?

**6** The Fisher family ate a half-gallon of ice cream. (A half gallon is equal to 8 cups.) If the mom ate 2 cups, and each of the 3 children ate 1 cup, how many cups of ice cream did the dad eat?