

**Prerequisite: Use Measurement Tools**

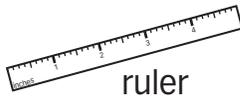
**Study the example showing how to choose a tool to measure an object. Then solve problems 1–7.**

**Example**

Which tool can you use to find out how heavy the fish tank is?



scale



ruler



clock



measuring cup

Use the scale. Put the fish tank on the scale and read the number of kilograms.

- 1** Which tool can you use to find out the amount of water the fish tank can hold?

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- 2** Which tool can you use to find out how tall the fish tank is?

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- 3** Which tool can you use to find out how heavy the measuring cup is?

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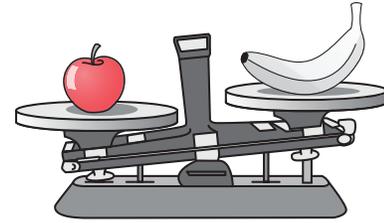


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**Solve.**

Anita placed an apple and a banana on a balance scale. She knows that the heavier side will be lower. Look at the picture.



- 4** Which has more mass, the apple or the banana?  
How do you know?

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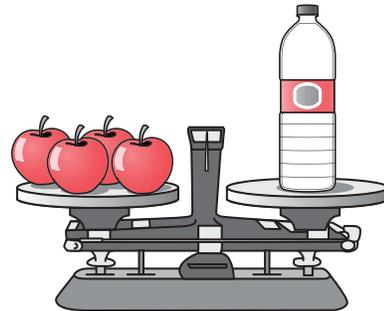
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- 5** What would happen if you took the apple off the scale? Explain your answer.

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In the picture, the mass of the water bottle is 1 kilogram.

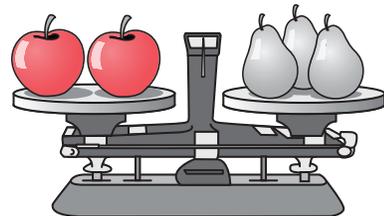


- 6** Does one apple have a mass more or less than 1 kilogram? Explain.

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In the picture, all the apples are exactly the same, and all the pears are exactly the same. The picture shows the result.



- 7** What do you think would happen if you put 1 apple on one side and 1 pear on the other side of the scale? Explain your answer.

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## Estimate Mass

**Study the example showing one way to estimate mass. Then solve problems 1–8.**

### Example

Dana wants to estimate how heavy her backpack is when she fills it with hardcover library books.

Each book has a mass of about 1 kilogram. She can fit 8 books in her backpack.

Dana estimates that her full backpack has a mass of about 9 kilograms, because the backpack has mass too.



- 1** Would you use grams or kilograms as the unit to measure the mass of a strawberry?

\_\_\_\_\_

- 2** Would you use grams or kilograms as the unit to measure the mass of a puppy?

\_\_\_\_\_

- 3** Would you use grams or kilograms as the unit to measure the mass of a pen?

\_\_\_\_\_

- 4** A 1-liter bottle of water has a mass of about 1 kilogram. What could have a mass of more than 1 kilogram? Circle the letter for all that apply.

- A** a slice of bread      **C** a watermelon  
**B** a chair      **D** a paper bag

### Vocabulary

**mass** the amount of matter in an object. Objects with more mass are heavier.

**kilogram** a unit of mass. One liter of water has a mass of 1 kilogram.

**gram** a unit of mass. One paper clip has a mass of about 1 gram.

**Solve.**

- 5 A paper clip has a mass of 1 gram. Estimate the mass of a slice of bread and explain how you figured it out.

Estimated mass: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 6 A bottle of water has a mass of 1 kilogram. Estimate the mass of a watermelon, and explain how you figured it out.

Estimated mass: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 7 George says that his bicycle has a mass of 15 grams. Janet says the bicycle has a mass of 15 kilograms. Who do you think is correct? Why do you think so?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



- 8 George took the front wheel off his bike and found its mass. What could the mass of the wheel be? Explain your reasoning.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Solve Word Problems about Mass

**Study the example showing how to solve a word problem about mass. Then solve problems 1–7.**

### Example

A tree house is strong enough to hold up to 300 kilograms safely. Can 8 children who are all about 30 kilograms be in the tree house at once?

$$\begin{aligned} 8 \times 30 &= 8 \times 3 \times 10 \\ &= 24 \times 10 \\ &= 240 \end{aligned}$$

The 8 children have a total mass of 240 kilograms. 240 kilograms is less than 300 kilograms.

All 8 children can be in the tree house at once.

- 1** Jon has a bag of candy with a mass of 200 grams. Mark has a bag of candy with a mass of 215 grams. What is the mass of the two bags of candy combined?

**Solution:** The combined mass is \_\_\_\_\_.

- 2** Brenda has 2 dogs. Their masses are 27 kilograms and 33 kilograms. What is the mass of the two dogs combined?

**Solution:** The combined mass is \_\_\_\_\_.

- 3** Joe is shoveling snow. He estimates that he lifts 3 kilograms of snow with each full shovel. What is the total mass he lifts with 80 full shovels?

**Solution:** The total mass is about \_\_\_\_\_.



**Solve.**

- 4 A houseplant has a mass of 15 kilograms. Barbara buys 3 houseplants of exactly the same mass. What is the mass of all the houseplants combined? Write a number sentence to solve the problem.

**Solution:** The combined mass is \_\_\_\_\_.

- 5 Kara's filled lunchbox is 815 grams. Ben's filled lunchbox is 900 grams. How much lighter is Kara's lunchbox than Ben's lunchbox?

**Solution:** Kara's lunchbox is \_\_\_\_\_ lighter.

- 6 Mark has 8 packs of pretzels in a paper bag. Each pack of pretzels is 90 grams. The bag is 85 grams. What is the mass of the paper bag with the pretzels in it?

**Solution:** The mass of the bag with the pretzels is \_\_\_\_\_.

- 7 Kathy's cloth grocery sack can hold 16 kilograms without ripping. She buys juice, soup, and rice at the store. The table shows the mass for 1 of each item. What is one way she can fill the sack with these items?

Item	Mass
juice	2 kilograms
soup	1 kilogram
bag of rice	5 kilograms

**Show your work.**

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## Mass

## Solve the problems.

- 1 Bonnie's backpack has a mass 10 kilograms. She removes two large hardcover books that each have a mass of 2 kilograms. What is the mass of Bonnie's backpack now?

**Show your work.**

**Solution:** \_\_\_\_\_

Don't forget to label your answer. Are you finding the total mass in grams or kilograms?

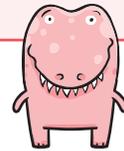


- 2 Patricia buys 2 baskets of fruit. One has a mass of 13 kilograms. The other has a mass of 24 kilograms. What is the difference in mass between the 2 fruit baskets?

**Show your work.**

**Solution:** \_\_\_\_\_

What does it mean to find the difference between two numbers?



- 3 A basketball has a mass of 600 grams. What is a good estimate for the mass of a large balloon?

- |            |             |
|------------|-------------|
| A 10 grams | C 100 grams |
| B 60 grams | D 600 grams |

How is a basketball like a balloon, and how is it different?

