

Lesson 11-5

Wednesday, April 27, 2022 1:46 PM

Name _____

Solve & Share

A pitcher holds 4 liters of water.
How many milliliters does the pitcher hold?
Solve this problem any way you choose.

Generalize You can convert metric units of capacity using multiplication or division. Show your work!

I can ...
convert metric units of capacity.

Content Standards: 5.MD.A.1, 5.NF.A.2
Mathematical Practices: MP2, MP3, MP7, MP8

1 liter = _____ mL
4 liters = _____ mL

$4L \times 1,000mL = 4,000mL$

Look Back! **MP.7 Look for Relationships** Juanita shares a one-liter bottle of water with 3 friends. How much water does each person get? Give your answer in liters and milliliters.

$\frac{1}{4}L$ $1,000mL \div 4 = 250mL$

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How Do You Convert Metric Units of Capacity?

The most commonly used units of capacity in the metric system are the **liter (L)** and the **milliliter (mL)**.

Can you find a liter or milliliter in the real world?



1 liter equals 1,000 milliliters.



Susan has 1,875 liters of water. How many milliliters is this?

$$1,875 \text{ L} = \square \text{ mL}$$

To change a larger unit to a smaller unit, **multiply**.

$$\begin{aligned} \text{Find } 1,875 \times 10^3 \\ 1,875 \times 10^3 &= 1,875 \\ 1,875 \text{ L} &= 1,875 \text{ mL} \end{aligned}$$

So, Susan has 1,875 milliliters of water.

Jorge has 3,500 milliliters of water. How many liters is this?

$$3,500 \text{ mL} = \square \text{ L}$$

To change a smaller unit to a larger unit, **divide**.

$$\begin{aligned} \text{Find } 3,500 \div 10^3 \\ 3,500 \div 10^3 &= 3.5 \\ 3,500 \text{ mL} &= 3.5 \text{ L} \end{aligned}$$

So, Jorge has 3.5 liters of water.

Convince Me! **MP.2 Reasoning** Order these measurements from greatest to least. Explain how you decided.

2,300 L 500 mL 3,000 mL 2 L 22 L

500 mL : 1,000 mL = 1/2 L
3,000 mL : 1,000 mL = 3 L

2,300 L, 22 L, 3,000 mL, 2 L, 500 mL

Name _____

Guided Practice

Do You Understand?

1. **MP.8 Generalize** Explain how you can convert milliliters to liters.

Divide by 1,000 mL to find the Liters

2. What types of tools would you select to measure capacity? Give an example and explain how that tool could be used.

Liquid Measuring Cup for cooking

Do You Know How?

In 3–8, convert each unit of capacity.

3. $2.75 \text{ L} = \underline{2,750} \text{ mL}$ 4. $3,000 \text{ mL} = \underline{3} \text{ L}$

5. $5 \text{ L} = \underline{5,000} \text{ mL}$ 6. $250 \text{ mL} = \underline{0.25} \text{ L}$

7. $0.027 \text{ L} = \underline{27} \text{ mL}$ 8. $400 \text{ mL} = \underline{0.4} \text{ L}$

Independent Practice

In 9–20, convert each unit of capacity.

9. $5,000 \text{ mL} = \underline{\hspace{1cm}} \text{ L}$ 10. $45,000 \text{ mL} = \underline{\hspace{1cm}} \text{ L}$ 11. $4.27 \text{ L} = \underline{\hspace{1cm}} \text{ mL}$ 12. $13 \text{ L} = \underline{\hspace{1cm}} \text{ mL}$

13. $3,700 \text{ mL} = \underline{3.7} \text{ L}$ 14. $0.35 \text{ L} = \underline{\hspace{1cm}} \text{ mL}$ 15. $2,640 \text{ mL} = \underline{\hspace{1cm}} \text{ L}$ 16. $314 \text{ mL} = \underline{\hspace{1cm}} \text{ L}$

17. $0.06 \text{ L} = \underline{60} \text{ mL}$ 18. $2,109 \text{ mL} = \underline{\hspace{1cm}} \text{ L}$ 19. $85 \text{ mL} = \underline{\hspace{1cm}} \text{ L}$ 20. $9.05 \text{ L} = \underline{\hspace{1cm}} \text{ mL}$

In 21 and 22, complete each table to show equivalent measures.

21.

liters	0.1	1	10
milliliters			

22.

milliliters	500	5,000	50,000
liters			

*For another example, see Set E on page 490.

3. $2.75 \text{ L} \times 1,000 \text{ mL} = 2,750 \text{ mL}$

4. $3,000 \text{ mL} \div 1,000 \text{ mL} = 3 \text{ L}$

5. $5 \text{ L} \times 1,000 \text{ mL} = 5,000 \text{ mL}$

6. $250 \text{ mL} \div 1,000 \text{ mL} = 0.25 \text{ L}$

7. $0.027 \text{ L} \times 1,000 \text{ mL} = 27 \text{ mL}$

8. $400 \text{ mL} \div 1,000 \text{ mL} = 0.4 \text{ L}$

13. $3,700 \text{ mL} : 1,000 \text{ mL} = 3.7 \text{ L}$

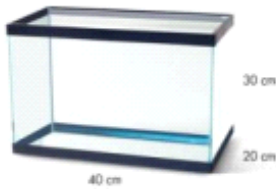
17. $0.06 \text{ L} \times 1,000 \text{ mL} = 60 \text{ mL}$

Math Practices and Problem Solving

23. **MP.2 Reasoning** Carla's famous punch calls for 3 liters of mango juice. The only mango juice she can find is sold in 500-milliliter cartons. How many cartons of mango juice does Carla need to buy?

24. Carla makes 6 liters of punch. She pours the punch into 800 mL bottles. How many bottles can she fill?

26. **Higher Order Thinking** One cubic centimeter will hold 1 milliliter of water. How many milliliters will the aquarium below hold? How many liters will it hold?



25. Bobby filled the jug with water for soccer practice. If each player gets 250 milliliters of water, how many players will the water jug serve?



27. Terry is buying juice. He needs 3 liters. A half-liter of juice costs \$2.39. A 250-milliliter container of juice costs \$1.69. What should Terry buy so he gets 3 liters at the lowest price? Explain.

What steps do you need to do to solve this problem?



Common Core Assessment

28. A bird bath holds 4 liters of water. How many milliliters of water does it hold?

- (A) 400 mL
- (B) 800 mL
- (C) 4,000 mL
- (D) 8,000 mL

29. You are filling a 2-liter bottle with liquid from full 80-milliliter containers. How many containers will it take to fill the 2-liter bottle?

- (A) 400
- (B) 250
- (C) 40
- (D) 25

$$4L \times 1,000 mL = 4,000 mL$$

C

$$V = l \times w \times h$$

$$V = \frac{40 \text{ cm} \times 20 \text{ cm} \times 30 \text{ cm}}{800 \text{ cm}^3} \times 30 \text{ cm}$$

$$24,000 \text{ cm}^3$$

$$24,000 \text{ mL}$$

$$24,000 \text{ mL} \div 1,000 \text{ mL} = 24 \text{ L}$$