

Directions: Use the information on page 21 to do the following problems.

1. A ream of paper contains 500 sheets. A set of 5 sheets of paper weighs about 1 ounce. How many pounds and ounces does the ream weigh? _____ lb. _____ oz.
2. For a special art project, each child in the sixth grade needed a 25-lb. bag of clay. There were 92 sixth graders. How much clay did the teachers need? _____ tons _____ lb.
3. A videocassette weighs $\frac{1}{2}$ pound. How many videocassettes would weigh a ton? _____
4. One kind of medicine uses 10 milligrams of medicine for each pill. How many pills would 1 gram of medicine make? _____
5. Using the above problem, how many pills would 1 kilogram of medicine make? _____
6. A paperback dictionary weighs $1\frac{1}{2}$ pounds. How many dictionaries would be in $1\frac{1}{2}$ tons? _____
7. A stapler weighs 8 ounces. How many staplers would be in a 3-ton shipment? _____
8. A science experiment called for 1 decagram of baking soda per person. How many people could do the experiment with 1 kilogram of baking soda? _____
9. One science student studies 5 milligrams of dust with a microscope. How much dust would be needed for 100 students? _____
10. It takes about 2.2 kilograms to equal 1 pound. How many kilograms would be in 100 pounds? _____
11. How many kilograms would be in 1 ton? _____
12. About how many large (1g) paper clips would it take to weigh 1 pound? _____
13. One calculator weighs 5 ounces. How many calculators would be in a 1-ton shipment? _____
14. One small camera weighs 2.5 hectograms. How many cameras would be in a 10-kilogram shipment? _____

Facts to Know

- The most common small unit of liquid measure in daily use is the fluid ounce.
- A fluid ounce (fl. oz.) is equal to 6 teaspoons (tsp.) of liquid.
- The most basic small unit of liquid measure in the metric system is the milliliter.
- 1 fluid ounce = about 30 milliliters.

Chart of Liquid Measures

Customary Units	Metric Units
8 fluid ounces = 1 cup	100 milliliters = 1 centiliter
16 fluid ounces = 1 pint	1,000 milliliters = 1 liter
2 cups = 1 pint	10 centiliters = 1 liter
32 fluid ounces = 1 quart	1,000 liters = 1 kiloliter
2 pints = 1 quart	
4 cups = 1 quart	
128 fluid ounces = 1 gallon	
4 quarts = 1 gallon	
8 pints = 1 gallon	

Measuring Tools

- An eyedropper holds about 1 milliliter.
- It would take about 30 eyedroppers to hold 1 fluid ounce.
- A medicine cup usually holds 1 fluid ounce.
- A measuring cup usually holds either 8 or 16 fluid ounces.



Sample A

Rita wanted to make pancakes for breakfast. She had pancake mix but needed to pick up some other ingredients at the store. She bought a one-half gallon of milk and a 32-ounce container of maple syrup. What are the metric equivalents to the two ingredients that Rita bought at the store? Use milliliters or liters in your answer.

$\frac{1}{2}$ gallon of milk = 64 fluid ounces of milk

(Remember, 1 fluid ounce = 30 mL, and 1,000 milliliters = 1 liter)

$64 \times 30 \text{ mL} = 1,920 \text{ mL} = 1.92 \text{ liters}$

So, $\frac{1}{2}$ gallon of milk is equivalent to 1.92 liters of milk.

32 fluid ounces of maple syrup = $32 \times 30 \text{ mL} = 960 \text{ mL}$

So, 32 fluid ounces of maple syrup is equivalent to 960 mL of maple syrup.



• • • Calculating Fluid Ounces and Cups

Directions: Use the information on page 25 to help you do these problems.

- 1 cup = _____ fluid ounces
- 2 cups = _____ fluid ounces
- 4 cups = _____ fluid ounces
- 6 cups = _____ fluid ounces
- 8 cups = _____ fluid ounces
- 9 cups = _____ fluid ounces
- 1 quart = _____ fluid ounces
- 2 quarts = _____ fluid ounces
- 5 quarts = _____ fluid ounces
- 3 quarts = _____ fluid ounces
- How many quarts will a 1-gallon container hold? _____
- How many quarts are equal to 4 gallons? _____
- How many fluid ounces are in 1 gallon? _____
- How many quarts are in a 15-gallon tank of gas? _____
- How many fluid ounces are in a 15-gallon tank of gasoline? _____
- 1 pint = _____ fluid ounces
- 3 pints = _____ fluid ounces
- 7 pints = _____ fluid ounces
- 5 gallons = _____ pints
- 11 gallons = _____ cups
- 15 gallons = _____ pints
- 10 gallons = _____ fluid ounces
- 17 pints = _____ cups
- How many total fluid ounces are in 1 gallon, 1 quart, and 1 pint? _____ fl. oz.
- How many total fluid ounces are in 2 gallons, 2 quarts, 1 pint, and 1 cup? _____ fl. oz.

$$1 \text{ fluid ounce} = 30 \text{ milliliters}$$

Directions: Use the chart on page 25 to help you do these problems.

1. How many milliliters will fit into 1 fluid ounce? _____ mL
2. How many milliliters will a cup hold? _____ mL
3. How many milliliters will a liter hold? _____ mL
4. How many milliliters will a quart hold? _____ mL
5. How many more milliliters will a liter hold than a quart? _____ mL
6. How many milliliters will a pint hold? _____ mL
7. How many milliliters will a gallon hold? _____ mL
8. How many liters will fit in a 1-gallon container? _____ L
9. How many liters will fit in a 10-gallon container? _____ L
10. How many liters are in an 18-gallon tank of gasoline? _____ L
11. How many liters are in 1,000 quarts of milk? _____ L
12. How many liters are in 25 gallons of orange juice? _____ L
13. How many liters are in 200 pints of water? _____ L
14. How many liters are in 2,000 quarts of lemonade? _____ L
15. How many liters are in 750 pints of liquid detergent? _____ L

Using Liquid Measurements
in Word Problems

Directions: Use the information on page 25 to help you do the following problems.

1. A spaghetti recipe calls for 8 cups of water. How many quarts of water are needed? _____
2. A cook needed to add 3 milliliters of food coloring to each cup of water. How much food coloring would she need for a quart of water? _____
3. A scientist added 5 mL of acid to a cup of water. How much would she need for a gallon of water? _____
4. A chemistry student was adding 7 milliliters of ammonia to a cup of vinegar. Using the same formula, how much ammonia would she add to 3 gallons of vinegar? _____
5. A sixth grader found that 20 milliliters of water would sit on the head of a penny without spilling. How many penny heads could he cover with a liter of water? _____
6. A fifth grade student wanted to add 9 milliliters of dish soap to each cup of water in her 3-gallon container. How many milliliters did she add to the 3 gallons of water? _____
7. Your best friend wanted to make a soap solution by adding 3 fluid ounces of soap to each pint of water. How much soap did she add to a gallon of water? _____
8. You decided to make a soapy water solution using 12 milliliters of water to every cup of water. How many milliliters did you add to 2 gallons of water? _____
9. One of your classmates was able to place 30 milliliters of water on the head of a quarter. How many quarter heads could she cover with a gallon of water? _____
10. Your neighbor wants to give 5 gallons of water to her roses using a 1-liter watering container. How many liters will she use? _____
11. A painter's bucket will hold 10 cups of paint. How many times will he fill his bucket to use 5 gallons of paint? _____
12. A custodian uses 1.5 cups of floor cleaner for every quart of water. How many cups of cleaner will he use with 8 gallons of water? _____



Answer Key

Page 6

1. $5\frac{11}{16}$ "
2. $2\frac{5}{16}$ "
3. $6\frac{3}{4}$ "
4. $6\frac{7}{16}$ "
- 5.–18. Answers will vary.

Pages 7 and 8

Answers will vary.

Page 10

1. 18.2 cm
2. 26.2 cm
3. $13\frac{1}{2}$ cm
4. $16\frac{1}{2}$ ft.
5. $15\frac{1}{4}$ in.
6. $18\frac{3}{8}$ cm.
- 7.–10. Answers will vary.

Page 11

1. 15.6 cm
2. $11\frac{1}{4}$ in.
3. 24.4 m
4. $18\frac{3}{4}$ ft.
5. 74.4 m
6. 64 yd.
7. 137.4 cm
8. 105.3 m

Page 12

1. 19.1 m
2. 22.6 m
3. 26 in.
4. $20\frac{1}{2}$ ft.
5. 25.12 m
6. 37.68 in.
7. 31.4 cm
8. 21.98 m

Page 14

1. 41 m^2
2. 126 yd.^2
3. 67.5 cm^2
4. 6.08 m^2
5. 34 ft.^2
6. $16\frac{1}{4}\text{ in.}^2$
7. $3,680\text{ m}^2$
8. $7,500\text{ mm}^2$

Page 15

1. 24 ft.^2
2. 45 yd.^2
3. 11.66 cm^2
4. 27.72 cm^2

5. 405 in.^2
6. 49.14 m^2
7. 116.39 cm^2
8. 86.45 m^2

Page 16

1. 50.24 m^2
2. 78.5 cm^2
3. 314 cm^2
4. 452.16 cm^2
5. $1,256\text{ cm}^2$
6. 615.44 ft.^2
7. 706.5 in.^2
8. $1,962.5\text{ m}^2$

Page 18

1. 105 m^3
2. 720 ft.^3
3. 343 cm^3
4. 165 in.^3
5. 240 yd.^3
6. 67.032 m^3
7. 92.736 m^3
8. 694.512 cm^3
9. $1,728\text{ ft.}^3$
10. $86\frac{6}{8}\text{ ft.}^3$

Page 19

1. 351.68 m^3
2. 169.56 cm^3
3. 282.6 cm^3
4. 18.84 in.^3
5. $50,240\text{ cm}^3$
6. $1,538.6\text{ ft.}^3$

Pages 20–23

Answers will vary.

Page 24

1. 6 lbs. 4 oz.
2. 1 ton 300 lbs.
3. 4,000 cassettes
4. 100 pills
5. 100,000 pills
6. 2,000 dictionaries
7. 12,000 staplers
8. 100 people
9. 500 mg or $\frac{1}{2}$ g
10. 220 kg
11. 4,400 kg
12. 2,200 clips
13. 6,400 calculators
14. 40 cameras

Page 26

1. 8 fl. oz.
2. 16 fl. oz.
3. 32 fl. oz.
4. 48 fl. oz.
5. 64 fl. oz.
6. 72 fl. oz.
7. 32 fl. oz.
8. 64 fl. oz.
9. 160 fl. oz.
10. 96 fl. oz.
11. 4 qt.
12. 16 qt.
13. 128 fl. oz.
14. 60 qt.
15. 1,920 fl. oz.
16. 16 fl. oz.
17. 48 fl. oz.
18. 112 fl. oz.
19. 40 pints
20. 176 cups
21. 120 pints
22. 1,280 fl. oz.
23. 34 cups
24. 176 fl. oz.
25. 344 fl. oz.

Page 27

1. 30 mL
2. 240 mL
3. 1,000 mL
4. 960 mL
5. 40 mL
6. 480 mL
7. 3,840 mL
8. 3.84 L
9. 38.4 L
10. 69.1 L
11. 960 L
12. 96 L
13. 96 L
14. 1920
15. 360 L

Page 28

1. 2 qt.
2. 12 mL
3. 80 mL
4. 336 mL
5. 50 pennies
6. 432 mL

7. 24 fl. oz.
8. 384 mL
9. 128 quarters
10. 19.2 L
11. 8 times
12. 48 cups

Page 30

1. 40° acute
2. 120° obtuse
3. 180° straight
4. 90° right
5. 50° acute
6. 130° obtuse
7. 250° reflex
8. 215° reflex
9. 90° right
10. 80° acute

Page 31

1. $\angle BAC = 100^\circ$
 $\angle CBA = 35^\circ$
 $\angle ACB = 45^\circ$
 $\triangle ABC = 180^\circ$
2. $\angle CDE = 50^\circ$
 $\angle ECD = 70^\circ$
 $\angle DEC = 60^\circ$
 $\triangle DEC = 180^\circ$
3. $\angle LMN = 90^\circ$
 $\angle MNL = 30^\circ$
 $\angle MLN = 60^\circ$
 $\triangle LMN = 180^\circ$
4. $\angle MNO = 25^\circ$
 $\angle OMN = 65^\circ$
 $\angle MON = 90^\circ$
 $\triangle MNO = 180^\circ$
5. $\angle XYZ = 60^\circ$
 $\angle ZXY = 60^\circ$
 $\angle YZX = 60^\circ$
 $\triangle XYZ = 180^\circ$
6. $\angle WPO = 154^\circ$
 $\angle POW = 11^\circ$
 $\angle PWO = 15^\circ$
 $\triangle WPO = 180^\circ$