

• Simplifying Mixed Measures

Power Up

facts

Power Up F

count aloud

Count up and down by tens between 0 and 200. Count up and down by hundreds between 0 and 2000.

mental math

- Number Sense:** A score is 20. How many is two score? ... three score? ... four score?
- Estimation:** Round 757 to the nearest ten. Then subtract 400. What is the number?
- Number Sense:** $1\frac{1}{2} + \frac{1}{2}$
- Number Sense:** $1\frac{1}{2} - \frac{1}{2}$
- Fractional Parts:** How much money is half of \$3?
- Percent:** Aoliyah says she has 25% of \$4.00 in her pocket. How much money does Aoliyah have?
- Geometry:** An octagon has how many more sides than a hexagon?
- Calculation:** $9 \times 8, - 2, \div 2, + 1, \div 4, + 1, \div 2$

problem solving

Choose an appropriate problem-solving strategy to solve this problem. Jiro wrote a division problem and then erased the two-digit dividend. He then gave it to Jenaya as a problem-solving exercise. Copy Jiro's division problem and find the missing digits for Jenaya.

$$\begin{array}{r} 24 \\ 4 \overline{) \quad \quad} \\ \underline{\quad \quad} \\ \quad \quad \end{array}$$

New Concept

In this lesson we will practice changing measures named with two units into measures named with one unit. In Examples 1–4, we will learn how to change these kinds of measurements.

Example 1

Jaylen is 5 feet 4 inches tall. How many inches tall is Jaylen?

Five feet 4 inches means “5 feet plus 4 inches.” Before we can add, we first change 5 feet to inches. Since 1 foot equals 12 inches, we multiply 5 by 12 inches.

$$5 \text{ feet} = 5 \times 12 \text{ inches}$$

$$5 \text{ feet} = 60 \text{ inches}$$

Now we add 60 inches and 4 inches.

$$60 \text{ inches} + 4 \text{ inches} = 64 \text{ inches}$$

Jaylen is **64 inches** tall.

Example 2

Carla ran a quarter mile in 1 minute 15 seconds. What was her time in seconds?

One minute 15 seconds means “1 minute plus 15 seconds.” We first change 1 minute to seconds. Then we add.

$$1 \text{ minute} = 60 \text{ seconds}$$

$$60 \text{ seconds} + 15 \text{ seconds} = 75 \text{ seconds}$$

Carla ran a quarter mile in **75 seconds**.

Analyze If the time on Carla’s digital watch read 3:05:06 when she began running, what time was it when she crossed the finish line?

Example 3

The melon weighed 3 pounds 8 ounces. How many ounces did the melon weigh?

Three pounds 8 ounces means “3 pounds plus 8 ounces.” We change pounds to ounces first. One pound equals 16 ounces.

$$3 \text{ pounds} = 3 \times 16 \text{ ounces}$$

$$3 \text{ pounds} = 48 \text{ ounces}$$

Now we add.

$$48 \text{ ounces} + 8 \text{ ounces} = 56 \text{ ounces}$$

The melon weighed **56 ounces**.

Example 4

Thinking Skill

Connect

Name different units of measure in the U.S. Customary System.

In the refrigerator, there was a full one-gallon container of milk and a full one-quart container of milk. Convert 1 gallon to quarts and find the sum of the capacities of the containers.

A quart is one quarter ($\frac{1}{4}$) of a gallon, so one gallon is 4 quarts. One gallon plus one quart is **5 quarts**.

Activity

Simplifying Height Measurements

Material needed:

- yardstick

Choose a height in the classroom, such as the height of your desk, a windowsill, or a bookshelf. Measure the height you chose in inches only. Then measure the height you chose in feet and inches. Show that the two measurements represent the same distance.

Lesson Practice

Use one unit to name each measure:

- 6 feet 2 inches = ____ inches
- 3 minutes 2 seconds = ____ seconds
- 2 hours 30 minutes = ____ minutes
- 2 pounds 12 ounces = ____ ounces

Written Practice

Distributed and Integrated

Formulate For problems 1–3, write and solve an equation to find the answer.

- ⁽¹⁷⁾ There were 36 students on one bus, 29 on another bus, and 73 on the third bus. Altogether, how many students were on the three buses? Explain how you know your answer is reasonable.
- ^(21, 28) Anita's grandfather has lived for seven decades. Seven decades is how many years?
- ⁽³⁵⁾ Anita is 12 years old. Her grandmother is 68 years old. Anita's grandmother is how many years older than Anita?

*4. When Gabriel turned 12 years old, he was 5 feet 6 inches tall. How many inches is 5 feet 6 inches?

*5. **Multiple Choice** The 7 in 374,021 means which of the following?

- (7) **A** 7 **B** 70 **C** 700 **D** 70,000

6. From March 1 of one year to May 1 of the next year is how many months?

*7. **Represent** Draw a rectangle. Shade three eighths of it. What percent of the rectangle is shaded?

*8. Use a ruler to find the length of this line segment in inches:



*9. $4 + 3\frac{3}{4}$

10. $3\frac{3}{5} + 1\frac{1}{5}$

11. $2\frac{3}{8} + \frac{2}{8}$

*12. $5\frac{1}{3} - \left(5\frac{1}{3} - \frac{1}{3}\right)$

13. $2\frac{1}{2} - \frac{1}{2}$

*14. $3\frac{5}{9} - 1\frac{1}{9}$

15. $\begin{array}{r} \$48,748 \\ \$37,145 \\ + \$26,498 \\ \hline \end{array}$

16. $\begin{array}{r} \$63,142 \\ - \$17,936 \\ \hline \end{array}$

17. $\begin{array}{r} \$5.63 \\ \times 700 \\ \hline \end{array}$

18. $\begin{array}{r} 4729 \\ \times 8 \\ \hline \end{array}$

19. $\begin{array}{r} 9006 \\ \times 80 \\ \hline \end{array}$

20. $\frac{3456}{8}$

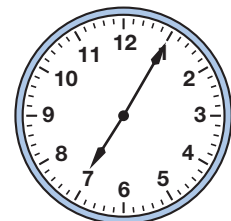
21. $1836 \div 9$


22. $1405 \div 7$

*23. $(20 \times 25) + (5 \times 25)$

*24. In a packet of 50 flower seeds, $\frac{2}{5}$ of the seeds are daisies. If Victor plants the seeds in a garden and all of them sprout and grow, how many daisy plants can Victor expect to find in his garden?

25. Each school day Amy's alarm clock rings at 6:45 a.m. This morning, Amy fell back to sleep after turning off her alarm and woke up again at the time shown on the clock. How many fewer minutes did Amy have this morning to get ready for school?



- *26.**  **Explain** If 115 students ride on 3 school buses, is it possible for the same number of students to ride on each bus? Explain why or why not.

- *27. Multiple Choice** Which of these numbers is divisible by 6 and by 5?
(22, 42) **A** 576 **B** 765 **C** 6057 **D** 7650



- *28.** Compare: $\frac{1}{5}$ of 10 \bigcirc $10 \div 5$
(Inv. 3)

- *29.** Some grasshoppers grow to be $2\frac{1}{4}$ inches long. Is $2\frac{1}{4}$ inches closer to 2 inches or to 3 inches?
(44)

- *30.** Although the amount of food a bottlenose dolphin eats in a day can vary from one day to the next, the table below shows the average amount of food a bottlenose dolphin eats.
(1, Inv. 4)

The Bottlenose Dolphin

Number of Days	1	2	3	4
Average Amount of Food Eaten (in pounds)	23	46	69	92

- a.**  **Generalize** Write a rule that describes how to find the average amount of food eaten in pounds for any number of days.
- b.**  **Predict** What is a reasonable estimate of the amount of food a bottlenose dolphin can be expected to eat in 1 week? Explain why your estimate is reasonable.

Early Finishers

Real-World Connection

Shelby is running in a relay race on a team of four runners. She ran her lap in 1 minute 23 seconds. Her team's total time was 5 minutes 9 seconds.

- a.** Change both of these times to seconds.
- b.** How much of the team's total time was *not* run by Shelby? Give your answer in minutes and seconds.