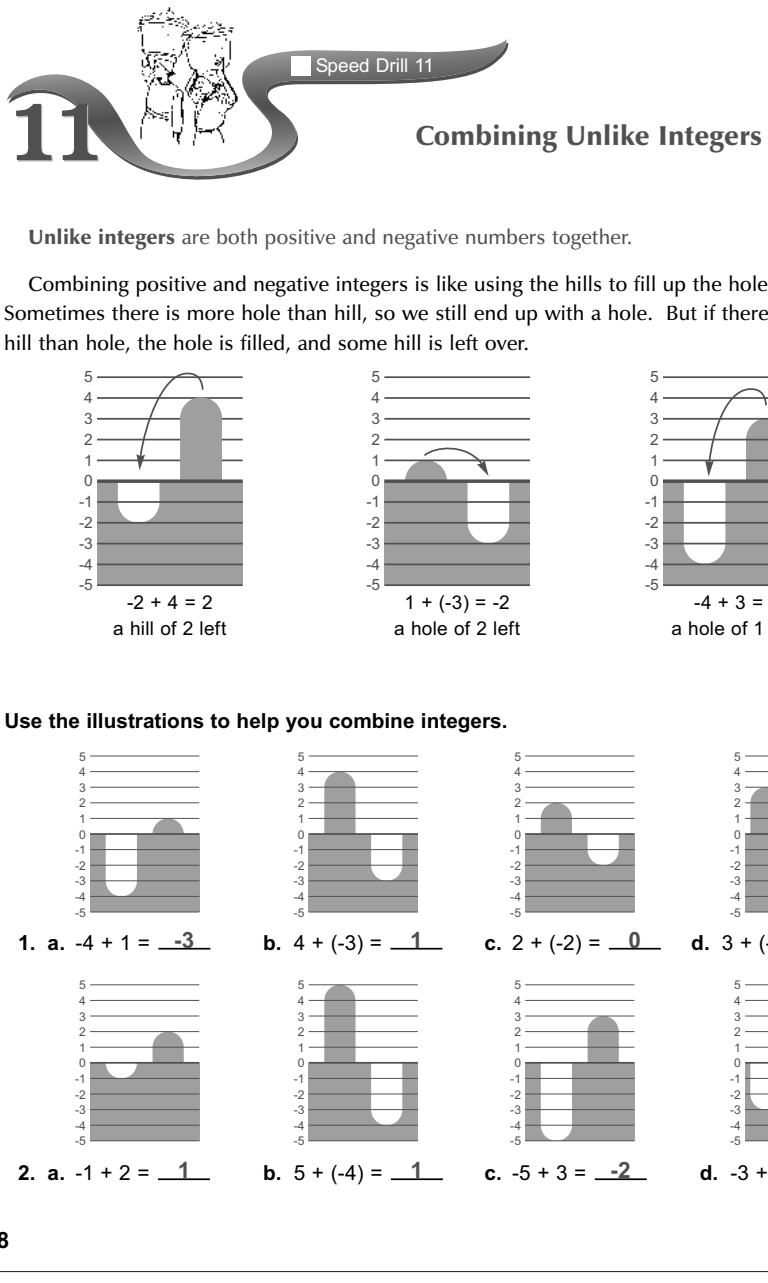
Lesson 11

pp. 38-41

Lesson Preparation

Drill

- Do Speed Drill 11 and write the number correct in the blank.



Speed Drill 11

11

Combining Unlike Integers

Unlike integers are both positive and negative numbers together.

Combining positive and negative integers is like using the hills to fill up the holes. Sometimes there is more hole than hill, so we still end up with a hole. But if there is more hill than hole, the hole is filled, and some hill is left over.

Use the illustrations to help you combine integers.

1. a. -4 + 1 = -3 **b.** 4 + (-3) = 1 **c.** 2 + (-2) = 0 **d.** 3 + (-4) = -1

2. a. -1 + 2 = 1 **b.** 5 + (-4) = 1 **c.** -5 + 3 = -2 **d.** -3 + 4 = 1

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Teaching the Lesson

Combining Unlike Integers

Combining unlike integers is like using the hills to fill up the holes. Sometimes there is more hole than hill, so we still end up with a hole (a negative number). Sometimes there is more hill than hole, so the hole is filled up and some hill (a positive number) is left over.

△Teacher Aide Check on page 39.

Lesson 11

Read these numbers to your teacher.

△**3.** 1.328 4.236 5.066 -438 -43 $\frac{2}{19}$

We Remember

Remember: To multiply, move the decimal point to the right.

Multiply each number.

		× 10	× 100	× 1,000
4. 361.9	**a.**	3,619	**b.** 36,190	**c.** 361,900
5. 0.47	**a.**	4.7	**b.** 47	**c.** 470
6. 635	**a.**	6,350	**b.** 63,500	**c.** 635,000

Round to the nearest dollar.

7. a. $6.50 $7.00 **b.** $29.36 $29.00 **c.** $69.99 $70.00

Round to the nearest whole number to estimate.

8. a. estimate 9.768 × 4.2

10 × 4 = 40

b. estimate 3.95 × 6.5

4 × 7 = 28

Round to the nearest hundred.

9. a. 9,768 9,800 **b.** 395 400 **c.** 2,936 2,900

Round to the nearest ten.

10. a. 4,697 4,700 **b.** 695 700 **c.** 565 570

Round to the nearest hundred to estimate.

11. a. estimate 936 + 650 + 999

900 + 700 + 1,000 = 2,600

b. estimate 565 – 497

600 – 500 = 100

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Tips for Struggling Students

➔ If students struggle with the "hills and holes" idea for combining integers, try illustrating this concept on the board with a number line. To show -2 + 4 = 2, begin at 0. "Jump" to negative 2, then "jump" four places to the right to show that we end up at 2 on the number line.

△**Teacher Aide Check.** Listen to each student read the numbers.

Teacher Notes:

Lesson 11

Circle the greater number in each pair. Add or remove zeros as needed.

12. **a.** (7.5) 0.72 **b.** 1.2 (1.7) **c.** 0.34 (0.4) **d.** (2.1) 1.2

? . . . Mental Math

13. $\sqrt{25}$ → +10 → ÷5 → ×1,000 → ÷10 → ×3 = **900**

Write these numbers.

14. Fifteen trillion, seven hundred million, forty-seven thousand, three hundred twenty

15,000,700,047,320

15. One million, six hundred two thousand and twenty-five hundredths

1,602,000.25

+ - ÷ × Skill Builders

16. **a.** $30\overline{)510}$ = **17** (30, 210, 210, 0)

b. $50\overline{)1,532}$ = **30 R32** (150, 32, 0, 32)

c. $23.23 - 16.52 = 6.71$

d. $1\frac{5}{8} + \frac{7}{8} = 1\frac{15}{8} = 2\frac{7}{8}$

17. **a.** $9.345 - 6.589 = 2.756$

b. $7\overline{)3.5}$ = **0.5** (35, 0)

c. $3.024 \times 6 = 18.144$

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Teacher Notes:

Lesson 11

Complete the sentences. **Note: These will be on your Mastery Drill in Lessons 14 and 16.**

18. The symbol for pi is __π__.

19. The number for pi is __3.14__.

20. Josinter's Uncle Silvester makes 890 shillings each week. He usually gives $\frac{1}{10}$ to God's work. This week he was able to give twice as much. How many shillings did he give to the Lord this week?

$$\begin{array}{r} 89 \\ 10\overline{)890} \\ \underline{80} \\ 90 \\ \underline{90} \\ 0 \end{array} \qquad \begin{array}{r} 1 \\ 89 \\ \times\ 2 \\ \hline 178 \end{array}$$

Answer: __178 shillings__

Copy and solve.

21. 246 + 25 + 168 + 4

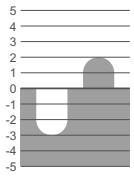
22. Which method did you use to check?

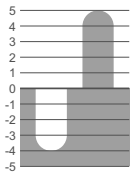
__Answers will vary.__

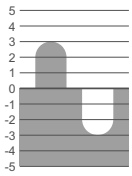
$$\begin{array}{r} {\scriptstyle 1\ 2} \\ 246 \\ 25 \\ 168 \\ +\ \ 4 \\ \hline 443 \end{array}$$ ☑

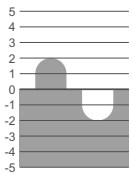
Many houses in Kenya are made of mud packed between slender wooden posts.

Combine the integers.









23. **a.** -3 + 2 = __-1__ **b.** -4 + 5 = __1__ **c.** 3 + (-3) = __0__ **d.** 2 + (-2) = __0__

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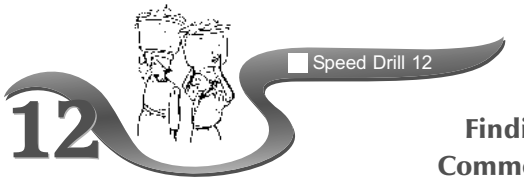
Teacher Notes:

Lesson 12
pp. 42-45

Lesson Preparation

Drill

- Do Speed Drill 12 and write the number correct in the blank.



Finding the Lowest Common Denominator

So far, you have learned to add and subtract fractions that have common denominators. You have also learned to change fractions having different denominators to equal fractions with a common denominator so you can add or subtract. Now you are ready to find a common denominator yourself when the denominators differ.

The best common denominator to use is the **lowest common denominator** (LCD). The LCD is simply the lowest common multiple (LCM) of all your denominators. Start with the largest denominator to be added. Count off its multiples until you find one that is a common multiple of each of the other denominators. Here's how:

Find the LCD of $\frac{1}{6}$, $\frac{5}{12}$, and $\frac{3}{8}$.

1. The largest denominator is 12, so start with 12. Begin counting its multiples.

2. 12 – a multiple of 6, but not of 8.

3. 24 – a multiple of both 6 and 8. So the LCD is 24.

Find the LCD of $\frac{3}{10}$ and $\frac{4}{5}$.

1. The largest denominator is 10, so start with 10. Begin counting its multiples.

2. 10 – a multiple of 5 also. So the LCD is 10.

Find the LCD.

1. a. The LCD of $\frac{5}{6}$ and $\frac{7}{10}$ is 30.

b. The LCD of $\frac{2}{3}$, $\frac{1}{6}$, and $\frac{1}{2}$ is 6.

2. a. The LCD of $\frac{1}{7}$ and $\frac{4}{5}$ is 35.

b. The LCD of $\frac{3}{4}$, $\frac{2}{3}$, and $\frac{1}{6}$ is 12.

3. a. The LCD of $\frac{5}{8}$ and $\frac{3}{12}$ is 24.

b. The LCD of $\frac{3}{16}$, $\frac{1}{4}$, and $\frac{5}{8}$ is 16.

Borrowing to Subtract Fractions

When the top fraction is smaller than the bottom fraction in a subtraction problem, you must borrow.

You cannot subtract $\frac{4}{5}$ from $\frac{2}{5}$. Borrow 1 from 5.

Change the 1 to $\frac{5}{5}$ and add it to $\frac{2}{5}$.

The 5 becomes a 4 and the $\frac{2}{5}$ becomes $\frac{7}{5}$.

$\frac{2}{5} + \frac{5}{5} = \frac{7}{5}$

$$\begin{array}{r} 4\ \frac{7}{5} \\ \cancel{5}\ \cancel{\frac{2}{5}} \\ -\ 2\ \frac{4}{5} \\ \hline 2\ \frac{3}{5} \end{array}$$

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Teaching the Lesson

Finding the Lowest Common Denominator

Students have been adding and subtracting fractions with like denominators. This lesson prepares them to learn how to find common denominators when fractions have unlike denominators. Help students understand how to find the lowest common multiple of two or three denominators. They will not be using this skill to add and subtract fractions in this lesson but will first practice finding the lowest common denominator of several fractions.

Borrowing to Subtract Fractions

This refresher lesson from Sunrise Math 400 reviews how to borrow from the whole number when subtracting a larger fraction from a smaller one.

△Teacher Aide Check on page 43.

Subtract. Borrow as needed.

4. a. $8\frac{1}{16} - 4\frac{11}{16} = 4\frac{6}{16} = 4\frac{3}{8}$ **b.** $7\frac{3}{7} - 6\frac{5}{7} = \frac{5}{7}$ **c.** $5\frac{2}{9} - \frac{7}{9} = 5\frac{4}{9}$ **d.** $8\frac{7}{12} - 6\frac{11}{12} = 1\frac{8}{12} = 1\frac{2}{3}$

Circle the digit in the ten trillions place.

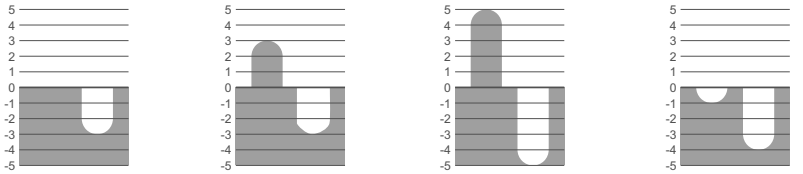
5. 329,164,008,766,153.04

Read these numbers to your teacher.

△**6.** 217,837,000,462,026 63,093,028,000 9,000,020,000

We Remember

Combine integers.



7. a. 0 + (-3) = **-3** **b.** 3 + (-3) = **0** **c.** 5 + (-5) = **0** **d.** -1 + (-4) = **-5**

Write a fraction or mixed number for each decimal.
Write a decimal for each fraction or mixed number.

8. a. 15.006 **$15\frac{6}{1,000}$** **b.** 23.16 **$23\frac{16}{100}$** **c.** 12.9 **$12\frac{9}{10}$**

9. a. $\frac{732}{1,000}$ **0.732** **b.** $2\frac{69}{100}$ **2.69** **c.** $93\frac{7}{100}$ **93.07**

Use the graph at the bottom of page 60 to answer the question.

10. My height is not a multiple of 10. I am not the second tallest tree. My name does not contain an odd number of letters. What tree am I? I am the **Oleander** tree.

Tips for Struggling Students

➔ Students need to have mastered factoring in order to understand finding lowest common denominators. If students struggle with finding the LCD, they may need more practice listing multiples of the numbers 2 through 12 or in using the factor keys for 2, 3, 5, and 7 to decide which numbers are factors of a given denominator.

➔ Remind students that the 1 they borrow from the whole number is an improper fraction having the same digit for both numerator and denominator ($\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, etc). This improper fraction must be added to the existing fraction before doing the subtraction.

Helpful Hints

➔ Encourage students to cross out and rewrite neatly as they borrow to subtract fractions. They may be able to do this step mentally, but if they make a mistake, it will be hard to find the error unless the work can be clearly seen.

△**Teacher Aide Check.** Listen to each student read the numbers.

Board Work (Continued on page 206.)

Find the lowest common denominator for each set of unlike fractions.

$\frac{1}{6}$ and $\frac{2}{5}$ **30** $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{16}$ **16** $\frac{2}{3}$ and $\frac{4}{9}$ **9**

$\frac{1}{8}$ and $\frac{3}{4}$ **8** $\frac{1}{10}$, $\frac{1}{2}$, $\frac{3}{5}$ **10** $\frac{1}{6}$, $\frac{2}{3}$, $\frac{1}{9}$ **18**

Lesson 12

11. Money in Kenya is based on the shilling. It takes about 75 shillings to equal one dollar. How many shillings would equal 25 dollars?

Answer: 1,875 shillings

$$\begin{array}{r} {\scriptstyle 1}\not{2} \\ 75 \\ \times\ 25 \\ \hline 375 \\ 1500 \\ \hline 1,875 \end{array}$$

12. The refreshing rains of rainy season are very welcome to the Luo people of Kenya. It rained 3.0 cm on Wednesday, 1.5 cm on Thursday, 1.0 cm on Friday, and 2.5 cm on Saturday. What was the average rainfall for those four days?

Answer: 2 cm

$$\begin{array}{r} {\scriptstyle 1} \\ 3.0 \\ 1.5 \\ 1.0 \\ +\ 2.5 \\ \hline 8.0 \end{array} \qquad 4\overline{)\,\begin{array}{r}2\\8\\8\\0\end{array}}$$

Write the number and the decimal.

13. Four hundred ten million, six hundred fifty thousand, ninety-nine 410,650,099

14. Thirty-two thousandths 0.032

Between March and June in Kenya, it rains almost every afternoon.

Write the ratio.

15. Porridge is made by cooking 1 cup of oatmeal in 2 cups of water. What is the ratio of oatmeal to water? 1:2

Circle the most sensible distance.

16. Height of a mountain	(10,000 feet)	10,000 inches	10,000 miles
17. Length of a lake	5 m	(5 km)	5 cm

Simplify these expressions.

18. a. 5 + 4 × 6
5 + 24
29

b. 4 × (3 + 2) – 6
4 × 5 – 6
20 – 6
14

c. 9 – (2 × 4) + 6
9 – 8 + 6
1 + 6
7

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Board Work, *Continued*

Borrow to subtract these mixed numbers.

$7\frac{1}{4} - 4\frac{3}{4}$ = $2\frac{2}{4} = 2\frac{1}{2}$

$6\frac{3}{10} - 3\frac{7}{10}$ = $2\frac{6}{10} = 2\frac{3}{5}$

$10\frac{1}{6} - 1\frac{5}{6}$ = $8\frac{2}{6} = 8\frac{1}{3}$

$1\frac{13}{16} - \frac{15}{16}$ = $\frac{14}{16} = \frac{7}{8}$

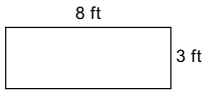
Lesson 12

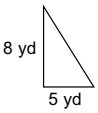
Skill Builders

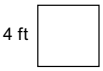
19. **a.** $15\frac{7}{7} - 6\frac{3}{7} = 8\frac{4}{7}$ **b.** $5\frac{7}{6} - 2\frac{5}{6} = 2\frac{2}{6} = 2\frac{1}{3}$ **c.** $7\overline{)2,843}$ Write the remainder as a fraction. $406\frac{1}{7}$; 28; 43; 42; 1

20. **a.** $20\frac{3}{3} - 14\frac{1}{3} = 5\frac{2}{3}$ **b.** $3\frac{4}{4} - 1\frac{3}{4} = 1\frac{2}{4} = 1\frac{1}{2}$ **c.** $\frac{3}{8} = \frac{3}{8}$; $+\ \frac{1}{2} = \frac{7}{8}$; $\frac{7}{8}$ **d.** $\frac{5}{9} = \frac{5}{9}$; $\frac{2}{3} = \frac{6}{9}$; $+\ \frac{1}{3} = \frac{3}{9}$; $\frac{14}{9} = 1\frac{5}{9}$

Write the formula and find the area.







21. **a.** $A = l \times w$
$A = 8 \times 3$
$A = 24\ ft^2$

b. $A = \frac{1}{2} \times (b \times h)$
$A = \frac{1}{2} \times (5 \times 8)$
$A = \frac{1}{2} \times 40$
$A = 20\ yd^2$

c. $A = s^2$
$A = 4 \times 4$
$A = 16\ ft^2$

Remember: To multiply, move the decimal point to the right.

Multiply each number.

		× 10	× 100	× 1,000
22. 93.4		**a.** 934	**b.** 9,340	**c.** 93,400
23. 0.65		**a.** 6.5	**b.** 65	**c.** 650
24. 0.392		**a.** 3.92	**b.** 39.2	**c.** 392

Find the LCD.

25. **a.** The LCD of $\frac{7}{12}$ and $\frac{5}{8}$ is 24. **b.** The LCD of $\frac{5}{9}$, $\frac{3}{5}$, and $\frac{1}{3}$ is 45.

26. **a.** The LCD of $\frac{7}{9}$ and $\frac{3}{4}$ is 36. **b.** The LCD of $\frac{5}{6}$, $\frac{7}{8}$, and $\frac{3}{4}$ is 24.

27. **a.** The LCD of $\frac{1}{6}$ and $\frac{3}{24}$ is 24. **b.** The LCD of $\frac{7}{8}$, $\frac{2}{3}$, and $\frac{1}{6}$ is 24.

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Teacher Notes: