

**LESSON**  
**3-1**

**Rational Numbers and Decimals**

*Practice and Problem Solving: A/B*

Write each rational number as a terminating decimal.

1.  $\frac{19}{20}$

2.  $-\frac{1}{8}$

3.  $\frac{17}{5}$

\_\_\_\_\_

Write each rational number as a repeating decimal.

4.  $-\frac{7}{9}$

5.  $\frac{11}{15}$

6.  $\frac{8}{3}$

\_\_\_\_\_

Write each mixed number as an improper fraction and as a decimal.  
Then tell whether the decimal is terminating or repeating.

7.  $3\frac{2}{9}$  \_\_\_\_\_

8.  $15\frac{1}{20}$  \_\_\_\_\_

9.  $-5\frac{3}{10}$  \_\_\_\_\_

10. In part a and in part b, use each of the digits 2, 3, and 4 exactly once.

a. Write a mixed number that has a terminating decimal, and write the decimal.

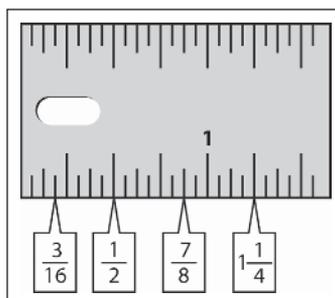
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b. Write a mixed number that has a repeating decimal, and write the decimal.

\_\_\_\_\_

11. The ruler is marked at every  $\frac{1}{16}$  inch. Do the labeled measurements

convert to repeating or terminating decimals? \_\_\_\_\_



11. -31
12. 33
13. -62
14. -48

### Reading Strategies

1. paid; gave;  $4(-3) + 7 = -12 + 7 = -5$ ;  
\$5 less
2. below;  $-48 \div 4 = -12$ ; 12 feet below the surface
3. lost; gained;  $3(-5) + 32 = -15 + 32 = 17$ ;  
gained 17 yards

### Success for English Learners

1. 39
2. -5
3. 6
4. a. Sample answer: Tom bought 3 DVDs for \$20 each. He had a coupon for \$5 off one DVD. After his purchase, what is the change in the amount of money Tom has?  
b.  $-3(20) + 5 = -60 + 5 = -55$ ; Tom has \$55 less now.

## MODULE 2 Challenge

1. Sample answer:  
 $81 \div (-9) + (-4) - 17 + (4)(3) + 1$   
 $-9 + (-4) - 17 + 12 + 1$   
 $-13 - 17 + 12 + 1$   
 $-30 + 12 + 1$   
 $-18 + 1$   
 $-17$
2. Sample answer: Play with 2–4 players. Shuffle the integer cards and deal them out. Place the operations card face-up on the table. One player starts making an expression by placing one card on the table. The next player can choose an operation card and an integer card from his/her hand and extend the expression. Each player does the same until the cards are gone or one player wins. To win, a player makes the expression equal to 0.

3. Sample answer:

First find multiplication and division signs and do these operations first.

1. Multiply  $(-4)(7) = -28$ . The product is negative because one of the factors is negative.

$$(-8) + (-3) + (-28) \div 14 + 9(-2)$$

2. Divide  $(-28) \div 14 = -2$ . The quotient is negative because the dividend is negative and the divisor is positive.

$$(-8) + (-3) + (-2) + 9(-2)$$

3. Multiply  $(9)(-2) = -18$ . Same reason as step 1.

$$(-8) + (-3) + (-2) + (-18)$$

Now go back and add and subtract from left to right.

4.  $(-8) + (-3) = (-11)$  because you are adding two negative numbers.

$$(-11) + (-2) + (-18)$$

5.  $(-11) + (-2) = (-13)$ , for the same reason.  $(-13) + (-18)$

$$6. (-13) + (-18) = (-31)$$

## MODULE 3 Rational Numbers

### LESSON 3-1

#### Practice and Problem Solving: A/B

1. 0.95
2. -0.125
3. 3.4
4.  $-0.777\dots$  or  $0.\overline{7}$
5.  $0.7333\dots$  or  $0.7\overline{3}$
6.  $2.666\dots$  or  $2.\overline{6}$
7.  $\frac{29}{9}$ ;  $3.222\dots$ ; repeating or  $3.\overline{2}$
8.  $\frac{301}{20}$ ; 15.05; terminating
9.  $-\frac{53}{10}$ ; -5.3; terminating

10. a. Answers may vary. Sample answer:

$$2\frac{3}{4}, 2.75; 3\frac{2}{4}, 3.5$$

b. Answers may vary. Sample answer:

$$4\frac{2}{3}, 4.666\dots \text{ or } 4.\bar{6}$$

11. They all convert to terminating decimals.

### Practice and Problem Solving: C

1.  $\frac{25}{18}$ ; 1.3888... or  $1.3\bar{8}$ ; repeating

2.  $\frac{200}{15}$ ; 13.333... or  $13.\bar{3}$ ; repeating

3. Possible answer:  $\frac{5}{20}, \frac{18}{20}, \frac{3}{20}$ ; the decimals are 0.25, 0.9, 0.15. They terminate because a rational number with 20 in the denominator is equivalent to a rational number with 100 in the denominator, which always terminates.

4. Possible answer:  $\frac{30}{15} = 2.0$ ;  $\frac{5}{15} = 0.333\dots$

or  $0.\bar{3}$ ; To find a repeating decimal, select a multiple of 5 that is less than 15. To find a terminating decimal, select a numerator that is a multiple of 15.

5. Possible answer: Yes;  $\frac{1.5}{7.5} = \frac{15}{75}$ , which is written as a ratio of two integers;

$$\frac{15}{75} = 0.2$$

### Practice and Problem Solving: D

1. 0.65; terminating

2. 4.666... or  $4.\bar{6}$ ; repeating

3. 0.555... or  $0.\bar{5}$ ; repeating

4. 3.833... or  $3.8\bar{3}$ ; repeating

5. 8.75; terminating

6. 10.625; terminating

7. 1.3125

8. 7.3125

9. 26.3125

10. 1.266... or  $1.2\bar{6}$

11. 17.266... or  $17.2\bar{6}$

12. 23.266... or  $23.2\bar{6}$

### Reteach

1.  $\frac{3}{4} = 0.75$  so  $7\frac{3}{4} = 7.75$

2.  $\frac{5}{6} = 0.833\dots$  or  $0.8\bar{3}$  so  $11\frac{5}{6} = 11.833\dots$   
or  $11.8\bar{3}$

3.  $\frac{3}{10} = 0.3$  so  $12\frac{3}{10} = 12.3$

4.  $\frac{5}{18} = 0.277\dots$  or  $0.2\bar{7}$  so  $8\frac{5}{18} = 8.277\dots$   
or  $8.2\bar{7}$

5. Sample answer:

Method 1: Start with the fraction part.

$$\frac{2}{9} = 0.222\dots \text{ or } 0.\bar{2} \text{ so } 9\frac{2}{9} = 9.222\dots \text{ or } 9.\bar{2}$$

Method 2:  $9\frac{2}{9} = \frac{83}{9}$ . Using long division,

$$\frac{83}{9} = 9.222\dots \text{ or } 9.\bar{2}; \text{ the results agree.}$$

6. Sample answer:

Method 1: Start with the fraction part.

$$\frac{5}{8} = 0.625 \text{ so } 21\frac{5}{8} = 21.625.$$

Method 2:  $21\frac{5}{8} = \frac{173}{8}$ . Using long

division,  $\frac{173}{8} = 21.625$ ; the results agree.

### Reading Strategies

1. Both  $-3$  and  $5$  are integers.

2.  $2$  is an integer but  $1.17$  is not an integer (but that does not mean that  $\frac{2}{1.17}$  is not a rational number).

3.  $1$  is an integer but  $\frac{1}{3}$  is not an integer

(but that does not mean that  $\frac{1}{\frac{1}{3}}$  is not a rational number).

4.  $\sqrt{2}$  is not an integer and  $\sqrt{4}$  is not an integer (but  $\sqrt{4}$  can be written as the integer  $2$ ).