Answers

Get Ready, pages 52–53

1. a) 50.816 **b)** 272.43

2. a) $\frac{3}{12}$, $\frac{3}{4}$ **b)** $\frac{3}{4} > \frac{3}{12}$

3. a) $\frac{5}{10}$ or $\frac{1}{2}$ **b)** $\frac{7}{8}$

4. a) $\frac{2}{9}$ **b)** 2

Math Link

1. 9, $\frac{1}{9}$

2. $\frac{4}{9}$

3. $\frac{8}{9}$

4. $\frac{3}{9}$ or $\frac{1}{3}$

5. Answers may vary. Example: Use X, Y, and O for symbols. The fraction of total squares needed to win does not change.

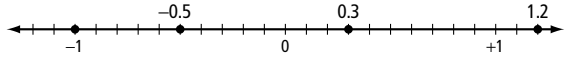
2.1 Warm Up, page 55

1. a) 1.2 **b)** –1

2. a) 0.5 **b)** 0.6

3. a) $\frac{3}{10}$ **b)** $\frac{85}{100}$ or $\frac{17}{20}$

4. a)



b) –1, –0.5, 0.3, 1.2

5. Answers may vary. Example: **a)** $\frac{4}{6}$ **b)** $\frac{4}{6}$ or $\frac{2}{3}$

6. a) +5 **b)** –3.4 **c)** $-\frac{3}{4}$ **d)** $\frac{2}{5}$

2.1 Comparing and Ordering Rational Numbers, pages 56–63

Working Example 1: Show You Know

Ascending order: $-\frac{3}{2}, -0.6, \frac{3}{8}, \frac{3}{4}$; Descending order: $\frac{3}{4}, \frac{3}{8}, -0.6, -\frac{3}{2}$

Working Example 2: Show You Know

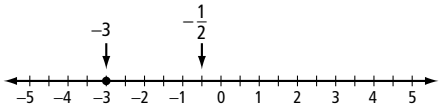
a) $-\frac{7}{10}$ **b)** 0.0001

Working Example 3: Show You Know

Answers may vary. Example: **a)** $\frac{57}{100}$ **b)** $-2\frac{45}{100}$ or $-\frac{245}{100}$

Communicate the Ideas

1.

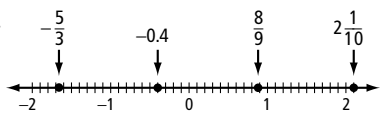


2. NO. Answers may vary. Example: When numbers are negative, the bigger the number, the smaller the value.

Practise

3. a) D **b)** C **c)** A **d)** B

4.



5. $1.\overline{8}, \frac{9}{5}, -\frac{3}{8}, -\frac{1}{2}, -1$

6. Answers will vary. Examples: **a)** $-\frac{4}{10}$ **b)** $\frac{20}{12}; \frac{5}{3}$

7. a) $\frac{1}{5}$ **b)** $-\frac{1}{2}$

8. Answers may vary. Example: **a)** 0.7 **b)** –0.6

9. Answers may vary. Example: **a)** $\frac{25}{100}$ or $\frac{1}{4}$ **b)** $-\frac{527}{1000}$

Apply

10. a) +8.2 **b)** +2.9 **c)** –3.5 **d)** +32.50

11. a) 6.1, 5.4, 3.9, 0.6, –0.1, –5.1, –14.1 **b)** Yellowknife

12. a) = **b)** > **c)** < **d)** >

2.2 Warm Up, page 64

1. a) 2 **b)** –12 **c)** –6 **d)** 12 **e)** –6 **f)** 5 **g)** –2 **h)** 5

2. Estimates will vary. **a)** Estimate: 5; Calculate: 5.24 **b)** Estimate: 0.4; Calculate: 0.43 **c)** Estimate: 18; Calculate: 20.15 **d)** Estimate: 3; Calculate: 3

3. a) 10 **b)** 9

2.2 Problem Solving With Rational Numbers in Decimal Form, pages 65–73

Working Example 1: Show You Know

Estimates will vary. **a)** Estimate: –3; Calculate: –2.86 **b)** Estimate: –4; Calculate: –4.8

Working Example 2: Show You Know

Estimates will vary. **a)** Estimate: 3; Calculate: 3.66 **b)** Estimate: –1; Calculate: –1.2

Working Example 3: Show You Know

2.96 °C/min

Communicate the Ideas

1. Answers will vary. Examples: **a)** Positive because 6.5 is greater than –0.32 **b)** 6.18

2. a) the same **b)** Answers will vary. Example: A negative times a positive equals a negative. It does not matter whether the negative number is first or second.

Practise

3. Estimates will vary. **a)** Estimate: 1.0; Calculate: 0.7 **b)** Estimate: –1; Calculate: –0.88

4. Estimates will vary. **a)** Estimate: 2; Calculate: 2.3; **b)** Estimate: 5.5; Calculate: 5.34

5. Estimates will vary. **a)** Estimate: –9; Calculate: –8.64 **b)** Estimate: 30; Calculate: 30.25

6. Estimates will vary. **a)** Estimate: 10; Calculate: 10 **b)** Estimate: –1.5; Calculate: –1.3

7. a) –13.17 **b)** –3.08

Apply

8. The temperature dropped 2.2 °C per hour.

9. a) 3.8 + 2.3 **b)** The pelican's dive is 6.1 m.

10. It took 29 min to reach the surface.

11. a) The company lost money. **b)** On average, the company lost $1.2 million per year.

2.3 Warm Up, page 74

1. a) $\frac{4}{5}$ **b)** $\frac{2}{9}$

2. $\frac{14}{3}$

3. a) $\frac{9}{10}$ **b)** $\frac{1}{2}$

4. a) $5\frac{1}{10}$ **b)** $\frac{11}{14}$

2.3 Problem Solving With Rational Numbers in Fraction Form, pages 75–87

Working Example 1: Show You Know

Estimates will vary. **a)** Estimate: $-1\frac{1}{2}$; Calculate: $-1\frac{3}{20}$ **b)** Estimate: 3; Calculate: $3\frac{1}{4}$

Working Example 2: Show You Know

a) $\frac{1}{15}$ **b)** $-1\frac{7}{10}$

Working Example 3: Show You Know

$10

Communicate the Ideas

1. a) –2 **b)** –2 **c)** Answers will vary. Example: I like multiplying by the reciprocal because cancelling is possible.

Practise

2. Estimates will vary. **a)** Estimate: $\frac{1}{2}$; Calculate: $\frac{5}{8}$ **b)** Estimate: $-\frac{1}{2}$; Calculate: $-\frac{7}{20}$

3. Estimates will vary. **a)** Estimate: 0; Calculate: $\frac{1}{12}$ **b)** Estimate: 6; Calculate: $5\frac{5}{6}$ **c)** Estimate: 0; Calculate: $-\frac{4}{15}$ **d)** Estimate: 0; Calculate: $-\frac{9}{80}$

Apply

4. There are 15 chicken salad sandwiches.

5. a) Li at $\frac{10}{24}$ of a pizza. **b)** There was $1\frac{7}{12}$ of a pizza left.

6.

Start Temp (°C)	End Temp (°C)	Change in Temp (°C) (End Temp – Start Temp)
b) –100	$-\frac{1}{2}$	$99\frac{1}{2}$
c) $-1\frac{3}{5}$	5	$6\frac{3}{5}$
d) $\frac{9}{10}$	$\frac{-2}{5}$	$-1\frac{3}{10}$

7. Paul spent $6 on other supplies.

2.4 Warm Up, page 88

1. a) 4 **b)** 100 **c)** 1.44 **d)** 0.25

2. a) 3 **b)** 4 **c)** 5 **d)** 10

3. a) 1.1 **b)** 0.3 **c)** 1.2 **d)** 1.5

4. a) 3.6 **b)** 0.79 **c)** 290 **d)** 0.729

2.4 Determining Square Roots of Rational Numbers, pages 89–99

Working Example 1: Show You Know

Estimate will vary. Example: 20; Calculate: 19.36 mn^2

Working Example 2: Show You Know

a) is **b)** is not

Working Example 3: Show You Know

a) 0.4 **b)** 1.1

Working Example 4: Show You Know

a) 0.6 **b)** 0.583

Communicate the Ideas

1. a) NEITHER

b) Answers will vary. Example: Max divided by 2 instead of finding the square root. Lynda squared 0.8 and misplaced the decimal.

2. $\sqrt{25.4}$; 5^2 is 25, so the square must be slightly more than 25.

Practise

3. Answers will vary: Example: 10

4. Estimates will vary. **a)** Estimate: 9; Calculate: 9.61 **b)** Estimate: 150; Calculate: 156.25 **c)** Estimate: 0.4; Calculate: 0.3844

5. a) is **b)** is not **c)** is **d)** is not

6. a) 14 **b)** 1.1 **c)** 0.5 **d)** 0.8

7. a) 13 **b)** 0.4

8. Estimates will vary. **a)** Estimate: 6.1; Calculate: 6.2 **b)** Estimate: 2.1; Calculate: 2.1

Apply

9. The length of one side is 1.3 m.

10. a) The side length is 3 m. **b)** A 2-L can will cover 18 m^2. **c)** The side length is 4.2 m. **d)** She will use 5.6 L of paint.

11. It costs $4800.

12. The side length of the rug is 3.8 m.

Math Link

a) The length of one side is 9.9 cm. **b)** The area of the whole grid is 98.01 cm^2. **c)** The length of one side is 13.5 cm.

d) The dimensions are 4.5 × 4.5.

Graphic Organizer, page 100

Answers will vary. Example:

Rational number:

Definition: A number that can be written as a fraction.

Examples: $\frac{1}{4}$, $2\frac{1}{2}$, $-\frac{51}{25}$, 1.2, –0.5

Perfect square:

Definition: The product of two identical numbers

Examples: $3 \times 3 = 9$, $\frac{3}{4} \times \frac{3}{4} = \frac{9}{16}$

Non-perfect square:

Definition: A number that cannot be written as the product of two identical numbers.

Examples: 10, –7, $-\frac{4}{5}$, 0.18

Chapter 2 Review, pages 101–104

1. opposites **2.** square root **3.** perfect square **4.** rational number

5. a) = **b)** < **c)** = **d)** >

6. a) –0.95 **b)** 1.49 **c)** –8.1 **d)** 1.3

7. a) –1.325 **b)** 6.2

8. The temperature changed –5.6 °C.

9. $4.8 million

10. a) $-\frac{2}{15}$ **b)** $-\frac{4}{5}$ **c)** $-1\frac{3}{4}$ **d)** $4\frac{7}{12}$

11. a) $-\frac{1}{6}$ **b)** $-\frac{20}{21}$ **c)** 14 **d)** $-12\frac{5}{6}$

12. There are 420 hours in $2\frac{1}{2}$ weeks.

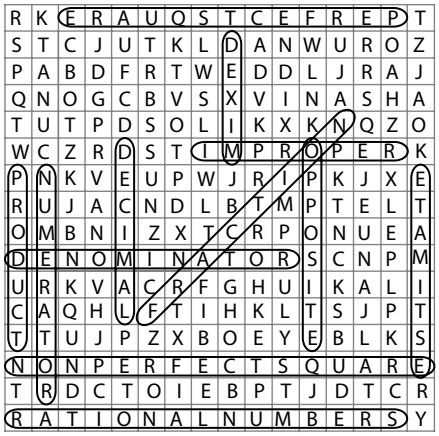
13. a) no **b)** yes **c)** yes **d)** no

14. Estimate will vary. Example: 14; Calculate: 14.8

15. You would need 3 cans of paint.

Key Word Builder, page 105

1. decimal **2.** denominator **3.** estimate **4.** fraction **5.** improper **6.** mixed **7.** numerator **8.** opposite **9.** perfect square **10.** product **11.** rational numbers **12.** non-perfect square



Chapter 2 Practice Test, pages 106–108

1. C **2.** B **3.** C **4.** B **5.** B **6.** C

7. 1.2; 4.8

8. left

9. $-\frac{1}{5}$ or $-\frac{2}{5}$ or $-\frac{3}{5}$ or $-\frac{4}{5}$

10. a) $-\frac{1}{2}$ **b)** $-\frac{1}{2}$ **c)** $4\frac{1}{8}$ **d)** $-\frac{10}{11}$

11. Fredericks's time was 9.89 s.

12. Yes. Its square root is 5.6.

13. a) 37.21 **b)** 37

Math Link: Wrap It Up!, page 109

a) Answers will vary. Example: Use 1 red die and 1 black die to play. Red is a positive integer, black is a negative integer. Roll the two dice and add the scores. The first player to 20 wins.

b) Answers will vary. Examples: +2 + (–5) = –3; (–3) + (+3) = 0; +6 + (+5) = +11; (+6) + (+6) = +12. So the score is –3 + 0 + 11 + 12 = 20.

Challenge, pages 110–111

Answers will vary. Example:

1.

Your Reaction Distance	Partner's Reaction Distance
10	*12*
11	*13*
9	*10*
8	*8*
7	*7*
$d = \frac{\text{sum of 5 reaction distances}}{5}$ $d = 9$	$d = \frac{\text{sum of 5 reaction distances}}{5}$ $d = 10$
$d =$ *9* cm ÷ 100 $=$ *0.09* m	*0.01 m*

2. Player 1: 0.136 s; Player 2: 0.143 s

3. a) 8.3 m **b)** Answers will vary. Example: Being tired might influence your reaction time.