Chapter 4 Homework

4.1.1

4-7. Croakie now has a new routine that is 59 feet long. Keep this distance in mind as you complete parts (a) and (b) below. <u>Help (Html5)</u>□<u>Help (Java)</u>

    a. In his new routine, Croakie makes seven super jumps, all the same length, and then hops 3 feet. How long is each super jump?

    b. If x represents the length of one super jump and $2x$ represents the length of two super jumps, write an expression that represents Croakie's routine.

4-8. Now Croakie can do a super high jump! <u>Help (Html5)</u>□<u>Help (Java)</u>

The first time he performed his new super-high-jump routine, he did three super-high jumps and then hopped five feet. The second time, he did only two super-high jumps and then hopped six feet. Both times, he covered the same distance. His attempts are shown in the diagram below.

First attempt x x x 5

Second attempt x x 6
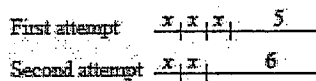
    a. How far does Croakie travel in one super-high jump? Explain or show how you know.

    b. How long is his whole super-high-jump routine? How can you tell?

4-9. Simplify each expression below. For each expression, draw a picture or show how you know your answer makes sense. <u>Help (Html5)</u>□<u>Help (Java)</u>

    a. $5 + (-4) + 12.65$

    b. $6.5 + (-2) + 10.5$

    c. $4(-5 + 100)$

    d. $-212 + (-102)$

    e. $4 + 6(3) + 2(5^{\frac{1}{2}} - 1$

f.　$5 + 3(5) + (-4)(5)$

4-10. Read the Math Notes box in this lesson. Then complete the following division problems. <u>Help (Html5)</u>□<u>Help (Java)</u>

    a. $683 \div 4$

    b. $212 \div 9$

4-11. Rewrite each decimal as a fraction or fraction as a decimal. <u>Help (Html5)</u>□<u>Help (Java)</u>

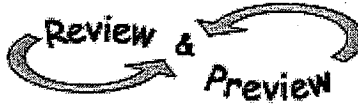a.　0.007

    b.　0.103
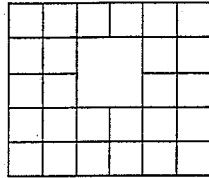
    c.　1.21

    d.　$\dfrac{505}{1000}$

    e.　$\dfrac{505}{100}$

    f.　$\dfrac{2}{100000}$

4.1.2

4-16. Look at the figure formed by square tiles below. How can you find out how many small squares there are in this diagram *without* counting each one? Think about this as you answer the questions below. Help (Html5)□Help (Java)

a. Write and simplify an expression involving addition to count the number of small squares.

b. Write and simplify an expression involving subtraction to count the number of small squares.

4-17. A team of students worked on problem 4-12. The team's work is shown below. Unfortunately, the expressions, descriptions, and diagrams got mixed up! Match the counting method, word description, and diagram that describe the same strategy. Help (Html5)□Help (Java)

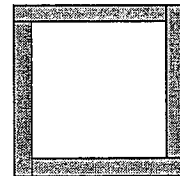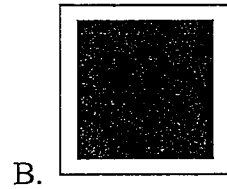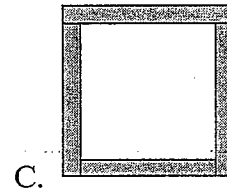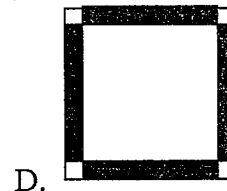| Counting Methods	Word Descriptions	Diagrams
a. $4 \cdot 10 - 4$	1. Start in one corner and count 9 four times around the picture frame.	A.

b. $10 + 9 + 9 + 8$ 2. Take a side length of 10 four times and take away the four corners.

B.

c. $9 \cdot 4$ 3. Take the entire 100's grid and subtract the inside part of the picture frame.

C.

d. $(10 \cdot 10) - (8 - 8)$ 4. Take the top length, then add the two vertical sides and add the bottom.

D.

4-18. Melissa collected the dates of all her friends' birthdays. The histogram below shows what she found out. Make a list of the months when her friends' birthdays occur and how many birthdays there are in each month. Help (Html5) ☐ Help (Java)
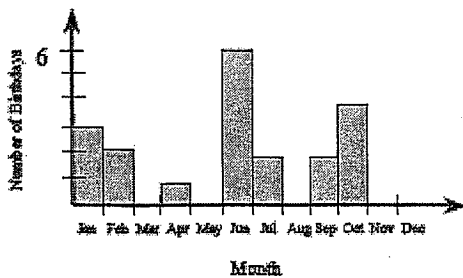
4-19. Review the Math Notes box in this lesson. Then convert each mixed number to a fraction greater than one, or each fraction greater than one to a mixed number. Help (Html5) ☐ Help (Java)

a. $4\frac{1}{8}$

b. $\dfrac{302}{3}$

c. $100 \frac{2}{5}$

d. $\dfrac{18}{3}$

4-20. Each expression below begins with –5 and then adds something to it. As you look at each expression, state which direction you should move on a number line if you start at –5. Then simplify each expression.

For example, if the expression reads –5 + (–9), you would write "left, –14," since from –5 you would move *left* on a number line 9 units and would end up at –14. Help (Html5)☐Help (Java)

a. –5 + (–4.5)

b. –5 + –8

c. $-5 + 6\frac{3}{5}$

4.1.3

Review & Preview

4-34. Julian was studying a pattern made with toothpicks, and he started the table shown below. Help (Html5)☐Help (Java)

Figure Number	Number of Toothpicks
1	7

2	10
3	13
4	
5	

a. Copy and complete the table.

b. Draw axes and plot Julian's points.

c. How can you describe what all of these points have in common?

4-35. Estimate each sum or difference below by stating which whole numbers the answer should be between. Then check your conclusion by calculating the actual sum or difference. Help (Html5)☐Help (Java)

a. $5.2 - 2.09$

b. $25\frac{1}{3} - 17\frac{5}{6}$

c. $3\frac{3}{4} + 2\frac{5}{7}$

d. $103.57 + 29.6$

4-36. Find the prime factorization for each number below. Help (Html5)☐Help (Java)

a. 36

b. 45

c. Find the greatest common factor for 36 and 45.

d. Find the least common multiple for 36 and 45.

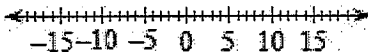**4-37.** Simplify each of the following absolute value expressions. <u>Help (Html5)</u>□<u>Help (Java)</u>

a. $|-15|+|-26|$

b. $-|-40|$

c. $|0.5|+\left|-1\frac{1}{2}\right|$

4-38. Copy the following problems, then use the number line to help you fill in < (less than) or > (greater than) on the blank line between each pair of numbers. <u>Help (Html5)</u>□<u>Help (Java)</u>

-15 -10 -5 0 5 10 15

a. −4.84 ____ −8.48

b. 7 ____ −7

c. -6.5 ____ $-5\frac{1}{2}$

d. −1 ____ 0

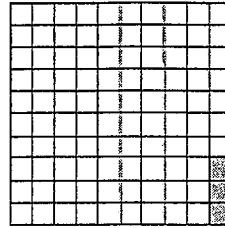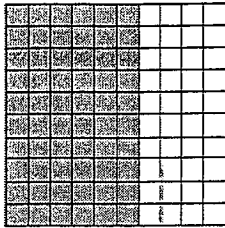**4-39.** Evaluate the expressions below for the given values of the variables. <u>Help (Html5)</u>□<u>Help (Java)</u>

a. $6j-3$ for $j=4$

b. $\frac{1}{2}b+5$ for $b=14$

c. $8+4k$ for $k=3.5$

**4-40.** Use the hundredths grids below to answer the following questions. Help (Html5) □ Help (Java)

a. Give three names for the larger shaded area.

b. Give three names for the smaller shaded area.

c. What are two other names for 120%? Can you show 120% on a single hundreds grid? Explain your thinking.

4-41. Janna is training for a triathlon and wants to eat a diet with a ratio of carbohydrates to protein to fat that is 4:3:2. Help (Html5) □ Help (Java)

a. What percent of her diet is the protein?

b. What is the ratio of carbohydrates to fat?

4-42. What is the length of the segment connecting the points (−9, 3) and (−9, −2)? Help (Html5) □ Help (Java)

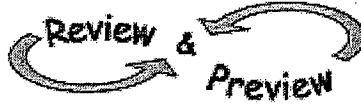**4-43.** Find each sum or difference without a calculator. Help (Html5) □ Help (Java)
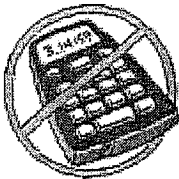
a. $\frac{7}{10} + \frac{2}{3}$

b. $0.9 - 0.04$

c. $3\frac{1}{4} + 2\frac{11}{12}$

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

4.2.1

Review & Preview

4-47. Use graph paper to complete the steps below. Then answer the question that follows. Help (Html5)☐Help (Java)

- Draw a square that measures 5 units on each side.

- Draw a design inside your 5 × 5 square.

- Then draw a square that measures 15 units on each side.

- Enlarge your picture as accurately as possible so that it fits inside of the 15 × 15 square.

How much wider and how much longer is your new picture?

4-48. Tina is going to put 1-inch square tiles on the picture frame shown below. Help (Html5)☐Help (Java)

7 in.

4 in.
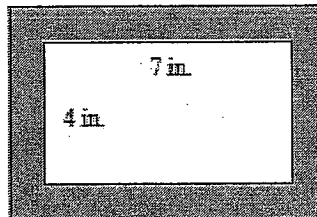
a. If the frame is one tile wide, how many 1-inch-square tiles will she need?

b. Would more 1-inch square tiles fit inside the frame or on the frame? Show how you know.

4-49. Four friends worked together to wash all of the cars that the Kumar family owns. They received $43.00 for doing the work and agreed to divide the earnings evenly. How much money will each friend earn? Show how you know. Help (Html5)☐Help (Java)

4-50. Copy and complete the generic rectangle below. What multiplication problem does it represent and what is the product? Help (Html5)☐Help (Java)

	___	40	___
___	___	800	___
5	500	___	30

4-51. Use the portions representation web to rewrite each percent as a fraction, as a decimal and with words or a picture. Help (Html5)☐Help (Java)

    a. 13%

    b. 20%

    c. 130%

    d. 32%

4.2.2

Review & Preview

4-58. Draw two different simple geometric shapes (such as rectangles or right triangles) on graph paper. Help (Html5)☐Help (Java)

    a. Choose one shape and enlarge it so that each side is twice as long as the original.

    b. Choose the other shape and reduce it so that each side is half the length of the original.

4-59. Study the pattern below. Sketch and label the fourth and fifth figures. Then predict how many dots will be in the 100th figure. Write an expression you can use to determine the number of dots in any figure. Help (Html5)☐Help (Java)

Figure 1   Figure 2   Figure 3

4-60. Simplify each of the following absolute value expressions. <u>Help (Html5)</u>□<u>Help (Java)</u>

a. $\left|-25.6\right|+\left|-11.4\right|$

b. $-\left|-3\frac{2}{7}\right|$

c. $\left|0.375\right|+\left|-\frac{5}{8}\right|$

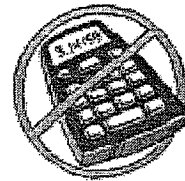**4-61.** Compute each sum or difference. <u>Help (Html5)</u>□<u>Help (Java)</u>

a. $\frac{2}{3}+\frac{1}{5}$

b. $\frac{7}{8}-\frac{1}{4}$

c. $1\frac{2}{3}+3\frac{1}{4}$

d. $7-3\frac{2}{5}$

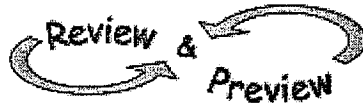**4-62.** Find each quotient without using a calculator. <u>Help (Html5)</u>□<u>Help (Java)</u>

a. $42.5\div1.5$

b. $589.2\div16$

c. $5\div9$
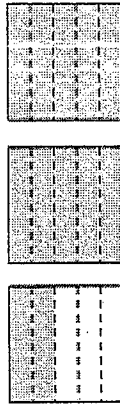
Review & Preview

4-70. On graph paper, draw any quadrilateral. Then enlarge it by each of the following ratios. Help (Html5)☐Help (Java)

a. $\frac{4}{1}$

b. $\frac{7}{2}$

4-71. George drew the diagram at right to represent the number $2\frac{2}{5}$. "Look," said Helena, "This is the same thing as $\frac{12}{5}$." What do you think? Explore this idea in parts (a) through (c) below. Help (Html5)☐Help (Java)

a. Is Helena correct? If so, explain how she can tell that the diagram represents $\frac{12}{5}$. If she is not correct, explain why not.

b. Draw a diagram to represent the mixed number $3\frac{2}{3}$. How can you write this as a single fraction greater than one?

c. How can you write $\frac{7}{4}$ as a mixed number? Be sure to include a diagram in your answer.

4-72. Simplify the following expressions. <u>Help (Html5)</u>□<u>Help (Java)</u>

a. $1\frac{1}{2}+2\frac{1}{8}$

b. $\frac{4}{5}-\frac{2}{3}+\frac{1}{6}$

c. $5\frac{3}{5}-1\frac{4}{5}$

4-73. A new shipment of nails is due any day at Hannah's Hardware Haven, and you have been asked to help label the shelves so that the nails are organized in length from least to greatest. She is expecting nails of the following sizes: $1\frac{3}{8}$ inch, $1\frac{7}{8}$ inch, $2\frac{1}{4}$ inch, $\frac{7}{8}$ inch, and $1\frac{1}{2}$ inch. Use the ruler below to help Hannah order the labels on the shelves from least to greatest. <u>Help (Html5)</u>□<u>Help (Java)</u>
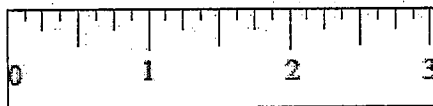
4-74. Cecelia wants to measure the area of her bedroom floor. Should she use square inches or square feet? Complete parts (a) through (c) below as you explore this question. <u>Help (Html5)</u>□<u>Help (Java)</u>

a. Write a sentence to explain which units you think Cecelia should use.

b. If Cecelia's bedroom is 12 feet by 15.5 feet, what is the area of the bedroom floor? Show how you got your answer.

c. Find the perimeter of Cecelia's bedroom floor. Show how you got your answer.

4-80. Richie and Bethany play basketball and practice shooting free throws after school. During one practice session, Richie attempted 15 free throws and made 12 of them. Help (Html5) □ Help (Java)

   a. Write a ratio comparing the number of free throws he made to the number that he missed.

   b. Bethany made eight free throws for every three that she missed. Did Bethany do better than Richie? Show how you know.

4-81. This problem is a checkpoint for addition and subtraction of mixed numbers. It will be referred to as Checkpoint 4.

Compute each sum or difference. Simplify if possible. Help (Html5) □ Help (Java)

   a. $5\frac{1}{2} + 4\frac{2}{3}$

   b. $1\frac{5}{6} + 2\frac{1}{5}$

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

   d. $10 - 8\frac{2}{3}$

Check your answers by referring to the Checkpoint 4 materials.

If you needed help solving these problems correctly, then you need more practice. Review the Checkpoint 4 materials and try the practice problems. Also consider getting help outside of class time. From this point on, you will be expected to do problems like this one quickly and easily.

4-82. Use an algebraic expression to represent each sequence of lengths shown below. Help (Html5) □ Help (Java)

a. (line segment with x, 1, x)

b. (line segment with m, m, m, 5)

c. (line segment with y, 2, y, 2)
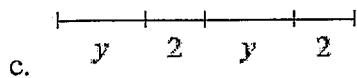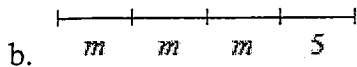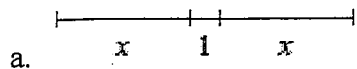
4-83. In parts (a) through (c) below, refer to the previous problem. You will find the length of the line segments in problem 4-82 by substituting given values for the variables. For example, if x is 3 units in part (a) of problem 4-82, the line segment would be $3 + 1 + 3 = 7$ units long. Help (Html5)☐Help (Java)

a. Find the length of the line segment in part (a) of problem 4-82 using $x = 4\frac{1}{2}$

b. Find the length of the line segment in part (b) of problem 4-82 $m = 4$

c. Find the length of the line segment in part (c) of problem 4-82 using $y = 5.5$

4-84. Write each fraction greater than one as a mixed number and each mixed number as a fraction greater than one. Help (Html5)☐Help (Java)

a. $5\frac{8}{19}$

b. $\frac{17}{8}$

c. $7\frac{7}{15}$

d. $\frac{19}{5}$