

Mental Math

Name _____

2-1
Reteaching

There are several ways that you can add and subtract decimals mentally to solve a problem.

Commutative Property of Addition

You can add two decimal numbers in any order.

$$15.75 + 2.25 = 2.25 + 15.75$$

Compatible numbers are numbers that are easy to compute mentally.

$$2.6 + 9.3 + 7.4$$

2.6 and 7.4 are compatible because they are easy to add.

$$2.6 + 9.3 + 7.4 = (2.6 + 7.4) + 9.3$$

$$= 10 + 9.3 = 19.3$$

Associative Property of Addition

You can change the groupings of addends.

$$1.7 + (1.3 + 7) = (1.7 + 1.3) + 7$$

With **compensation**, you adjust one or both decimal numbers to make computations easier and compensate to get the final answer.

$$3.76 - 1.26$$

$$- .01 - .01$$

$$\uparrow \quad \uparrow$$

$$3.75 - 1.25 = 2.5$$

Add or subtract mentally.

$$1. \quad 16.9 + 12.1 = \underline{\hspace{2cm}}$$

$$3. \quad 8.01 + 1.09 = \underline{\hspace{2cm}}$$

5. How much heavier is a Hippo than a Moose?

6. How heavy are the Elephant and the Rhino combined?

7. What is the total weight of all four animals?

Animal	Weight (Tons)
Hippo	2.5
Elephant	3.85
Rhino	2.15
Moose	.5

Weight of Zoo Animals

$$4. \quad 2.65 + 4.01 + 3.34 = \underline{\hspace{2cm}}$$

$$2. \quad 100.5 - 21.5 = \underline{\hspace{2cm}}$$

Name _____

Mental Math

Show how you can use mental math to add or subtract.

1. $7.03 + 9.0 + 3.07 =$ _____

2. $63.75 - 13.25 =$ _____

Practice
2-1

City	State	Population
San Antonio	Texas	1.4 million
Phoenix	Arizona	1.6 million
San Diego	California	1.3 million
Chicago	Illinois	2.7 million

Estimated Population in Millions

3. How many more people live in Phoenix than live in San Antonio?

4. How many people live in San Diego and Chicago combined?

5. A hotel bought 56.4 lb of apples in August from a local orchard. In September, the hotel purchased an additional 52.34 lb of apples and 32.26 lb of strawberries. How many pounds of fruit did the hotel buy?

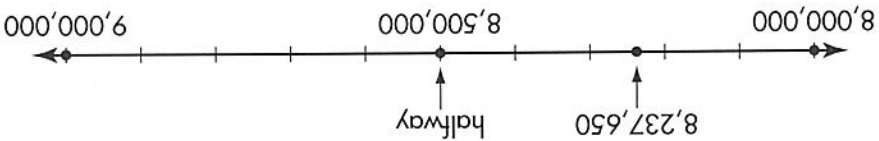
- A 132 lbs B 141 lbs C 139 lbs D 140.5 lbs

6. **Explain It** Write the definition and give an example of the Commutative Property of Addition using decimal numbers.

Rounding Whole Numbers and Decimals

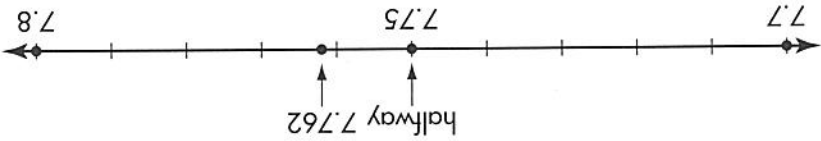
Name _____

You can use the number line below to help you round 8,237,650 to the nearest million. Is 8,237,650 closer to 8,000,000 or 9,000,000?



8,237,650 is less than halfway to 9,000,000. 8,237,650 is closer to 8,000,000.

The number line can also help you round 7.762 to the nearest tenth. Is 7.762 closer to 7.7 or 7.8?



7.762 is more than halfway to 7.8. 7.762 is closer to 7.8.

Round each number to the place of the underlined digit.

1. 4,225,806

2. 7.049

3. 165,023,912

4. 18.692

5. Round the number of connected computers in Year 2 to the nearest ten million.

Year 1	30,979,376
Year 2	42,199,279
Year 3	63,592,854

Number of Computers
Connected to the Internet

6. Marc earned \$9.37 per hour working at the library. Round his wage to the nearest ten cents.

Rounding Whole Numbers and Decimals

Name _____

Practice
2-2

Round each number to the place of the underlined digit.

1. 32.60

2. 489,334,209

3. 324,650

4. 32.073

5. Name two different numbers that round to 30 when rounded to the nearest ten.

In 2000, Italy produced 7,464,000 tons of wheat, and Pakistan produced 21,079,000 tons of wheat. Round each country's wheat production in tons to the nearest hundred thousand.

6. Italy

7. Pakistan

The price of wheat in 1997 was \$3.38 per bushel. In 1998, the price was \$2.65 per bushel. Round the price per bushel of wheat for each year to the nearest tenth of a dollar.

8. 1997

9. 1998

10. Which number rounds to 15,700,000 when rounded to the nearest hundred thousand?

A 15,000,000 B 15,579,999 C 15,649,999 D 15,659,999

11. **Writing to Explain** Write a definition of rounding in your own words.

Estimating Sums and Differences

Name _____

2-3
Reteaching

During one week, Mr. Graham drove a truck to five different towns to make deliveries. Estimate how far he drove in all.

Mr. Graham's Mileage Log

Cities	Mileage
Mansley to Mt. Hazel	243
Mt. Hazel to Perkins	303
Perkins to Alberton	279
Alberton to Fort Mansley	277
Fort Mansley to Mansley	352

To estimate the sum, you can round each number to the nearest hundred miles.

$$\begin{array}{r} 243 \Rightarrow 200 \\ 303 \Rightarrow 300 \\ 279 \Rightarrow 300 \\ 277 \Rightarrow 300 \\ + 352 \Rightarrow 400 \\ \hline 1,500 \text{ mi} \end{array}$$

Mr. Graham drove about 1,500 mi.

You can estimate differences in a similar way.

Estimate $7.25 - 4.98$.

You can round each number to the nearest whole number.

$$\begin{array}{r} 7.25 \Rightarrow 7 \\ - 4.98 \Rightarrow -5 \\ \hline 2 \end{array}$$

The difference is about 2.

Estimate each sum or difference.

1. $19.7 - 6.9$

2. $59 + 43 + 95$

3. $582 + 169 + 23$

4. $87.99 - 52.46$

5. **Estimation** Bridgid worked 16.75 h. Kevin worked 12.50 h. About how many more hours did Bridgid work than Kevin?

Estimating Sums and Differences

Estimate each sum or difference.

1. $5,602 - 2,344$

3. $2,314 + 671$

2. $7.4 + 3.1 + 9.8$

4. $54.23 - 2.39$

5. Wesley estimated $5.82 - 4.21$ to be about 2. Is this an overestimate or an underestimate? Explain.

6. Estimate the total precipitation in inches and the total number of days with precipitation for Asheville and Wichita.

City	Inches	Days
Asheville, North Carolina	47.71	124
Wichita, Kansas	28.61	85

7. Which numbers should you add to estimate the answer to this problem:
 $87,087 + 98,000$?

A $88,000 + 98,000$

C $87,000 + 98,000$

B $85,000 + 95,000$

D $80,000 + 90,000$

8. **Estimation** Estimate the total weight of two boxes that weigh 9.4 lb and 62.6 lb using rounding and compatible numbers. Which estimate is closer to the actual total weight? Why?

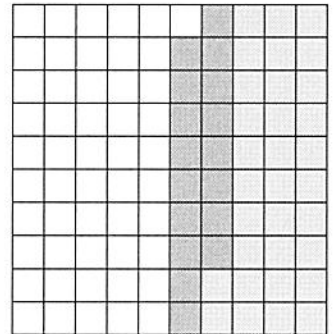
Modeling Addition and Subtraction of Decimals

Reaching
2-4

Name _____

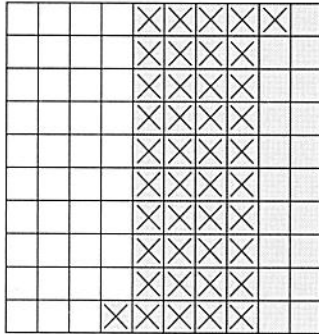
Adding decimals using a hundredths grid:

Add $0.32 + 0.17$.



Subtracting decimals using a hundredths grid:

Subtract $0.61 - 0.42$.



Step 1: Shade 32 squares to show 0.32.

Step 2: Use a different color. Shade 17 squares

to show 0.17.

Step 3: Count all the squares that are shaded.

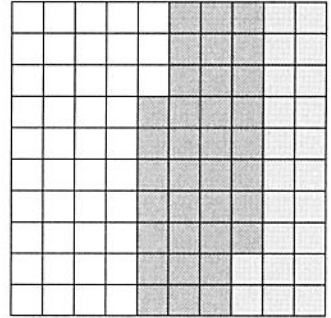
How many hundredths are shaded in all? Write

the decimal for the total shaded squares: 0.49.

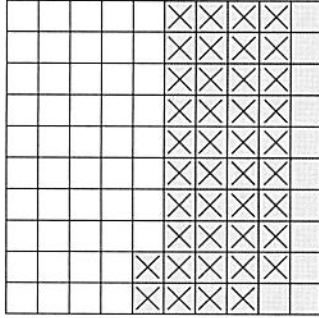
So, $0.32 + 0.17 = 0.49$.

Add or subtract. You may use hundredths grids to help.

1. $0.22 + 0.35 =$ _____



2. $0.52 - 0.41 =$ _____

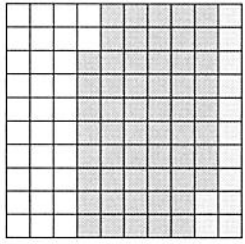


Name _____

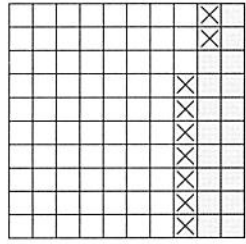
Modeling Addition and Subtraction of Decimals

Add or subtract. Use hundredths grids if necessary.

1. $0.12 + 0.56 =$ _____



2. $0.27 - 0.09 =$ _____



3. $0.86 + 0.54 =$ _____

5. $0.93 - 0.25 =$ _____

7. $1.13 - 1.02 =$ _____

4. $1.27 + 0.75 =$ _____

6. $1.07 - 0.61 =$ _____

8. $0.28 + 1.96 =$ _____

9. Is the difference of $1.45 - 0.12$ less than or greater than 1?

10. A bottle of nail polish holds 0.8 ounce. A bottle of perfume holds 0.45 ounce. How many more ounces does a bottle of nail polish hold?

11. Add: $1.18 + 1.86$

- A 2.04 B 2.94 C 3.04 D 3.14

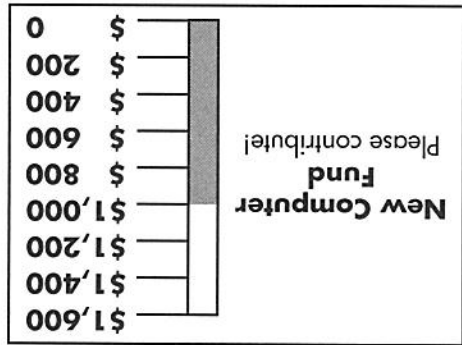
12. **Writing to Explain** Explain how to use hundredths grids to subtract $1.65 - 0.98$.

Problem Solving: Draw a Picture and Write an Equation

Name _____

A community center is raising funds to buy a computer. Here is a picture of the sign they put outside the center. How much more money must the center raise?

How to write an equation number sentence for a problem:



One Way

The goal is \$1,600.
 So far, \$1,000 has been raised.
 The amount yet to be raised is the unknown.
 Think: The amount raised so far and the amount yet to be raised will reach the goal.
 Write an equation.
 $1,000 + x = 1,600$
 Think: What number added to 1,000 will result in 1,600?
 $1,000 + 600 = 1,600$
 The amount yet to be raised is \$600.

Another Way

The goal is \$1,600.
 So far, \$1,000 has been raised.
 The amount yet to be raised is the unknown.
 Think: The difference between the goal and what has been raised so far is the amount yet to be raised.
 Write an equation.
 $1,600 - 1,000 = x$
 Think: What number will result if 1,000 is subtracted from 1,600?
 $1,600 - 1,000 = 600$
 The amount yet to be raised is \$600.

A mason needs 22 bricks to make a stoop. So far he has carried 15 to the site. How many more bricks must he carry?

Draw a picture. Write an equation. Write a number sentence. Solve.

Name _____

Problem Solving: Draw a Picture and Write an Equation

Write two different equations; then solve each problem.

1. Dayana picked apples for 2 hours. She picked 28 apples in the first hour, and at the end of two hours, she had 49. How many apples did she pick during the second hour?

2. Dixon bought a pack of pencils and then gave 12 away. He now has 24 left. How many pencils were in the pack of pencils that Dixon bought?

- Copy and complete the picture. Then write an equation and solve.
3. Rumina is baking 25 muffins for the bake sale. She has already baked 12. How many more does she need to bake?

25 muffins in all	12	n
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4. **Estimation** Janet saved 22 dollars one month and 39 dollars the next month. She wants to buy a bicycle that costs \$100. About how much more money does she need?

- A about \$40 B about \$50 C about \$60 D about \$70

5. **Writing to Explain** Stefany ran 2 miles each day for 14 days. How many miles did she run in 14 days? Explain two different ways to solve this problem, and then solve.

Adding Decimals

Name _____

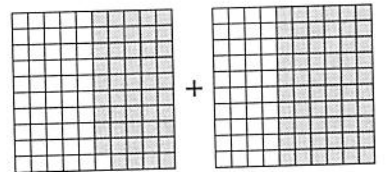
Retaching
2-6

In February, Chantell ran a 5K race in 0.6 hour. She ran another 5K race in May in 0.49 hour. What was her combined time for the two races?

Step 1: Write the numbers, lining up the decimal points. Include the zeros to show place value.

$$\begin{array}{r} 0.60 \\ + 0.49 \\ \hline \end{array}$$

You can use decimal squares to represent this addition problem.



Step 2: Add the hundredths.

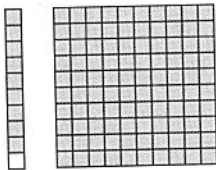
$$\begin{array}{r} 0.60 \\ + 0.49 \\ \hline 9 \end{array}$$



Step 3: Add the tenths.

Remember to write the decimal point in your answer.

$$\begin{array}{r} 0.60 \\ + 0.49 \\ \hline 1.09 \end{array}$$



Chantell's combined time for the two races was 1.09 hours.

Add.

1. $2.97 + 0.35 =$ _____
2. $13.88 + 7.694 =$ _____
3. $39.488 + 26.7 =$ _____
4. $88.8 + 4.277 + 78.95 =$ _____
5. Is 16.7 a reasonable sum for $7.5 + 9.2$? Explain.

6. How much combined snowfall was there in Milwaukee and Oklahoma City?

City	Snowfall (inches) in 2000
Milwaukee, WI	87.8
Baltimore, MD	27.2
Oklahoma City, OK	17.3

Adding Decimals

Name _____

Practice
2-6

Add.

$$\begin{array}{r} 58.0 \\ + 3.6 \\ \hline \end{array}$$

2.

$$\begin{array}{r} 40.5 \\ + 22.3 \\ \hline \end{array}$$

3.

$$\begin{array}{r} 34.587 \\ + 21.098 \\ \hline \end{array}$$

4.

$$\begin{array}{r} 43.1000 \\ + 8.4388 \\ \hline \end{array}$$

5. $16.036 + 7.009 =$ _____
6. $92.30 + 0.32 =$ _____
7. Reilly adds 45.3 and 3.21. Should his sum be greater than or less than 48? Tell how you know.

In science class, students weighed different amounts of tin. Carmen weighed 4.361 g, Kim weighed 2.704 g, Simon weighed 5.295 g, and Angelica weighed 8.537 g.

8. How many grams of tin did Carmen and Angelica have combined?

9. How many grams of tin did Kim and Simon have combined?

10. In December the snowfall was 0.03 in. and in January it was 2.1 in. Which was the total snowfall?

- A 3.2 in. B 2.40 in. C 2.13 in. D 0.03 in.

11. **Writing to Explain** Explain why it is important to line up decimal numbers by their place value when you add or subtract them.

Name _____

Subtracting Decimals

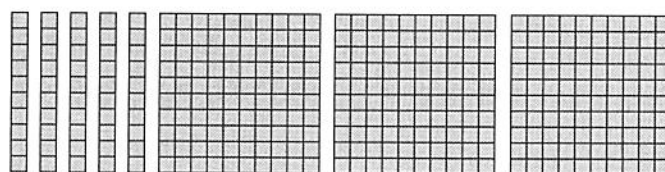
2-7

Retaching

Mr. Montoya bought 3.5 lb of ground beef. He used 2.38 lb to make hamburgers. How much ground beef does he have left?

Step 1: Write the numbers, lining up the decimal points. Include the zeros to show place value.

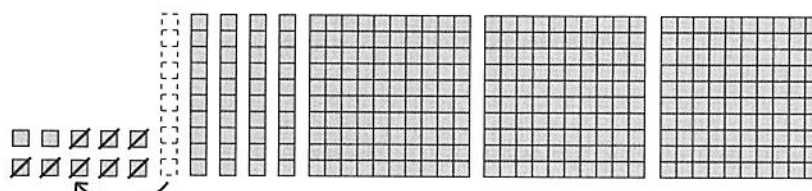
$$\begin{array}{r} 3.50 \\ - 2.38 \\ \hline \end{array}$$



You can use decimal squares to represent this subtraction problem.

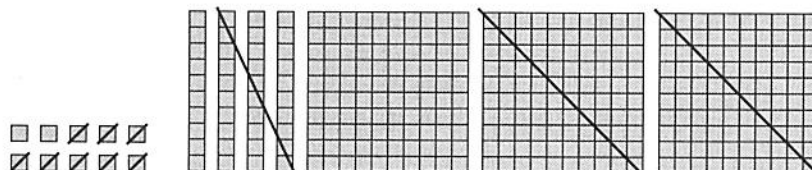
Step 2: Subtract the hundredths. Regroup if you need to.

$$\begin{array}{r} 2 \\ 3.50 \\ - 2.38 \\ \hline \end{array}$$



Step 3: Subtract the tenths and the ones. Remember to write the decimal point in your answer.

$$\begin{array}{r} 4 \text{ } 10 \\ 3.50 \\ - 2.38 \\ \hline 1.12 \end{array}$$



Mr. Montoya has 1.12 lb of ground beef left over.

Subtract.

1.
$$\begin{array}{r} 82.7 \\ - 5.59 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 43.3 \\ - 12.82 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 7.28 \\ - 4.928 \\ \hline \end{array}$$

Problem Solving: Multiple-Step Problems

Solve.

1. Theater tickets for children cost \$5. Adult tickets cost \$3 more. If 2 adults and 2 children buy theater tickets, what is the total cost?

2. Luis has a \$10 bill and three \$5 bills. He spends \$12.75 on the entrance fee to an amusement park and \$8.50 on snacks. How much money does he have left?

3. Alexandra earns \$125 from her paper route each month, but she spends about \$20 each month on personal expenses. To pay for a school trip that costs \$800, about how many months does she need to save money? Explain.

4. Patty is a member of the environmental club. Each weekday, she volunteers for 2 hours. On Saturday and Sunday, she volunteers 3 hours more each day. Which expression shows how to find the number of hours she volunteers in one week?

- A $2 + 5$
 B $2 + 2 + 2 + 2 + 2 + 5 + 5$
 C $2 + 2 + 2 + 3 + 3$
 D $2 + 3 + 3$

5. An adult's goal is to eat only 2,000 calories each day. One day for breakfast he consumed 310 calories, for lunch he consumed 200 more calories than breakfast, and for dinner he consumed 800. Did he make his goal? Explain.