Name_____   Period _____   Date _____

MathLinks

6-8
STUDENT PACKET

MATHLINKS: GRADE 6
STUDENT PACKET 8
DECIMAL OPERATIONS

WORD BANK

Word or Phrase	Definition or Description	Example or Diagram
addend		
decimal		
difference		
dividend		
divisor		
factor		
minuend		
product		
quotient		
sum		
subtrahend		

A CHECKING ACCOUNT

Summary	Goals
We will add and subtract decimal numbers. We will learn to maintain a check register and write checks.	• Write decimals using words and numbers. • Add and subtract multi-digit decimals using mental math and the standard algorithms. • Write checks. • Keep accurate records in a check register.

Warmup

Write each dollar amount in words.

1. $104	2. $400.35
3. $693.07	4. $2,048.00

5. Find the sum of the amounts in problems 1 through 3.	6. Subtract the sum you found in problem 5 from the amount in problem 4.

Write each expanded form number in its standard form.

7. 8 + 0.06 + 0.005	8. 200 + 3 + 0.09

ADDING DECIMALS

STANDARD ALGORITHM FOR DECIMAL ADDITION
• Set up each problem in columns, with place values lined up to add tens with tens, ones with ones, tenths with tenths, etc. When the digits are properly lined up, the decimal points will also line up.   • (Optional) Include trailing zeroes to the right of the decimal points as place holders if needed, as in this problem where 1 thousandth is added to 0 thousandths.   • Add with regrouping as usual. Because the place values in the sum line up with the place values in the two addends, the decimal point in the sum will line up with the decimal points in the addends.

$$\begin{array}{r} {\scriptstyle 1 \ \ 1} \\ 4\,8\,.\,5\,6\,0 \\ +\ 3\,6\,.\,5\,2\,1 \\ \hline 8\,5\,.\,0\,8\,1 \end{array}$$

1. Why do we line up the decimals points to add?

Compute.

2. 129.6 + 7.58	3. 7.456 + 0.67	4. 88.3 + 29.6
5. 4.56 + 1.097	6. 234 + 79.2	7. 0.02837 + 0.196

Challenge: Compute mentally.

0.8 + 1.4   0.52 + 0.519

SUBTRACTING DECIMALS

STANDARD ALGORITHM FOR DECIMAL SUBTRACTION

- Set up the problem in columns, with place values lined up to subtract tens from tens, ones from ones, tenths from tenths, etc. When the digits are properly lined up, the decimal points will also line up.
- Include trailing zeroes to the right of the decimal point as place holders in the minuend (top number) as needed to line up with any trailing nonzero digit in the subtrahend (bottom number).
- Subtract as though the decimal points are not there. When done calculating, place the decimal point in the difference directly below the decimal points in the problem.

$$
\begin{array}{r}
{}^{6}\ \ {}^{13}\ {}^{10} \\
7\ .\ 4\ 0 \\
-\ 3\ .\ 5\ 1 \\
\hline
3\ .\ 8\ 9
\end{array}
$$

---

1. Why do we line up the decimals points to subtract?

Compute.

2. 52.17 – 4.6	3. 0.672 – 0.19	4. 8.135 – 0.44
5. 0.672 – 0.19	6. 19.04 – 2.11	7. 827 – 58.2

Challenge: Try to compute the following mentally.
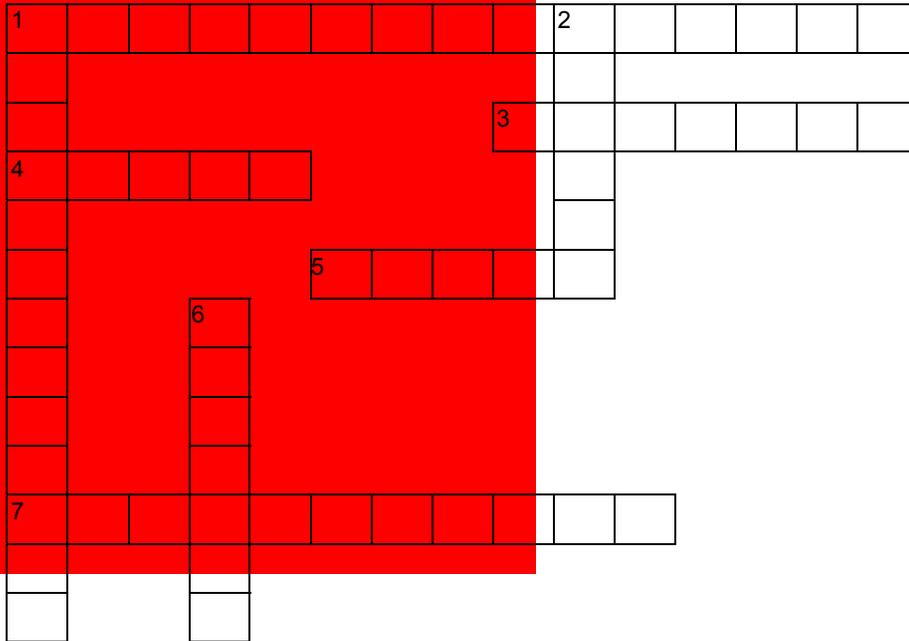
4.86 – 1.56   0.52 – 0.519

UNCLE CHARLIE NEEDS YOUR HELP

Uncle Charlie recently broke his hand, and he is unable to write checks and keep his check register up to date. He needs your help. Before you begin, you will need to know some vocabulary associated with checking accounts.

Fill in the crossword puzzle using the clues below.

ACROSS

1. A bank account in which you put money so you can write checks

3. To put money into an account

4. A document that orders a bank to pay the amount specified from an account

5. A deduction from a bank account

7. For example, depositing money or writing a check

DOWN

1. This allows you to keep track of your transactions

2. Any type of deposit

6. The current amount of money in an account

Word List		
deposit	check	balance
check register	credit	debit
transaction	checking account	

CHARLIE'S CHECK REGISTER

A check register is a document where you keep track of the transactions that take place in a checking account.

- When you write a check, you record it in the "debit" column and subtract that amount from the current balance.
- When you make a deposit, you record it in the "credit" column and add that amount to the current balance.

1. Here is the latest page in Charlie's check register. Complete the additions and subtractions as needed, and find the balance.

Check Register				Debit (-)		Credit (+)		Balance	
Check Number	**Date**	**Description of Transaction**							
		beginning balance						$ 654	33
135	March 6	TV Superstore		244	50				
136	March 7	Stop 'n Shop		18	86				
	March 12	Deposit – paycheck				566	20		
137	March 20	The Cleaner Cleaners		30	15				

2. Charlie tells you that he forgot to record the following checks. Record them in the register and compute his new balance.

- Check #138 on April 1 to the Big Buy Store for $10.45

- Check #139 on April 15 to the County Tax Collector for $135.08

3. Charlie also made a deposit that he did not yet record for $350 on April 17. Record this deposit in the register and compute the current balance.

WRITING CHECKS FOR CHARLIE

Charlie has arranged with the bank for you to write checks for him. Use today's date and sign your own name to the check.

1. Write check #140 to the Stop 'n Shop for $105.06.

Charlie Stern **10000 W. Wilshire Blvd** **Angel City, CA 90024**	Date_____ 140

Pay to the $ [   ]
Order of_____

_____   dollars

First Bank of AC
2000 Westwood Blvd.
Angel City, CA 90024

For_____   _____

2. Write check #141 to the Angel City Post Office for $42.00.

Charlie Stern **10000 W. Wilshire Blvd** **Angel City, CA 90024**	Date_____ 141

Pay to the $ [   ]
Order of_____

_____   dollars

First Bank of AC
2000 Westwood Blvd.
Angel City, CA 90024

For_____   _____

3. Record these checks in the check register on the previous page, and compute Charlie's new balance.

4. Why do you subtract check amounts from your balance?

PRACTICE WITH CHECKING ACCOUNTS

1. In October, Gail completed the following transactions. Record the checks and the deposit, and find her current balance.

    • Check #833 on October 5 to Corner Grocery Store for $18.45
    • Check #834 on October 10 to Party Store for $82.75
    • Check #835 on October 20 to Economy Oil for $40.10
    • Deposit on October 15 for $255

		Check Register					
Check Number	Date	Description of Transaction		Debit (-)		Credit (+)	Balance
		Beginning balance					$302	10

2. Gail has arranged with the bank for you to write checks for her. Use today's date and sign your own name to the check. Include it in the check register above, and calculate the new balance.

Write check #836 to Super Electronics for $105.00.

Gail B	Date_____	836
4321 Florentine Road		
Bakertown, CA 91010		
Pay to the		$
Order of_____		
_____		dollars
💰 **Anytown Credit Union**		
1100 Lincoln Street.		
Bakertown, CA 91010		
For_____	_____	

3. For what kind of transaction do you add the amount to your balance?

DECIMAL MULTIPLICATION

Summary

We will explore decimal multiplication using repeated addition, an area model, and decimal-fraction equivalence.

Goals

- Explore various models for decimal multiplication.
- Understand the standard algorithm for decimal multiplication.
- Multiply decimals.

Warmup

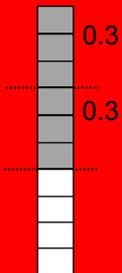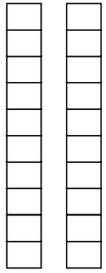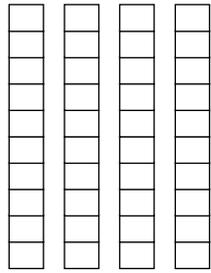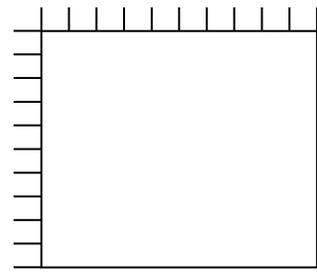|	
1. Multiply $5\left(\dfrac{3}{8}\right)$ using repeated addition. Then check using the fraction "multiply across" rule.	2. Multiply $\dfrac{3}{4} \times \dfrac{1}{3}$ using an area model. Then check using the fraction "multiply across" rule.

Compute each sum, mentally if possible.

3. 0.4 + 0.4	4. 0.6 + 0.6 + 0.6	5. 1.4 + 1.4 + 1.4

DECIMAL MULTIPLICATION: THREE MODELS

One way to interpret the product of a whole number and a decimal is to form equal groups. Use repeated addition with a diagram to find each product.

1. (2)(0.3)	2. (3)(0.4)	3. (2)(1.7)
0.3 + 0.3 0.6	0.4 0.4 + 0.4	
4. (5)(3.035)	**5. (4)(2.6)**	**6. (4)(0.64)**

A second way to interpret multiplication of decimals is by using an area model. Use an area diagram to illustrate each product. Draw in lines to show a hundred grid if needed.

7. 0.2 × 0.4	8. 0.2 × 0.3	9. 0.4 × 0.6

DECIMAL MULTIPLICATION: THREE MODELS (Continued)

A third way to interpret decimal multiplication is by using fraction equivalents.

8. Multiply (0.03) • (0.2)

The fraction equivalent for 0.03 is ⬚ . The fraction equivalent for 0.2 is ⬚ .

Therefore,   (0.03) • (0.2) = ⬚ • ⬚ = ⬚ = _____ ,
                                                                        decimal

so   (0.03) • (0.2) = _____ .

Look at the number of digits to the right of the decimal point in the previous problems.

9. For problem #3 number of digits to right of decimal point	2 0 digits	×	1.7 1 digit	=	_____ 1 digit
10. For problem #7 number of digits to right of decimal point	0.2 __ digit(s)	×	0.4 __ digit(s)	=	_____ __ digit(s)
11. For problem #10 number of digits to right of decimal point	0.2 __ digit(s)	×	0.03 __ digit(s)	=	_____ __ digit(s)

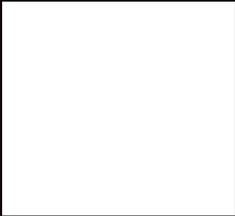### STANDARD ALGORITHM (RULE) FOR DECIMAL MULTIPLICATION

- Multiply, ignoring the placement of the decimal points.
- Then put the decimal point in the product. The product will have as many places to the right of the decimal point as the two original factors combined.

$$\begin{array}{r} 3.4 \\ \times\ 4.05 \\ \hline 170 \\ +\ 13.60\ \\ \hline 13.770 \end{array}$$

14. Write the standard algorithm (rule) for decimal multiplication in your own words.

DECIMAL MULTIPLICATION PRACTICE 1

Find each product using the method indicated.

1.	Use repeated addition. (6)(0.4)	Use the decimal multiplication rule. 6 × 0.4
2.	Use an area model. 0.6 × 0.4	Use the decimal multiplication rule. 0.6(0.4)
3.	Change decimals to fractions before multiplying. Then change the product back to a decimal. 0.06(0.4)	Use the decimal multiplication rule. (0.06)(0.4)

Use any method to compute.

4. 126(0.79)	5. (6.8)(0.73)	6. 22.6 × 8.7

DECIMAL MULTIPLICATION PRACTICE 2

Multiply mentally. Apply the decimal multiplication rule to place the decimal point.

1. 0.4 × 0.2	2. 0.04 × 0.2	3. 0.4 × 0.02	4. 1.4 × 0.2
5. (0.6)(0.3)	6. (0.06)(0.3)	7. (0.6)(0.03)	8. (2.5)(0.3)

Compute using the decimal multiplication rule.

9. 0.41 × 0.23	10. 4.1 × 0.23	11. 0.41 × 2.3

12. Circle the words that best describe the rule for multiplying decimals.

To multiply decimals vertically, line up the numbers on the **right / left**.

Aligning the decimal points is **required** / **not required.**

The number of digits to the **right / left** of the decimal point in the product is equal to the

sum / product of the number of digits to the right of the decimal point in each factor.

Compute.

13. (57)(0.7)	14. (8.3)(4.12)	15. (0.014)(0.96)

MULTIPLYING BY 10, 100, AND 1,000

Use your knowledge of whole number multiplication and the decimal multiplication rule to find the following products.

Original number	Original number times 10		Original number times 100	Original number times 1,000
1. 9				
2. 57				
3. 0.9				
4. 5.7				
5. 0.09				
6. 0.57				

7. Describe a shortcut for multiplying a decimal number by 10.

8. Describe a shortcut for multiplying a decimal number by 100.

Use the shortcuts stated above to compute the following mentally.

9. 0.6 × 10	10. 1.6 × 10	11. 0.16 × 10	12. 0.016 × 10
13. (51.2)(100)	14. (0.512)(100)	15. (5.12)(100)	16. (0.00512)(100)
17. 0.47 × 1,000	18. 4.7 × 1,000	19. 0.047 × 1,000	20. 0.0047 × 1,000
21. (0.4)(20)	22. (1.5)(20)	23. (0.4)(300)	24. (0.12)(3,000)

DECIMAL DIVISION

Summary	**Goals**
We will explore concepts related to decimal division and establish an algorithm for it. We will use decimals to solve a problem.	• Explore decimal division. • Understand the standard algorithm for decimal division. • Divide decimals. • Solve a problem involving decimals.

Warmup

Use a sense-making strategy, a diagram, or a table to find the following.

1. Four friends share $3.00 so that each one gets the same amount. How much will each friend get?	2. Four friends share $3.12 so that each one gets the same amount. How much will each friend get?

3. Why are the following numbers equivalent?   3   3.0   3.00

4. Write the division statement $\frac{3}{4}$ = 0.75 in three different ways.

   ____ divided by ____ is ____   _____ ÷ ____ = ____   ____ $\overline{)}$

5. In the division statement $4\overline{)3}$ $^{0.75}$, what is …

   the dividend? _____   the divisor? _____   the quotient? _____

QUOTIENTS THAT INVOLVE DECIMALS

1. Use the standard long division algorithm. $4\overline{)3\ 1\ 2}$	2. Look back at problem 2 in the warmup on page 14. Use your answer to determine the correct place for the decimal point in the quotient. $4\overline{)3\ .\ 1\ 2}$
3. Where did you place the decimal point in problem 2 so that the solution makes sense?	

4. Use the standard long division algorithm. $4\overline{)3\ 0\ 0}$	5. Look back at problem 1 in the warmup on page 14. Use your answer to determine the correct place for the decimal point in the quotient. $4\overline{)3\ .\ 0\ 0}$
6. Where did you place the decimal point in problem 5 so that the solution makes sense?	

7. Change $\frac{3}{8}$ to a decimal. $\frac{3}{8} \cdot \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{1000} = \underline{}$ decimal	8. Use long division to compute, and place the decimal appropriately. $8\overline{)3}$

9. When dividing by a whole number using the standard algorithm, where do you place the decimal point in the quotient?

PRACTICE 1

1. Write the division statement "7 divided by 20 equals 0.35" in three different ways.	2. Five friends go to lunch and share the cost equally. If the lunch bill is $31.30, how much will each friend pay?
3. Write $\dfrac{3}{20}$ as a decimal. $$\dfrac{3}{20}\left(\dfrac{5}{5}\right) = \dfrac{\square}{100} = \underline{\hspace{1cm}}$$ Verify the result with division. $$20\overline{)3}$$	4. Write $\dfrac{5}{8}$ as a decimal. $$\dfrac{5}{8}\left(\dfrac{\quad}{\quad}\right) = \dfrac{\square}{1000} = \underline{\hspace{1cm}}$$ Verify the result with division.
5. Write $\dfrac{5}{8}$ as a decimal.	6. Write $\dfrac{2}{3}$ as a decimal.

7. Circle the numbers that are equivalent to 14.3.

   014.3   104.3   140.3   14.30   14.300   14.3000

Choose one of the circled numbers above and explain how you know it is equivalent to 14.3.

DIVISION BY A DECIMAL

1. How many nickels are in $0.45? Draw a diagram to show the solution to this problem.	

2. How many groups of 0.05 are in 0.45? Multiply: $\left(\dfrac{0.45}{0.05}\right)\left(\dfrac{100}{100}\right)$ Why is $0.05\overline{)0.45}$ equivalent to $5\overline{)45}$?	3. To show that we are multiplying the divisor and dividend by 100, we draw arrows to indicate relocation of the decimal point. This makes the divisor a whole number. Relocate decimal points in the divisor and dividend. Locate the decimal point in the quotient. Complete the division problem. $0.05\overline{)0.45}$

4. How many dimes are in $1.80? Draw a diagram to show the solution to this problem.	

5. How many groups of 0.10 are in 1.80? Multiply: $\left(\dfrac{1.80}{0.10}\right)\left(\dfrac{10}{10}\right)$ Why is $0.10\overline{)1.80}$ equivalent to $1\overline{)18}$?	6. To show that we are multiplying the divisor and dividend by 10, we draw arrows to indicate relocation of the decimal point. This makes the divisor a whole number. Relocate decimal points in the divisor and dividend. Locate the decimal point in the quotient. Complete the division. $0.10\overline{)1.80}$

DIVISION BY A DECIMAL (Continued)

7. How many quarters are in $4? Draw a diagram to show the solution to this problem.	

8. How many groups of 0.25 are in 4? Multiply: $\left(\dfrac{4}{0.25}\right)\left(\dfrac{100}{100}\right)$ Why is $0.25\overline{)4}$ equivalent to $25\overline{)400}$?	9. To show that we are multiplying the divisor and dividend by 100, we draw arrows to indicate relocation of the decimal point. This makes the divisor a whole number. Relocate decimal points in the divisor and dividend. Locate the decimal point in the quotient. Complete the division. $0.25\overline{)4}$ Hint: Include placeholder zeroes.

STANDARD ALGORITHM FOR DECIMAL DIVISION

- Multiply the divisor and dividend by the same power of 10 (10, 100, 1000, etc.) so that the divisor is a whole number.
- Divide as usual, lining up the digits of the quotient above the dividend so that the tens line up with tens, ones with ones, tenths with tenths, and so on. Place the decimal in the quotient in the same location as the dividend.

$$0.02\overline{)0.358}$$

$$
\begin{array}{r}
17.9 \\
2\overline{)35.8} \\
-2 \\
\hline
15 \\
-14 \\
\hline
1\ 8 \\
-\ 1\ 8 \\
\hline
0
\end{array}
$$

10. Explain the standard algorithm for decimal division in your own words.

PRACTICE 2

1. Write the division statement $\dfrac{1.8}{0.06} = 30$ in three different ways.

2. Circle the numbers that are equivalent to 1.05

        01.5   1.005   001.0500   1.050   01.05   1.5

Choose one of the numbers not circled above and explain how you know it is not equivalent to 1.05.

3. Explain why $0.08\overline{)3.2}$ is not equivalent to $8\overline{)3200}$.

4. Compute. $\dfrac{301.52}{0.08}$	5. Compute. $6.48 \div 1.8$	6. Use division to find how many nickels are in $8.75.

7. Dee Harmon thinks that division makes things smaller. Is she always correct, sometimes correct, or never correct? Explain.

POSTER PROBLEMS

Part 1: Your teacher will divide you into groups.

- Identify members of your group as A, B, C, or D.   I am group member _____.

- Each group will start at a numbered poster. Our group start poster is _____.

- Each group will have a different color marker. Our group marker is _____.

Part 2: Answer the problems on posters by following the directions of your teacher.

Part 3: Return to your seats.

Our group started at poster _____. Refer to this poster. Do work on this paper.

1. Check the work done on this problem. If there are any errors, show the corrections.

2. Give feedback on the overall quality of the work by identifying one way in which the work is very good and suggesting one way that the work could be improved.

If your group started with problems 1 or 2, use problem 4 here. If your group started with problems 3 or 4, use problem 2 here.

3. The question asks, "How much will be left over?" Use the solutions from Part B and Part C to answer this question in two different ways.

IT'S COOKIE TIME

Here is a delicious recipe for healthy macaroons. It makes 8 dozen (8 × 12) cookies.

| YIELD: Makes 8 dozen

INGREDIENTS:

8 egg whites
¼ teaspoon salt
2 tablespoons vanilla extract
3 cups sugar
4 cups coconut flakes
7 cups bran flakes | DIRECTIONS:

Preheat oven to 350ºF.

In a bowl, beat the egg whites, salt, and vanilla until foamy. Gradually add the sugar and beat until stiff and glossy. Gently fold in the coconut and bran flakes.

Prepare a sheet pan lined with parchment and sprayed with vegetable spray. Drop 1 ounce portions of macaroon mix about 2 inches apart on the baking pan and bake in a preheated oven 12-15 minutes until golden. Allow to cool on sheet pan. |

1. Suppose you wanted to make different numbers of cookies. Calculate the quantities of ingredient needed.

	8 dozen	**4 dozen**	**16 dozen**	**3 dozen**	**1 dozen**
number of cookies	96				
egg whites					
salt					
vanilla extract					
sugar					
coconut					
bran flakes					

IT'S COOKIE TIME (Continued)

Here are the costs of ingredients at the local Stop 'n Shop. There is no tax on groceries. Only these quantities are available.

Coconut Flakes $3 for 1 cup $4 for 2 cups	Vanilla Extract $3 for 2 oz. $2 for 1 oz. (2 tablespoons = 1 fl. oz.)	Sugar $1.50 per pound (1 pound = 3 ½ cups)
Salt $1.99 for 28 oz.	Eggs $3.75 for one dozen $2.50 for half-dozen	Bran Flakes $0.75 per cup

2. You already have salt, but need to purchase the other ingredients. Calculate the cost of purchasing all the other ingredients. Try to minimize leftover ingredients. Round all costs to the nearest penny. Find the total cost for each quantity of cookies and the cost per cookie.

	8 dozen	4 dozen	16 dozen	3 dozen	1 dozen
egg whites					
vanilla extract					
sugar					
coconut					
bran flakes					
TOTAL COST					
COST per COOKIE					

3. Suppose you had a cookie sale and wanted to raise $50 for a school party. How many cookies would you make, and for how much would you sell them?

SKILL BUILDERS, VOCABULARY, AND REVIEW

SKILL BUILDER 1

1. Which of the following expressions are equivalent to $3 \times 2\frac{1}{5}$? Choose all that apply.

   A. $\quad 3\left(2 + \frac{1}{5}\right)$ B. $\quad 2\frac{1}{5} + 2\frac{1}{5} + 2\frac{1}{5}$ C. $\quad 2\frac{1}{5} \times 2\frac{1}{5} \times 2\frac{1}{5}$ D. $\quad 6\frac{1}{5}$

Use grouping symbols to make each of the following equations true. If the statement is already true, write none needed.

2. $\quad 8 + 2 \div 6 - 1 = 2$	3. $\quad 39 + 5 - 3^2 = 13$
4. $\quad 4 + 6 \div 2 - 2 = 5$	5. $\quad 3 - 1^2 + 5 - 2^3 = 1$

Find the following quotients. Round to the nearest tenth.

6. $\quad 342 \div 17$	7. $\quad \dfrac{4242}{12}$

8. Use a metric ruler to measure the dimensions of this page to the nearest centimeter. Then find the perimeter of this page.

SKILL BUILDER 2

Ervin conducted an experiment to see if left-handed and right-handed students wrote at the same speed. He recorded the number of seconds it took 24 different students to write the alphabet. His data is in the tables below.
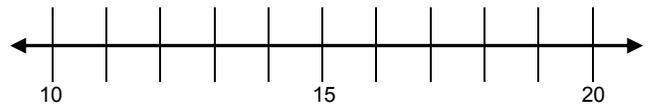
Left-Handed Students			
12	15	13	12
15	14	17	20
15	16	17	17

Right-Handed Students			
11	13	15	14
13	10	17	18
14	17	16	16

1. Construct a dot plot for each data set.
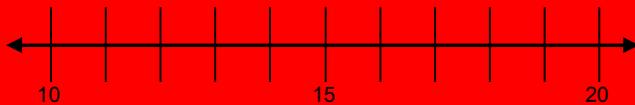
Left-Handed Students

Right-Handed Students

2. Does the data suggest that the left-handed and right-handed students in this sample set write at the same speed? Explain your reasoning using statistical evidence.

Use mental math strategies to calculate the following sums and differences without rewriting the mixed numbers as improper fractions.

3. $3\frac{1}{3} + 2\frac{1}{3}$	4. $5\frac{3}{4} + 2\frac{1}{4}$	5. $5 + 3\frac{3}{4}$
6. $2\frac{2}{3} - \frac{1}{3}$	7. $7\frac{7}{8} - 5\frac{3}{8} - 1$	8. $5 + 2\frac{3}{4}$

SKILL BUILDER 3

1. Explain why you need to line up decimal points when adding and subtracting decimals.

2. Identify which of the following addition problems is written correctly. Then find the sum.

3 0 . 2 4	3 0 . 2 4	3 0 . 2 4
+ 1 2 5 . 7 3 1	+ 1 2 5 . 7 3 1	+ 1 2 5 . 7 3 1

Rewrite each addition problem vertically. Then find the sums.

3. 3.256 + 10.3	4. 0.45 + 7	5. 5.01 + 301.7

Rewrite each subtraction problem vertically. Then find the differences.

6. 12.045 – 8.02	7. 923.05 – 23.7	8. 923.05 – 23.7

SKILL BUILDER 4

Compute the following.

1. $5.43 + $33.09	2. $103.30 − $67.89	3. $56.78 − $4.50 + $120
4. 1345.012 + 198.57	5. 1198.57 − 134.012	6. 546.85 + 678.90 – 302.1
7. 5446 + 0.8945	8. 327 – 3.456	9. 5600 – 230.1 – 321.091

10.   Lorenzo has $456.78 in his checking account. He buys a surfboard for $399.99 and some board shorts for $35.79. What is his balance after these purchases?
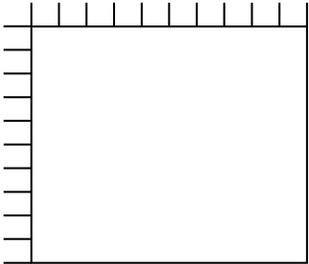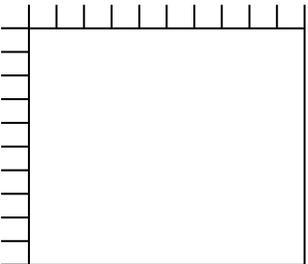
SKILL BUILDER 5

Find the products.

1. $\dfrac{2}{3} \times \dfrac{1}{4}$	2. $\dfrac{4}{7} \bullet \dfrac{1}{2}$	3. $\left(4\dfrac{4}{5}\right)\left(4\dfrac{1}{2}\right)$

Use repeated addition to find each product.

4. $3(0.9)$	5. $5 \bullet 0.15$	6. $4 \times \$0.25$

Use the area model to illustrate each product.

7. 0.6×0.2	8. 0.3×0.8

9. Change the numbers in problem 8 to fractions before multiplying. Then, change the product back to a decimal. Does your answer agree with your answer to problem 8?

SKILL BUILDER 6

Use any method to compute.

1. 236×0.49	2. 8.6×5.73	3. 0.654×8.71

Use mental math to compute the following products.

Original number	Original number times 10	Original number times 100	Original number times 1,000
4. 25			
5. 32.1			
6. 0.87			
7. 30.405			
8. 0.09014			

9. Six friends went out to dinner. They want to split the $123.36 bill equally. How much should each person pay?

10. Write the division statement "4 divided by 5 equals 0.8" using three different division symbols.

11. Use the division algorithm to write $\frac{2}{5}$ as a decimal. Then compare how this decimal relates to the decimal in problem 10.

SKILL BUILDER 7

1. Write the division statement $\dfrac{2.8}{0.7} = 4$ in three other ways.

2. Circle the numbers or expressions that are equivalent to 8.060

   08.060   8.06   80.60   00008.0600000   8 + 0.06   4.3 + 4.3

   Explain how you know the numbers not circled are not equivalent to 8.060.

3. Show that $0.12\overline{)3.624}$ is not equivalent to $0.12\overline{)3624}$.

4. Compute. $\dfrac{23.12}{1.7}$	5. Compute. $341.76 \div 23.1$	6. Use division to find how many quarters there are in $12.50.

Compute.

7. $\dfrac{2}{3} \div \dfrac{5}{7}$	8. $4\dfrac{2}{7} \div 1\dfrac{3}{7}$	9. $\left(4\dfrac{3}{5}\right)\left(\dfrac{1}{2} \div \dfrac{3}{8}\right)$

FOCUS ON VOCABULARY

Name each of the parts of the computation problems below.

Addition:

```
    1  1
  48.56  ⎤
 +36.521 ⎦     _____

  85.081        _____
```

Subtraction:

```
    4 11
   7.516         _____
 - 3.42          _____
 _____
   4.096         _____
```

Multiplication:

```
     3. 4  ⎤
    4.0  5 ⎦     _____

    1 7 0  ⎤
   1 3 6 0 ⎦     _____

  1 3.7  7 0     _____
```

Word List
addend
difference
dividend
divisor
factors
minuend
partial product
product
quotient
remainder
sum
subtrahend

Division:

```
 0.02)0.358   ------>   2)35.8
```

```
    1 7 . 9 ←------  _____
  2)3 5 . 8 ←------  _____
  −2        ←------  _____
   1 5
  −1 4
    1  8
  −  1  8
       0 ←--------- _____
```

SELECTED RESPONSE

Show your work on a separate sheet of paper.

1. Which of the following is the sum of 5.123 and 62.8?

   A. 11.403   B.   5.751   C.   57.51   D.   67.923

2. Find the difference. 6.543 – 0.31

   A.   3.443   B.   6.233   C.   6.532   D.   None of these.

3. Find the product. 3.2 × 0.3

   A.   0.096   B.   0.96   C.   9.6   D.   96

4. Stefano was trying to find out how many nickels are in $200. Which of the following division problems will give him the right answer? Choose all that apply.

   A. $\dfrac{200}{5}$ B. $5\overline{)200}$ C. $5\overline{)20000}$ D. $\dfrac{2000}{5}$

5. Use the division algorithm to find the equivalent decimal value of $\dfrac{1}{8}$.

   A.   12.5   B.   1.25   C.   0.125   D.   0.0125

6. Find the quotient. 58.5 ÷ 2.34

   A.   2.50   B.   0.25   C.   25   D.   250

KNOWLEDGE CHECK

Show your work on a separate sheet of paper and write your answers on this page.

8.1 A Checking Account

1. Compute. 312.4 + 7 + 0.56 + 1.005

2. Compute. 500.10 – 7.893

3. At the beginning of the month, Harvey had $345.67 in his checking account. His credits for the month totaled $567.89. His debits totaled $705.

    What is his balance at the end of the month?

8.2 Decimal Multiplication

Use any method to compute.

4. 120×0.75 5. 6.43×2.05 6. 71×0.005

8.3 Decimal Division

Use any method to compute.

7.   71.3 divided by 3.1   8. $76.5 \div 3$ 9. $3.123 \overline{)624.6}$

HOME SCHOOL CONNECTION

Here are some problems to review with your young mathematician.

1. Help Amanda complete her check register and calculate the new balance.

Check Register									
Check Number	Date	Description of Transaction		Debit (-)		Credit (+)		Balance	
		Beginning balance						$302	10
101	May 3	Grocery Store		58	33				
	May 5	Birthday gift from Grandma				50	00		
	May 6	Deposit - Paycheck				234	90		
102	May 10	Movie Tickets and Popcorn		17	09				

2. How much does she need to save before she can buy a plane ticket to Hawaii that costs $640.78?

3. Compute. 0.67×1.1

4. Compute. $105.041 \div 45.67$

COMMON CORE STATE STANDARDS – MATHEMATICS

STANDARDS FOR MATHEMATICAL CONTENT

5.NBT.1*	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
5.NBT.2*	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. ~~Use whole number exponents to denote powers of 10.~~
5.NBT.4*	Use place value understanding to round decimals to any place.
5.NBT.5*	Fluently multiply multi-digit whole numbers using the standard algorithm.
5.NBT.6*	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
5.NBT.7*	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

*Review of content essential for success in 6th grade.

STANDARDS FOR MATHEMATICAL PRACTICE

MP1	Make sense of problems and persevere in solving them.
MP5	Use appropriate tools strategically.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

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