May, 2022

Dear Parents/Guardians,

The attached math enrichment packet is meant to provide your child with a review of material he/she learned in 5th grade. Your child is expected to turn the completed packet into Mrs. Cardwell (6th grade) on the first day of the 2022-2023 school year. Please encourage your child to schedule time throughout the summer to work on the packet and not wait until the end of summer to begin.

Reminders for your child:

- Read and follow all directions
- Show work (in an organized manner & # each problem) for ANY/ALL problems to receive full credit. You will turn this paper in with the completed packet.

Have a great summer!

Mrs. Melanie Cardwell

Algebra • Properties

Properties of operations are characteristics of the operations that are always true.

Property	Examples
Commutative Property of Addition or Multiplication	Addition: $3 + 4 = 4 + 3$ Multiplication: $8 \times 2 = 2 \times 8$
Associative Property of Addition or Multiplication	Addition: $(1 + 2) + 3 = 1 + (2 + 3)$ Multiplication: $6 \times (7 \times 2) = (6 \times 7) \times 2$
Distributive Property	$8 \times (2 + 3) = (8 \times 2) + (8 \times 3)$
Identity Property of Addition	$9 + 0 = 9$ $\quad 0 + 3 = 3$
Identity Property of Multiplication	$54 \times 1 = 54$ $\quad 1 \times 16 = 16$

Use properties to find 37 + 24 + 43.

$37 + 24 + 43 = 24 + \underline{37} + 43$ Use the Commutative Property of Addition to reorder the addends.

$= 24 + (37 + 43)$ Use the Associative Property of Addition to group the addends.

$= 24 + \underline{80}$ Use mental math to add.

$= \underline{104}$

Grouping 37 and 43 makes the problem easier to solve because their sum, 80, is a multiple of 10.

Use properties to find the sum or product.

1. $31 + 27 + 29$ _____

2. $41 \times 0 \times 3$ _____

3. $4 + (6 + 21)$ _____

Complete the equation, and tell which property you used.

4. $(2 \times \_\_\_\_) + (2 \times 2) = 2 \times (5 + 2)$ _____

5. $\_\_\_\_ \times 1 = 15$ _____

Algebra • Multiplication Patterns

You can use basic facts, patterns, and powers of 10 to help you multiply whole numbers by multiples of 10, 100, and 1,000.

Use mental math and a pattern to find $90 \times 6{,}000$.

- 9×6 is a basic fact. $9 \times 6 = 54$
- Use basic facts, patterns, and powers of 10 to find $90 \times 6{,}000$.

$9 \times 60 = (9 \times 6) \times 10^1$
$= 54 \times 10^1$
$= 54 \times 10$
$= 540$

$9 \times 600 = (9 \times 6) \times 10^2$
$= 54 \times 10^2$
$= 54 \times 100$
$= 5{,}400$

$9 \times 6{,}000 = (9 \times 6) \times 10^3$
$= 54 \times 10^3$
$= 54 \times 1{,}000$
$= 54{,}000$

$90 \times 6{,}000 = (9 \times 6) \times (10 \times 1{,}000)$
$= 54 \times 10^4$
$= 54 \times 10{,}000$
$= 540{,}000$

So, $90 \times 6{,}000 = 540{,}000$.

Use mental math to complete the pattern.

1. $3 \times 1 = 3$

$3 \times 10^1 =$ _____

$3 \times 10^2 =$ _____

$3 \times 10^3 =$ _____

2. $8 \times 2 = 16$

$(8 \times 2) \times 10^1 =$ _____

$(8 \times 2) \times 10^2 =$ _____

$(8 \times 2) \times 10^3 =$ _____

3. $4 \times 5 = 20$

$(4 \times 5) \times$ _____ $= 200$

$(4 \times 5) \times$ _____ $= 2{,}000$

$(4 \times 5) \times$ _____ $= 20{,}000$

4. $7 \times 6 =$ _____

$(7 \times 6) \times$ _____ $= 420$

$(7 \times 6) \times$ _____ $= 4{,}200$

$(7 \times 6) \times$ _____ $= 42{,}000$

Algebra • Evaluate Numerical Expressions

A **numerical expression** is a mathematical phrase that includes only numbers and operation symbols.

You **evaluate** the expression when you perform all the computations to find its value.

Order of Operations
1. Parentheses
2. Multiply and Divide
3. Add and Subtract

To evaluate an expression, use the **order of operations.**

Evaluate the expression $(10 + 6 \times 6) - 4 \times 10$.

Step 1 Start with computations inside the parentheses.

$10 + 6 \times 6$

Step 2 Perform the order of operations inside the *parentheses*.

Multiply and divide from left to right.

$10 + 6 \times 6 = 10 + \underline{36}$

Add and subtract from left to right.

$10 + 36 = \underline{46}$

Step 3 Rewrite the expression with the parentheses evaluated.

$46 - 4 \times 10$

Step 4 *Multiply and divide* from left to right.

$46 - 4 \times 10 = 46 - \underline{40}$

Step 5 *Add and subtract* from left to right.

$46 - 40 = \underline{6}$

So, $(10 + 6 \times 6) - 4 \times 10 = 6$.

Evaluate the numerical expression.

1. $8 - (7 \times 1)$ _____

2. $5 - 2 + 12 \div 4$ _____

3. $8 \times (16 \div 2)$ _____

4. $4 \times (28 - 20 \div 2)$ _____

5. $(30 - 9 \div 3) \div 9$ _____

6. $(6 \times 6 - 9) - 9 \div 3$ _____

7. $11 \div (8 + 9 \div 3)$ _____

8. $13 \times 4 - 65 \div 13$ _____

9. $9 + 4 \times 6 - 65 \div 13$ _____

Divide by 2-Digit Divisors

When you divide by a 2-digit divisor, you can use estimation to help you place the first digit in the whole-number quotient. Then you can divide.

Divide. $53\overline{)2{,}369}$

Step 1 Use compatible numbers to estimate the whole-number quotient. Then use the estimate to place the first digit in the whole-number quotient.

$$\begin{array}{r} 40 \\ 50\overline{)2{,}000} \end{array}$$

The first digit will be in the tens place.

Step 2 Divide the tens.

$$\begin{array}{r} 4 \\ 53\overline{)2{,}369} \\ -\ 212 \\ \hline 24 \end{array}$$

Think:

Divide: 236 tens ÷ 53

Multiply: 53 × 4 tens = 212 tens

Subtract: 236 tens − 212 tens

Compare: 24 < 53, so the first digit of the whole-number quotient is reasonable.

Step 3 Bring down the 9 ones. Then divide the ones.

$$\begin{array}{r} 44\ r37 \\ 53\overline{)2{,}369} \\ -\ 212\downarrow \\ \hline 249 \\ -\ 212 \\ \hline 37 \end{array}$$

Think:

Divide: 249 ones ÷ 53

Multiply: 53 × 4 ones = 212 ones

Subtract: 249 ones − 212 ones

Compare: 37 < 53, so the second digit of the whole-number quotient is reasonable.

Write the remainder to the right of the whole number part of the whole-number quotient.

So, 2,369 ÷ 53 is 44 r37.

Divide. Check your answer.

1. $52\overline{)612}$

2. $63\overline{)917}$

3. $89\overline{)1{,}597}$

4. $43\overline{)641}$

5. $27\overline{)4{,}684}$

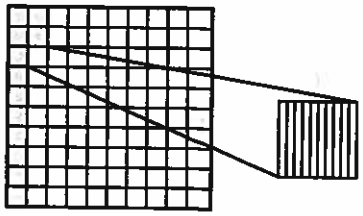
6. $64\overline{)8{,}455}$

Thousandths

Thousandths are smaller parts than hundredths. If one hundredth is divided into 10 equal parts, each part is one **thousandth**.

Write the decimal shown by the shaded parts of the model.

One column of the decimal model is shaded.
It represents one tenth, or 0.1.



Two small squares of the decimal model are shaded.
They represent two hundredths, or 0.02.

A one-hundredth square is divided into 10 equal parts, or thousandths. Three columns of the enlarged one-hundredth square are shaded. They represent 0.003.

So, 0.123 of the decimal model is shaded.

The relationship of a digit in different place-value positions is the same for decimals as for whole numbers.

Write the decimals in a place-value chart.

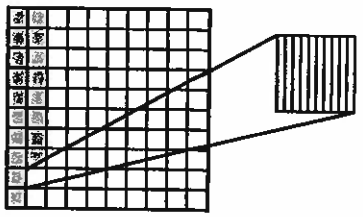
Ones	Tenths	Hundredths	Thousandths
0	8		
0	0	8	
0	0	0	8

0.08 is $\frac{1}{10}$ of 0.8.

0.08 is 10 times as much as 0.008.

1. Write the decimal shown by the shaded parts of the model.

_____



Use place-value patterns to complete the table.

Decimal	10 times as much as	$\frac{1}{10}$ of
2. 0.1		
3. 0.03		
4. 0.5		

Decimal	10 times as much as	$\frac{1}{10}$ of
5. 0.02		
6. 0.4		
7. 0.06		

Place Value of Decimals

You can use a place-value chart to find the value of each digit in a decimal.
Write whole numbers to the left of the decimal point.
Write decimals to the right of the decimal point.

Ones	Tenths	Hundredths	Thousandths
3	8	4	7
3×1	$8 \times \frac{1}{10}$	$4 \times \frac{1}{100}$	$7 \times \frac{1}{1{,}000}$
3.0	0.8	0.04	0.007

Value

The place value of the digit 8 in 3.847 is tenths.

The value of 8 in 3.847 is $8 \times \frac{1}{10}$, or 0.8.

You can write a decimal in different forms.

Standard Form: 3.847

Expanded Form: $\underline{3} \times 1 + \underline{8} \times (\frac{1}{10}) + \underline{4} \times (\frac{1}{100}) + \underline{7} \times (\frac{1}{1{,}000})$

When you write the decimal in word form, write "and" for the decimal point.

Word Form: three and eight hundred forty-seven thousandths

1. Complete the place-value chart to find the value of each digit.

Ones	Tenths	Hundredths	Thousandths
2	6	9	5
2×1		$9 \times \frac{1}{100}$	
	0.6		

Value

Write the value of the underlined digit.

2. 0.7<u>9</u>2 _____

3. 4.<u>6</u>91 _____

4. 3.80<u>5</u> _____

Round Decimals

Rounding decimals is similar to rounding whole numbers.

Round 4.682 to the nearest tenth.

Step 1 Write 4.682 in a place-value chart.

Ones	Tenths	Hundredths	Thousandths
4	(6)	8	2

Step 2 Find the digit in the place to which you want to round. Circle that digit.

The digit 6 is in the tenths place, so circle it.

Step 3 Underline the digit to the right of the circled digit.

The digit 8 is to the right of the circled digit, so underline it.

Step 4 If the underlined digit is less than 5, the circled digit stays the same. If the underlined digit is 5 or greater, increase the circled digit by 1.

8 > 5, so increase 6 to 7.

Step 5 After you round the circled digit, drop the digits to the right of the circled digit.

So, 4.682 rounded to the nearest tenth is 4.7.

Write the place value of the underlined digit. Round each number to the place of the underlined digit.

1. 0.3<u>9</u>2

_____

_____

2. 5.<u>7</u>14

_____

_____

3. 1<u>6</u>.908

_____

_____

Name the place value to which each number was rounded.

4. 0.825 to 0.83

_____

5. 3.815 to 4

_____

6. 1.546 to 1.5

_____

Algebra • Multiplication Patterns with Decimals

You can use patterns and place value to help you place the decimal point.

To multiply a number by a power of 10, you can use the exponent to determine how the position of the decimal point changes in the product.

	Exponent	Move decimal point:
$10^0 \times 5.18 =$ 5.18	0	0 places to the right
$10^1 \times 5.18 =$ 51.8	1	1 place to the right
$10^2 \times 5.18 =$ 518	2	2 places to the right
$10^3 \times 5.18 =$ 5,180	3	3 places to the right

You can use place-value patterns to find the product of a number and the decimals 0.1 and 0.01.

	Multiply by:	Move decimal point:
$1 \times 2{,}457 =$ 2,457	1	0 places to the left
$0.1 \times 2{,}457 =$ 245.7	0.1	1 place to the left
$0.01 \times 2{,}457 =$ 24.57	0.01	2 places to the left

Complete the pattern.

1. $10^0 \times 25.89 =$ _____

$10^1 \times 25.89 =$ _____

$10^2 \times 25.89 =$ _____

$10^3 \times 25.89 =$ _____

2. $1 \times 182 =$ _____

$0.1 \times 182 =$ _____

$0.01 \times 182 =$ _____

Multiplication with Decimals and Whole Numbers

To find the product of a one-digit whole number and a decimal, multiply as you would multiply whole numbers. To find the number of decimal places in the product, add the number of decimal places in the factors.

To multiply 6 × 4.25, multiply as you would multiply 6 × 425.

Step 1
Multiply the ones.

$$\begin{array}{r} {\scriptstyle 3} \\ 425 \\ \times\ \ 6 \\ \hline 0 \end{array}$$

Step 2
Multiply the tens.

$$\begin{array}{r} {\scriptstyle 1\,3} \\ 425 \\ \times\ \ 6 \\ \hline 50 \end{array}$$

Step 3
Multiply the hundreds. Then place the decimal point in the product.

$$\begin{array}{rl} {\scriptstyle 1\ 3} & \\ 4.25 \leftarrow & 2 \text{ decimal places} \\ \times\ \ 6 \leftarrow & +\ 0 \text{ decimal places} \\ \hline 25.50 \leftarrow & 2 \text{ decimal places} \end{array}$$

So, $6 \times 4.25 = 25.50$.

Place the decimal point in the product.

1. $\begin{array}{r} 8.23 \\ \times\ \ 6 \\ \hline 49.38 \end{array}$ **Think:** The place value of the decimal factor is hundredths.

2. $\begin{array}{r} 6.3 \\ \times\ 4 \\ \hline 252 \end{array}$

3. $\begin{array}{r} 16.82 \\ \times\ \ 5 \\ \hline 8410 \end{array}$

Find the product.

4. $\begin{array}{r} 5.19 \\ \times\ \ 3 \\ \hline \end{array}$

5. $\begin{array}{r} 7.2 \\ \times\ 8 \\ \hline \end{array}$

6. $\begin{array}{r} 37.46 \\ \times\ \ 7 \\ \hline \end{array}$

Multiply Decimals

Multiply. 9.3×5.27

Step 1 Multiply as with whole numbers.

$$\begin{array}{r} {\scriptstyle 2\ 6} \\ {\scriptstyle 2} \\ 527 \\ \times\ 93 \\ \hline 1{,}581 \\ +\ 47{,}430 \\ \hline 49{,}011 \end{array}$$

Step 2 Add the number of decimal places in the factors to place the decimal point in the product.

5.27 ← 2 decimal places
× 9.3 ← + 1 decimal place
1,581
+ 47,430
49.011 ← 3 decimal places

So, $9.3 \times 5.27 =$ 49.011.

Place the decimal point in the product.

1. 1.6 × 0.7 = 112

2. 14.2 × 7.6 = 10792

3. 3.59 × 4.8 = 17232

Find the product.

4. 5.7 × 0.8

5. 35.1 × 8.4

6. 2.19 × 6.3

Algebra • Division Patterns with Decimals

To divide a number by 10, 100, or 1,000, use the number of zeros in the divisor to determine how the position of the decimal point changes in the quotient.

	Number of zeros:	Move decimal point:
$147 \div 1 =$ 147	0	0 places to the left
$147 \div 10 =$ 14.7	1	1 place to the left
$147 \div 100 =$ 1.47	2	2 places to the left
$147 \div 1{,}000 =$ 0.147	3	3 places to the left

To divide a number by a power of 10, you can use the exponent to determine how the position of the decimal point changes in the quotient.

	Exponent	Move decimal point:
$97.2 \div 10^0 =$ 97.2	0	0 places to the left
$97.2 \div 10^1 =$ 9.72	1	1 place to the left
$97.2 \div 10^2 =$ 0.972	2	2 places to the left

Complete the pattern.

1. $358 \div 10^0 =$ _____

$358 \div 10^1 =$ _____

$358 \div 10^2 =$ _____

$358 \div 10^3 =$ _____

2. $102 \div 10^0 =$ _____

$102 \div 10^1 =$ _____

$102 \div 10^2 =$ _____

$102 \div 10^3 =$ _____

3. $99.5 \div 1 =$ _____

$99.5 \div 10 =$ _____

$99.5 \div 100 =$ _____

Division of Decimals by Whole Numbers

Divide. 19.61 ÷ 37

Step 1 Estimate the quotient.
2,000 hundredths ÷ 40 = 50 hundredths, or 0.50.
So, the quotient will have a zero in the ones place.

Step 2 Divide the tenths.
Use the estimate. Try 5 in the tenths place.

Multiply. 5 × 37 = 185

Subtract. 196 − 185 = 11

Check. 11 < 37

Step 3 Divide the hundredths.
Estimate: 120 hundredths ÷ 40 = 3 hundredths.

Multiply. 3 × 37 = 111

Subtract. 111 − 111 = 0

Check. 0 < 37

Place the decimal point in the quotient.

So, 19.61 ÷ 37 = 0.53.

```
        0
37)19.61

        0 5
37)19.61
  − 18 5
      1 1

        0.53
37)19.61
  − 18 5
      1 11
    − 1 11
        0
```

Write the quotient with the decimal point placed correctly.

1. 5.94 ÷ 3 = 198 _____

2. 48.3 ÷ 23 = 21 _____

Divide.

3. $9\overline{)61.2}$

4. $17\overline{)83.3}$

5. $9\overline{)7.38}$

Write Zeros in the Dividend

When there are not enough digits in the dividend to complete the division, you can write zeros to the right of the last digit in a decimal number in the dividend. Writing zeros to the right of the last digit will not change the value of the dividend or the quotient.

Divide. $5.2 \div 8$

Step 1 Divide as you would whole numbers. Place the decimal point in the quotient above the decimal point in the dividend.

$$\begin{array}{r} 0.6 \\ 8\overline{)5.2} \\ -\,4\,8 \\ \hline 4 \end{array}$$

The decimal point in the quotient is directly above the decimal point in the dividend.

Step 2 The difference is less than the divisor. Write a 0 in the dividend to the right of the last digit and continue to divide.

$$\begin{array}{r} 0.65 \\ 8\overline{)5.20} \\ -\,4\,8 \\ \hline 40 \\ -\,40 \\ \hline 0 \end{array}$$

The difference, 4, is less than the divisor.

Write a 0 in the dividend to the right of the last digit. Then continue to divide.

So, $5.2 \div 8 =$ 0.65.

Write the quotient with the decimal point placed correctly.

1. $3 \div 0.4 = 75$ **2.** $25.2 \div 8 = 315$ **3.** $60 \div 25 = 24$ **4.** $8.28 \div 0.72 = 115$

Divide.

5. $6\overline{)43.5}$ **6.** $1.4\overline{)7.7}$ **7.** $30\overline{)72}$ **8.** $0.18\overline{)0.63}$

Add and Subtract Fractions

To add or subtract fractions with unlike denominators, you need to rename them as fractions with like denominators. You can do this by making a list of equivalent fractions.

Add. $\frac{5}{12} + \frac{1}{8}$

Step 1 Write equivalent fractions for $\frac{5}{12}$. $\frac{5}{12}, \frac{10}{24}, \frac{15}{36}, \frac{20}{48}$

Step 2 Write equivalent fractions for $\frac{1}{8}$. $\frac{1}{8}, \frac{2}{16}, \frac{3}{24}$

Step 3 Rewrite the problem using the equivalent fractions. Then add.

Stop when you find two fractions with the same denominator.

$\frac{5}{12} + \frac{1}{8}$ becomes $\frac{10}{24} + \frac{3}{24} = \frac{13}{24}$.

Subtract. $\frac{9}{10} - \frac{1}{2}$

Step 1 Write equivalent fractions for $\frac{9}{10}$. $\frac{9}{10}, \frac{18}{20}, \frac{27}{30}, \frac{36}{40}$

Step 2 Write equivalent fractions for $\frac{1}{2}$. $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}$

Step 3 Rewrite the problem using the equivalent fractions. Then subtract.

$\frac{9}{10} - \frac{1}{2}$ becomes $\frac{9}{10} - \frac{5}{10} = \frac{4}{10}$. Written in simplest form, $\frac{4}{10} = \frac{2}{5}$.

Find the sum or difference. Write your answer in simplest form.

1. $\frac{2}{9} + \frac{1}{3}$ _____

2. $\frac{1}{2} + \frac{2}{5}$ _____

3. $\frac{1}{4} + \frac{1}{6}$ _____

4. $\frac{1}{5} + \frac{3}{4}$ _____

5. $\frac{7}{8} - \frac{1}{4}$ _____

6. $\frac{3}{4} - \frac{2}{3}$ _____

7. $\frac{9}{10} - \frac{4}{5}$ _____

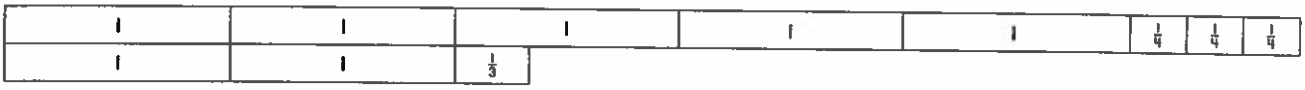
8. $\frac{8}{9} - \frac{5}{6}$ _____

Add and Subtract Mixed Numbers

When you add or subtract mixed numbers, you may need to rename the fractions as fractions with a common denominator.

Find the sum. Write the answer in simplest form. $5\frac{3}{4} + 2\frac{1}{3}$

Step 1 Model $5\frac{3}{4}$ and $2\frac{1}{3}$.



Step 2 A common denominator for $\frac{3}{4}$ and $\frac{1}{3}$ is 12, so rename $5\frac{3}{4}$ as $5\frac{9}{12}$ and $2\frac{1}{3}$ as $2\frac{4}{12}$.

Step 3 Add the fractions.

$$\frac{9}{12} + \frac{4}{12} = \frac{13}{12}$$

Step 4 Add the whole numbers

$$5 + 2 = 7$$

Add the sums. Write the answer in simplest form.

$$\frac{13}{12} + 7 = 7\frac{13}{12}, \text{ or } 8\frac{1}{12}$$

So, $5\frac{3}{4} + 2\frac{1}{3} = 8\frac{1}{12}$.

Find the sum or difference. Write your answer in simplest form.

1. $2\frac{2}{9} + 4\frac{1}{6}$ **2.** $10\frac{5}{6} + 5\frac{3}{4}$ **3.** $11\frac{7}{8} - 9\frac{5}{6}$ **4.** $18\frac{3}{5} - 14\frac{1}{2}$

_____ _____ _____ _____

Subtraction with Renaming

You can use a common denominator to find the difference of two mixed numbers.

Estimate. $9\frac{1}{6} - 2\frac{3}{4}$

Step 1 Estimate by using 0, $\frac{1}{2}$, and 1 as benchmarks.

$9\frac{1}{6} - 2\frac{3}{4} \rightarrow 9 - 3 = 6$

So, the difference should be close to 6.

Step 2 Identify a common denominator.

$9\frac{1}{6} - 2\frac{3}{4}$ A common denominator of 6 and 4 is 12.

Step 3 Write equivalent fractions using the common denominator.

$9\frac{1}{6} = 9 + \frac{1 \times 2}{6 \times 2} = 9\frac{2}{12}$

$2\frac{3}{4} = 2 + \frac{3 \times 3}{4 \times 3} = 2\frac{9}{12}$

Step 4 Rename if needed. Then subtract.

Since $\frac{2}{12} < \frac{9}{12}$, rename $9\frac{2}{12}$ as $8\frac{14}{12}$.

Subtract. $8\frac{14}{12} - 2\frac{9}{12} = 6\frac{5}{12}$

So, $9\frac{1}{6} - 2\frac{3}{4} = 6\frac{5}{12}$.

Since the difference of $6\frac{5}{12}$ is close to 6, the answer is reasonable.

Estimate. Then find the difference and write it in simplest form.

1. Estimate: _____

$5\frac{1}{3} - 3\frac{5}{6}$ _____

2. Estimate: _____

$7\frac{1}{4} - 2\frac{5}{12}$ _____

3. Estimate: _____

$8\frac{2}{3} - 2\frac{7}{9}$ _____

4. Estimate: _____

$9\frac{2}{5} - 3\frac{3}{4}$ _____

5. Estimate: _____

$7\frac{3}{16} - 1\frac{5}{8}$ _____

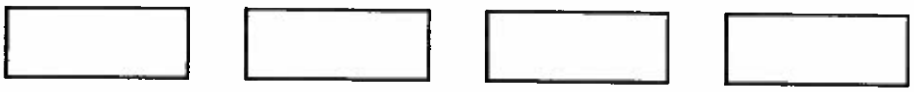
6. Estimate: _____

$2\frac{4}{9} - 1\frac{11}{18}$ _____

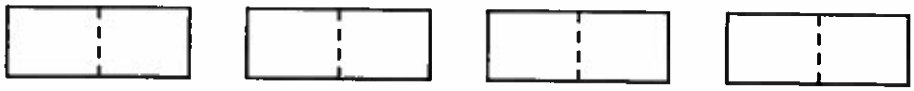
Multiply Fractions and Whole Numbers

Find the product. $\frac{3}{8} \times 4$

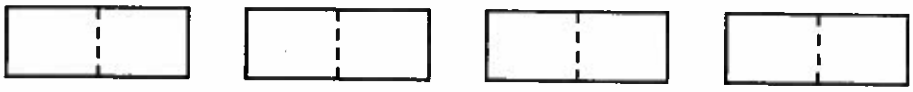
Step 1 Draw 4 rectangles to represent the factor 4.



Step 2 The denominator of the factor $\frac{3}{8}$ is 8. So, divide the 4 rectangles into 8 equal parts.



Step 3 The numerator of the factor $\frac{3}{8}$ is 3. So, shade 3 of the parts.



Step 4 The 4 rectangles have 3 shaded parts. Each rectangle is divided into 2 equal parts. So, $\frac{3}{2}$ of the rectangles are shaded.

So, $\frac{3}{8} \times 4$ is $\frac{3}{2}$, or $1\frac{1}{2}$.

Find the product.

1. $\frac{5}{12} \times 4 =$ _____
2. $8 \times \frac{3}{4} =$ _____
3. $\frac{7}{9} \times 3 =$ _____
4. $5 \times \frac{4}{7} =$ _____
5. $\frac{9}{10} \times 5 =$ _____
6. $3 \times \frac{3}{4} =$ _____
7. $\frac{7}{12} \times 6 =$ _____
8. $12 \times \frac{2}{9} =$ _____
9. $\frac{2}{9} \times 3 =$ _____

Fraction Multiplication

To multiply fractions, you can multiply the numerators, then multiply the denominators. Write the product in simplest form.

Multiply. $\frac{3}{10} \times \frac{4}{5}$

Step 1 Multiply the numerators. Multiply the denominators.

$$\frac{3}{10} \times \frac{4}{5} = \frac{3 \times 4}{10 \times 5}$$

$$= \frac{12}{50}$$

Step 2 Write the product in simplest form.

$$\frac{12}{50} = \frac{12 \div 2}{50 \div 2}$$

$$= \frac{6}{25}$$

So, $\frac{3}{10} \times \frac{4}{5}$ is $\frac{6}{25}$.

Find the product. Write the product in simplest form.

1. $\frac{3}{4} \times \frac{1}{5}$ _____

2. $\frac{4}{7} \times \frac{5}{12}$ _____

3. $\frac{3}{8} \times \frac{2}{9}$ _____

4. $\frac{4}{5} \times \frac{5}{8}$ _____

5. $\frac{1}{3} \times 4$ _____

6. $\frac{3}{4} \times 8$ _____

7. $\frac{5}{8} \times \frac{2}{3}$ _____

8. $\frac{5}{6} \times \frac{3}{8}$ _____

Multiply Mixed Numbers

You can use a multiplication square to multiply mixed numbers.

Multiply. $1\frac{2}{7} \times 1\frac{3}{4}$ **Write the product in simplest form.**

Step 1 Write the mixed numbers outside the square.

×	1	$\frac{2}{7}$
1		
$\frac{3}{4}$		

Step 2 Multiply the number in each column by the number in each row.

×	1	$\frac{2}{7}$
1	1×1	$\frac{2}{7} \times 1$
$\frac{3}{4}$	$1 \times \frac{3}{4}$	$\frac{2}{7} \times \frac{3}{4}$

Step 3 Write each product inside the square.

×	1	$\frac{2}{7}$
1	1	$\frac{2}{7}$
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{14}$

Step 4 Add the products inside the multiplication square.

$$1 + \frac{2}{7} + \frac{3}{4} + \frac{3}{14}$$

Find the least common denominator.

$$\frac{28}{28} + \frac{8}{28} + \frac{21}{28} + \frac{6}{28} = \frac{63}{28}$$

Simplify.

$$\frac{63}{28} = 2\frac{7}{28}, \text{ or } 2\frac{1}{4}$$

So, $1\frac{2}{7} \times 1\frac{3}{4}$ is $2\frac{1}{4}$.

Find the product. Write the product in simplest form.

1. $2\frac{5}{8} \times 1\frac{1}{7}$ _____

2. $3\frac{1}{2} \times 12$ _____

3. $10\frac{5}{6} \times \frac{3}{5}$ _____

4. $7\frac{7}{10} \times \frac{10}{11}$ _____

Use the Distributive Property to find the product.

5. $12 \times 2\frac{1}{2}$ _____

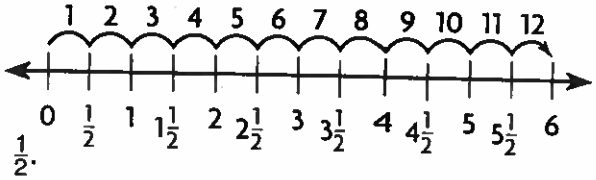
6. $15 \times 5\frac{1}{3}$ _____

Divide Fractions and Whole Numbers

You can use a number line to help you divide a whole number by a fraction.

Divide. $6 \div \frac{1}{2}$

Step 1 Draw a number line from 0 to 6. Divide the number line into halves. Label each half on your number line, starting with $\frac{1}{2}$.



Step 2 Skip count by halves from 0 to 6 to find $6 \div \frac{1}{2}$.

Step 3 Count the number of skips. It takes 12 skips to go from 0 to 6. So the quotient is 12.

$6 \div \frac{1}{2} =$ 12 because 12 $\times \frac{1}{2} = 6$.

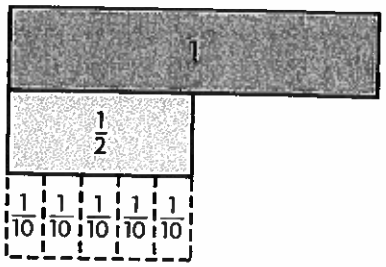
You can use fraction strips to divide a fraction by a whole number.

Divide. $\frac{1}{2} \div 5$

Step 1 Place a $\frac{1}{2}$ strip under a 1-whole strip.

Step 2 Find 5 fraction strips, all with the same denominator, that fit exactly under the $\frac{1}{2}$ strip.

Each part is $\frac{1}{10}$ of the whole.



Step 3 Record and check the quotient.

$\frac{1}{2} \div 5 =$ $\frac{1}{10}$ because $\frac{1}{10} \times 5 = \frac{1}{2}$.

So, $\frac{1}{2} \div 5 =$ $\frac{1}{10}$.

Divide. Draw a number line or use fraction strips.

1. $1 \div \frac{1}{2} =$ _____

2. $2 \div \frac{1}{3} =$ _____

3. $4 \div \frac{1}{4} =$ _____

4. $\frac{1}{5} \div 3 =$ _____

5. $\frac{1}{3} \div 2 =$ _____

6. $4 \div \frac{1}{5} =$ _____