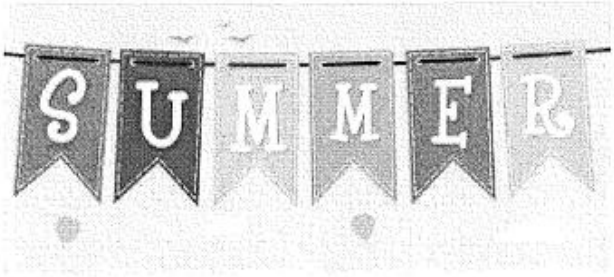
Fairfield Public Schools



Math Packet

For

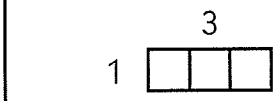
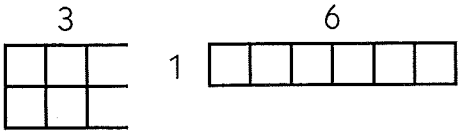
Students Entering Fifth Grade

Math Academy

NAME _____ **DATE** _____

Prime & Composite Numbers

Use the following information to help solve the problems below.

A prime number has only two factors: itself and 1.	A composite number has more than two factors.	The number 1 is neither prime nor composite.
Number: 3 	Number 6 	Number: 1 

1 For each number, circle prime or composite. Then list all of its factors.

Number	Circle one.	List all of the factors.
example 8	prime (composite)	1, 2, 4, 8
a 5	prime composite	
b 16	prime composite	
c 27	prime composite	
d 31	prime composite	
e 36	prime composite	
f 108	prime composite	
g 126	prime composite	

2 Julia says that prime numbers have to be odd and composite numbers have to be even. Is she correct? Explain how you know.

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Understanding & Using Number Properties

If you are adding or multiplying, you can change the order of the numbers or the way they are grouped to make the calculations easier. The three properties below can make mental math easier.

Commutative Property	Associative Property	Distributive Property
Changing the order of two numbers or numerical expressions when you add or multiply does not change the answer.	Changing the way you group three numbers or numerical expressions when you add or multiply does not change the answer.	You can break a number apart, multiply each part separately, and then add the products. You will still get the same answer.
$5 + 2 = 2 + 5$ $5 \times 2 = 2 \times 5$	$(38 \times 4) \times 25 = 38 \times (4 \times 25)$ $= 38 \times 100$ $= 3{,}800$	$6 \times 13 = 6 \times (10 + 3)$ $= 6 \times 10 + 6 \times 3$ $= 60 + 18$ $= 78$

1 For each problem below:

- Write it a different way so it's easier to solve in your head.
- Solve it and write the answer.
- Circle C if you switched the order of the numbers.
- Circle A if you grouped the numbers in a different way.
- Circle D if you broke the number apart and multiplied one part at a time.
- You may need to circle more than one property.

Problem	Rewrite	Answer	Property
ex $(70 + 469) + 30$	$(70 + 30) + 469$	569	C (A) D
a $(69 + 45) + 55$			C A D
b 4×32			C A D
c $4 \times (16 \times 25)$			C A D
d $(250 + 86) + 50$			C A D

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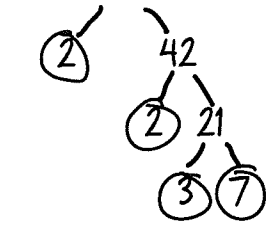
More Prime Factorization

1 Use a factor tree to find the prime factorization of each number below.

ex 84  $84 = 2 \times 2 \times 3 \times 7$	**a** 96	**b** 72

2 Use the prime factors above to complete the sentences below. Fill in the circle or circles for each one.

a 12 is a factor of: ○ 84 ○ 96 ○ 72

b 4 is a factor of: ○ 84 ○ 96 ○ 72

c 8 is a factor of: ○ 84 ○ 96 ○ 72

d 24 is a factor of: ○ 84 ○ 96 ○ 72

3a If you know that 12 is a factor of a certain number, what else must be true about that number?

○ It is prime.
○ It is greater than 40.
○ It is even.
○ It is divisible by 9.

b Explain your answer to part a.

4 If you know that 10 is a factor of a certain number, what other numbers can you be certain are also factors of that number?

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Multiplication Estimate & Check

1 Think about rounding to estimate the answers to the problems below. Then rewrite each problem vertically and solve it using the partial products method. Check your answer against your estimate to make sure that it is reasonable.

Problem	**ex** 63 × 21	**a** 42 × 37	**b** 73 × 26
Estimate	60 × 20 = 1,200		
Solution	63 × 21 20 × 60 = 1,200 20 × 3 = 60 1 × 60 = 60 1 × 3 = + 3 1,323		
Problem	**c** 33 × 19	**d** 84 × 38	**e** 56 × 44
Estimate			
Solution			

CHALLENGE

2 Circle the two numbers whose product is 1,274

26 34 49 61

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Using the Standard Multiplication Algorithm

1 Solve these multiplication problems.

80	80	90	90	100	100
× 30	× 40	× 30	× 40	× 30	× 40

2 Solve these multiplication problems using the standard algorithm. Use the answers above to help make sure your answers are reasonable.

ex

$$\begin{array}{r} {}^{1}2 \\ 84 \\ \times\ 36 \\ \hline {}_{1}\,504 \\ +\,2{,}520 \\ \hline 3{,}024 \end{array}$$

a

$$\begin{array}{r} 79 \\ \times\ 26 \\ \hline \end{array}$$

b

$$\begin{array}{r} 86 \\ \times\ 32 \\ \hline \end{array}$$

c

$$\begin{array}{r} 92 \\ \times\ 37 \\ \hline \end{array}$$

d

$$\begin{array}{r} 82 \\ \times\ 43 \\ \hline \end{array}$$

e

$$\begin{array}{r} 98 \\ \times\ 29 \\ \hline \end{array}$$

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Using Basic Fact Strategies to Multiply Larger Numbers

Thinking about basic fact strategies and relationships between facts can help you multiply larger numbers too.

To multiply by	Strategy	Example	
3	Double the number and add 1 more of that number.	3 × 16	2 × 16 = 32 32 + 16 = 48
5	Think of the number times 10. Then cut it in half.	5 × 16	10 × 16 = 160 160 ÷ 2 = 80
20	Think of the number times 10. Then double it.	20 × 16	10 × 16 = 160 160 + 160 = 320
30	Think of the number times 10. Double it. Then add them together.	30 × 16	10 × 16 = 160 160 + 160 = 320 320 + 160 = 480
15	Think of the number times 10. Cut it in half. Then add them together.	15 × 16	10 × 16 = 160 160 ÷ 2 = 80 160 + 80 = 240

1 Complete the multiplication problems below. Use problems you have already solved to help solve other ones.

a 24 × 1 = _____	**b** 32 × 1 = _____	**c** 17 × 1 = _____
24 × 2 = _____	32 × 2 = _____	17 × 2 = _____
24 × 3 = _____	32 × 3 = _____	17 × 3 = _____
24 × 10 = _____	32 × 10 = _____	17 × 10 = _____
24 × 5 = _____	32 × 5 = _____	17 × 5 = _____
24 × 20 = _____	32 × 20 = _____	17 × 20 = _____
24 × 30 = _____	32 × 30 = _____	17 × 30 = _____
24 × 15 = _____	32 × 15 = _____	17 × 15 = _____

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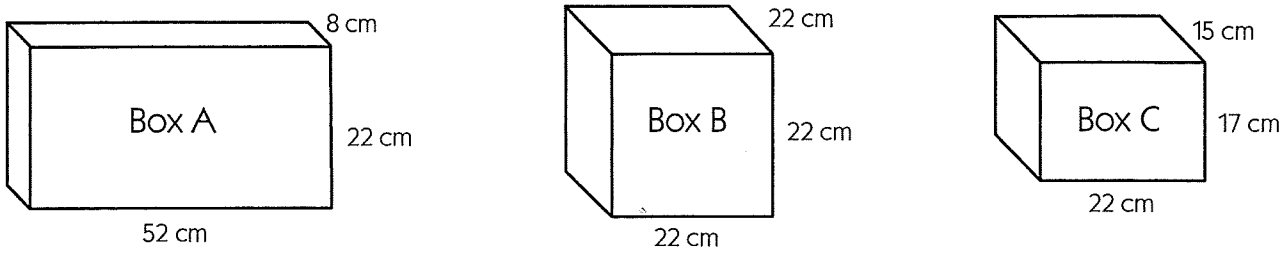
Which Box Holds the Most?

1 Ebony's cousin Jada is away at college this year. Ebony wants to send her a package with some candy in it. She has the three boxes shown below. Which box should she use if she wants to send Jada as much candy as possible?



a What do you need to know about the boxes in order to answer the question above?

b Solve the problem. Show all your work.

2 Ebony wants to wrap the box in paper before she sends it to Jada. What is the surface area of the box you chose above? Show all your work.

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More Fraction Story Problems

1 Yesterday Carson threw away $1\frac{1}{3}$ pounds of paper packaging. He threw away $\frac{3}{4}$ of a pound of plastic packaging. Altogether, how many pounds of packaging did Carson throw away yesterday? Show all your work.

2 Carmen ran $1\frac{3}{8}$ miles yesterday. Her sister Lola ran $2\frac{1}{4}$ miles yesterday. How much farther did Lola run than Carmen? Show all your work.

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Multiplication & Division Review

1 Complete the following multiplication tables.

a

×	2	9	6	5	7	20	40	30
60	120							

b

×	2	9	6	5	7	20	40	30
40	80							

2 Complete the following division table.

÷	1,200	900	60	210	1,500	1,800	270	2,400
30	40							

3 Solve these multiplication problems using the standard algorithm.

$$\begin{array}{r} {\scriptstyle 1}\\ 84 \\ \times\ 36 \\ \hline {\scriptstyle 1}\ 504 \\ +\ 2{,}520 \\ \hline 3{,}024 \end{array}$$

$$\begin{array}{r} 58 \\ \times\ 27 \\ \hline \end{array}$$

$$\begin{array}{r} 451 \\ \times\ 32 \\ \hline \end{array}$$

$$\begin{array}{r} 256 \\ \times\ 33 \\ \hline \end{array}$$

$$\begin{array}{r} 177 \\ \times\ 49 \\ \hline \end{array}$$

$$\begin{array}{r} 305 \\ \times\ 64 \\ \hline \end{array}$$

$$\begin{array}{r} 573 \\ \times\ 26 \\ \hline \end{array}$$

$$\begin{array}{r} 837 \\ \times\ 86 \\ \hline \end{array}$$

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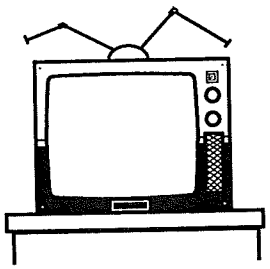
Time Problems

1 Ms. Wilson wants to spend 15 minutes conferencing with each student in her class about their writing assignment. She has 30 minutes before school starts, 30 minutes after school ends, and one 45-minute study hall during the day. If she meets with students during all of those times, how many days will it take her to meet with her 30 students? Show all your work.

2 Rhonda spends half an hour watching TV each weeknight and 2 hours each day on the weekends. How much time does she spend watching TV each week? Show all your work.



3 Frank is supposed to practice his violin for at least 6 hours a week. He played for 30 minutes on Monday, for an hour on Wednesday and on Friday, and for 45 minutes on Thursday. He didn't play at all on Tuesday. How much does he need to practice this weekend to make it at least 6 hours of practicing this week? Show all your work.

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Division Estimate & Check

Make a multiplication menu for each divisor. Complete the sentence to identify a range of reasonable answers. Then use long division to find the exact answer, including the remainder if there is one.

Problem	Multiplication Menu	Range of Reasonable Answers	Your Work	Exact Answer
ex 307 ÷ 19	19 x 10 = 190 19 x 20 = 380 19 x 5 = 95 19 x 2 = 38	The answer will be less than 20 and greater than 10.	1 5] 16 r3 10 19 ⌊ 307 - 190 117 - 95 22 - 19 3	16 r3
1 396 ÷ 17		The answer will be less than _____ and greater than _____.		
2 275 ÷ 13		The answer will be less than _____ and greater than _____.		

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Finding Equivalent Fractions

1 Write two fractions that are equal to the fraction shown.

ex $\frac{3}{9} = \frac{1}{3}$ and $\frac{3}{9} = \frac{6}{18}$	**a** $\frac{9}{15} =$ and $\frac{9}{15} =$
b $\frac{4}{6} =$ and $\frac{4}{6} =$	**c** $\frac{15}{18} =$ and $\frac{15}{18} =$

2 Circle the fractions that are equal to the fraction shown. Use the space at right as a work space to do calculations if needed.

Fraction	Circle the fractions that are equal to the other fraction.				
ex $\frac{1}{2}$	$\frac{4}{8}$	$\frac{3}{5}$	$\frac{2}{4}$	$\frac{7}{14}$	$\frac{5}{6}$
a $\frac{4}{12}$	$\frac{1}{3}$	$\frac{2}{10}$	$\frac{8}{24}$	$\frac{6}{14}$	$\frac{12}{36}$
b $\frac{3}{4}$	$\frac{6}{7}$	$\frac{6}{8}$	$\frac{9}{12}$	$\frac{15}{20}$	$\frac{30}{40}$
c $\frac{3}{15}$	$\frac{6}{30}$	$\frac{5}{17}$	$\frac{1}{3}$	$\frac{1}{5}$	$\frac{9}{45}$

3 If you are given one fraction, what can you do to write other fractions that are equal to that fraction?

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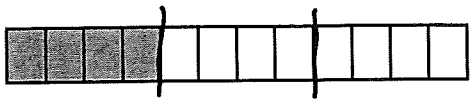
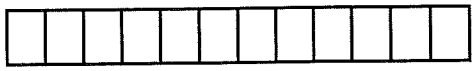
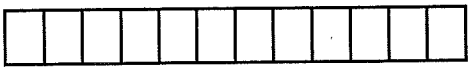
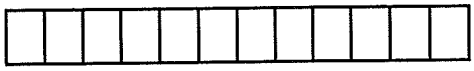
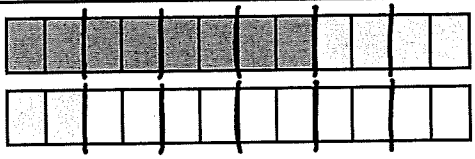
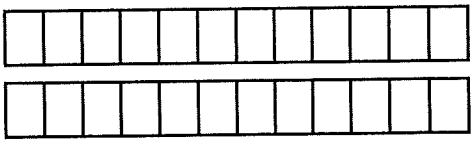
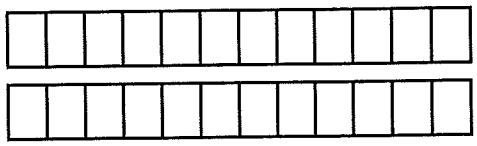
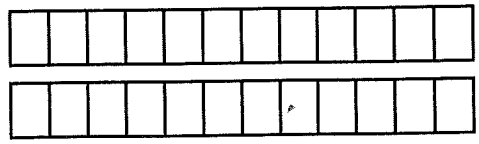
Adding Fractions

1 Each bar below is divided into 12 equal pieces. Show each fraction on a fraction bar.

ex $\frac{1}{3}$ 	**a** $\frac{2}{3}$ 
b $\frac{1}{4}$ 	**c** $\frac{3}{4}$ 
d $\frac{1}{2}$ 	**e** $\frac{5}{6}$ 

2 Rewrite each pair of fractions so that they have the same denominator. Then use the fraction bar pictures to show their sum. Write an equation to show both fractions and their sum.

Fractions to Add	Rewrite with Common Denominator	Picture and Equation
ex $\frac{2}{3} + \frac{1}{2}$	$\frac{2}{3} + \frac{1}{2} = \frac{4}{6} + \frac{3}{6}$	 $\frac{4}{6} + \frac{3}{6} = \frac{7}{6}$ or $1\frac{1}{6}$
a $\frac{2}{3} + \frac{3}{4}$	$\frac{2}{3} + \frac{3}{4} =$	
b $\frac{1}{3} + \frac{5}{6}$	$\frac{1}{3} + \frac{5}{6} =$	
c $\frac{7}{12} + \frac{3}{4}$	$\frac{7}{12} + \frac{3}{4} =$	

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Adding Fractions & Mixed Numbers

1 Rewrite each fraction in simplest form by dividing the numerator and denominator by the greatest common factor. A fraction is in its simplest form when its numerator and denominator have no common factor other than 1. You do not have to show your work if you can do it in your head.

ex $\frac{9 \div 3}{15 \div 3} = \frac{3}{5}$	**a** $\frac{4 \div \_\_}{6 \div \_\_} = \_\_$	**b** $\frac{12 \div \_\_}{15 \div \_\_} = \_\_$
c $\frac{12 \div \_\_}{18 \div \_\_} = \_\_$	**d** $\frac{8 \div \_\_}{12 \div \_\_} = \_\_$	**e** $\frac{4 \div \_\_}{12 \div \_\_} = \_\_$

2 Rewrite each pair of fractions so they have the same denominator. Then find their sum. Sometimes, you will need to find the least common multiple. Sometimes you might be able to reduce each fraction to its simplest form to find a common denominator.

ex a $\frac{5}{8} + \frac{7}{12}$ ↓ ↓ $\frac{15}{24} + \frac{14}{24} = \frac{29}{24}$ and $\frac{29}{24} = 1\frac{5}{24}$	**ex b** $\frac{2}{6} + \frac{8}{12}$ ↓ ↓ $\frac{1}{3} + \frac{2}{3} = \frac{3}{3}$ and $\frac{3}{3} = 1$
a $\frac{3}{4} + \frac{2}{8}$	**b** $\frac{6}{8} + \frac{9}{12}$
c $3\frac{6}{12} + 4\frac{1}{2}$	**d** $1\frac{5}{8} + 2\frac{3}{4}$

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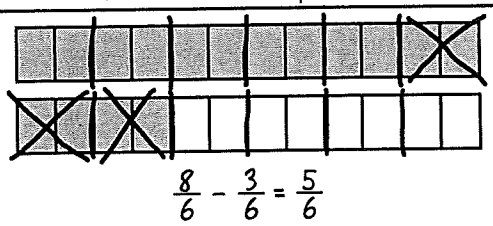
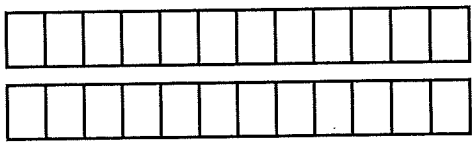
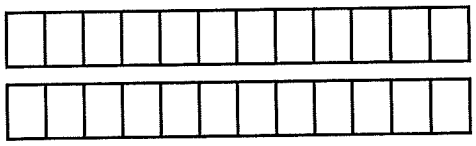
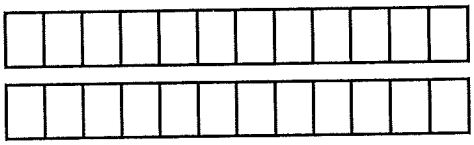
Fraction Subtraction

1 Rewrite each pair of fractions so they have the same denominator. Then use the fraction bar pictures to show their difference. Write an equation to show both fractions and their difference.

Fractions	Rewrite with Common Denominator	Picture and Equation
ex $\frac{4}{3} - \frac{1}{2}$	$\frac{4}{3} - \frac{1}{2} = \frac{8}{6} - \frac{3}{6}$	 $\frac{8}{6} - \frac{3}{6} = \frac{5}{6}$
a $\frac{3}{4} - \frac{2}{3}$	$\frac{3}{4} - \frac{2}{3} =$	
b $\frac{5}{6} - \frac{1}{3}$	$\frac{5}{6} - \frac{1}{3} =$	
c $\frac{15}{12} - \frac{3}{4}$	$\frac{15}{12} - \frac{3}{4} =$	

CHALLENGE

2 Add each pair of numbers.

a $\frac{4}{12} + \frac{7}{15} =$

b $463\frac{7}{12} + 129\frac{13}{36} =$

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More Fraction Subtraction

1 Rewrite each improper fraction as a mixed number.

ex $\frac{16}{12} = 1\frac{4}{12}$ **a** $\frac{12}{8} =$ **b** $\frac{15}{6} =$ **c** $\frac{17}{8} =$ **d** $\frac{14}{3} =$

2 Rewrite each mixed number as an improper fraction.

ex $1\frac{2}{8} = \frac{10}{8}$ **a** $1\frac{5}{12} =$ **b** $2\frac{5}{6} =$ **c** $3\frac{1}{4} =$ **d** $4\frac{2}{3} =$

3 Rewrite each pair of fractions so that they have the same denominator. Then find the difference. Sometimes, you will need to find the least common multiple. Sometimes you might be able to reduce each fraction to its simplest form to find a common denominator.

ex a

$\frac{5}{8} - \frac{7}{12}$

$\frac{15}{24} - \frac{14}{24} = \frac{1}{24}$

ex b

$\frac{8}{6} - \frac{8}{12}$

$\frac{4}{3} - \frac{2}{3} = \frac{2}{3}$

a

$\frac{7}{4} - \frac{4}{8}$

b

$\frac{15}{12} - \frac{3}{8}$

c

$2\frac{3}{8} - 1\frac{1}{3}$

d

$3\frac{5}{8} - 1\frac{3}{4}$

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Decimal Addition & Subtraction

1 Fill in the missing digits below to make the inequalities true. There will be more than one correct way to fill in each missing digit.

ex 3 < 1.5 06 + 1.5	**a** 0.705 + 1.___98 < 2
b 4 < 2.406 + 1.___09	**c** 1.620 + 1.___82 > 3

2 Complete the following addition problems.

1 1 3.034 + 1.886 4.920	12.32 + 4.099	6.005 + 12.243	17.28 + 3.8	7.853 + 3.629

3.45 + 5.062 = _____ 8.049 + 4.356 = _____

3 Complete the following subtraction problems.

2 9 3.046 - 1.273 1.773	5.38 - 2.4	4.263 - 2.051	8.03 - 3.485	12.238 - 9.065

15.204 - 8.039 = _____ 13.006 - 12.058 = _____

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Decimal Story Problems

1a In the 2008 Beijing Summer Olympics, Jamaican runner Usain Bolt ran the 200 meter dash in 19.30 seconds, coming in first place and breaking the world record for that race. The runner who came in second, Churandy Martina, finished the race in 19.82 seconds. By how much did Bolt win the race? Show all your work.

b Did Bolt run the race more or less than a half-second faster than the second place finisher? Explain how you can tell.

2a In the 2008 Beijing Summer Olympics, Usain Bolt ran the 100-meter dash in 9.69 seconds. Is that less than half, exactly half, or more than half as long as it took him to run the 200-meter dash? Show all your work.

b Does your answer to part 2a make sense to you? Explain why or why not.

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Fraction Estimate & Check

Before you solve each problem, look carefully at the fractions and write what you know about the sum or difference. Then find the exact sum or difference. Show all your work. If your answer is greater than 1, write it as a mixed number, not an improper fraction.

Problem	What You Know Before You Start	Show your work.	Exact Sum or Difference
ex $\frac{8}{3} + \frac{9}{12}$	The sum is more than 3.	$\frac{32}{12} + \frac{9}{12} = \frac{41}{12}$ and $\frac{41}{12} = 3\frac{5}{12}$	$3\frac{5}{12}$
1 $\frac{4}{6} + \frac{8}{12}$			
2 $\frac{12}{8} + \frac{3}{4}$			
3 $\frac{3}{8} + \frac{8}{12}$			
4 $\frac{10}{8} - \frac{9}{12}$			
5 $\frac{5}{6} - \frac{3}{4}$			

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Order of Operations Review

The order of operations tells you how to do calculations when there is more than one kind of operation.

Order of Operations	Example
	$20 - 12 \div (3 + 1)$
1. Anything inside parentheses	$20 - 12 \div \mathbf{(3 + 1)} = 20 - 12 \div 4$
2. Multiplication and division from left to right	$20 - \mathbf{12 \div 4} = 20 - 3$
3. Addition and subtraction from left to right	$\mathbf{20 - 3} = 17$

1 Use the order of operations above to complete each equation. Show all your work.

a _____ $= 463 - 180 \div (3 \times (2 + 3))$

b $(249 - 192) \div 3 \times 14 =$ _____

c _____ $= 36 + 14 \times (182 - 164) \div 12$

d $(9 \div 3 + 213) - 72 \div 4 =$ _____

2 Insert parentheses to make each equation true. Show all your work.

a $3 \times 9 + 18 + 36 \div 9 = 33$

b $2 = 140 \div 2 + 12 - 4 \times 2$

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Reviewing Three Number Properties

If you are adding or multiplying, you can change the order of the numbers or the way they are grouped to make the calculations easier. The three properties below can make mental math easier.

Commutative Property	Associative Property	Distributive Property
Changing the order of two numbers or numerical expressions when you add or multiply does not change the answer.	Changing the way you group three numbers or numerical expressions when you add or multiply does not change the answer.	You can break a number apart, multiply each part separately, and then add the products. You will still get the same answer.
$5 + 2 = 2 + 5$ $5 \times 2 = 2 \times 5$	$(38 \times 4) \times 25 = 38 \times (4 \times 25)$ $= 38 \times 100$ $= 3{,}800$	$6 \times 13 = 6 \times (10 + 3)$ $= 6 \times 10 + 6 \times 3$ $= 60 + 18$ $= 78$

1 For each problem below:

- Write it a different way so it is easier to solve in your head.
- Solve it and write the answer.
- Circle C if you switched the order of the numbers.
- Circle A if you grouped the numbers in a different way.
- Circle D if you broke the number apart and multiplied one part at a time.
- You may need to circle more than one property.

Problem	Rewrite	Answer	Property
ex $(70 + 469) + 30$	$(70 + 30) + 469$	569	(C) (A) D
a 12×23			C A D
b $(50 \times 73) \times 2$			C A D
c $15 + (135 + 86)$			C A D
d 35×8			C A D
e $25 \times (4 \times 329)$			C A D
f $(34 \times 50) \times 20$			C A D

NAME _____ DATE _____

Variables & Expressions

Sometimes people use letters to represent unspecified amounts. Such letters are called *variables*. For example, if you worked for $6 an hour, you would multiply the time you worked by 6 to find out what you earned. If we let t represent the time you worked, we could show the amount of money you earned with this expression.

$$6 \times t$$

When we say, "evaluate the expression when $t = 3$," we mean, "figure out how much money you would make if you worked for 3 hours." To do this, substitute 3 for t and complete the calculation:

Evaluate the expression $6 \times t$ when $t = 3$.

$6 \times 3 = 18$ This means you would earn $18 if you worked for 3 hours at $6 per hour.

1 Evaluate the expression $6 \times t$ when:

a $t = 2$

b $t = 4$

c $t = 5$

d $t = 8$

2 How much money would you make if you worked 15 hours and earned $6 per hour?

3 Evaluate the following expressions when each variable has the value shown. Use order of operations when you need to.

ex $4 + b$ when $b = 10$ $4 + 10 = 14$
a $4 + b$ when $b = 23$
b $4 + b$ when $b = 103$
c $3 \times n - 2$ when $n = 2$
d $3 \times n - 2$ when $n = 4$
e $2 \times k + 12$ when $k = 7$
f $2 \times k + 12$ when $k = 10$

NAME _____ DATE _____

Cheetahs & Muffins

1a Isabel works at the city zoo. She is in charge of feeding the cheetahs. Each cheetah needs to eat 5 pounds of food each day. Which expression shows how much food the cheetahs will eat altogether each day? (The letter c stands for the number of cheetahs at the zoo.)

◯ $5 + c$ ◯ $c - 5$ ◯ $5 \times c$ ◯ $c \div 5$

b There are 6 cheetahs at the zoo now. How much food do they eat each day? Show all your work.

c The zoo is thinking about getting some more cheetahs. Isabel can afford to buy 70 pounds of food each day. How many cheetahs would that feed? Show all your work.

2a Every weekend Clarice and her dad bake some muffins and give 8 of them to their neighbors for breakfast on Sunday. Which expression shows how many muffins they have left over for themselves each week? (The letter m stands for the number of muffins they baked.)

◯ $8 + m$ ◯ $m - 8$ ◯ $8 \times m$ ◯ $m \div 8$

b If they baked 24 muffins last weekend, how many did they have left for themselves? Show all your work.

c If they wanted to have 12 muffins left for themselves, how many would they need to bake? Show all your work.

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Adding Fractions with Different Denominators

Here is a quick way to add fractions with different denominators.

Original Problem	$\frac{3}{4} + \frac{5}{6}$
1. Multiply the denominators by each other to get a common denominator.	$4 \times 6 = 24$
2. Rewrite each fraction as an equivalent fraction with the common denominator.	$\frac{3 \times 6}{4 \times 6} = \frac{18}{24}$ $\frac{5 \times 4}{6 \times 4} = \frac{20}{24}$
3. Add the fractions.	$\frac{18}{24} + \frac{20}{24} = \frac{38}{24}$
4. Reduce the sum to lowest form and express as a mixed number if greater than 1.	$38 - 24 = 14$ $\frac{38}{12} = 1\frac{14}{24}$ $1\frac{14}{24} = 1\frac{7}{12}$

1 Follow the steps at left to add each pair of fractions.

a

$\frac{1}{6} + \frac{7}{9}$

b

$\frac{5}{8} + \frac{11}{12}$

c

$\frac{3}{5} + \frac{4}{11}$

d

$\frac{10}{16} + \frac{5}{9}$

NAME _____ DATE _____

Fraction Addition & Subtraction Review

1 Find the sum or the difference for each pair of fractions.

a $\frac{5}{6} - \frac{2}{5} =$	**b** $\frac{1}{3} + \frac{6}{7} =$

2 Annie ran $\frac{5}{8}$ of a mile. Her sister Mabel ran $\frac{7}{10}$ of a mile. Who ran farther and by exactly how much? Show all of your work.

3 Juan and his mom hiked $\frac{3}{8}$ of a mile this morning and $\frac{4}{5}$ of a mile this afternoon. How much did they hike today? Show all of your work.

NAME _____ DATE _____

Fraction Addition & Subtraction Story Problems

1 Find the sum or the difference for each pair of numbers.

a $\frac{5}{14} + \frac{4}{5} =$	**b** $\frac{7}{9} - \frac{4}{7} =$

2 George and his dad made some snack mix for their camping trip. To make it, they used 2 cups of mini pretzels, $\frac{3}{4}$ cup of peanuts, and $\frac{2}{3}$ cup of chocolate chips. How many cups of snack mix did they end up with? Show all of your work.

3 Lisa drank $\frac{7}{16}$ of a bottle of water during the soccer game. Julianne drank $\frac{2}{3}$ of a water bottle that was the same size as Lisa's. Who drank more water and by exactly how much?

NAME | DATE

Dante's Decision page 1 of 2

Dante wants to spend some of his allowance money, but he is having a hard time deciding what to buy. He loves baseball cards, packs of gum, and bouncy balls. Fill in the ratio tables and answer the questions to help Dante keep track of what he can buy.

1 Dante's favorite packs of baseball cards cost $1.70 each. Fill in the table below to show the cost of different numbers of packs of baseball cards.

Packs of Baseball Cards	1	2	4	8	9	10	15	25
Cost	$1.70							

2 Dante's favorite gum costs $0.60 a pack. Fill in the table below to show the cost of different numbers of packs of gum.

Packs of Gum	1	2	5	9	10	19	20	25
Cost	$0.60							

3 Bouncy balls come in packages that cost $3.15 each. Fill in the table below to show the cost of different numbers of packs of bouncy balls.

Packs of Bouncy Balls	1	2	3	6	9	10	12	20
Cost	$3.15							

4 Dante decided to spend only $20.00 of his allowance and save the rest for later.

a Can he buy 12 packs of baseball cards? Why or why not?

b Can he buy 30 packs of gum? Why or why not?

c How much of the $20.00 will he still have after he buys 5 packs of bouncy balls?

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Skills Review page 2 of 2

4 Fill in the blanks.

a $\frac{1}{2}$ of 84 = ____ **b** $\frac{1}{4}$ of 84 = ____ **c** $\frac{1}{8}$ of 84 = ____

d $\frac{1}{2}$ of ____ = 62 **e** $\frac{1}{4}$ of ____ = 31

5 True or False?

a $\frac{1}{4}$ of 28 = $\frac{1}{8}$ of 14 **b** $\frac{1}{8}$ of 32 = $\frac{1}{4}$ of 16 **c** $\frac{1}{2}$ of 56 = $\frac{1}{4}$ of 28

6 Add or subtract. Use the space below to show your work if necessary.

$\frac{1}{2} + \frac{5}{8}$ = ____	$2\frac{1}{6} - \frac{7}{12}$ = ____	$8\frac{3}{4} + 1\frac{5}{12}$ = ____
6.89 + 8.12 = ____	10.01 – 3.72 = ____	3.12 – 2.76 = ____
$\frac{2}{3}$ + ____ = $1\frac{4}{9}$	4.08 – ____ = 2.99	$5\frac{1}{2}$ – ____ = $2\frac{3}{4}$

7 **CHALLENGE** Randall has $5.00 to spend on snacks at the movies. Use the table to figure out three snacks Randall can buy for $5.00. Show your thinking. Is that the only combination of three snacks Randall can buy? How do you know?

Popcorn - small	$2.75
Popcorn - medium	$2.99
Popcorn - large	$3.49
Cookie	$2.25
Lemonade	$1.19
Candy Bar	$1.29
Granola Bar	$0.89

NAME _____ DATE _____

Maria's Multiplication page 2 of 2

Review

5 Finish the number pattern for the rule: $2n + 1$

3, 5, _____, _____, _____, _____, _____, _____, _____, _____

6 Finish the number pattern for the rule: $4n + 1$

5, 9, _____, _____, _____, _____, _____, _____, _____, _____

7 What do you notice about the two number patterns you just completed? How are they similar? How are they different?

8 Multiply:

a $8.7 \times 10 =$ _____

b $8.7 \times 100 =$ _____

c $8.7 \times 1{,}000 =$ _____

d $8.7 \times 0.1 =$ _____

e $8.7 \times 0.01 =$ _____

f Look at the zeroes and the decimal points in your answers. What do you notice?

NAME _____ DATE _____

Fraction Times Fraction Checkpoint page 1 of 2

1 Henry's little sister spilled ketchup on one of his homework problems.

$\frac{3}{5} \times$ [ketchup] $=$ _____

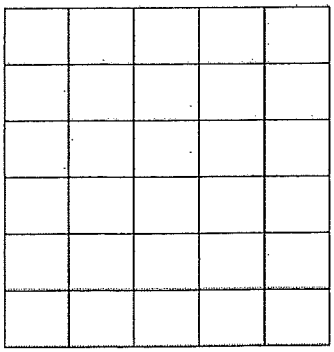
a Fill in the bubble to show what Henry should be able to tell for sure about the answer, even though he can't see the other number.

- ○ The answer will be less than $\frac{3}{5}$.
- ○ The answer will be greater than the ketchup-covered number.
- ○ The answer will be less than the ketchup-covered number.

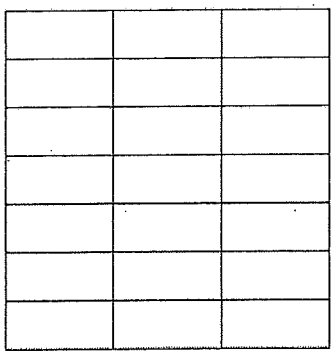
b Explain your answer. How do you know the statement you chose is true?

2 Use the rectangular arrays to model and solve each problem. Show all your work.

a $\frac{4}{6} \times \frac{2}{5} =$ [ ]



b $\frac{3}{7} \times \frac{2}{3} =$ [ ]



NAME _____ **DATE** _____

Area & Perimeter Story Problems

You can make sketches to help solve the problems below. Remember to include the units of measurement in your answers. Show all of your work.

1a The classroom rug is 9 feet long and 8 feet wide. What is the total area of the rug?

b What is the perimeter of the rug?

2a Chrissy is going to make a big painting on a piece of wood that is 4 feet wide and 7 feet long. What is the total area of the piece of wood?

b What is the perimeter of the piece of wood?

3 The school playground measures 465 feet by 285 feet. What is the perimeter of the playground?

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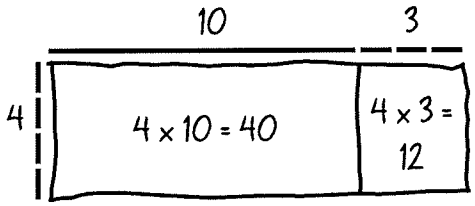
Fill the Frames

Label each array frame below. Then fill it in with labeled rectangles. Write an addition equation to show how you got the total. Then write a multiplication equation to match the array.

Labeled Array Frame & Rectangle	Addition Equation	Multiplication Equation
example 	40 + 12 = 52	4 x 13 = 52
1		
2		
3		

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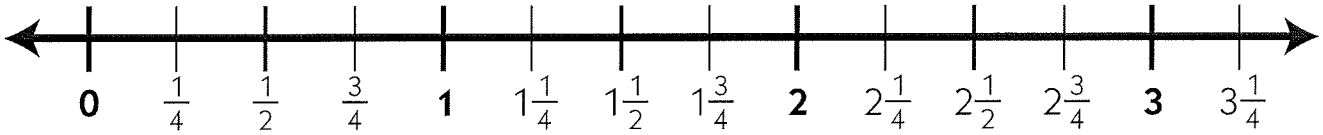
Fractions & Mixed Numbers on a Number Line

1 Use the number line to answer the questions below.



example a What improper fraction is equal to $2\frac{1}{4}$? In other words, how many fourths are in two and one-fourth?	$\frac{9}{4}$
example b What number is halfway between 2 and 3?	$2\frac{1}{2}$
a What improper fraction is equal to $1\frac{1}{2}$? In other words, how many halves are in one and one-half?	
b What mixed number is equal to $\frac{6}{4}$?	
c Which is greater, $\frac{5}{4}$ or $1\frac{1}{2}$?	
d What mixed number is equal to $\frac{13}{4}$?	
e What improper fraction is equal to $2\frac{1}{2}$? In other words, how many halves are in two and one-half?	
f Which is greater, $1\frac{3}{4}$ or $\frac{8}{4}$?	

CHALLENGE

2 What number is halfway between 0 and 1?

3 What number is halfway between 0 and 3?

4 What number is halfway between 0 and 17?

NAME _____ **DATE** _____

Fraction Story Problems

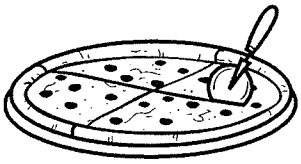
Draw pictures to help answer the questions below. Circle your answer to each question.

1 Jim had a piece of string that was three-fourths of a foot long. Damien had a piece of string that was half a foot long. Whose string was longer? How much longer was it? Use a labeled sketch, as well as numbers and/or words, to prove your answer.

2 Rosa and Jasmine were trying to run a kilometer (1 kilometer is equal to 1000 meters). Rosa made it halfway. Jasmine made it one-third of the way. Who ran farther? Use a labeled sketch, as well as numbers and/or words, to prove your answer.

CHALLENGE

3 Lisa and her brother Darius were eating small pizzas. Their mom cut each pizza into fourths. Lisa figured out that she ate one and a half little pizzas. Darius counted that he ate seven fourths. Who ate more pizza? How much more? Use a labeled sketch, numbers, and/or words to prove your answer.



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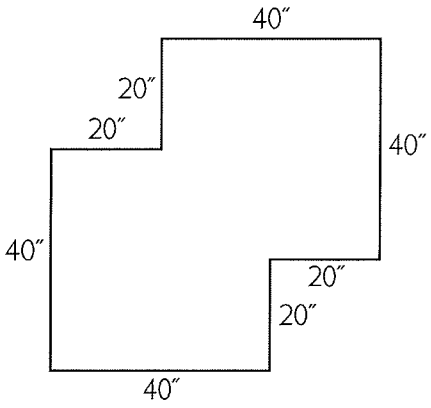
Area & Perimeter, Time & Money

1 Find the area and perimeter of this figure. Show all of your work.



Area _____

Perimeter _____

2a Simon earns $24 per hour. Raymond earns one-half that amount. Simon works 5 hours per day. If Raymond wants to earn the same amount of money as Simon, how many hours would he need to work each day? Show all your work.

b How much money does Simon make each day? Show all your work.

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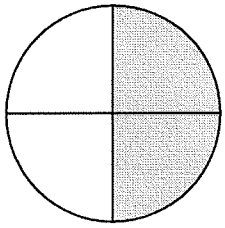
Fractions & Mixed Numbers

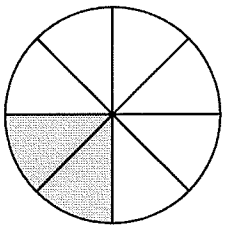
1 The circles below are divided into equal parts. Write two fractions to show what part of each circle is filled in.

example

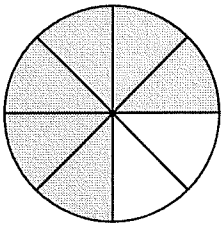


$\frac{1}{2}$ $\frac{2}{4}$

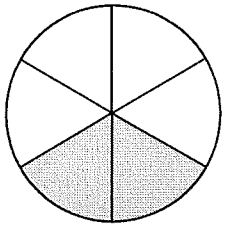
a



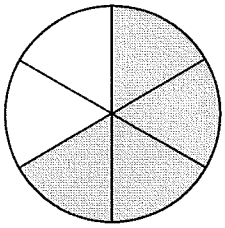
b



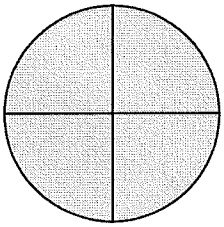
c



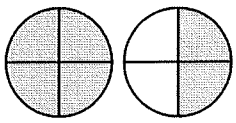
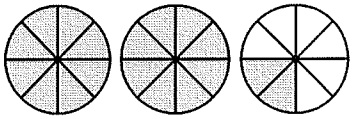
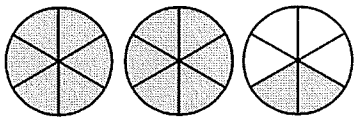
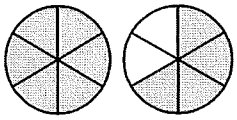
d



e



2 The circles below are divided into equal parts. Write a fraction and a mixed number to show how many circles are filled in.

	Fraction	Mixed Number		Fraction	Mixed Number
example 	$\frac{3}{2}$	$1\frac{1}{2}$	**a** 		
b 			**c** 		

3 Fill in the missing fractions or mixed numbers.

CHALLENGE

Fractions	**ex** $\frac{5}{2}$	**a** $\frac{9}{2}$	**b** $\frac{9}{4}$	**c** $\frac{14}{4}$	**d**	**e**	**f** $\frac{62}{3}$	**g**
Mixed Number	$2\frac{1}{2}$				$3\frac{1}{2}$	$2\frac{3}{4}$		$30\frac{1}{3}$

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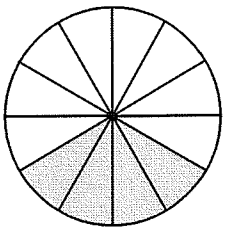
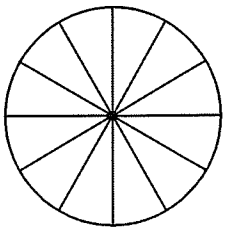
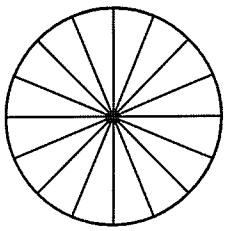
Simplifying Fractions

1 When you can divide the numerator and the denominator by the same number, you can simplify a fraction. If you divide the numerator and denominator by the greatest factor they have in common (the greatest common factor), you can show the fraction in its simplest form. Look carefully at the example below. Then fill in the rest of the table.

Fraction	Factors of the Numerator (top number)	Factors of the Denominator (bottom number)	Greatest Common Factor	Divide to Get the Simplest Form	Picture and Equation
ex $\frac{4}{12}$	1, 2, (4)	1, 2, 3, (4) 6, 12	4	$\frac{4 \div 4}{12 \div 4} = \frac{1}{3}$	 $\frac{4}{12} = \frac{1}{3}$
a $\frac{9}{12}$				$\frac{9 \div}{12 \div} =$	 $\frac{9}{12} =$
b $\frac{10}{16}$				$\frac{10 \div}{16 \div} =$	 $\frac{10}{16} =$

2 Use what you know about factors to write the fractions below in simplest form.

ex $\frac{5 \div 5}{15 \div 5} = \frac{1}{3}$	**a** $\frac{9 \div}{15 \div} =$	**b** $\frac{6 \div}{16 \div} =$	**c** $\frac{8 \div}{12 \div} =$

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Decimals & Fractions

1 Write the place value of the underlined digit in each number. The place values are spelled for you here:

hundreds	tens	ones	tenths	hundredths

example 2.0<u>3</u> hundredths

a 3.<u>1</u>7 _____

b 12<u>0</u>.4 _____

c <u>5</u>06.92 _____

d 54.2<u>9</u> _____

e 32.<u>7</u> _____

2 Write each decimal number.

ex a Twenty-three and two-tenths: 23.2

ex b One hundred thirty and five-hundredths: 130.05

a Six and seven-hundredths: _____

b Two-hundred sixty-five and eight-tenths: _____

3 Write each fraction or mixed number as a decimal number.

ex a $5\frac{3}{10}$ = 5.3	**ex b** $12\frac{4}{100}$ = 12.04	**ex c** $3\frac{17}{100}$ = 3.17
a $\frac{7}{10}$ =	**b** $3\frac{5}{100}$ =	**c** $\frac{4}{100}$ =
d $4\frac{38}{100}$ =	**e** $1\frac{9}{100}$ =	**f** $1\frac{9}{10}$ =

4 Use a greater than (>), less than (<), or equal sign to show the relationship between the decimal numbers below.

ex 1.09 < 1.9	**a** 1.12 1.2	**b** 3.5 3.48
c 23.81 23.85	**d** 4.50 4.5	**e** 3.06 3.65

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Ordering Decimals & Fractions

1 Write the decimal number that is equal to each fraction below.

ex $\frac{25}{100}$ = *0.25*	**a** $\frac{5}{10}$ =	**b** $\frac{50}{100}$ =	**c** $\frac{75}{100}$ =
d $\frac{1}{4}$ =	**e** $\frac{1}{2}$ =	**f** $\frac{3}{4}$ =	**g** $\frac{10}{10}$ =

2a Write each decimal number in the box where it belongs.

0.28 0.06 0.92 0.3 0.8 0.6 0.15 0.71

less than $\frac{1}{4}$	between $\frac{1}{4}$ and $\frac{1}{2}$	between $\frac{1}{2}$ and $\frac{3}{4}$	greater than $\frac{3}{4}$

b Write the decimal numbers above in order from least to greatest.

_____ _____ _____ _____ _____ _____ _____ _____

least greatest

3 Write the following fractions and decimals in order from least to greatest.

0.3 $\frac{9}{10}$ 0.78 $\frac{1}{4}$ 0.08 0.23 $\frac{3}{4}$

_____ _____ _____ _____ _____ _____ _____

least greatest

4 Write the following fractions and decimals in order from least to greatest.

3.6 $\frac{5}{4}$ $\frac{1}{3}$ 0.02 $1\frac{1}{2}$ 2.25 $\frac{10}{4}$

_____ _____ _____ _____ _____ _____ _____

least greatest

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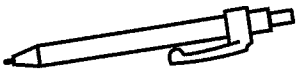
Pencils & Paint

1 Keiko wants to buy mechanical pencils for all 25 of her classmates. Mechanical pencils come in packages of 6 that each cost $2.99. If Keiko has $12 in her pocket, can she buy enough mechanical pencils right now? Show all your work.



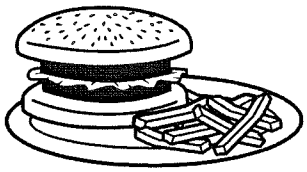
CHALLENGE

2 On Spring Cleanup Day, the fourth graders are going to paint the hallways in the school. They measured the walls and figured out that they have 4,800 sq. feet to paint. They want to paint half of the walls green and half yellow. Each gallon of green paint covers 250 sq. feet and costs $30. Each gallon of yellow paint covers 250 sq. feet and costs $32. How much will it cost them to buy enough paint to paint the hallways? Show all your work.

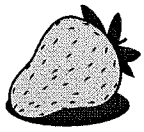
NAME _____ **DATE** _____

Decimal & Fraction Story Problems

1 Breanna is having a barbecue with her family. They need to get $2\frac{1}{4}$ pounds of ground beef for everyone to have a hamburger. Breanna found a package of ground beef at the store that was 2.4 pounds. Would that be enough ground beef for their family? Explain your answer.



2 Bob is making jam. He needs $3\frac{3}{4}$ pounds of strawberries. He put a box of berries on the scale at the farm stand. The scale said "3.6 pounds." Is that enough strawberries? Explain your answer.



3 Leilani's mom said that they could stop for a snack sometime after they had driven $13\frac{1}{2}$ miles. The trip meter on their car shows 13.8 miles. Can they stop for a snack now?

NAME _____ DATE _____

Decimal & Fraction Riddles

1 Write the decimal number that is equal to each fraction below.

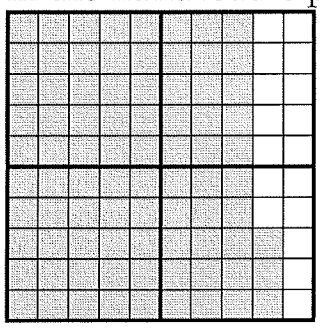
ex a $\frac{1}{2}$ = 0.5	**ex b** $1\frac{1}{2}$ = 1.5	**ex c** $\frac{6}{10}$ = 0.6	**ex d** $\frac{79}{100}$ = 0.79
a $\frac{1}{4}$ = _____	**b** $\frac{3}{4}$ = _____	**c** $\frac{7}{10}$ = _____	**d** $\frac{2}{100}$ = _____
e $\frac{30}{100}$ = _____	**f** $\frac{53}{100}$ = _____	**g** $2\frac{6}{100}$ = _____	**h** $3\frac{1}{4}$ = _____

2 Use >, <, or = to compare each pair of numbers.

a $\frac{3}{2}$ 1.5	**b** 0.6 $\frac{9}{100}$	**c** $\frac{36}{100}$ 0.25	**d** 0.75 $\frac{9}{12}$
e $83\frac{1}{2}$ 83.48	**f** $\frac{125}{100}$ 1.07	**g** $\frac{82}{100}$ 0.9	**h** $74\frac{3}{4}$ 74.8

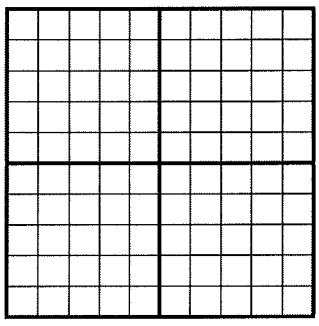
3 Shade in and label each grid to show a decimal number that fits the description. There is more than one right answer for each one.

example Show a number that is greater than $\frac{1}{2}$ and has an odd number in the hundredths place.



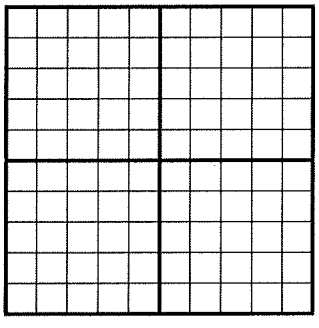
0.83

a Show a number that is greater than $\frac{3}{4}$ and has a 0 in the hundredths place.



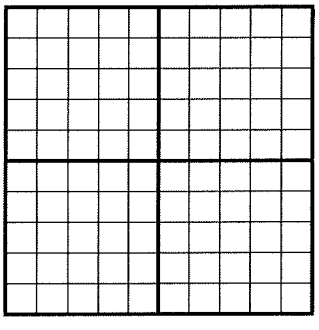
_____

b Show a number that is less than $\frac{1}{4}$ and has an even number in the tenths place.



_____

c Show a number between $\frac{1}{4}$ and $\frac{1}{2}$ with an odd number in the tenths place.



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NAME _____ DATE _____

Jeff's Wallpaper Problem

1 Jeff is going to hang wallpaper on the big wall in his living room. The wall is 16 feet tall and 23 feet wide. There is a window in the middle of the wall that is 5 feet tall and 8 feet wide. How many square feet of wall does Jeff have to cover with wallpaper? Hint: *Draw a picture.* Show all of your work.

2 The wallpaper Jeff wants to use comes in rolls that are 1 yard wide and 10 yards long. How many square feet of wallpaper are in each roll? Show all of your work.

CHALLENGE

3 What happens to the area of a rectangle if you double one side while cutting the other side in half? Start with the rectangle below. Draw and label two more rectangles to show what happens.