NAME _____ DATE _____

Set B1 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

Padre's Pizza

1 It costs $9.50 for a large pizza with cheese at Padre's Pizza. Each extra topping is $1.00.

a Which equation could be used to find y, the amount of money it would cost for a large pizza with 4 extra toppings?

$y = \$9.50 - \$4.00$ ○

$y = \$9.50 \times (4 \times \$1.00)$ ○

$y = \$9.50 + (4 \times \$1.00)$ ○

$y = (4 \times \$1.00) \div \$9.50$ ○

b Explain your answer to part a. Why did you choose this equation instead of the others?

2 It's Ty's birthday. For his party, his mom bought 4 large pizzas with a total of 9 extra toppings.

a Which equation could be used to find y, the amount of money she had to pay?

$y = \$9.50 + (9 \times \$1.00)$ ○

$y = (4 \times \$9.50) + (4 \times \$1.00)$ ○

$y = \$9.50 - (9 \times \$1.00)$ ○

$y = (4 \times \$9.50) + (9 \times \$1.00)$ ○

b Explain your answer to part a. Why did you choose this equation instead of the others?

(Continued on back.)

Independent Worksheet 1 Padre's Pizza (cont.)

3 The marching band went to Padre's after the Friday night football game. They ordered 7 large pizzas with 3 extra toppings each and 4 large pizzas with 4 extra toppings each.

a Which equation could be used to find t, the total number of extra toppings?

$t = (7 \times 3) + (4 \times 4)$ ○

$t = 7 \times 3 \times 4 \times 4$ ○

$t = (7 + 3) \times (4 + 4)$ ○

$t = 7 + 3 + 4 + 4$ ○

b Use the equation you picked to solve the problem. How many extra toppings did they order in all? Show your work.

c How much did they have to pay for all the pizzas they ordered? Show all your work.

4 The cook at Padre's Pizza has 12 pizzas lined up for a special order. She put cheese and sausage on all of them. She added pineapple to every second pizza and olives to every third pizza.

a Which pizzas in the line will have all 4 toppings (cheese, sausage, pineapple, and olives)? Mark the row you could use to solve this problem.

○ P PC PO PC T P PC O P PC T PO PC P PC OT

○ C CS CP CS O C CS P C CS O CP CS C CS PO

○ CS CS P CS O CS P CS CS PO CS CS P CS O CS P CS CS PO

(Continued on next page.)

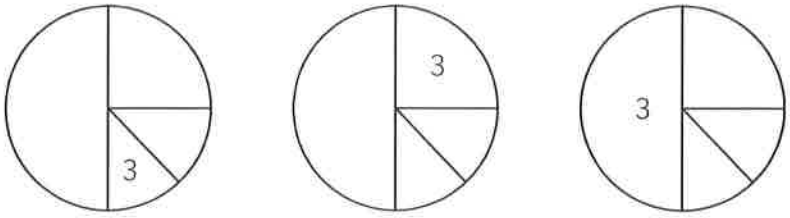
NAME _____ DATE _____

Independent Worksheet 1 Padre's Pizza (cont.)

4b Which of the 12 pizzas got all 4 toppings?

5 The boy's basketball team came into Padre's on Wednesday night after practice. Half the boys on this team also play soccer, $\frac{1}{4}$ play baseball, and $\frac{1}{8}$ are in the school band. The remaining 3 boys aren't in any other activities. No one is in more than 2 activities.

a How many boys are there on the basketball team? Circle the diagram that will give you the most help solving this problem.



b Use the diagram you picked to help solve the problem. Show all of your work.

NAME _____ DATE _____

Set B1 ★ Independent Worksheet 2

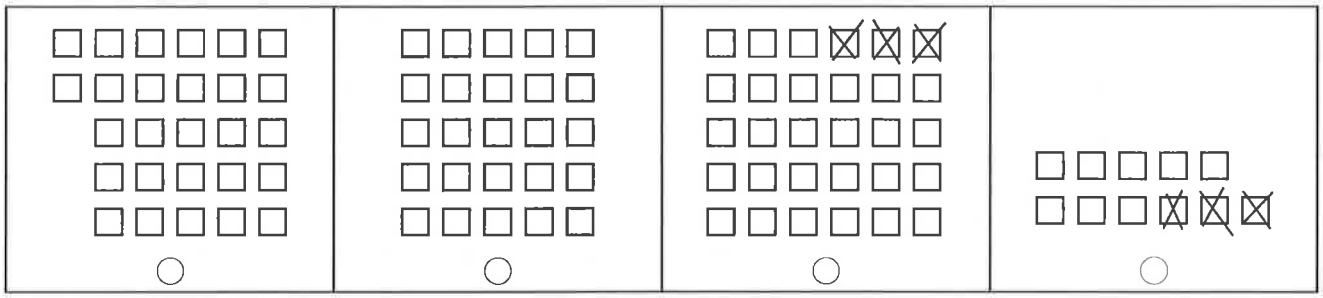
INDEPENDENT WORKSHEET

Choosing Equations & Diagrams

Select the diagram and equation that best represent each problem situation below.

1 There are 5 rows of 6 desks in the classroom. Today, 3 of the desks are empty. How many students are in class today?

a Which diagram below best shows this problem?



b If x represents the number of students in class, which equation could be used to solve the problem?

$5 + 3 + 6 = x$ ○	$(5 \times 6) - 3 = x$ ○	$(5 \times 3) + 6 = x$ ○	$(5 \times 6) + 3 = x$ ○

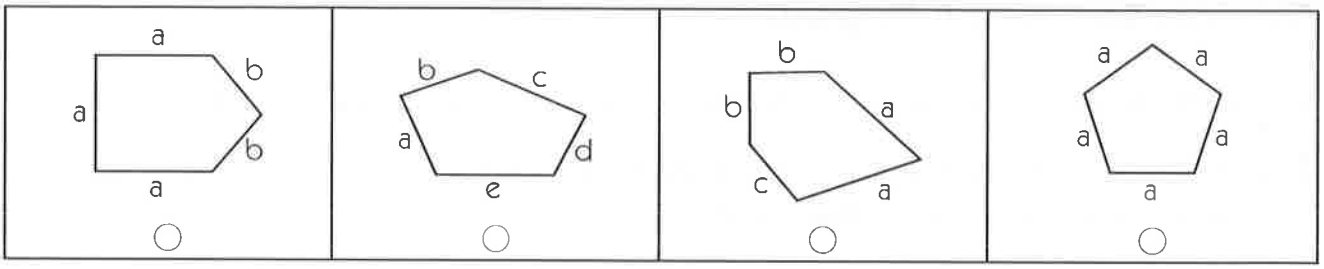
c Explain your answer to part b. Why did you choose this equation instead of the others?

(Continued on back.)

Independent Worksheet 2 Choosing Equations & Diagrams (cont.)

2 A pentagon has three longer sides that are all the same length and two shorter sides that are both the same length.

a Which diagram shows the pentagon described above?

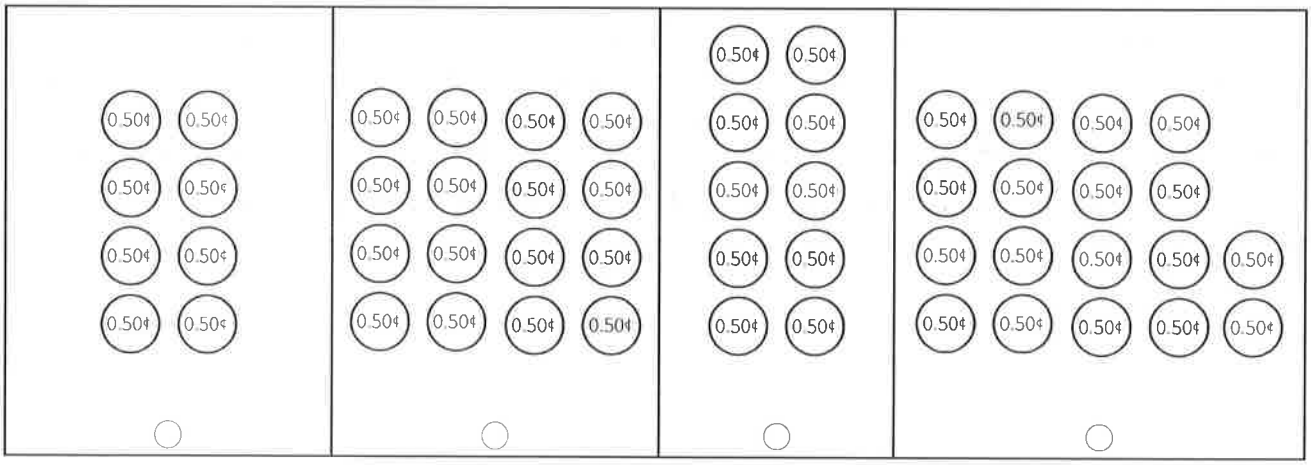


b Which equation could be used to find the perimeter of the pentagon?

$P = 5 \times a$ ○	$P = 3 + a + 2 + b$ ○	$P = (2 \times a) + (2 \times b)$ ○	$P = (3 \times a) + (2 \times b)$ ○

3 Destiny is having a party. She wants to get two cookies for each of the 8 people, including herself, who will be at the party. If each cookie costs 50¢, how much money will she spend on cookies?

a Which diagram below best shows this problem?



b Explain your answer to part a. Why did you choose this diagram instead of the others?

(Continued on next page.)

NAME _____ DATE _____

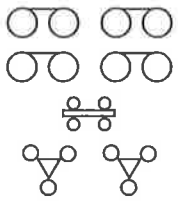
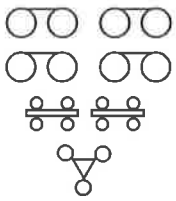
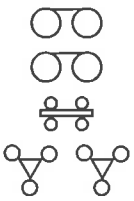
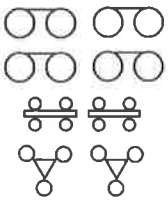
Independent Worksheet 2 Choosing Equations & Diagrams (cont.)

c If x represents the amount of money Destiny is going to spend, which equation could be used to solve the problem?

$(2 + 8) \times 0.50 = x$ ○	$(2 \times 8) \times 1.00 = x$ ○	$(2 \times 8) - 0.50 = x$ ○	$(2 \times 8) \times 0.50 = x$ ○

4 There are 4 bikes, 2 skateboards, and a tricycle in Milo's garage How many wheels are there altogether?

a Which diagram below best shows this problem?

 ○	 ○	 ○	 ○

b If x represents the number of wheels in Milo's garage, which equation could be used to solve the problem?

$2 \times (4 + 2 + 1) = x$ ○	$(2 + 4 + 3) \times 2 = x$ ○	$2 \times 4 \times 3 = x$ ○	$(4 \times 2) + (2 \times 4) + 3 = x$ ○

c Explain your answer to part b. Why did you choose this equation instead of the others?

5 There are some bikes and trikes on the playground. There are 36 wheels in all, and 15 bikes and trikes. How many bikes are there? How many trikes are there? Make a labeled diagram to solve the problem. Show your work. Use the back of the page if you need more room.

Equations & Properties page 1 of 2

1 Solve this problem in your head: $5 \times 37 \times 2 =$

Order of operations says we multiply the numbers in order from left to right:

$$(5 \times 37) \times 2$$

We can use two properties to make this problem easier to solve:

Associative Property
Changing the way you group three numbers or numerical epressions when you add or multiply does not change the answer. $(2 + 3) + 4 = 2 + (3 + 4)$ *and* $(2 \times 3) \times 4 = 2 \times (3 \times 4)$

$$(5 \times 37) \times 2 = 5 \times (37 \times 2)$$

Commutative Property
Changing the order of two numbers or numerical epressions when you add or multiply does not change the answer. $5 + 3 = 3 + 5$ *and* $3 \times 4 = 4 \times 3$

$$5 \times (37 \times 2) = 5 \times (2 \times 37)$$

If we use the associative property again, we can make the problem even easier to solve.

$$5 \times (2 \times 37) = (5 \times 2) \times 37$$

$$10 \times 37 =$$

What's the answer?

Equations & Properties page 2 of 2

2 Solve this problem in your head: $6 \times 17 =$

Did you multiply 6×10 and then 6×7, and then add the two products? If you did, you used the

Distributive Property
When you multiply a number you can break that number apart. Multiply each part separately, and then add the products. You will still get the same answer.

$$6 \times 17 = 6 \times (10 + 7)$$
$$6 \times (10 + 7) = (6 \times 10) + (6 \times 7)$$
$$(6 \times 10) + (6 \times 7) = 60 + 42$$
$$60 + 42 =$$

What's the answer?

3 Solve the problems below in your head. Use one or more of the properties to help?

Commutative Property *Switch the order of two numbers.*
Associative Property *Group it differently.*
Distributive Property *Break the number apart and multiply one part at a time.*

a $(28 \times 50) \times 2 =$	**b** $(40 + 267) + 60 =$
c $5 \times 37 =$	**d** $4 \times (25 \times 298) =$

NAME _____ DATE _____

Defining & Using the Properties

1 Write your own definition of each property, and give an example so you can remember how it works.

Property	Definition	Example
a Commutative		
b Associative		
c Distributive		

2 For each problem below:

- Use one or more of the above properties to rewrite the equation in a form that's easier to solve.
- Solve it and write the answer.
- Circle all the properites you used to rewrite the equation (C for commutative, A for Associative, and D for Distributive.)

Problem	Rewrite	Answer	Property
ex. (70 + 469) +30	(70 + 30) + 469	569	(C) (A) D
a (5 × 39) × 2			C A D
b (27 × 25) × 4			C A D
c 4 × 27			C A D
d (40 + 579) + 60			C A D
e 6 × 28			C A D
f (16 × 50) × 2			C A D

NAME _____ DATE _____

Set A8 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

Properties Make It Easier

Here are two properties that make it easier to do mental math.

Commutative Property *Changing the order of two numbers or numerical epressions when you add or multiply does not change the answer.*

$$5 + 3 = 3 + 5 \quad \text{and} \quad 3 \times 4 = 4 \times 3$$

Associative Property *Changing the way you group three numbers or numerical epressions when you add or multiply does not change the answer.*

$$(2 \times 3) \times 4 = 2 \times (3 \times 4)$$

2 For each problem below:

- Use one or both of the above properties to rewrite the equation in a form that's easier to solve.
- Solve it and write the answer.
- Circle all the properites you used to rewrite the equation (C for commutative, A for Associative, or C and A if you used both properties.)

Problem	Rewrite	Answer	Property
ex. (70 + 469) +30	(70 + 30) +469	569	(C) (A)
a (5 × 68) × 2			C A
b (24 × 25) × 4			C A
c (32 × 50) × 2			C A
d (30 + 587) + 70			C A
e 50 × (20 × 16)			C A

(Continued on back.)

Independent Worksheet 1 Properties Make It Easier (cont.)

Distributive Property *When you multiply a number you can break that number apart. Multiply each part separately, and then add the products. You will still get the same answer.*

2 Use the distributive property to make the problems below easier. Fill in the missing steps to get the answers.

example 6 × 13 ↓
6 × (10 + 3) ↓
(6 × 10) + (6 × 3) ↓
60 + 18 = 78

a 7 × 23 ↓
7 × (20 + 3) ↓
↓

b 8 × 24 ↓
8 × (20 + 4) ↓
↓

c 5 × 45 ↓
↓
(5 × 40) + (5 × 5) ↓

d 3 × 28 ↓
↓
(3 × 20) + (3 × 8) ↓

e 5 × 63 ↓
↓
↓

f 6 × 35 ↓
↓
↓

g 9 × 24 ↓
9 × (20 + 4) ↓
↓

h 7 × 39 ↓
↓
↓

NAME _____ DATE _____

Set A8 ★ Independent Worksheet 2

INDEPENDENT WORKSHEET

C is for Commutative, A is for Associative, D is for Distributive

1 Draw a line from each property to the correct definition on the right. Write two more examples below each property to show how it works.

Commutative Property	Changing the way you group three numbers when you add or multiply does not change the answer. $(2 \times 3) \times 4 = 2 \times (3 \times 4)$
Associative Property	You can break a number apart, multiply each part separately, and then add the products. You will still get the same answer. $6 \times 15 =$ $6 \times (10 + 5) =$ $(6 \times 10) + (6 \times 5) =$ $60 + 30 = 90$
Distributive Property	Changing the order of two numbers when you add or multiply does not change the answer. $5 + 3 = 3 + 5$ and $3 \times 4 = 4 \times 3$

2 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 the letter(s) that show(s) the property or properties you used.

Problem	Rewrite	Answer	Property
a 8×32			C A D
b $(4 \times 48) \times 25$			C A D
c $(60 + 6{,}532) + 40$			C A D
d $(5 \times 456) \times 2$			C A D
e 6×85			C A D

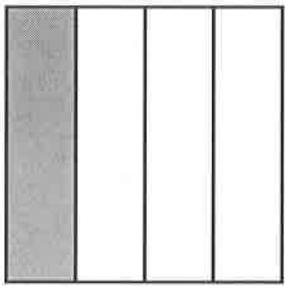
Square Sandwiches & Bedroom Walls

1 Carlos had 2 extra square sandwiches. They were exactly the same size. He gave $\frac{1}{4}$ of the first sandwich to his friend Ben and $\frac{1}{3}$ of the second sandwich to his friend Corey.

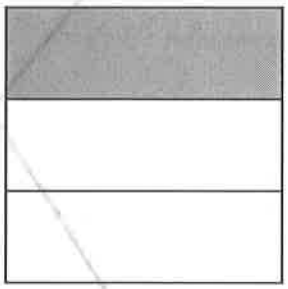
Ben said, "Hey, that's not fair! Corey got more than I did!"

Exactly how much more did Corey get? Divide each sandwich into same-sized pieces to find out.

$\frac{1}{4}$



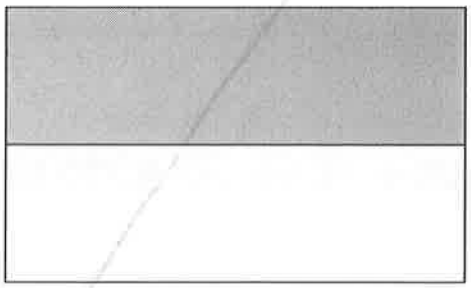
$\frac{1}{3}$



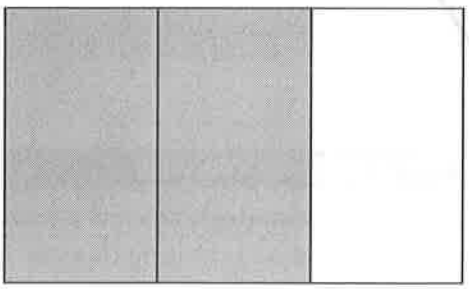
2 Jasmine and Raven were painting 2 walls in Jasmine's bedroom. The 2 walls were exactly the same size. Jasmine painted $\frac{1}{2}$ of the first wall. Raven painted $\frac{2}{3}$ of the other wall.

Exactly how much more did Raven paint than Jasmine? Divide each wall into same-sized pieces to find out. Is there more than one answer?

$\frac{1}{2}$



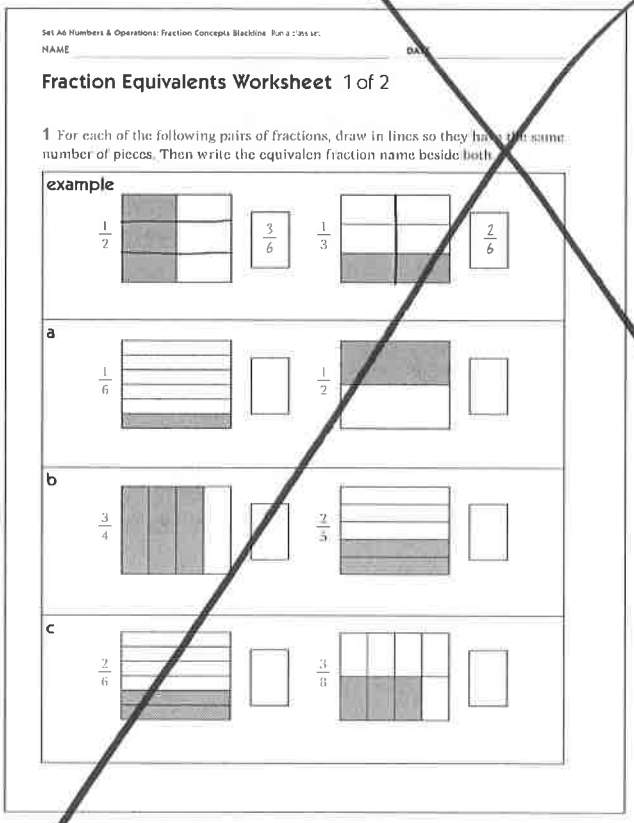
$\frac{2}{3}$



Activity 2 Same-Sized Pieces (cont.)

12. Write $\frac{1}{4}$ and $\frac{2}{6}$ on the board. Which of the two fractions is greater? Exactly how much greater? Ask students to work in pairs to find the least common multiple of 4 and 6, and use the information to rewrite $\frac{1}{4}$ and $\frac{2}{6}$ so they have a common denominator. After they have had a minute or two to work, ask volunteers to share their solutions and strategies with the class.

13. Repeat step 12 with two or three other pairs of fractions. Possibilities include $\frac{2}{6}$ and $\frac{3}{8}$, $\frac{3}{4}$ and $\frac{7}{12}$, and $\frac{3}{5}$ and $\frac{4}{6}$. Then give students each a copy of the Fraction Equivalents Worksheets. Review both sheets with the class and clarify as needed. When students understand what to do, have them go to work. Encourage them to help one another, and circulate to provide help as needed. You might also want to give students a choice of working on the sheet independently, or working with you in a more supported small group setting.



Set A6 Numbers & Operations: Fraction Concepts Blackline Run a class set.

NAME _____ DATE _____

Fraction Equivalents Worksheet 1 of 2

1 For each of the following pairs of fractions, draw in lines so they have the same number of pieces. Then write the equivalent fraction name beside both.

example

$\frac{1}{2}$ $\frac{3}{6}$ $\frac{1}{3}$ $\frac{2}{6}$

a

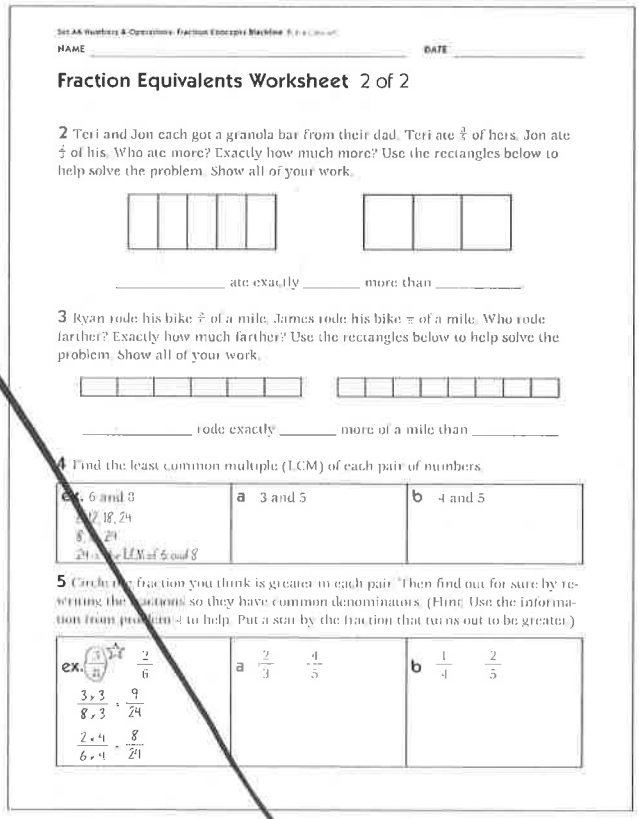
$\frac{1}{6}$ $\frac{1}{2}$

b

$\frac{3}{4}$ $\frac{2}{5}$

c

$\frac{2}{6}$ $\frac{3}{8}$



NAME _____ DATE _____

Fraction Equivalents Worksheet 2 of 2

2 Teri and Jon each got a granola bar from their dad. Teri ate $\frac{3}{8}$ of hers. Jon ate $\frac{3}{5}$ of his. Who ate more? Exactly how much more? Use the rectangles below to help solve the problem. Show all of your work.

_____ ate exactly _____ more than _____

3 Ryan rode his bike $\frac{5}{6}$ of a mile. James rode his bike $\frac{7}{8}$ of a mile. Who rode farther? Exactly how much farther? Use the rectangles below to help solve the problem. Show all of your work.

_____ rode exactly _____ more of a mile than _____

4 Find the least common multiple (LCM) of each pair of numbers.

ex. 6 and 8	a 3 and 5	b 4 and 5
12, 18, 24		
8, 16, 24		
24 is the LCM of 6 and 8		

5 Circle the fraction you think is greater in each pair. Then find out for sure by rewriting the fractions so they have common denominators. (Hint: Use the information from problem 4 to help. Put a star by the fraction that turns out to be greater.)

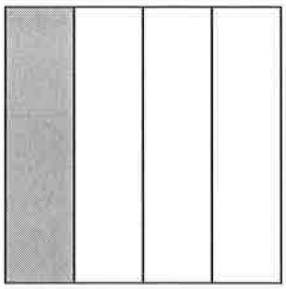
ex. $\frac{3}{8}$ ☆ $\frac{2}{6}$	a $\frac{2}{3}$ $\frac{4}{5}$	b $\frac{1}{4}$ $\frac{2}{5}$
$\frac{3\times3}{8\times3} = \frac{9}{24}$		
$\frac{2\times4}{6\times4} = \frac{8}{24}$		

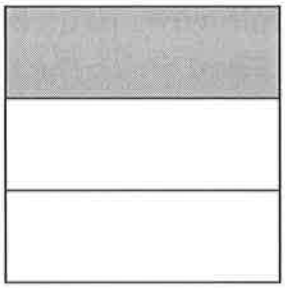
INDEPENDENT WORKSHEET

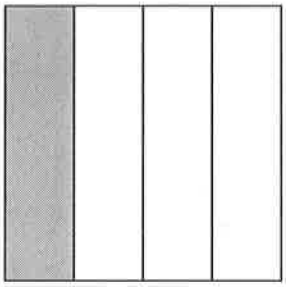
Use Set A6 Independent Worksheets 2 and 3 to provide students more practice finding the difference between two fractions by rewriting them so they have common denominators.

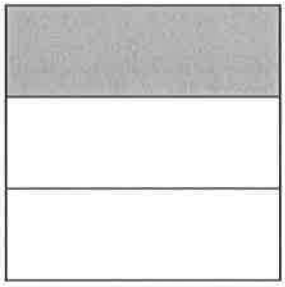
NAME _____ DATE _____

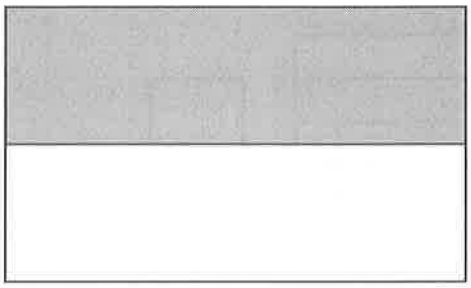
Same-Sized Pieces

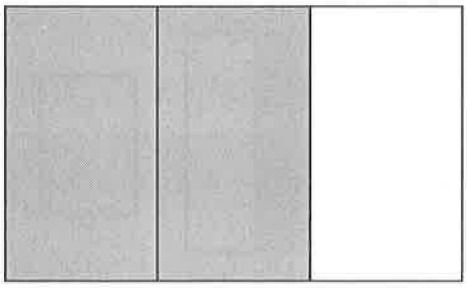


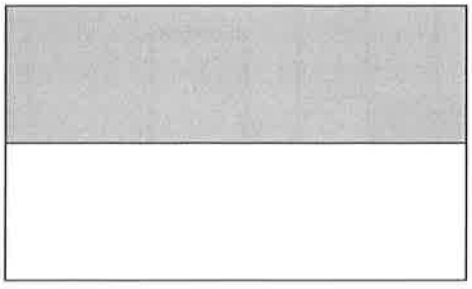


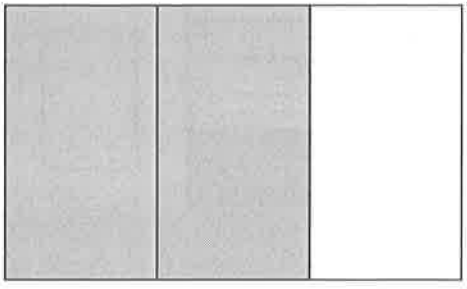










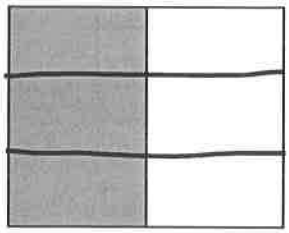
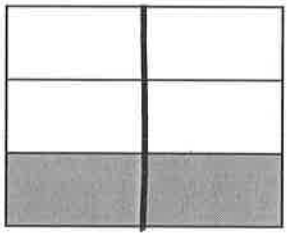


NAME _____ DATE _____

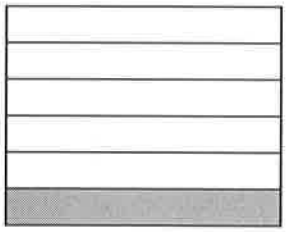
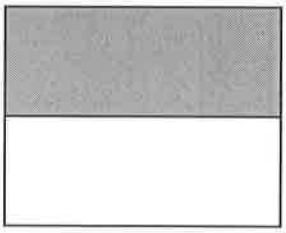
Fraction Equivalents Worksheet page 1 of 2

1 For each of the following pairs of fractions, draw in lines so they have the same number of pieces. Then write the equivalen fraction name beside both.

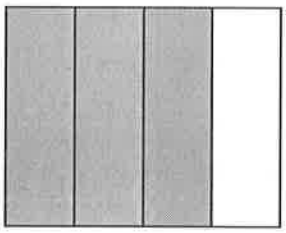
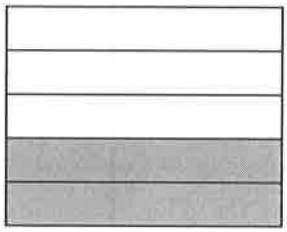
example

$\frac{1}{2}$  $\frac{3}{6}$ $\frac{1}{3}$  $\frac{2}{6}$

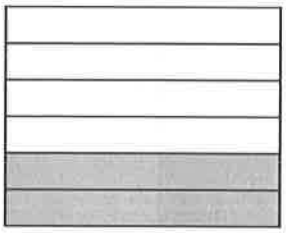
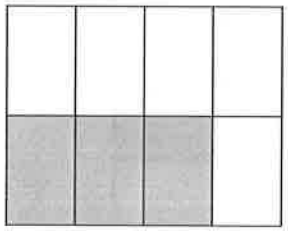
a

$\frac{1}{6}$  $\frac{1}{2}$ 

b

$\frac{3}{4}$  $\frac{2}{5}$ 

c

$\frac{2}{6}$  $\frac{3}{8}$ 

NAME _____ DATE _____

Fraction Equivalents Worksheet page 2 of 2

2 Teri and Jon each got a granola bar from their dad. Teri ate $\frac{3}{5}$ of hers. Jon ate $\frac{2}{3}$ of his. Who ate more? Exactly how much more? Use the rectangles below to help solve the problem. Show all of your work.

_____ ate exactly _____ more than _____.

3 Ryan rode his bike $\frac{5}{6}$ of a mile. James rode his bike $\frac{7}{8}$ of a mile. Who rode farther? Exactly how much farther? Use the rectangles below to help solve the problem. Show all of your work.

_____ rode exactly _____ more of a mile than _____

4 Find the least common multiple (LCM) of each pair of numbers.

ex. 6 and 8	**a** 3 and 5	**b** 4 and 5
6, 12, 18, 24 8, 16, 24 24 is the LCM of 6 and 8		

5 Circle the fraction you think is greater in each pair. Then find out for sure by re-writing the fractions so they have common denominators. (Hint: Use the information from problem 4 to help. Put a star by the fraction that turns out to be greater.)

ex. $\frac{3}{8}$ ☆ $\frac{2}{6}$	**a** $\frac{2}{3}$ $\frac{4}{5}$	**b** $\frac{1}{4}$ $\frac{2}{5}$
$\frac{3 \times 3}{8 \times 3} = \frac{9}{24}$ $\frac{2 \times 4}{6 \times 4} = \frac{8}{24}$		

NAME _____ DATE _____

Set A6 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

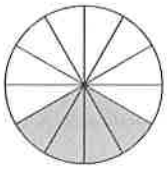
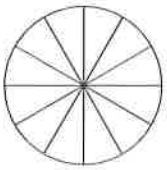
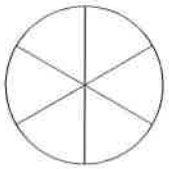
Using the Greatest Common Factor to Simplify Fractions

1 Write all the factors of each number below. Try to think of the factors in pairs.

ex. 2 1, 2 **a** 4 _____ **b** 8 _____

c 3 _____ **d** 6 _____ **e** 12 _____

2 You can simplify a fraction by dividing the numerator and the denominator by the same number. If you divide the numerator and denominator by the largest 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 $\frac{8}{12}$				$\frac{8 \div}{12 \div} = \_\_$	 $\frac{8}{12} = \_\_$
b $\frac{4}{6}$				$\frac{4 \div}{6 \div} = \_\_$	 $\frac{4}{6} = \_\_$

(Continued on back.)

Independent Worksheet 1 Using the Greatest Common Factor to Simplify Fractions (cont.)

3 Find the greatest common factor of each pair of numbers below.

example 6 and 16 Factors of 6 1, (2) 3, 6 Factors of 16 1, (2) 4, 8, 16 Greatest Common Factor of 6 and 16 2	**a** 6 and 21 Factors of 6 _____ Factors of 21 _____ Greatest Common Factor of 6 and 21 _____
b 8 and 24 Factors of 8 _____ Factors of 24 _____ Greatest Common Factor of 8 and 24 _____	**c** 18 and 24 Factors of 18 _____ Factors of 24 _____ Greatest Common Factor of 18 and 24 _____

4 Use your answers from problem 3 to simplify these fractions.

example $\frac{6 \div 2}{16 \div 2} = \frac{3}{8}$ $\frac{6}{16} = \frac{3}{8}$	**a** $\frac{6}{21}$
b $\frac{8}{24}$	**c** $\frac{18}{24}$

5 A fraction is in its simplest form when its numerator and denominator have no common factor other than 1. Look at the fractions below.

- Circle the fractions that can be simplified.
- Put a line under the fractions that are already in simplest form.

$\frac{3}{6}$ $\frac{5}{8}$ $\frac{4}{10}$ $\frac{12}{15}$ $\frac{2}{7}$ $\frac{8}{14}$ $\frac{3}{13}$

6 Choose three of the fractions in problem 5 that can be simplified. Simplify them below. Show your work.

NAME _____ DATE _____

Set A6 ★ Independent Worksheet 2

INDEPENDENT WORKSHEET

Finding the Least Common Denominator

Which is greater, $\frac{2}{3}$ or $\frac{4}{5}$? Exactly how much difference is there between these two fractions? If you want to compare, add, or subtract two fractions, it is easier if you rewrite them so they both have the same denominator.

To do this:

- Find the least common multiple of the denominators of the fractions.

  multiples of 3 3, 6, 9, 12, 15
  multiples of 5 5, 10, 15
  The least common multiple of 3 and 5 is 15.

- Multiply the numerator and denominator of each fraction by the same number so the denominators are equal.

$\frac{2 \times 5}{3 \times 5} = \frac{10}{15}$ $\frac{4 \times 3}{5 \times 3} = \frac{12}{15}$ $\frac{4}{5}$ is greater than $\frac{2}{3}$ by exactly $\frac{2}{15}$

1 Find the least common multiple (LCM) of each pair of numbers.

ex. 4 and 10	**a** 5 and 6	**b** 2 and 7
4, 8, 12, 16, 20 10, 20 20 is the LCM of 4 and 10		

2 Circle the fraction you think is greater in each pair. Then find out for sure by re-writing the fractions so they have common denominators. Hint: Use the information from problem 1 to help. Put a star by the fraction that turns out to be greater.

ex. (3/4) ☆ 7/10	**a** 4/5 5/6	**b** 1/2 4/7
$\frac{3 \times 5}{4 \times 5} = \frac{15}{20}$ $\frac{7 \times 2}{10 \times 2} = \frac{14}{20}$		

(Continued on back.)

Independent Worksheet 2 Finding the Least Common Denominator (cont.)

3 Find the least common multiple (LCM) of each pair of numbers.

a 5 and 10	**b** 6 and 9	**c** 5 and 7

4 Circle the fraction you think is greater in each pair. Then find out for sure by rewriting the fractions so they have common denominators. Hint: Use the information from problem 3 to help. Put a star by the fraction that turns out to be greater.

a $\frac{2}{5}$ $\frac{3}{10}$	**b** $\frac{4}{6}$ $\frac{7}{9}$	**c** $\frac{4}{5}$ $\frac{5}{7}$

5 Erica swam $\frac{6}{8}$ of a mile on Monday. She swam $\frac{10}{12}$ of a mile on Tuesday. Did she swim farther on Monday or Tuesday. Exactly how much farther? Use numbers, words, and/or labeled sketches to solve this problem. Show all your work.

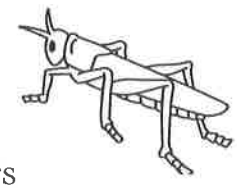
Erica swam exactly _____ of a mile farther on _____.

Set A6 ★ Independent Worksheet 3

INDEPENDENT WORKSHEET

LCM & GCF

1 Two grasshoppers are hopping up the stairs. Gary starts at the bottom and hops up 3 stairs at a time. First he lands on step 3, then step 6, and so on. Grace starts at the bottom and hops up 4 stairs at a time. First she lands on step 4, then step 8, and so on.



a The staircase has 24 steps. On which steps will both grasshoppers land? Use labeled sketches, numbers, and/or words to solve the problem. Show your work.

Both grasshoppers will land on steps _____.

b What is the first step on which both grasshoppers will land? _____
This is the least common multiple of 3 and 4.

2 Find the least common multiple (LCM) of each pair of numbers.

ex. 6 and 8	**a** 4 and 9	**b** 5 and 8	**c** 6 and 14
6, 12, 18, 24 8, 16, 24 24 is the LCM of 6 and 8			

3 Circle the fraction you think is greater in each pair. Then find out for sure by rewriting the fractions so they have common denominators. Hint: Use the information from problem 2 to help. Put a star by the fraction that turns out to be greater.

ex. (5/6) ☆ 6/8	**a** 3/4 7/9	**b** 2/5 3/8	**c** 4/6 9/14
$\frac{5\times4}{6\times4} = \frac{20}{24}$ $\frac{6\times3}{8\times3} = \frac{18}{24}$			

(Continued on back.)

Independent Worksheet 3 LCM & GCF (cont.)

4 You can use the greatest common factor (GCF) to help simplify fractions.

Find the greatest common factor of each pair of numbers.

ex. 12 and 24 Factors of 12 are 1, 2, 3, 4, 6, (12) Factors of 24 are 1, 2, 3, 4, 6, 8, (12), 24 12 is the GCF of 12 and 24	**a** 8 and 20
b 12 and 18	**c** 10 and 15

5 Use your answers from problem 4 to simplify these fractions.

ex. $\frac{12 \div 12}{24 \div 12} = \frac{1}{2}$ $\quad \frac{12}{24} = \frac{1}{2}$	**a** $\frac{8}{20}$
b $\frac{12}{18}$	**c** $\frac{10}{15}$

6 Ebony got $\frac{3}{4}$ of a yard of red ribbon and $\frac{10}{12}$ of a yard of purple ribbon. Which piece of ribbon was longer? Exactly what fraction of a yard longer was it? Use numbers, words, and/or labeled sketches to solve this problem. Make sure your answer is in simplest form.

The _____ piece of ribbon was exactly _____ of a yard longer than the _____ piece of ribbon.

NAME _____ DATE _____

Set A5 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

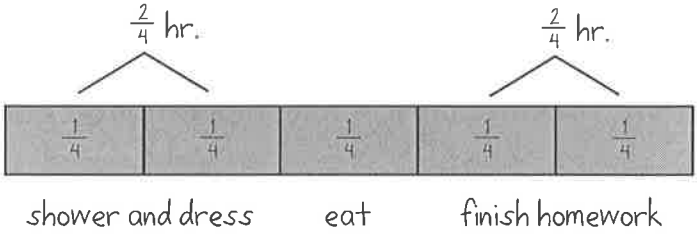
Fractions through the School Day

Make a labeled sketch to solve each of the problems below. Use words to explain your answer, and write an equation to match. Use your fraction kit to help if you want.

Note: If the answer turns out to be an improper fraction, change it to a mixed number.

example Sam and Ali are friends. They're both in Mrs. Hill's fifth grade class. When Sam gets up on school days, it takes him $\frac{2}{4}$ of an hour to take a shower and get dressed, $\frac{1}{4}$ to eat breakfast, and $\frac{2}{4}$ of an hour to finish his homework. How long does it take Sam to get ready for school?

a Labeled Sketch



b Explanation (in words):

2 fourths plus 1 fourth plus 2 more fourths is 5 fourths in all. There are 4 fourths in an hour, so it takes him 1 and $\frac{1}{4}$ hours to get ready for school.

c Equation:

$\frac{2}{4} + \frac{1}{4} + \frac{2}{4} = \frac{5}{4}$ $\quad \frac{5}{4} = 1\frac{1}{4}$ hour

(Continued on back.)

Independent Worksheet 1 Fractions through the Day (cont.)

1 Ali fixed eggs for her family this morning. She had $\frac{5}{6}$ of a carton when she started, and $\frac{2}{6}$ of a carton left when she finished. What fraction of the carton did Ali use?

a Labeled Sketch

b Explanation (in words):

c Equation:

2 Sam and Ali's class had P.E. first thing this morning P.E. lasts $\frac{4}{8}$ of an hour. They spent $\frac{1}{8}$ of an hour running laps. What fraction of an hour did they have left after that?

a Labeled Sketch

b Explanation (in words):

c Equation:

(Continued on next page.)

Independent Worksheet 1 Fractions through the Day (cont.)

3 Ali had $\frac{5}{6}$ of a granola bar in her lunchbox. She ate $\frac{3}{6}$ of the bar at recess. What fraction of the bar did she have left for lunch?

a Labeled Sketch

b Explanation (in words):

c Equation:

4 They had a math test after recess. Mrs. Hill said, "You have $\frac{8}{12}$ of an hour to complete the test." After $\frac{6}{12}$ of an hour, Sam only had 1 page left to go. How much of an hour did he have left to finish the last page?

a Labeled Sketch

b Explanation (in words):

c Equation:

(Continued on back.)

Independent Worksheet 1 Fractions through the Day (cont.)

5 The 5th graders at Sam and Ali's school take turns picking up trash on the playground after lunch each day. The chart below shows how many pounds of trash each class has picked up so far this week. How many pounds have they collected in all?

Fifth Grade Class	Pounds of trash
Mrs. Hill's Class	$2\frac{1}{6}$ pounds
Mr. Wong's Class	$1\frac{2}{6}$ pounds
Mrs. Tejada's Class	$1\frac{4}{6}$ pounds

a Labeled Sketch

b Explanation (in words):

c Equation:

6 The 5th graders are painting a mural about recycling on one of the walls by the playground. So far, they've used $1\frac{2}{8}$ gallons of red paint, $2\frac{5}{8}$ gallons of yellow paint, and $2\frac{3}{8}$ gallon of green paint. How many gallons of paint have they used in all?

a Labeled Sketch

b Explanation (in words):

c Equation:

NAME _____ DATE _____

Set A5 ★ Independent Worksheet 2

INDEPENDENT WORKSHEET

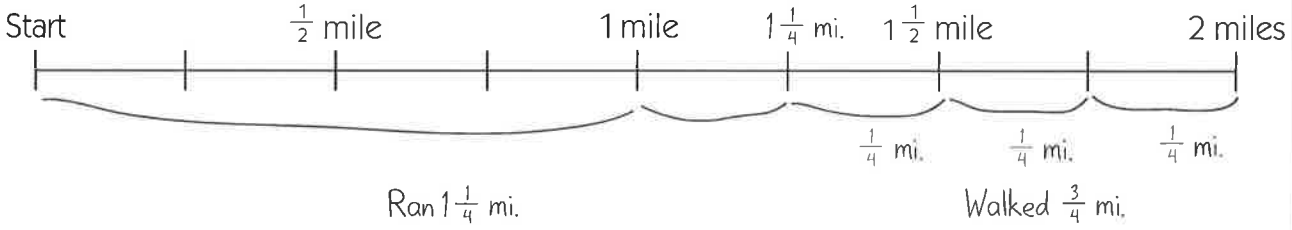
Fractions on the Trail

There is a 2-mile hiking trail behind Kennedy School. Make a labeled sketch on the map to solve each of the problems below. Add more marks and fractions to the line if you need to. Use words to explain your answer, and write an equation to match.

Note: If the answer turns out to be an improper fraction, change it to a mixed number.

example Marissa and her mom ran the first $1\frac{1}{4}$ miles of the trail. They got tired, so they walked the rest of the way. How far did they walk?

a Labeled Sketch



b Explanation (in words):

They walked $\frac{3}{4}$ of a mile because 2 - 1 leaves 1 mile, and then they ran another $\frac{1}{4}$ of a mile. That left $\frac{3}{4}$ of mile to go.

c Equation

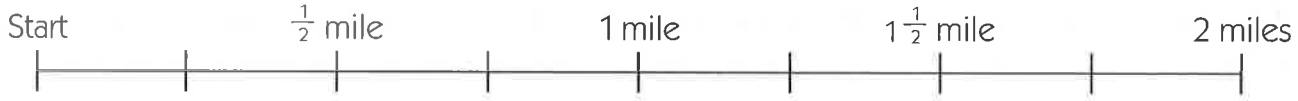
$2 - 1\frac{1}{4} = \frac{3}{4}$ mile

(Continued on back.)

Independent Worksheet 2 Fractions on the Trail (cont.)

1 Tonio took his little brother for a walk on the trail. They walked $\frac{3}{4}$ of a mile Then they turned around and went back to the start. How many miles did they walk in all?

a Labeled Sketch

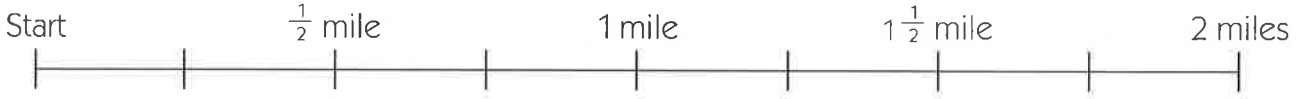


b Explanation (in words):

c Equation:

2 Troy and Eric decided to run the whole 2 miles. Eric twisted his ankle after they'd gone $1\frac{1}{8}$ of a mile. They decided to walk the rest of the way and call Eric's dad to come get them. How many eighths of a mile did they have to walk to get to the end of the trail?

a Labeled Sketch



b Explanation (in words):

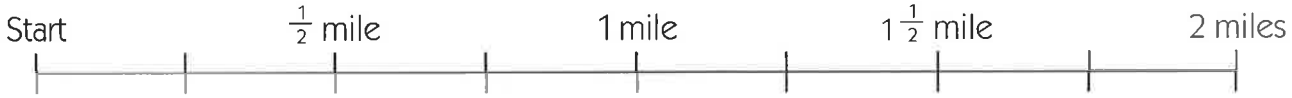
c Equation:

(Continued on next page.)

Fractions Independent Worksheet 2 Fractions on the Trail (cont.)

3 Kendra and her grandma walked $1\frac{3}{8}$ of a mile down the trail. Then they turned around and walked back to the start. How many miles did they walk in all?

a Labeled Sketch

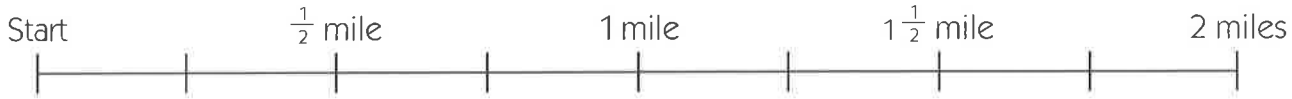


b Explanation (in words):

c Equation:

4 Carter was walking down the trail. When he got to the $\frac{3}{4}$ mile marker, he realized that his glasses had slipped out of his pocket. He turned around and started to go back. He found his glasses right beside the $\frac{2}{4}$ mile marker. Then he turned around and walked to the end of the trail to meet his friend. How many miles did he walk in all?

a Labeled Sketch



b Explanation (in words):

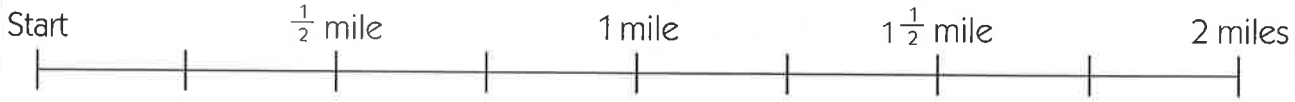
c Equation:

(Continued on back.)

Independent Worksheet 2 Fractions on the Trail (cont.)

5 Everyday, Mrs. Goodman starts at the beginning of the trail and walks $1\frac{1}{4}$ miles. Then she turns around and walks back to the start. How many miles does she walk in 1 week (7 days)?

a Labeled Sketch



b Explanation (in words):

c Equation:

CHALLENGE

6 Make up your own story problem about the hiking trail. Then give it to a classmate to solve. Be sure to check it first to make sure it works.

a My problem:

b Labeled Sketch

c Explanation (in words):

d Equation:

NAME _____ DATE _____

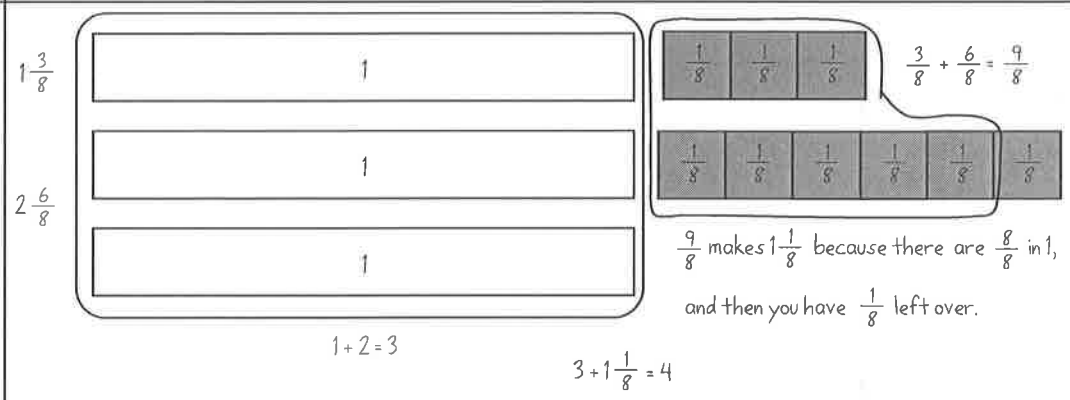
Set A5 ★ Independent Worksheet 3

INDEPENDENT WORKSHEET

Adding & Subtracting Fractions

Use numbers, words, *and* labeled sketches to solve each of the problems below. Show all of your work. Use your fraction kit to help if you want.

Note: If the answer turns out to be an improper fraction, change it to a mixed number.

Problem	Explanation
example $1\frac{3}{8} + 2\frac{6}{8} = 4\frac{1}{8}$	
1 $\frac{5}{6} + \frac{3}{6} =$	

(Continued on back.)

Independent Worksheet 3 Adding & Subtracting Fractions (cont.)

Problem	Explanation
2 $\frac{7}{8} + \frac{4}{8} =$	
3 $2\frac{3}{4} + 3\frac{3}{4} =$	
4 $1\frac{7}{8} - \frac{5}{8} =$	

(Continued on next page.)

Independent Worksheet 3 Adding & Subtracting Fractions (cont.)

Problem	Explanation
5 $3\frac{5}{6}$ $+\ 2\frac{3}{6}$	
6 $3\frac{4}{8}$ $-\ 2\frac{2}{8}$	

CHALLENGE

7 $4\frac{2}{6}$ $-\ 2\frac{5}{6}$	

NAME _____ DATE _____

Set A3 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

Using Compatible Numbers to Multiply & Divide

Mathematicians sometimes estimate answers to multiplication and division problems by using *compatible numbers*. Compatible numbers are numbers that work well together.

example 1 A page in my chapter book has 12 words in each line and 32 lines on the page. *About* how many words on the whole page? Change 12 and 32 to nearby numbers that are easier to multiply in your head. 12 is close to 10 32 is close to 30 10 x 30 = 300, so the page has about 300 words.	**example 2** Mr. Gomez had 396 crayons left over at the end of the year. He's putting them in bags to send home with the kids. He has 20 students in his class. *About* how many crayons will each student get? Change 396 to a nearby number that is easier to divide by 20. 396 is close to 400. 20 is already a friendly number. You don't always have to change both numbers. 400 ÷ 20 = 20, so each student will get about 20 crayons.

1 Choose a chapter book from your classroom. Turn to a page in the middle of the book. *About* how many words do you think there are on the page? To find out, count the number of words in one line. Next, count the number of lines on the page. Record the information:

Words in one line _____ Lines on the page _____

2 Use compatible numbers to estimate the number of words on the page. Show your work.

(Continued on back.)

Independent Worksheet 1 Using Compatible Numbers to Multiply & Divide (cont.)

3 All the fourth and fifth graders at King School are going on a field trip with their teachers and some parent helpers. In all, there will be 197 people. The bus company plans to use 4 buses. Estimate how many people will ride in each bus. Use compatible numbers to help you. Show your work.

4 Use compatible numbers to estimate the answer to each problem below. To use this estimation strategy, change the actual numbers to nearby numbers that are compatible. The first two are done for you.

multiplication example 21 × 19	**division example** 249 ÷ 24
21 is close to 20.	249 is close to 250.
19 is close to 20.	24 is close to 25.
20 × 20 = 400,	250 ÷ 25 = 10,
so the answer is about 400.	so the answer is about 10.
a 32 × 29	**b** 153 ÷ 9
32 is close to _____.	153 is close to _____.
29 is close to _____.	9 is close to _____.
_____ × _____ = _____,	_____ ÷ _____ = _____,
so the answer is about _____.	so the answer is about _____.
c 49 × 19	**d** 119 ÷ 9
49 is close to _____.	119 is close to _____.
19 is close to _____.	9 is close to _____.
_____ × _____ = _____,	_____ ÷ _____ = _____,
so the answer is about _____.	so the answer is about _____.

NAME _____ DATE _____

Set A3 ★ Independent Worksheet 2

INDEPENDENT WORKSHEET

More Multiplication & Division with Compatible Numbers

1 Which 2 numbers in the box could you multiply to come closest to 600? Circle them. Show your thinking.

39	47	5	62	87	11	5	26

2 Estimate the answers to the following multiplication problems. Use compatible numbers to help. Show your work. The first one is done for you.

example 31 × 28 31 is close to 30. 28 is close to 30. 30 × 30 = 900. so the answer is about 900.	**a** 39 × 22
b 84 × 11	**c** 48 × 18

(Continued on back.)

Independent Worksheet 2 More Multiplication & Division with Compatible Numbers (cont.)

3 Estimate the answers to the following division problems. Use compatible numbers to help you. Show your work.

a *About* how much does each can of sugar-free soda cost if a case of 24 costs $5.99?

b 9 scouts want to split a bag of 262 peanuts equally. *About* how many peanuts will each of the scouts get?

c The scouts in Lincoln City collected 594 cans of food Now they're going to put the cans into bags to take to the Food Bank. If they put 21 cans in each bag, *about* how many bags of food can they make?

NAME _____ DATE _____

Set A3 ★ Independent Worksheet 3

INDEPENDENT WORKSHEET

Reasonable Estimates in Multiplication & Division

1 Fill in the bubble in front of the answer that gives a reasonable estimate for each problem. (Hint: Try using compatible numbers to help.) To the right of the problem, use words, numbers and/or pictures to explain why you think it is a reasonable estimate. The first one is done for you.

example

$$\begin{array}{r} 19 \\ \times\ 22 \\ \hline \end{array}$$

- ○ 229
- ○ 290
- ● 400
- ○ 500

19 is close to 20. 22 is close to 20. 20 × 20 = 400, so 400 is the best estimate.

a

$$\begin{array}{r} 28 \\ \times\ 21 \\ \hline \end{array}$$

- ○ 400
- ○ 500
- ○ 600
- ○ 700

b

$$\begin{array}{r} 26 \\ \times\ 9 \\ \hline \end{array}$$

- ○ 180
- ○ 260
- ○ 300
- ○ 540

c 206 ÷ 19 =

- ○ 10
- ○ 16
- ○ 20
- ○ 26

d 598 ÷ 18 =

- ○ 18
- ○ 21
- ○ 25
- ○ 30

e 994 ÷ 19 =

- ○ 40
- ○ 45
- ○ 50
- ○ 60

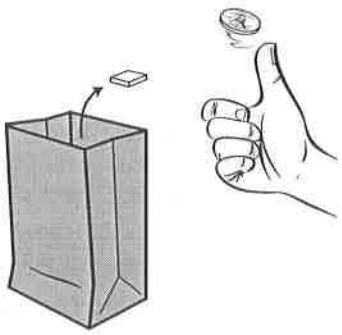
(Continued on back.)

Independent Worksheet 3 Reasonable Estimates in Multiplication & Division (cont.)

2 Brianna has $9.00. Baseball trading cards cost $0.49 each. She estimates that she will be able to buy about 27 cards with her money. Is this a reasonable estimate? Use words, numbers and/or pictures to explain your answer.

Counting the Possible Outcomes page 1 of 2

Rafael put 4 tile in a bag, one green, one red, one yellow, and one blue. Then he shook the bag to mix the tile.



If he flips a penny and pulls 1 tile out of the bag without looking, what is the probability that the penny will land on heads and the tile he pulls out will be green?

What do you have to do to find out?

To determine probability, you need to know all the different things that can happen. A list of all the possible outcomes is called a *sample space.*

You can make a sample space for a probability experiment by thinking of all the possibilities and writing them down. Here are two other methods:

1 Make a chart.

	Green	Red	Yellow	Blue
Heads 				
Tails 				

Activity 1 Counting the Possible Outcomes (cont.)

Students *Yep! There are 2 ways the penny can land and 4 different colors. 2 x 4 = 8. You can see it on the chart, but just multiplying is way easier than making a chart.*

11. Ask students to think about the fundamental counting principle in relation to the Odd Coin Game. Can they use the counting principle to predict how many different outcomes there are for flipping 3 coins at the same time?

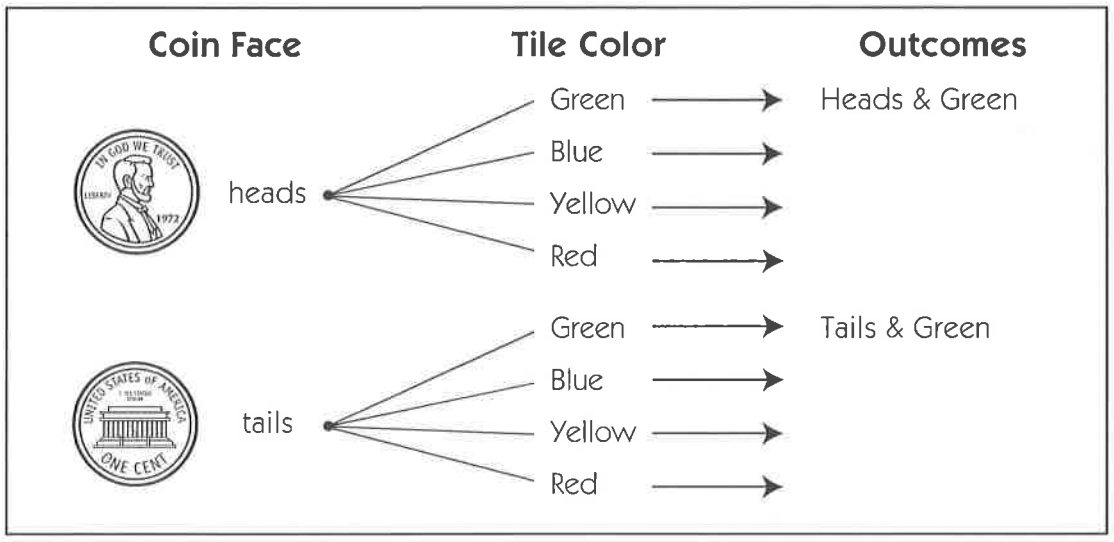
Students *There are 2 possibilities for each penny. You can get heads or tails. So that's 2 outcomes for the first penny, 2 for the second, and 2 for the third. It would be 2 x 2 x 2 = 8. That's right! There were 8 different combinations, remember?*

INDEPENDENT WORKSHEET

Use Set E2 Independent Worksheets 1 and 2 to provide students with more practice creating sample spaces and applying the fundamental counting principle.

Counting the Possible Outcomes page 2 of 2

2 Make a tree diagram.



3 If Rafael flips a penny and pulls 1 tile out of the bag without looking, what is the probability that the penny will land on tails and the tile he pulls out will be blue? How do you know?

NAME _____ DATE _____

Amber's Experiment

1 Amber is going to flip a penny and roll a die at the same time. The die has the numbers 1, 2, 3, 4, 5, and 6 on it. What is the probability that the penny will land on heads and the die will land on 4? Write your prediction here and explain your thinking.

2 You are going to make 2 kinds of sample spaces for this experiment. Remember, a sample space is a list of all the possible outcomes.

a Think before you start. What are the possible outcomes for the penny flip?

b What are the possible outcomes for the die roll?

c Complete the chart below to show all the possible outcomes of Amber's experiment.

Number Rolled	1	2	3	4	5	6
Heads 		H2				
Tails 					T5	

d On the back of this sheet, make a tree diagram to show all the possible outcomes of Amber's experiment.

3 How many possible outcomes are there in this experiment? _____

4 What is the probability that the penny will land on heads and the die will land on 4? Express your answer as a fraction.

NAME _____ DATE _____

Set E2 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

Charlie's Marbles

Charlie put 4 marbles in a bag. One of the marbles was green, one was yellow, one was blue, and one was red. He shook the bag to mix up the marbles.

Then he put 4 more marbles in another bag. One of the marbles was green, one was yellow, one was blue, and one was red. He shook the bag to mix up the marbles.

When the bags were ready, Charlie said to his friend, Sara, "I am going to pull a marble out of both bags at the same time without looking. What are my chances of getting a red marble out of the first bag and a blue marble out of the second bag?"

Sara said, "I think your chances of getting a red marble out of the first bag and a blue marble out of the second bag are 1 in 16."

1 Do you agree with Sara? Why or why not?

2 Complete the chart below to show all the possible combinations Charlie could get.

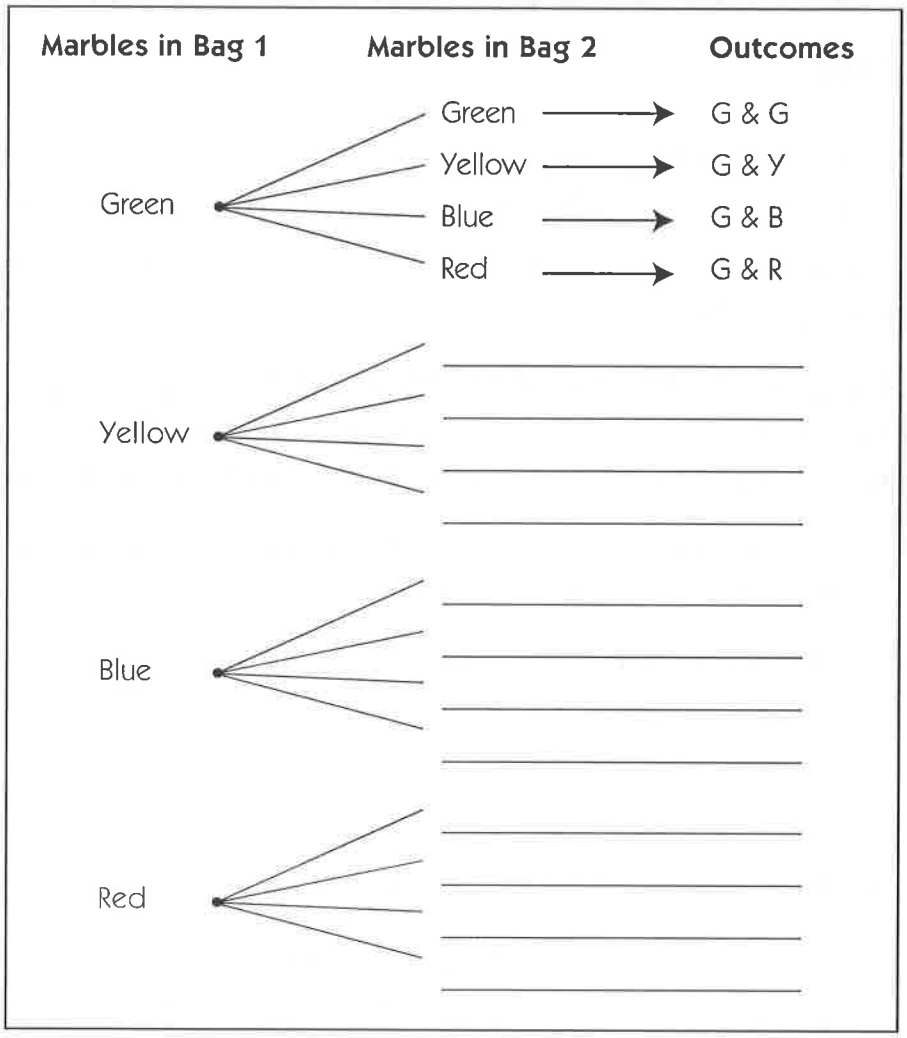
Marbles in Bag 2

Marbles in Bag 1	Green	Yellow	Blue	Red
Green	GG			
Yellow			YB	
Blue				
Red		RY		

(Continued on next page.)

Independent Worksheet 1 Charlie's Marbles (cont.)

3 Complete the tree diagram below to show all the possible combinations Charlie could get.



4 What are Charlie's chances of getting a red marble out of the first bag and a blue marble out of the second bag if he pulls one marble out of each bag without looking?

CHALLENGE

5 What are Charlie's chances of getting two marbles the same color if he pulls one marble out of each bag without looking? Explain your answer.