Problem 1.1

Play Getting Close several times. Keep a record of the estimation strategies you find useful.

Part A

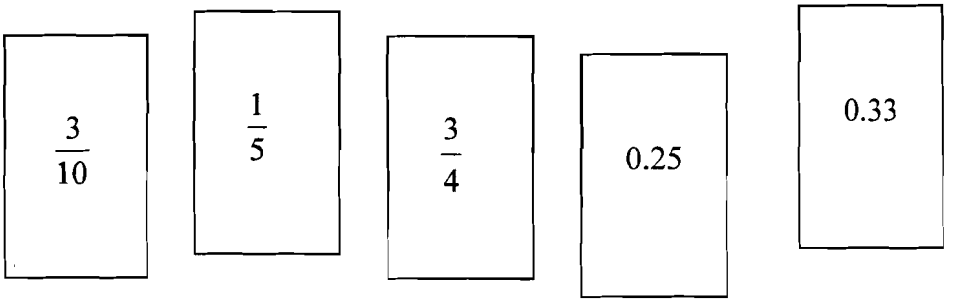
1. Describe or illustrate one estimation strategy that you found useful in the game

2. For which pairs was it easy to estimate the sum? Why?

   For which pairs was it hard to estimate the sum? Why?

Part B

Suppose you played Getting Close with only these game cards:



1. What is the greatest sum possible with any two of the game cards shown?

2. What is the least sum possible with any two of the game cards shown?

Problem 1.2

Part A

Elaine is making a model of a house that she designed. She wants to put wood molding around two rooms in the model. She measures and finds that she needs $3\frac{1}{4}$ feet of molding for one room and $2\frac{3}{8}$ feet of molding for the other room. She has $5\frac{1}{2}$ feet of molding.

1. Estimate whether she has enough molding.

2. Describe your strategy for estimating the answer.

3. Is your estimate an overestimate or an underestimate of the sum?

Part B

Elaine asks her granddaughter, Madison, to make curtains for the windows in the 2 model rooms. The pattern for the first room calls for a $\frac{7}{12}$-yard strip of material. The pattern for the second room calls for a $\frac{5}{8}$-yard strip.

1. Madison should underestimate/overestimate the amount of material she needs because _____.

2. She writes the following computation: $\frac{7}{12} + \frac{5}{8} = \frac{12}{20}$. Use estimation to check whether her computation is reasonable. Explain your thinking.

3. Madison's friend, Jamar, says that he can write $\frac{7}{12} + \frac{5}{8}$ using the same denominator. He writes $\frac{14}{24} + \frac{15}{24}$ and says, "Now the answer is easy."

a. What do you think Jamar will give as the sum? _____
Does his thinking make sense? _____

b. This is an exact answer/estimate.

Part C

Elaine makes the lace edging that is used to decorate the curtains in the model house. She needs 5 yards of lace for the curtains. She has these lengths of lace on hand:

$1\frac{1}{3}$ yards $2\frac{5}{6}$ yards $\frac{7}{8}$ yard $\frac{5}{12}$ yard

1. Elaine should underestimate/overestimate the amount of lace she has because ___ _____.

2. Use estimation to tell whether she has enough lace.

3. Find equivalent fractions with the same denominator to represent the lengths of lace.

$1\frac{1}{3}$ yards =

$2\frac{5}{6}$ yards =

$\frac{7}{8}$ yard =

$\frac{5}{12}$ yard =

How does this help you find the actual length of all the lace?

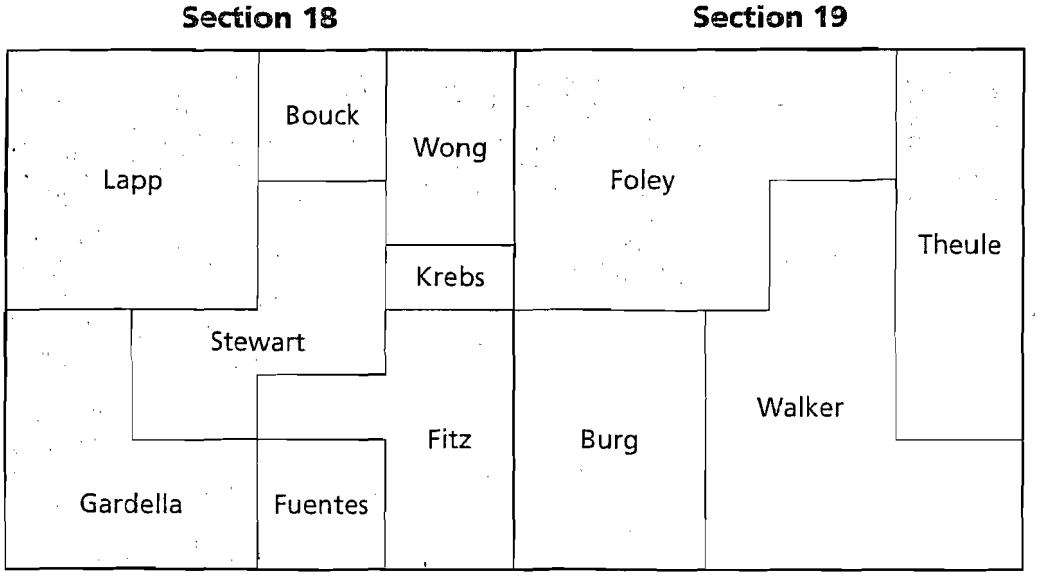
Part D

Estimate these sums and describe your thinking.

1. $\frac{2}{3} + \frac{1}{5}$
2. $2\frac{1}{3} + 3\frac{2}{3}$
3. $\frac{3}{4} + \frac{4}{3}$

Problem 2.1

The diagram below shows 2 sections of land that are *adjacent*, or side by side. Each section is divided among several owners. The diagram shows the part of a section each person owns.



Part A

What fraction of a section does each person own? Explain.

Section 18

Lapp-

Bouck-

Wong-

Stewart-

Krebs-

Gardella-

Fuentes-

Fitz-

Section 19

Foley-

Thuele-

Burg-

Walker-

Part B

Suppose Fuentes buys Theule's land. What fraction of a section will Fuentes own?

Write a number sentence to show your solution.

Part C

1. Find a group of owners whose combined land is equal to $1\frac{1}{2}$ sections of land.

Write a number sentence to show your solution.

2. Find another group of owners whose combined land is equal to $1\frac{1}{2}$ sections of land.

Part D

1. Bouck and Lapp claim that when their land is combined, the total equals Foley's land. Write a number sentence to show whether this is true.

2. Find 2 other people whose combined land equals another person's land.

Write a number sentence to show your answer.

3. Find 3 people whose combined land equals another person's land.

Write a number sentence to show your answer.

Part E

How many acres of land does each person own? Explain your reasoning(**Remember that there are 640 total acres of land in each section or 1280 acres of land total**)

Section 18

Lapp-

Bouck-

Wong-

Stewart-

Krebs-

Gardella-

Fuentes-

Fitz-

Section 19

Foley-

Thuele-

Burg-

Walker-

Part F

Lapp and Wong went on a land-buying spree and together bought all the lots of Section 18 that they did not already own. First, Lapp bought the land from Gardella, Fuentes, and Fitz. Then Wong bought the rest.

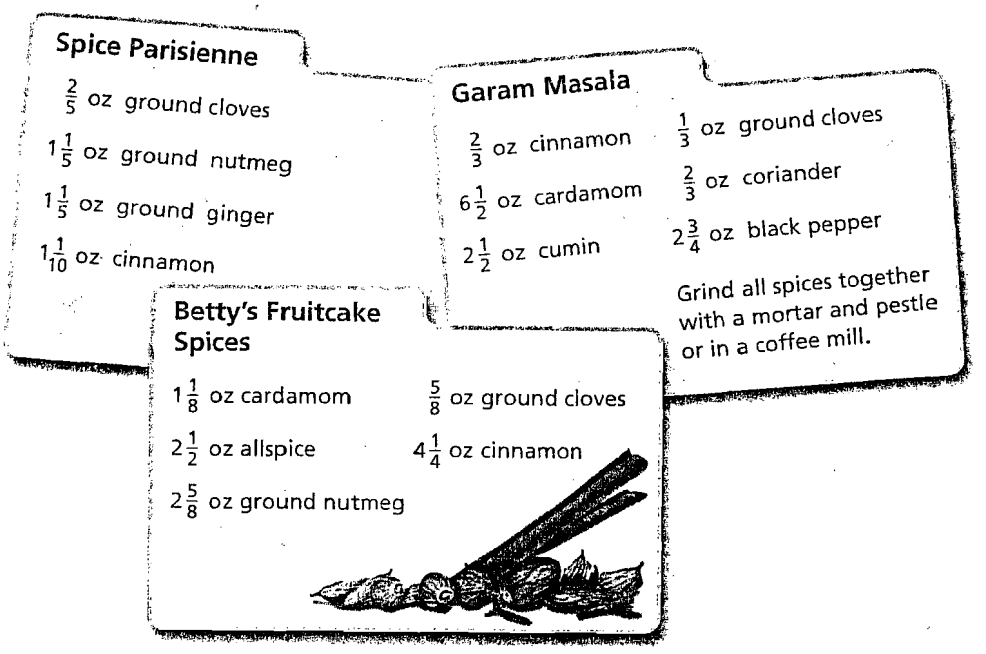
1. When the buying was completed, what fraction of Section 18 did Lapp own?

2. What fraction of Section 18 did Wong own?

3. Who owned more land? _____ How much more land did he or she own?_____

Problem 2.2

Reyna owns a spice shop in Tupelo Township. Some of her recipes are show below.



Part A

Use number sentences to show your thinking.

1. How many ounces of spice does Latisha buy?

2.a) Suppose she already has the nutmeh at home. How many ounces of spice does she buy?

b) Show a way to determine the answer using subtraction.

Part B

Ms. Garza buys spices to make one batch of Garam Masala.

1. How many ounces of spice does Ms. Garza buy?

2.a) Suppose she already has enough cinnamon and coriander at thome. How many ounces of spice does she buy?

b) Show a way to determine the answer using subtraction.

Part C

Betty buys spices for her famous fruitcake.

1. How many ounces of spie does Betty buy?

2. Betty makes the fruitcake but forgets the numeg! How many ounces of spice does she actually use?

3. Tevin is allergic to cinnamon. If Betty removes cinnamon from the recipe for him, how many ounces of spice does she buy?

Part D

Use what you have learned to find the value for N that makes each sentence correct.

1. $1\frac{2}{3} + 2\frac{7}{9} = N$

2. $\frac{2}{5} + \frac{1}{4} = N$

3. $2\frac{3}{4} - 1\frac{1}{3} = N$

4. $3\frac{1}{6} - 1\frac{3}{4} = N$

5. $N + \frac{3}{4} = 1\frac{1}{2}$

6. $2\frac{2}{3} - N = 1\frac{1}{4}$

Part E

Describe a good strategy for adding and subtracting mixed numbers.

Problem 2.3

Part A

For each number sentence, write its complete fact family.

1. $\frac{2}{3} + \frac{5}{9} = \frac{11}{9}$

2. $\frac{5}{10} - \frac{2}{5} = \frac{1}{10}$

Part B

For each mathematical sentence, find the value of N. Then write each complete fact family.

1. $3\frac{3}{5} + 1\frac{2}{3} = N$

2. $3\frac{1}{6} - 1\frac{2}{3} = N$

3. $\frac{3}{4} + N = \frac{17}{12}$

4. $N - \frac{1}{2} = \frac{3}{8}$

Part C

After writing several fact families, Rochelle claims that subtraction undoes addition. Do you agree or disagree? Explain.

Part D

In the mathematical sentence below, find values for M and N that make the sum exactly 3. Write your answer as a sum that equals 3.

$\frac{5}{8} + \frac{1}{4} + \frac{2}{3} + M + N = 3$

Problem 2.4

Part A

1. Find the sums in each group below.

Group 1	**Group 2**	**Group 3**
$2\frac{2}{9}+\frac{4}{9}=$	$\frac{4}{9}+\frac{1}{3}=$	$\frac{1}{8}+\frac{2}{3}=$
$\frac{5}{8}+\frac{1}{8}=$	$2\frac{1}{2}+\frac{5}{12}=$	$\frac{2}{9}+3\frac{1}{4}=$
$\frac{3}{5}+\frac{9}{5}=$	$\frac{7}{8}+\frac{1}{2}=$	$3\frac{4}{5}+3\frac{3}{4}=$

2. Describe what the problems in each group have in common.

Group 1-

Group 2-

Group 3-

3. Make up one new problem that fits in each group.

Group 1-

Group 2-

Group 3-

4. Write an algorithm that will work for adding any two fractions, including mixed numbers. Test your algorithm on the problems in the table. If necessary, change your algorithm until you think it will work all the time.

Part B

Find the differences in each group.

1.

Group 1	**Group 2**	**Group 3**
$3\frac{5}{6} - \frac{1}{6} =$	$1\frac{3}{4} - \frac{1}{8} =$	$3\frac{5}{6} - 1\frac{1}{4} =$
$\frac{11}{7} - \frac{1}{7} =$	$2\frac{7}{16} - 2\frac{1}{4} =$	$\frac{1}{4} - \frac{1}{5} =$
$1\frac{2}{3} - \frac{1}{3} =$	$6\frac{7}{8} - 3\frac{3}{4} =$	$4\frac{3}{5} - \frac{1}{3} =$

2. Describe what the problems in each group have in common.

Group 1-

Group 2-

Group 3-

3. Make up one new problem that fits in each group.

Group 1-

Group 2-

Group 3-

4. Write an algorithm that will work for subtracting any two fractions, including mixed numbers. Test your algorithm on the problems in the table. If necessary, change your algorithm until you think it will work all the time.

5. Describe how the subtraction problems below are different from the problems in the subtraction table in #1.

Group 1	**Group 2**	**Group 3**
$1\frac{1}{3} - \frac{2}{3} =$	$6\frac{3}{4} - 3\frac{7}{8} =$	$3\frac{1}{4} - 1\frac{5}{6} =$

6. If needed, change your algorithm until you think it would work all the time.

Part C

Use your algorithms for addition and subtraction to find each sum or difference.

1. $8 - 2\frac{2}{3}$ 2. $8\frac{2}{3} - 2$ 3. $2\frac{7}{16} + \frac{4}{9}$ 4. $1\frac{4}{5} + 1\frac{5}{6} + 1\frac{3}{4}$

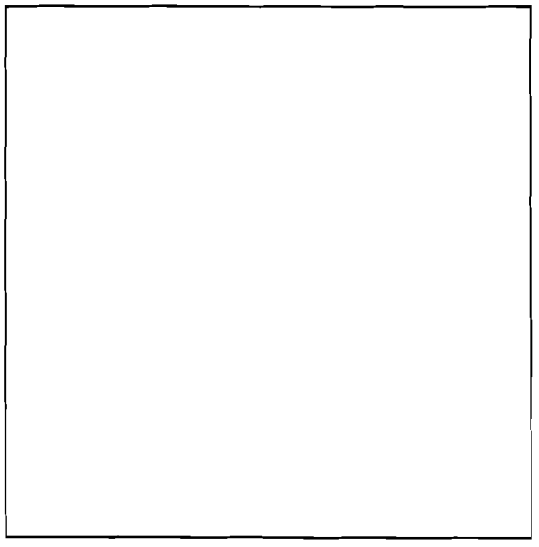
Problem 3.1

All the pans of brownies are square. A pan of brownies costs$12. You can buy any fractional part of a pan of brownies and pay that fraction of $12. For example, $\frac{1}{2}$ of a pan costs $\frac{1}{2}$ of $12.

Part A

Mr. Williams asks to buy $\frac{1}{2}$ of a pan that is $\frac{2}{3}$ full.

1. Use a copy of the brownie pan model shown below. Draw a picture to show how the brownie pan might look before Mr. Williams buys his brownies.



Model of Brownie Pan

2. Use a different colored pencil to show the part of the brownies that Mr. Williams buys. Note that Mr. Williams buys *a part of a part* of the brownie pan.

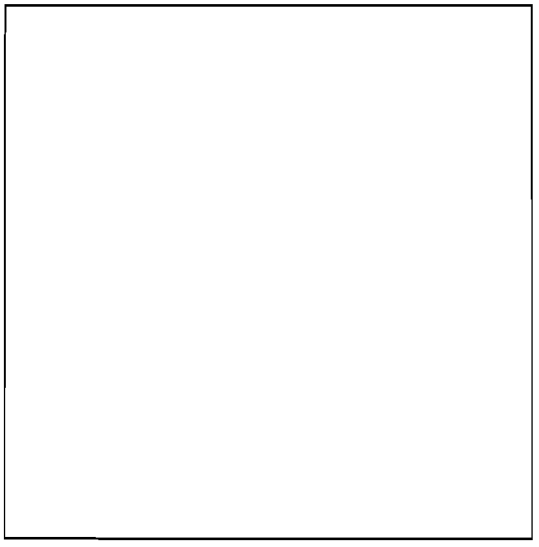
3. What fraction of a whole pan does Mr. Williams buy?

What does he pay?

Part B

Aunt Serena buys $\frac{3}{4}$ of another pan that is half full.

1. Draw a picture to show how the brownie pan might look before Aunt Serena buys her brownies.



2. Use a different colored pencil to show the part of the brownies that Aunt Serena buys. Note that Mr. Williams buys *a part of a part* of the brownie pan.

3. What fraction of a whole pan does Aunt Serena buy?

What does she pay?

Part C

When mathematicians write $\frac{1}{2}$ of $\frac{1}{4}$, they mean the operation of multiplication, or $\frac{1}{2} \times \frac{1}{4}$. When you multiply a fraction by a fraction, you are finding "a part of a part." Think of each example below as a brownie-pan problem in which you are buying part of a pan that is partly full- a part of a part.

1. $\frac{1}{3} \times \frac{1}{4}$ 2. $\frac{1}{4} \times \frac{2}{3}$ 3. $\frac{1}{3} \times \frac{3}{4}$ 4. $\frac{3}{4} \times \frac{2}{5}$

Part D

Use estimation to decide if each product is greater than or less than 1. To help, use the "of" interpretation for multiplication. For example, in number 1, think "$\frac{5}{6}$ of $\frac{1}{2}$."

1. $\frac{5}{6} \times \frac{1}{2}$ < or >
2. $\frac{5}{6} \times 1$ < or >
3. $\frac{5}{6} \times 2$ < or >
4. $\frac{3}{7} \times 2$ < or >
5. $\frac{3}{4} \times \frac{3}{4}$ < or >
6. $\frac{1}{2} \times \frac{9}{3}$ < or >
7. $\frac{1}{2} \times \frac{10}{7}$ < or >
8. $\frac{9}{10} \times \frac{10}{7}$

Problem 3.2

Part A

1. For parts a-d, use estimation to decide if the product is greater than or less than $\frac{1}{2}$.

a. $\frac{1}{3} \times \frac{1}{2}$ < or >

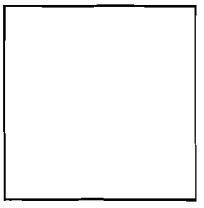
b. $\frac{5}{6} \times \frac{1}{2}$ < or >

c. $\frac{1}{8} \times \frac{4}{5}$ < or >

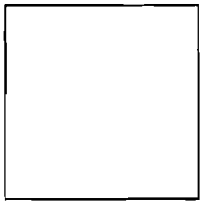
d. $\frac{5}{6} \times \frac{3}{4}$ < or >

2. Solve parts a-d above. Use the brownie pan model or the number line model.

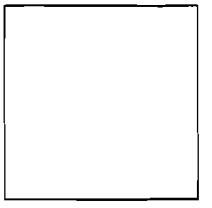
a. $\frac{1}{3} \times \frac{1}{2}$



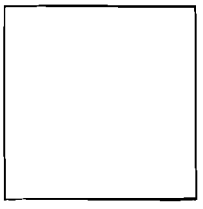
b. $\frac{5}{6} \times \frac{1}{2}$



c. $\frac{1}{8} \times \frac{4}{5}$



d. $\frac{5}{6} \times \frac{3}{4}$



3. What patterns do you see in your work for parts a-d?

4. For part b above, do each of the following.

a. Write a word problem where it makes sense to use the brownie pan model to solve the problem.

b. Write a word problem where it makes sense to use the number line model to solve the problem.

Part B

Solve the following problems. Write a number sentence for each.

1. Seth runs $\frac{1}{4}$ of a $\frac{1}{2}$-mile relay race. How far does he run?

2. Mali owns $\frac{4}{5}$ of an acre of land. She uses $\frac{1}{3}$ of it for her dog kennel. How much of an acre is used for the kennel?

3. Blaine drives the machine that paints stripes along the highway. He plans to paint a stripe that is $\frac{9}{10}$ of a mile long. He is $\frac{2}{3}$ of the way done when he runs out of paint. How long is the stripe he painted?

Part C

What observations can you make from Questions A and B that help you write an algorithm for multiplying fractions?

Part D

Ian says, "When you multiply, the product is greater than each of the two numbers you are multiplying: 3x5 = 15, and 15 is greater than 3 and 5." Libby disagrees. She says, "When you multiply a fraction by a fraction, the product is less than each of the two fractions you multiplied." Who is correct and why?

Problem 3.3

Part A

The sixth-graders have a fundraiser. They raise enough money to reach $\frac{7}{8}$ of their goal. Nikki raises $\frac{3}{4}$ of this money. What fraction of the goal does Nikki raise?

- Estimate the answer

- Create a model or diagram to find the exact answer

- Write a number sentence

Part B

A recipe calls for $\frac{2}{3}$ of a 16-ounce bag of chocolate chips. How many ounces are needed?

- Estimate the answer

- Create a model or diagram to find the exact answer

- Write a number sentence

Part C

Mr. Flansburgh buys a $2\frac{1}{2}$-pound wheel of cheese. His family eats $\frac{1}{3}$ of the wheel. How much cheese have they eaten?

- Estimate the answer

- Create a model or diagram to find the exact answer

- Write a number sentence

Part D

Peter and Erin run the corn harvester for Mr. McGreggor. They harvest about $2\frac{1}{3}$ acres each day. They have only $10\frac{1}{2}$ days to harvest the corn. How many acres of corn can they harvest for Mr. McGreggor?

- Estimate the answer

- Create a model or diagram to find the exact answer

- Write a number sentence

Problem 3.4

Part A

Use what you know about equivalence and multiplying fractions to first estimate, and then determine, the following products:

1. $2\frac{1}{2} \times 1\frac{1}{6}$ Estimate: Answer:

2. $3\frac{4}{5} \times \frac{1}{4}$ Estimate: Answer:

3. $\frac{3}{4} \times 16$ Estimate: Answer:

4. $\frac{5}{3} \times 2$ Estimate: Answer:

5. $1\frac{1}{3} \times 3\frac{6}{7}$ Estimate: Answer:

6. $\frac{1}{4} \times \frac{9}{4}$ Estimate: Answer:

Part B

Choose 2 numbers from part A. Draw a picture to prove that you calculations make sense.

#_____

#_____

Part C

Takoda answers Part A #1 by doing the following:

$(2 \times 1\frac{1}{6}) + (\frac{1}{2} \times 1\frac{1}{6})$

1. Do you think Takoda's strategy works? Explain.
   Yes/no

2. Try Takoda's strategy on #2 and #5 in part A. His strategy does/does not work because _____.

Part D

For #1-3, find a value for N so that the product of $1\frac{1}{2} \times N$ is:

1. between 0 and $1\frac{1}{2}$ $\quad 1\frac{1}{2} \times$ _____

2. $1\frac{1}{2}$ $\quad 1\frac{1}{2} \times$ _____

3. between $1\frac{1}{2}$ and 2 $\quad 1\frac{1}{2} \times$ _____

4. Describe when a product will be less than each of the two factors.

5. Describe when a product will be greater than each of the two factors.

Problem 3.5

Part A

1. Find the products in each group below.

Group 1	**Group 2**	**Group 3**
$\frac{1}{3} \times \frac{3}{4} =$	$2 \times 1\frac{7}{8} =$	$3\frac{2}{3} \times 1\frac{1}{2} =$
$\frac{1}{4} \times \frac{2}{5} =$	$\frac{2}{5} \times 12 =$	$2\frac{1}{4} \times 2\frac{5}{6} =$
$\frac{2}{3} \times \frac{5}{7} =$	$6 \times 1\frac{3}{8} =$	$1\frac{1}{5} \times 2\frac{2}{3} =$

2. Describe what the problems in each group have in common.

Group 1-

Group 2-

Group 3-

3. Make up one new problem that fits in each group.

Group 1-

Group 2-

Group 3-

4. Write an algorithm that will work for multiplying any two fractions, including mixed numbers. Test your algorithm on the problems in the table. If necessary, change your algorithm until you think it will work all the time.

Part B

Use your algorithm to multiply.

1. $\frac{5}{6} \times \frac{3}{4}$
2. $1\frac{2}{3} \times 12$
3. $\frac{14}{3} \times \frac{10}{3}$
4. $\frac{2}{5} \times 1\frac{1}{2}$

Part C

Find each product.

1. $\frac{7}{8} \times \frac{8}{7}$
2. $\frac{1}{9} \times \frac{9}{1}$
3. $1\frac{2}{3} \times \frac{3}{5}$
4. $11 \times \frac{1}{11}$

What pattern do you see?

Give another example that fits your pattern.

Problem 4.1

Use written explanations or diagrams to show your reasoning for each part. Write a number sentence showing your calculation(s).

Part A

Naylah plans to make small cheese pizzas to sell at a school fundraiser. She has nine bars of cheese. How many pizzas can she make if each pizza needs the given amount of cheese?

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

Part B

Frank also has nine bars of cheese. How many pizzas can he make if each pizza needs the given amount of cheese?

1. $\frac{1}{3}$ bar
2. $\frac{2}{3}$ bar
3. $\frac{3}{3}$ bar
4. $\frac{4}{3}$ bar

5. The answer to #2 is a mixed number. What does the fractional part of the answer mean? _____

_____

Part C

Use what you learned from Parts A and B to complete the following calculations.

1. $12 \div \frac{1}{3}$
2. $12 \div \frac{2}{3}$
3. $12 \div \frac{5}{3}$
4. $12 \div \frac{1}{6}$
5. $12 \div \frac{5}{6}$
6. $12 \div \frac{7}{6}$

7. The answer to #3 is a mixed number. What does the fractional part of the answer mean in the context of cheese pizzas? _____

_____

Part D

1. Explain why $8 \div \frac{1}{3} = 24$ and $8 \div \frac{2}{3} = 12$.

2. Why is the answser to $8 \div \frac{2}{3}$ exactly half the answer to $8 \div \frac{1}{3}$?

Part E

Write an algorithm that seems to make sense for dividing any whole number by any fraction.

Part F

Write a story problem that can be solved using $12 \div \frac{2}{3}$. Explain why the calculation matches the story.

Problem 4.2

Use written explanations or diagrams to show your reasoning for each part. Write a number sentence showing your calculation(s).

Part A

Ms. Li brings peanuts to be shared equally by members of groups winning each game. How much of a pound of peanuts will each student get in the given situations?

1. Four students share $\frac{1}{2}$ pound of peanuts.

2. Three students share $\frac{1}{4}$ pound of peanuts.

3. Two students share $\frac{1}{5}$ pound of peanuts.

Part B

A popcorn store donates its different-sized boxes of popcorn for use as prizes at a team competition. How much popcorn does each team member get in the given situations?

1. A two-person team shares a $\frac{3}{4}$-pound box of popcorn equally.

2. A four-person team shares a $\frac{7}{8}$-pound box of popcorn equally.

3. A two-person team shares a $1\frac{1}{2}$-pound box of popcorn equally.

(Remember $1\frac{1}{2} = \frac{3}{2}$.)

Part C

Find each quotient and explain which model you used.

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

2. $\frac{3}{2} \div 2$

3. $\frac{2}{5} \div 3$

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

Part D

What algorithm makes sense for dividing any fraction by any whole number?

Part E

Write a story problem that can be solved by $\frac{8}{3} \div 4$. Explain why the calculation matches the story.

Problem 4.3

Rasheed and Ananda have summer jobs at a ribbon company. Answer the questions below. Use written explanations or diagrams in each to show your reasoning. Write a number sentence to show you calculation(s).

Part A

Rasheed takes a customer order for ribbon badges. It takes $\frac{1}{6}$ yard to make a ribbon for a badge. How many ribbon badges can he make from the given amounts of ribbon? Describe what each fractional part of an answer means.

1. $\frac{1}{2}$ yard

2. $\frac{3}{4}$ yard

3. $2\frac{2}{3}$ yards (Remember $2\frac{2}{3} = \frac{8}{3}$.)

Part B

Ananda is working on an order for bows. She uses $\frac{2}{3}$ yard of ribbon to make one bow. How many bows can Ananda make from each of the following amounts of ribbon?

1. $\frac{4}{5}$ yard

2. $1\frac{3}{4}$ yard

3. $2\frac{1}{3}$ yards

Part C

Solve each of the following examples as if they were ribbon problems.

1. $\frac{3}{4} \div \frac{2}{3}$

2. $1\frac{3}{4} \div \frac{1}{2}$

3. $2\frac{3}{4} \div \frac{3}{4}$

Part D

What algorithm makes sense for dividing any fraction by any fraction?

Part E

To solve $\frac{3}{4} \div \frac{2}{5}$, Elisha writes, "$\frac{3}{4} \div \frac{2}{5}$ is the same as $\frac{15}{20} \div \frac{8}{20}$. So the answer to $\frac{3}{4} \div \frac{2}{5}$ is the same as $15 \div 8$."

1. Is Elisha's first claim, that $\frac{3}{4} \div \frac{2}{5}$ is the same as $\frac{15}{20} \div \frac{8}{20}$, correct?

2. Is his second claim, that $\frac{3}{4} \div \frac{2}{5}$ is the same as $15 \div 8$ correct?

3. Use Elisha's method to solve $\frac{3}{5} \div \frac{1}{3}$. Does the method give a correct solution?

Problem 4.4

Part A

1. Find the quotients in each group below.

Group 1	**Group 2**	**Group 3**	**Group 4**
$\frac{1}{3} \div 9 =$	$12 \div \frac{1}{6} =$	$\frac{5}{6} \div \frac{1}{12} =$	$5 \div 1\frac{1}{2} =$
$\frac{1}{6} \div 12 =$	$5 \div \frac{2}{3} =$	$\frac{3}{4} \div \frac{3}{4} =$	$\frac{1}{2} \div 3\frac{2}{3} =$
$\frac{3}{5} \div 6 =$	$3 \div \frac{2}{5} =$	$\frac{9}{5} \div \frac{1}{2} =$	$3\frac{1}{3} \div \frac{2}{3} =$

2. Describe what the problems in each group have in common.

Group 1-

Group 2-

Group 3-

Group 4-

3. Make up one new problem that fits in each group.

Group 1-

Group 2-

Group 3-

Group 4-

4. Write an algorithm that will work for dividing any two fractions, including mixed numbers. Test your algorithm on the problems in the table. If necessary, change your algorithm until you think it will work all the time.

Part B

Use your algorithm to divide.

1. $9 \div \frac{4}{5}$
2. $1\frac{7}{8} \div 3$
3. $1\frac{2}{3} \div \frac{1}{5}$
4. $2\frac{5}{6} \div 1\frac{1}{3}$

Part C

Here is a multiplication-division fact family for whole numbers:

$5 \times 8 = 40$ $8 \times 5 = 40$ $40 \div 5 = 8$ $40 \div 8 = 5$

1. Complete this multiplication-division fact family for fractions.

$\frac{2}{3} \times \frac{4}{5} = \frac{8}{15}$ $\times$ $=$ $\div$ $=$ $\div$ $=$

2. Check the division answers by using your algorithm.

Part D

For each number sentence, find a value for N that makes the sentence true. If needed, use fact families.

1. $\frac{2}{3} \div \frac{4}{5} = N$
2. $\frac{3}{4} \div N = \frac{7}{8}$
3. $N \div \frac{1}{4} = 3$