MULTIPLY & DIVIDE FRACTIONS

ERROR ANALYSIS

Class _____   Date _____

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Marcella's blueberry pie recipe calls for $1\frac{3}{4}$ cups of blueberries. She plans to make 8 pies for her family reunion. How many cups of blueberries will Marcella need?

Incorrect Work/Solution	Identify and Explain the Error
$1\frac{3}{4} \times 8 = 1\frac{3}{4} \times \frac{8}{1}$	
$= 1\frac{3 \times 8}{4 \times 1}$	
$= 1\frac{24}{4}$	
$= 1 \times 6$	
$= 6$	
Marcella will need 6 cups of blueberries.	

Correct Work/ Solution	Share a Strategy

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Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

In a dance contest in which 53,000 votes were cast, the winner received $\frac{3}{5}$ of the votes. How many votes did the winner not receive?

Incorrect Work/Solution	Identify and Explain the Error
$\frac{3}{5} \times 53,000 = \frac{3}{5} \times \frac{53,000}{1}$	
$= \frac{3 \times 53,000}{5 \times 1}$	
$= \frac{}{5}$ or 31,800	
The winner did not receive 31,800 votes.	

Correct Work/ Solution	Share a Strategy

✓ Multiply Fractions & Whole Numbers
✓ Multiply & Divide Fractions
✓ Multiply Mixed Numbers
✓ Divide Whole Numbers by Fractions

Exceeding the CORE by Mrs. Williams

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Incorrect Work/Solution	Identify and Explain the Error
$\frac{3}{5} \times 53,000 = \frac{3}{5} \times \frac{53,000}{1}$ $= \frac{3 \times 53,000}{5 \times 1}$ $= \frac{159,000}{5}$ or 31,800 The winner did not receive 31,800 votes.	

Correct Work/ Solution	Share a Strategy

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Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Julie made five loaves of bread that had $\frac{1}{4}$ cup of flour in each loaf. How many cups of flour were used in all?

Incorrect Work/Solution	Identify and Explain the Error
$\frac{1}{4} \times 5 = \frac{1}{4 \times 5}$ $= \frac{1}{20}$ A total of $\frac{1}{20}$ cups of flour was used in all.	

Correct Work/ Solution	Share a Strategy

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Richard has $\frac{1}{2}$ of a foot long sandwich left from yesterday. He ate $\frac{1}{4}$ of the leftover sandwich as a snack. What fraction of the entire sandwich did he eat as a snack?

Incorrect Work/Solution	Identify and Explain the Error
$\frac{1}{2} - \frac{1}{4}$ $= \frac{2}{4} - \frac{1}{4}$ $= \frac{1}{4}$ Richard ate $\frac{1}{4}$ of his entire sandwich as a snack.	
Correct Work/ Solution	**Share a Strategy**

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Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Phillip had $\frac{1}{3}$ of the lawn left to mow. On Sunday, he mowed $\frac{2}{5}$ of what was left.   What fraction of the entire lawn did Phillip mow on Sunday?

Incorrect Work/Solution	Identify and Explain the Error
$\frac{1}{3} \times \frac{2}{5} = \frac{1 \times 5}{3 \times 2}$ $= \frac{5}{6}$ Phillip mowed $\frac{5}{6}$ of the lawn on Sunday.	
Correct Work/ Solution	**Share a Strategy**

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Mr. Johnson is laying cement to make a rectangular driveway. The area he is covering with cement is $15\frac{1}{2}$ feet by $9\frac{3}{4}$ feet. What is the area of the driveway?

Incorrect Work/Solution	Identify and Explain the Error
$15 \times 9 = 135$ $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$ $135 + \frac{3}{8} = 135\frac{3}{8}$ The area of the driveway is $135\frac{3}{8}$ square feet.	
Correct Work/ Solution	**Share a Strategy**

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Marcella's blueberry pie recipe calls for $1\frac{3}{4}$ cups of blueberries. She plans to make 8 pies for her family reunion. How many cups of blueberries will Marcella need?	
Incorrect Work/Solution	**Identify and Explain the Error**
$1\frac{3}{4} \times 8 = 1\frac{3}{4} \times \frac{8}{1}$ $= 1\frac{3 \times 8}{4 \times 1}$ $= 1\frac{24}{4}$ $= 1 \times 6$ $= 6$ Marcella will need 6 cups of blueberries.	
Correct Work/ Solution	**Share a Strategy**

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

At summer camp, the duration of a basketball game is $\frac{3}{4}$ hour. The camp counselors have set aside 6 hours for basketball games. How many games can be played?	
Incorrect Work/Solution	**Identify and Explain the Error**
$6 \div \frac{3}{4} = \frac{6}{1} \times \frac{3}{4}$ $= \frac{18}{4}$ $= 4\frac{2}{4}$ or $4\frac{1}{2}$ A total of 4 basketball games can be played.	
Correct Work/ Solution	**Share a Strategy**

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Alex has an 8-foot-long piece of wood that he wants to cut to build a step stool for his daughter. If each piece is going to be $\frac{5}{6}$ foot long, what is the greatest number of pieces he will be able to use?

Incorrect Work/Solution	Identify and Explain the Error
$8 \div \frac{5}{6} = \frac{8}{1} \div \frac{5}{6}$ $= \frac{1}{8} \times \frac{5}{6}$ $= \frac{5}{48}$ Alex will be able to use $\frac{5}{48}$ pieces.	

Correct Work/ Solution	Share a Strategy

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Dara is making wedding favors. She is dividing $\frac{3}{4}$ pound of mints into 12 gift boxes. Write and solve an equation to find how many pounds of mints are in each gift box.

Incorrect Work/Solution	Identify and Explain the Error
$12 \div \frac{3}{4} = \frac{12}{1} \times \frac{4}{3}$ $= \frac{48}{3}$ or 16 There will be 16 pounds of mints in each gift box.	

Correct Work/ Solution	Share a Strategy

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Read the word problem. Look at the students work and solution. Identify the error and describe it. Solve the problem correctly. Then share a strategy this student could use to prevent the same error in the future.

Nathan is cutting a roll of biscuit dough into slices that are $\frac{3}{8}$ inch thick. If the roll is $10\frac{1}{2}$ inches long, how many slices can he cut?

Incorrect Work/Solution	Identify and Explain the Error
$10\frac{1}{2} \div \frac{3}{8} = \frac{12}{2} \times \frac{8}{3}$ $= \frac{96}{6}$ or 16 slices Nathan can cut 16 slices from the roll of biscuit dough.	

Correct Work/ Solution	Share a Strategy

Name (s) _____   Class_____   Date_____

Error Analysis – MULTIPLY & DIVIDE FRACTIONS

Answer Key

	Error	**Correct Sample Work**	**Correct Answer**
1.	The error in this solution is that the number of votes that the winner received was calculated instead of the votes that was not received.	$1 - \frac{3}{5} = \frac{5}{5} - \frac{3}{5}$ $= \frac{2}{5}$ $\frac{2}{5} \times 53{,}000 = \frac{2}{5} \times \frac{53{,}000}{1}$ $= \frac{2 \times 53{,}000}{5 \times 1}$ $= \frac{106{,}000}{5}$ or 21,200	The winner did not receive 21,200 votes.
2.	The error in in the solution is the number 5 was multiplied to the denominator instead of the numerator in $\frac{1}{4}$.	$\frac{1}{4} \times 5 = \frac{1}{4} \times \frac{5}{1}$ $= \frac{1 \times 5}{4 \times 1}$ $= \frac{5}{4}$ or $1\frac{1}{4}$	A total of $1\frac{1}{4}$ cups of flour was used in all.
3.	The error in this solution is the fraction of the leftover sandwich that was eaten as a snack was subtracted from what was left of the sandwich.	$\frac{1}{2} \times \frac{1}{4} = \frac{1 \times 1}{2 \times 4}$ $= \frac{1}{8}$	Richard ate $\frac{1}{8}$ of his entire sandwich as a snack.
4.	The error in this solution is the reciprocal of $\frac{2}{5}$ was multiplied.	$\frac{1}{3} \times \frac{2}{5} = \frac{1 \times 2}{3 \times 5}$ $= \frac{2}{15}$	Phillip mowed $\frac{2}{15}$ of the lawn on Sunday.
5.	The error in this solution is the product of the whole numbers in the mixed numbers is added to the product of its fractions.	$15\frac{1}{2} \times 9\frac{3}{4} = \frac{31}{2} \times \frac{39}{4}$ $= \frac{1209}{8}$ or $151\frac{1}{8}$	The area of the driveway is $151\frac{1}{8}$ square feet.

6.	The error in this solution is the mixed number was not changed to an improper fraction before it is multiplied.	$1\frac{3}{4} \times 8 = \frac{7}{4} \times \frac{8}{1}$ $\frac{56}{4}$ or 14	Marcella will need 14 cups of blueberries.
7.	The error in this solution is the fraction that is multiplied is not changed to its reciprocal.	$6 \div \frac{3}{4} = \frac{6}{1} \times \frac{4}{3}$ $= \frac{24}{3}$ or 8 .	A total of 8 basketball games can be played
8.	The error in this solution is the reciprocal for the wrong factor is found.	$8 \div \frac{5}{6} = \frac{8}{1} \times \frac{6}{5}$ $= \frac{48}{5}$ or $9\frac{3}{5}$	The greatest number of pieces that Alex will be able to use is 9 pieces.
9.	The error is the number of boxes is divided by the pounds of mints.	$\frac{3}{4} \div 12 = \frac{3}{4} \times \frac{1}{12}$ $= \frac{3}{48}$ or $\frac{1}{16}$	There will be $\frac{1}{16}$ pound of mints in each gift box.
10.	The error in this solution is the mixed number is changed to an incorrect improper fraction.	$10\frac{1}{2} \div \frac{3}{8} = \frac{21}{2} \times \frac{8}{3}$ $= \frac{168}{6}$ or 28 slices	Nathan can cut 28 slices from the roll of biscuit dough.
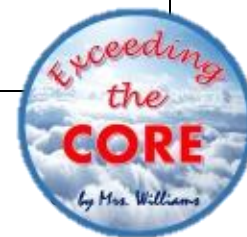
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