Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grade 5 Unit 4 STUDY GUIDE

Adding, Subtracting, Multiplying, and Dividing Fractions

**HINT:** DECIDE WHAT OPERATION IS BEING USED and READ CAREFULLY

**YOU MUST** TAKE A PHOTO OF EACH PAGE OF YOUR STUDY GUIDE AND UPLOAD IT ON TO **SEESAW to get Homework Credit and SHOW ALL YOUR WORK NEATLY**

1. Luke used 1 $\frac{1}{2}$ cups of flour to bake cookies, 4 $\frac{1}{3}$ cups of flour to bake bread, and $\frac{3}{4}$ cups of flour to bake a cake. When he was finished baking he was out of flour. How much flour did Luke use while baking?
2. Coach Rodgers wrote the following word problem on the board:

During baseball practice, Adam’s team drank 1$\frac{1}{2}$ gallons of water. If the team water cooler started with 3$\frac{3}{8}$ gallons of water, how much water is left at the end of practice?

A. Shelby thinks the answer to the above problem is $\frac{15}{8}$ .

B. Emma thinks the answer to the above problem is 2 $\frac{2}{12}$ .

 C. Kim thinks the answer to the above problem is 1 $\frac{7}{8}$ .

 D. Jermaine thinks the answer to the above problem is 1$\frac{2}{4}$ .

CHOOSE YOUR ANSWER –Show your work and EXPLAIN IT.. ( Hint: there may be two answers.

1. On Monday, $\frac{2}{5} $of the students at MBES had their hearing tested. On Tuesday $\frac{1}{4} $ of the students had their hearing tested. The rest had their hearing tested on Wednesday. What fraction of the students had their hearing tested on Wednesday?

***HINT: 100 Percent of all the student had their hearing checked at the school. Think common dominators and subtracting to help you find the answer.***

4. Sudeep is making two different types of soup for his sick mom. One recipe requires $\frac{5}{6}$ cup of chicken broth and the other recipe requires $\frac{3}{8}$ cup of chicken broth.

1. Estimate how much chicken broth Joseph needs to make both recipes. Using your knowledge of benchmark fractions, justify your estimate.

**HINT: Benchmark Fractions include the following: 0, ¼ ½ ¾ and 1 whole- If the numerator is half of the denominator**

1. Build a model to determine exactly how much chicken broth Joseph needs to make both recipes.
2. THREE PEOPLE are sharing 2 pizzas. Lucas says he can eat $\frac{3}{4}$ of a pizza. Dev says he can eat $\frac{6}{12}$ of a pizza, and Maggie says she can eat $\frac{2}{8}$ of a pizza.

***HINT: When given a problem like this you should always reduce your fractions to make it much easier***

* 1. If each person eats their amount, how much pizza will be left? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Construct a model to justify your answer.

Hint: Draw 3 whole pizzas to begin.

1. One third of the students in your class got an A on their math test. One fourth got a B on their math test.
2. What fraction of the class got an A or a B? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***HINT: This means you need to find a common denominator first.***

1. Construct a model to justify your answer. MUST EXPLAIN HOW YOU GOT TO YOUR ANSWERS AND MODELS MUST BE CLEAR and NEAT
2. The Chess Club is having a party. Every four girls in the Chess Club will share 5 small pizzas, and every five boys in the Chess Club will share 4 small pizzas.

Ian believes that the boys will get more pizza but, Mina disagrees and believes that the girls will get more pizza.

Who is correct? Ian or Mina Make a model for each group

 **Girl Scenario Boys Scenario**

1. Mr. Jones planted a garden in his backyard. In his garden, $\frac{2}{8}$ of the plants are vegetables. One-fourth of the vegetables are tomatoes.

 ***HINT: 6/8 of his garden is being used for something else completely there for you are only starting with 2/8 or a garden, just like if you had 2/8 of a candy bar and you had four people sharing it. ALSO REDUCING FRACTIONS CAN HELP TOO.***

* 1. What fraction of the plants in the garden are tomatoes? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SHOW YOUR WORK BELOW

* 1. Construct a model to justify your thinking.

Use This entire block to construct model

1. Based on the size of the factors, how does the product of 25 x 6 compare to the product of 25 x 3? Explain your thinking. In other words, how does 25 x 6 compare to the answer of 25 x 3?

***HINT: You should not have to multiply to figure it all out but if you need to do that then please do.***

**USE CUBES TO HELP YOU.**

1. David bought 9 roses for his grandmother. Two-thirds of them were yellow. ( think: if 3/3 of them were yellow, how many would be yellow out of the 9 roses he bought) Then answer for 2/3)
2. How many yellow roses did David buy? BE SURE YOU WRITE OUT THE EQUATION
3. MODEL IT : to get your answer- How many roses should you draw? How many did he buy in total? Then how many were yellow?

Draw in Box:

11**.** Ms. Smith wrote the following problem on the board:

“6 divided by $\frac{1}{4}$ = ”

* 1. The correct answer is $\frac{1}{24}$ because $\frac{1}{6}$ x $\frac{1}{4}$ = $\frac{1}{24}$.
	2. The correct answer is 1$\frac{1}{2}$ because $\frac{1}{6}$ x 4 = $\frac{6}{4}$, and when you convert it to a mixed number it equals 1$\frac{1}{2}$.
	3. The correct answer is 24 because 24 x $\frac{1}{4}$ = 6.
	4. The correct answer is $\frac{25}{4}$ because you need to convert it to an improper

 fraction.

1. What does the model below show? And how can you check your answer using inverse operation?

***Think how many items do you have and how is it being split up? Also how would you check your answer in standard algorithm?***

Write out the equation and how you would check your answer. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. How much will each person get if 3 people share half a pound of chocolate equally? **( Hint Think about how much chocolate you are starting with)**

SHOW YOUR WORK:

MD.2

1. The chart below shows the amount of juice in cups that was poured in glasses before a party. How much would each person get if the total amount of juice was dividing equally? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| $\frac{1}{4}$ cups | $\frac{2}{4}$ cups | $\frac{3}{4}$ cups |
|  | 2 |  |

1. Create a line plot to represent the data, be sure to include all of the necessary components. A line plot always includes a title.

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Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Grade 5 Unit 4 Post Test**

**Adding, Subtracting, Multiplying, and Dividing Fractions**

NF.1

1. Ms. Thomas used 1 $\frac{1}{2}$ cups of flour to bake muffins, 4 $\frac{1}{3}$ cups of flour to bake bread, and $\frac{3}{4}$ cups of flour to bake cookies. When she was finished baking she was completely out of flour. How much flour did Ms. Thomas use while baking?
	1. 5$ \frac{5}{9}$
	2. 6 $\frac{1}{19}$
	3. 6 $\frac{7}{12}$
	4. 6 $\frac{3}{4}$

NF.1/NF.2

1. Mrs. Smith wrote the following word problem on the board:

During football practice, John’s team drank 1$\frac{1}{2}$ gallons of water. If the team water cooler started with 3$\frac{3}{8}$ gallons of water, how much water is left at the end of practice?

* Shelby thinks the answer to the above problem is $\frac{15}{8}$ .
* Emma thinks the answer to the above problem is 2 $\frac{2}{12}$ .
* Kim thinks the answer to the above problem is 1 $\frac{7}{8}$ .
* Jermaine thinks the answer to the above problem is 1$\frac{2}{4}$ .

Who is correct and why?

NF.2

1. On Monday $\frac{2}{5} $of the students at Duke Ellington Elementary School had their hearing tested. On Tuesday $\frac{1}{4} $ of the students had their hearing tested. The rest had their hearing tested on Wednesday. What fraction of the students had their hearing tested on Wednesday?



NF.2

1. Joseph is making two different types of soup for his sick mom. One recipe requires $\frac{5}{6}$ cup of chicken broth and the other recipe requires $\frac{3}{8}$ cup of chicken broth.
	1. Estimate how much chicken broth Joseph needs to make both recipes. Using your knowledge of benchmark fractions justify your estimate.
	2. Construct a model to determine exactly how much chicken broth Joseph needs to make both recipes.

NF.2

1. David, Martin, & Ella are sharing two pizzas. David says he can eat $\frac{3}{4}$ of a pizza. Martin says he can eat $\frac{6}{12}$ of a pizza, and Ella says she can eat $\frac{2}{8}$ of a pizza.
	1. If each person eats their amount, how much pizza will be left?
	2. Construct a model to justify your answer.

NF.2

1. One third of the students in your class got an A on their math test. One fourth got a B on their math test.
	1. What fraction of the class got an A or a B?
	2. Construct a model to justify your answer.

NF.3

1. The Drama Club is having a party. Every four girls in the Drama Club will share 5 small pizzas, and every five boys in the Drama Club will share 4 small pizzas. Pedro believes that the boys will get more pizza but, Luisa disagrees and believes that the girls will get more pizza.

Who is correct? Justify your reasoning using words or a model.

NF.4a, b/NF.6

1. Mr. Jones planted a garden in his backyard. In his garden, $\frac{2}{8}$ of the plants are vegetables. One-fourth of the vegetables are tomatoes.
	1. What fraction of the plants in the garden are tomatoes?
	2. Construct a model to justify your thinking.

NF.5a, b

1. Based on the size of the factors, how does the product of 25 x 6 compare to the product of 25 x 3? Explain your thinking.

NF6

1. David bought 9 roses for his grandmother. Two-thirds of them were yellow.
	1. How many yellow roses did David buy?
	2. Justify your answer with a model.

NF.7a

11. Ms. Smith wrote the following problem on the board:

“6 divided by $\frac{1}{4}$ = ”

1. The correct answer is $\frac{1}{24}$ because $\frac{1}{6}$ x $\frac{1}{4}$ = $\frac{1}{24}$.
2. The correct answer is 1$\frac{1}{2}$ because $\frac{1}{6}$ x 4 = $\frac{6}{4}$, and when you convert it to a mixed number it equals 1$\frac{1}{2}$.
3. The correct answer is 24 because 24 x $\frac{1}{4}$ = 6.
4. The correct answer is $\frac{25}{4}$ because you need to convert it to an improper fraction.

NF.7b

12. The model below shows 3 ÷ $\frac{1}{5}$

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What number sentence also correctly explains the model?

$$A. \frac{1}{5}÷3=\frac{1}{5}×3=\frac{1}{15}$$

$$B. \frac{1}{5}÷3=3×5=15$$

$$C. 3÷\frac{1}{5}=3×\frac{1}{5}=\frac{3}{5}$$

$$D. 3÷\frac{1}{5}=3×5=15$$

NF.7c

1. How much will each person get if 3 people share half a pound of chocolate equally?
2. $\frac{1}{6}$
3. $\frac{2}{3}$
4. $1\frac{1}{2}$
5. $ 6$

MD.2

1. The chart below shows the amount of juice in cups that was poured in glasses before a party.

|  |  |  |
| --- | --- | --- |
| $\frac{1}{4}$ cups | $\frac{2}{4}$ cups | $\frac{3}{4}$ cups |
|  | 2 |  |

1. Create a line plot to represent the data, be sure to include all of the necessary components.

1

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1. Based on the data, find the amount of juice each glass would contain if the total amount of juice was redistributed equally?

$A. \frac{4}{8}$ Cups of juice

$B. \frac{6}{8}$ Cups of juice

$C. \frac{8}{4}$ Cups of juice

$D. \frac{16}{4}$ Cups of juice

# **Mathematics Grade 5 Unit 4 Assessment ANSWER KEY**

|  |  |
| --- | --- |
| 1 | c |
| 2 | Shelby and Kim are both correct. The improper fraction $\frac{15}{8} $is equivalent to the mixed number 1 $\frac{7}{8}$.  |
| 3 | a |
| 4 | 4a. 1 $\frac{1}{2}$ When estimating students should recognize that $\frac{5}{6}$ is close to $\frac{6}{6}$ which is a whole and $\frac{3}{8}$ is close to $\frac{4}{8}$ which is a half. Students should then add the whole and the half which equals 1 $\frac{1}{2}$. 4b. Models will vary but should be constructed to solve the problem not drawn to match an answer.  |
| 5 | 5a. $\frac{1}{2}$5b. Models will vary but should be constructed to solve the problem not drawn to match an answer. |
| 6 | 6a. $\frac{7}{12}$6b. Models will vary but should be constructed to solve the problem not drawn to match an answer. |
| 7 | The girls will receive more pizza. Girls = 1$\frac{1}{4}$ Boys = $\frac{4}{5}$ Models will vary but should be constructed to solve the problem not drawn to match an answer. |
| 8 | 8a. $\frac{2}{32}$8b. Models will vary but should be constructed to solve the problem not drawn to match an answer. |
| 9 | The product of 25 x 6 will be double the product of 25 x 3, because the factor 25 remains the same in both expressions and the factor 6 is twice the size of the factor 3.  |
| 10 | 10a. 610b. Models will vary but should be constructed to solve the problem not drawn to match an answer. |
| 11 | c |
| 12 | d |
| 13 | a |
| 14 | 14a. Student line plots should include:TitleLabelsCorrect dataAccurate scale14b. a |

**Grade 5 Math GSE Unit 4 Standards Report**

**Adding, Subtracting, Multiplying, and Dividing Fractions**

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Standards** | **Item Number** | **Point Values** |
| **NF1:** Add and subtract fractions and mixed numbers with unlike denominators by finding a common denominator and equivalent fractions to produce like denominators. | 1 | \_\_\_\_/1 |
| **NF1:** Add & subtract fractions & mixed numbers with unlike denominators by finding a common denominator & equivalent fractions to produce like denominators.**NF2**: Solve word problems involving addition & subtraction of fractions, including cases of unlike denominators (e.g., by using visual fraction models or equations to represent the problem). Use benchmark fractions & number sense of fractions to estimate mentally & assess the reasonableness of answers. | 2 | \_\_\_\_/4 |
| **NF2**: Solve word problems involving addition and subtraction of fractions, including cases of unlike denominators (e.g., by using visual fraction models or equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.  | 3 | \_\_\_\_/1 |
| 4a | \_\_\_\_/3 |
| 4b | \_\_\_\_/1 |
| 5a | \_\_\_\_/1 |
| 5b | \_\_\_\_/1 |
| 6a | \_\_\_\_/1 |
| 6b | \_\_\_\_/1 |
| **NF3:** Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. | 7a | \_\_\_\_/3 |
| **NF4:** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Apply & use understanding of multiplication to multiply a fraction or whole number by a fraction. b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. **NF6:** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. | 8a | \_\_\_\_/1 |
| 8b | \_\_\_\_/1 |
| **NF5:** Interpret multiplication as scaling (resizing), by: Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence *a/b = (n×a)/(n×b)* to the effect of multiplying *a/b* by 1.  | 9 | \_\_\_\_/2 |
| **NF6:** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. | 10a | \_\_\_\_/1 |
| 10b | \_\_\_\_/1 |
| **NF7:** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. **a.** Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.  | 11 | \_\_\_\_/1 |
| **NF7:** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.  | 12 | \_\_\_\_/1 |
| **NF7:** Apply & extend previous understandings of division to divide unit fractions by whole numbers & whole numbers by unit fractions.c. Solve real world problems involving division of unit fractions by non-zero whole numbers & division of whole numbers by unit fractions, e.g., by using visual *fraction* models & equations to represent the problem.  | 13 | \_\_\_\_/1 |
| **MD2:** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. | 14a | \_\_\_\_/4 |
| 14b | \_\_\_\_/1 |
| **Comments:** | **Total Score** \_\_\_\_/31 |