**FRACTIONS**

Subject: *Add and Subtract Fractions* Grade: *4*

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| Common Core State Standards |
| **4.NF.3a:** Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. **4.NF.3d:** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. |
| Objectives |
| Learn to add fractions with like denominators, and subtract fractions using the missing-addend method. Reinforce knowledge by using diagrams to visualize the addition/subtraction process.  |
| Launch Questions |
| **Q.** Is it possible to solve addition/subtraction problems for fractions the same way we solve problems dealing with whole numbers? At what point are they different?**Q.** If you add two fractions with like denominators and their numerators add up to the denominator, what is the value of the result? |
| Definition/Properties To Know |
| **Addend:** In the equation *x + y = z, x* and *y* are the addends because they are added together**Missing Addend Method:** Suppose you were given the equation 5 - *x* = 3, and you were tasked to find the value of *x*. The Missing Addend Method says that you can change this subtraction problem into an addition problem since you are looking for the value of x (the addend) needed such that, when added to 3, the result is 5; 3 + x = 5 . **Guide to Adding/Subtraction Fractions:*** If two fractions have the same denominator, add (or subtract) the numerators and keep the common denominator.
* If the two fractions have different denominators, replace the fractions with equivalent fractions, such that they have same denominator, and then add (or subtract) the numerators and keep the common denominator.
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*Warm-Up Activity:* See “WU 4”

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| Lesson (Introduction to Problem) |
| After a successful night of Trick-or-Treating, you and 4 friends arrive home to try out the new ChoCho Chocolate Bar. Before you and your friends can take a bite, your mom comes out of nowhere and takes all the candy bags. After a couple of minutes, your mom comes back and gives you all different sized pieces of the chocolate bars. The table below shows the fractions you each got back. **Note:** Some of you got more than one whole sized chocolate bar.

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| You | Jake | Jimmy | John | Juno |
| $$\frac{11}{12}$$ | $$\frac{8}{12}$$ | $$\frac{14}{12}$$ | $$\frac{3}{12}$$ | $$\frac{24}{12}$$ |

**Q.** How many ChoCho Chocolate Bars are there in total?**Q.** Which two people have the greatest amount of chocolate? Find their sum.**Q.** Which two people have the smallest amount of chocolate? Find their sum.**Q.** What’s the difference between the fractions in problems 2 and 3? Justify answer using the missing addend method and draw a diagram showing difference. * Students must learn to solve these questions using straightforward addition and diagrams. Adding fractions should be like adding regular whole numbers, except the numerator for the final answer must be divided by the denominator.
* To figure out which two people have the greatest/smallest amount of chocolate, students must generate different pairs of people and add their respective fractions. These two questions will require them to sort the answers while keeping track of who which two people they are using to sum.
* For the final question, students must write the equation using the missing addend method. In this case, the addends would be *x* (the difference) and the fraction for problem 3.
* Students can represent the fractions using any shape as long as they keep track of how many parts they will be adding or subtracting. It is recommended that students draw rectangular blocks divided into 12 parts.
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| Materials (If Needed) |
| * Paper and Pencil
* Ruler (if necessary)
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*Main Project:* See “MP 4”

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| Closure/Expectations |
| Students should be able to add/subtract fractions (of like denominators) with ease. Students should understand that a subtraction problem can be transformed into an addition problem via the Missing Addend Method. Finally, they should also be able to represent their addition/subtraction processes with diagrams.  |