**FRACTIONS**

Subject: *Add and Subtract Mixed Numbers* Grade: *4*

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| Common Core State Standards |
| **4.NF.3c:** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. |
| Objectives |
| Students will learn how to add and subtract mixed fractions, and how to convert a mixed number into its improper form (and vice versa).  |
| Launch Questions |
| **Q.** What makes a mixed number different from an improper fraction?**Q.** Is it easier to add/subtract two mixed numbers or two improper fractions? |
| Definition/Properties To Know |
| **Mixed Number:** A *mixed number* is contains both a whole number and a proper fraction. (*Ex.* $2\frac{1}{3}$). We can write any improper fraction as a mixed number, and vice versa. **Improper Fraction:** A fraction of the form $\frac{a}{b}$where *b* ≠ 0 and *a* ≥ *b.* From the geometric point of view, an improper fraction represents a point at or to the right of 1.  |

*Warm-Up Activity:* See “WU 6”

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| Lesson (Introduction to Problem) |
| For her upcoming birthday party, your mom decided to call you over to prepare some party drinks. For this year’s party she will be making her favorite fruit drink, “Berrylicious Juice”, which is a combination of cranberry juice, strawberry juice, blackberry juice, and blueberry juice. She gives you the recipe (located below) and you start prepare the drinks.* $2\frac{1}{3} cups of cranberry juice$
* $1\frac{2}{3} cups of strawberry juice$
* $3\frac{1}{3} cups of blackberry juice$
* $2 cups of blueberry juice$

**Q.** How many cups of juice makes one batch of “Berrylicious Juice”? Justify your answer with a drawing.**Q.** If your mom wants to “remake” the recipe by lowering each ingredient by$\frac{2}{3}$cups, how many cups of juice will make one “new” batch of “Berrylicious Juice”? Justify your answer with a drawing.* Students should approach the first problem by first adding the whole numbers and then the fractions. Because the sum of fractions will be greater than 1, students need to adjust the final answer.
* To model the fraction portion of this problem - no need to model whole numbers - students can use discrete objects and forms groups of 3 to indicate that the final answer should be +1.
* For the “new” batch of juice, students could use the missing-addend method, but that would be quite time inefficient. Instead, students can transform the mixed numbers to improper fractions and directly subtract the removed amount of liquid.
* To model the subtraction process, students can use discrete objects to model the improper fractions and subtract 2 objects from one group of 3 in order to should the subtraction being completed.
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| Materials (If Needed) |
| * Paper and Pencil
* Discrete objects like miniature cubes
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*Main Project:* See “MP 6”

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| Closure/Expectations |
| Students should understand that the value for a given mixed number is the same it’s improper representation. Students must be able to model the addition and subtraction process using both forms.  |