ADDING AND SUBTRACTING FRACTIONS 8

Name: Key Date:_____ Period:_____

SECTION 8.2 UNIT FRACTIONS AND MIXED NUMBERS

VOCABULARY

DEFINITION	EXAMPLE
Unit fraction: A fraction with 1 as the numerator (reciprocal of an integer n is $\frac{1}{n}$)	$\frac{1}{3}, \frac{1}{8}, \frac{1}{x}, \frac{1}{n}$
Multiplicative inverse or reciprocal: x is the multiplicative inverse or reciprocal of n if $x \cdot n = 1$	$\frac{1}{7} \cdot 7 = 7 \cdot \frac{1}{7} = 1$
Proper fraction: A fraction less than 1.	$\frac{3}{4}, \frac{1}{2}, \frac{7}{8}, \frac{5}{8}$
Mixed number: A number that consists of an integer part and a fractional part	$2\frac{1}{4}, 5\frac{2}{183}, 1\frac{5}{8}$
Improper fraction: A fraction greater than or equal to 1.	$\frac{7}{5}, \frac{3}{2}, \frac{185}{3}$

Big Idea: How do we convert and compare mixed numbers and improper fractions?

PROBLEM 1

State the difference between proper and improper fractions. What is the advantage of using an improper fraction or using a mixed number?

Proper fraction: less than 1.
Improper fraction: greater than or equal to 1.

Improper: the entire quantity is expressed as parts of the whole(s)

Mixed: it is easy to see the number of wholes and the "rest" of the amount

PROBLEM 2

Write each of the following mixed numbers as improper fractions:

a. $1\frac{2}{5}$

$\frac{5}{5} + \frac{2}{5}$

$\frac{7}{5}$

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

$\frac{3}{3} + \frac{3}{3} + \frac{1}{3}$

$\frac{7}{3}$

c. $3\frac{3}{4}$

$\frac{3 \cdot 4}{1 \cdot 4} + \frac{3}{4}$

$\frac{12 + 3}{4}$

$\frac{15}{4}$

PROBLEM 3

Write each of the following improper fractions as mixed numbers. Simplify if necessary.

a. $\frac{5}{2}$

$\frac{2 + 2 + 1}{2}$

$2\frac{1}{2}$

b. $\frac{7}{4}$

$\frac{4 + 3}{4}$

$1 + \frac{3}{4}$

c. $\frac{11}{3}$

$\frac{3 + 3 + 3 + 2}{3}$

$\frac{3(3) + 2}{3}$

$3\frac{2}{3}$

PRACTICE EXERCISES

1. Write the following mixed numbers as improper fractions

a. $5\frac{3}{8}$

$\frac{5\cdot 8}{1\cdot 8} + \frac{3}{8}$

$\frac{40+3}{8}$

$\frac{43}{8}$

b. $4\frac{11}{16}$

$\frac{16}{16} + \frac{16}{16} + \frac{16}{16} + \frac{16}{16} + \frac{11}{16}$

$\frac{75}{16}$

c. $7\frac{7}{12}$

$\frac{7\cdot 12}{1\cdot 12} + \frac{7}{12}$

$\frac{84+7}{12}$

$\frac{91}{12}$

2. Write the following improper fractions as mixed numbers. Simplify if necessary.

a. $\frac{27}{4}$

$\frac{24+3}{4}$

$\frac{4\cdot 6+3}{4}$

$\frac{4\cdot 6}{4} + \frac{3}{4}$

$6\frac{3}{4}$

b. $\frac{68}{6}$

$\frac{66+2}{6}$

$\frac{6\cdot 11}{6} + \frac{2}{6}$

$11 + \frac{1}{3}$

$11\frac{1}{3}$

c. $\frac{44}{12}$

$\frac{4\cdot 11}{4\cdot 3}$

$\frac{11}{3} = \frac{3+3+3+2}{3}$

$3\frac{2}{3}$

3. Convert each of these improper fractions to a mixed number. Then order from least to greatest.

$\frac{18}{5}$	$\frac{9}{2}$	$\frac{7}{3}$	$\frac{43}{6}$	$\frac{25}{2}$	$\frac{40}{30}$	$\frac{27}{10}$
$\frac{15+3}{5}$	$\frac{8+1}{2}$	$\frac{3+3+1}{3}$	$\frac{42+1}{6}$	$\frac{24+1}{2}$	$\frac{4}{3}$	$2\frac{7}{10}$
$3\frac{3}{5}$ ✓	$4\frac{1}{2}$ ✓	$2\frac{1}{3}$ ✓	$7\frac{1}{6}$ ✓	$12\frac{1}{2}$ ✓	$1\frac{1}{3}$ ✓	✓

$\boxed{1\frac{1}{3}} < \boxed{2\frac{1}{3}} < \boxed{2\frac{7}{10}} < \boxed{3\frac{3}{5}} < \boxed{4\frac{1}{2}} < \boxed{7\frac{1}{6}} < \boxed{12\frac{1}{2}}$

$\boxed{\frac{40}{30}} < \boxed{\frac{7}{3}} < \boxed{\frac{27}{10}} < \boxed{\frac{18}{5}} < \boxed{\frac{9}{2}} < \boxed{\frac{43}{6}} < \boxed{\frac{25}{2}}$

SUMMARY (What I learned today)