Name: _____ Date: _____

Aim: How can we add Rational Numbers?

Do Now:

a) $-10 + 14$

4

b) $9 + (-45)$ **-36**

c) $-22 + (-41)$ **-63**

d) $-20 + 13$ **-7**

e) ~~10~~ + ~~17~~ + (~~-10~~) + 23 + (~~-17~~) 23

Inverse Property of Addition

Consider the expressions below. Simplify each.

1) $-\frac{10}{5}$ **-2**

2) $\frac{-10}{5}$ **-2**

3) $\frac{10}{-5}$ **-2**

4) $\frac{-10}{-5}$ **2**

There are three ways to represent the opposite of $\frac{a}{b}$: $-\frac{a}{b}$ $\frac{-a}{b}$ $\frac{a}{-b}$

Write each number as an improper fraction.

a) $3\frac{1}{4}$ $\frac{13}{4}$

b) $-5\frac{1}{6}$ $-\frac{31}{6}$

c) $-2\frac{1}{5}$ $-\frac{11}{5}$

For rational numbers that are *fractions*, follow these steps:

1.) Turn mixed numbers into improper fractions. Place (-) symbol in the numerator.
2.) Use fraction/integer rules to add the NUMERATORS.
3.) Reduce, if possible.

Guided Practice

a) $-\frac{3}{10}+\left(-\frac{9}{10}\right)$

$\frac{-12}{10}$

$-1\frac{2}{10}$ $-1\frac{1}{5}$

b) $-\frac{7}{8}+\frac{1}{4}$

$\frac{-7}{8} + \frac{2}{8}$

$-\frac{5}{8}$

c) $-2\frac{1}{2} + -3\frac{3}{4}$

$\frac{-5}{2} + \frac{-15}{4}$

$\frac{-10}{4} + \frac{-15}{4}$

$\frac{-25}{4}$

$-6\frac{1}{4}$

d) $-2\frac{1}{2} + 3\frac{3}{4}$

$\frac{-5}{2} + \frac{15}{4}$

$\frac{-10}{4} + \frac{15}{4}$

$\frac{5}{4}$

$1\frac{1}{4}$

e) $1.5 + (-5.3)$

$5.3 - 1.5 = 3.8$

-3.8

f) $-2.3 + (-3.6)$

$2.3 + 3.6 = 5.9$

-5.9

Independent Practice

a) $-\frac{5}{6}+\left(-\frac{2}{3}\right)$

$\frac{-5}{6} + \frac{-4}{6}$

$\frac{-9}{6}$

$-1\frac{3}{6}$

$\boxed{-1\frac{1}{2}}$

b) $5\frac{1}{4} + \left(-1\frac{2}{5}\right)$

$\frac{21}{4} + \frac{-7}{5}$

$\frac{105}{20} + \frac{-28}{20}$

$\frac{77}{20}$

$\boxed{3\frac{17}{20}}$

c) 0.4 + (-9.1)

$9.1 - 0.4 = 8.7$

$\boxed{-8.7}$

d) -2.3 + (-3.6)

$2.3 + 3.6 = 5.9$

$\boxed{-5.9}$

e) 20.25 + (-15.711)

$20.250 - 15.711$

$\boxed{4.539}$

f) 12.48 + (-10.636)

$12.480 - 10.636$

$\boxed{1.844}$

g) $4 + (-1\frac{2}{3})$

$\frac{4}{1} + \frac{-5}{3}$

$\frac{12}{3} + \frac{-5}{3}$

$\frac{7}{3}$

$\boxed{2\frac{1}{3}}$

h) -3.1 + (-0.35)

$3.10 + 0.35 = 3.45$

$\boxed{-3.45}$

The TAKE AWAY

When adding negative rational numbers that are fractions, it is often easiest to place the negative symbol in the NUMERATOR.

Rational numbers follow the same rules for adding as INTEGERS.