Grade 9 Warm Up

Determine each sum.

1) $\dfrac{-5 \times 5}{6 \times 5} + \left(\dfrac{-2 \times 6}{5 \times 6}\right)$

$\dfrac{-25}{30} + \dfrac{-12}{30}$

$-\dfrac{37}{30}$

2) $\dfrac{8 \times 4}{3 \times 4} + \dfrac{5 \times 3}{4 \times 3}$

$\dfrac{32}{12} + \dfrac{15}{12}$

$+\dfrac{47}{12}$

3) $-3\dfrac{2}{7}^{\times 7} + 2\dfrac{1}{4}^{\times 4}$

$-\dfrac{23 \times 4}{7 \times 4} + \dfrac{9 \times 7}{4 \times 7}$

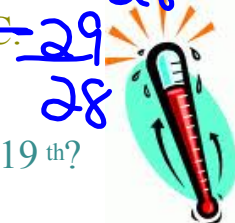$-\dfrac{92}{28} + \dfrac{(+63)}{28}$

$-\dfrac{29}{28}$

4) On December 18th, the temperature in Miramichi was -21.6°C. By noon the next day, the temperature increased by 3.7 °C.

a) What was the temperature at noon on December 19 th?

$^-21.6 + 3.7 = {}^-18.9$

b) On December 17th, the temperature was 2.1°C less than (colder than) that of December 18th. What was the temperature on the 17th?

Grade 9 Warm Up

Determine each sum.

1) $\dfrac{-5 \times 5}{6 \times 5} + \left(\dfrac{-2}{5}\right) \times 6$

$\dfrac{-25}{30} + \dfrac{-12}{30}$

$\dfrac{-37}{30} = -1\dfrac{7}{30}$

2) $\dfrac{8 \cdot 4}{3 \cdot 4} + \dfrac{5 \cdot 3}{4 \cdot 3}$

$\dfrac{24}{12} + \dfrac{15}{12}$

$\dfrac{39}{12}$

$\dfrac{13}{4} = 3\dfrac{1}{4}$

3) $-3\dfrac{2}{7} + 2\dfrac{1}{4}$

$\dfrac{-23 \cdot 4}{7 \cdot 4} + \dfrac{9 \cdot 7}{4 \cdot 7}$

$-\dfrac{92}{28} + \dfrac{63}{28}$

$-\dfrac{29}{28} = -1\dfrac{1}{28}$

4) On December 18th, the temperature in Miramichi was -21.6ºC. By noon the next day, the temperature increased by 3.7 ºC.

a) What was the temperature at noon on December 19 th?

$-21.6 + 3.7 = -17.9°C$

$-21.6 + (-2.1) =$

b) On December 17th, the temperature was 2.1ºC less than (colder than) that of December 18th. What was the temperature on the 17th? -23.7

Any Homework Questions?

http://www.math-play.com/adding-integers-game/adding-integers-drag-and-drop.html

Look Closely

1. $(-8) + (5) =$ **-3**

2. $(-8) - (5) =$ **-13**

    $-8 + -5$

3. $(-8) + (-5) =$ **-13**

4. $(-8) - (-5) =$

    $-8 + 5 = -3$

What do you notice???????

$(-8) + (5) = -3$ $(-8) + (-5) = -13$

$-8 + 5$ $-8 + -5$

$(-8) + (-5) = -3$ $(-8) + (-5) = -13$

When Subracting
ADD THE OPPOSITE !!!!!!

Subtracting Negative Numbers

(8) - (2) •———→ We add the opposite:(8) + (-2) = 6

$8 + (-2)$

$+6$

$\frac{6}{5} + \left(\frac{-10}{5}\right)$ •———→ We add the opposite: $\frac{6}{5} + \frac{10}{5} =$

$(-3) + (-6) = -9$

$(5) + (+5) = 10$

$(-4) + (+7) = +3$

$(7.2) + (-9.4) = -2.2$

$(-6.1) + (+8.9) = +2.8$

Section 3.3
Subtracting Rational Numbers

When subtracting Rational Numbers you must have a ...

Common Denominator

Ex) $\dfrac{13}{7} + \dfrac{-4}{7} = \dfrac{9}{7}$

Same Denominators

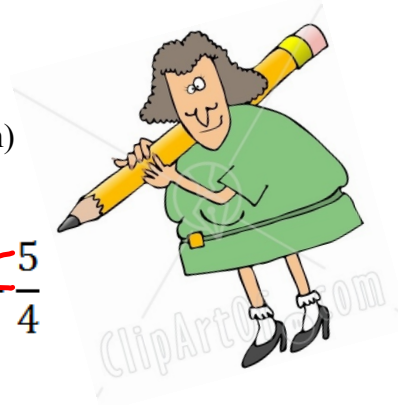This looks similar to adding Rational Numbers

You try ...

(Remember to write all solution in simplest form)

1)
$$\frac{21}{2} + \frac{-24}{2}$$

$$\frac{-3}{2}$$

2)
$$\frac{-25}{13} + \frac{-16}{13}$$

$$\frac{-41}{13}$$

3)
$$\frac{11}{4} + \frac{-5}{4}$$

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

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

Oh, what to do when the denominators are different???

I Know this one!!!!

When denominators are different you have to find a **"common denominator"**

How

By determining the LCM

Lowest Common Multiple

(of the denominators)

LCM

Subtract the following rational numbers

$$\frac{13 \times 3}{7 \times 3} - \frac{4 \times 4}{3 \times 4}$$

$$\frac{39}{21} - \frac{28}{21}$$

$$\frac{11}{21}$$

Thus the LCM is

Look at the multiples of each denominator

Find the LCM

7

1 x 7 = 7

2 x 7 = 14

3 x 7 = 21

4 x 7 = 28

3

1 x 3 = 3

2 x 3 = 6

3 x 3 = 9

4 x 3 = 12

5 x 3 = 15

6 x 3 = 18

7 x 3 = 21

You try...

1) $\dfrac{17\times 3}{12\times 3}\dfrac{4\times 4}{9\times 4}$

$\dfrac{51}{36} - \dfrac{16}{36}$

$= \dfrac{35}{36}$

2) $\dfrac{11\times 6}{5\times 6}\dfrac{10^{\times 15}}{2^{\times 15}} + \dfrac{2\times 10}{3\times 10}$

$\dfrac{66}{30} - \dfrac{150}{30} + \dfrac{20}{30}$

$\dfrac{-64 \div 2}{30 \div 2}$

$= \dfrac{32}{15}$

3) $\dfrac{-2}{7} - \dfrac{5}{28}$

$\dfrac{-2\times 4}{7\times 4} + \dfrac{-5}{28}$

$\dfrac{-8}{28} + \dfrac{-5}{28}$

$\dfrac{-13}{28}$

Subtracting Rational Numbers in Mixed Number Form

$$3\overset{+1}{\underset{\times 5}{\phantom{\frac{}{}}}} - 2\overset{+7}{\underset{\times 10}{\phantom{\frac{}{}}}}$$

$$\frac{16\;\times 2}{5\;\times 2} \qquad \frac{27}{10} \;=$$

STEP 1) Write each mixed number as an inproper fraction

$$\frac{16}{5} - \frac{27}{10}$$

STEP 2) Find common denominators and then subtract like before

$$\frac{32}{10} - \frac{27}{10} = \frac{5}{10} \qquad \frac{1}{2}$$

STEP 3) Reduce all fractions

Your Turn

1)

$$-2\frac{2}{9} - \left(-3\frac{1}{3}\right)$$

2)

$$6\frac{1}{2} - 3\frac{1}{7}$$