



Grade 9 Warm Up



Determine each sum.

$$1) \quad \frac{-5}{6} + \left(\frac{-2}{5}\right)$$

$$= \frac{-25}{30} + \left(\frac{-12}{30}\right)$$

$$= -\frac{37}{30}$$

$$2) \quad \frac{8}{3} + \frac{5}{4}$$

$$= \frac{32}{12} + \frac{15}{12}$$

$$= \frac{47}{12}$$

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

$$= -\frac{23}{7} + \frac{9}{4}$$

$$= \frac{-92}{28} + \frac{63}{28}$$

$$= -\frac{29}{28}$$

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 19th?

$$-21.6 + 3.7 = -17.9^{\circ}\text{C}$$



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?

$$-21.6 - 2.1 = -23.7^{\circ}\text{C}$$



Any Homework Questions?



Check your answers from the back of the textbook

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$$\begin{aligned} 8. a) \quad & -33.1^{\circ}\text{C} - (-28.5) \\ & = -33.1^{\circ}\text{C} + 28.5^{\circ}\text{C} \\ & = -4.6^{\circ}\text{C} \end{aligned}$$

$$\left. \begin{array}{l} -28.5 - (-33.1) \\ -28.5 + 33.1 \\ 4.6^{\circ}\text{C} \end{array} \right\}$$

Section 3.3

Subtracting Rational Numbers

When subtracting Rational Numbers you must have a ...

Common Denominator

Ex) $\frac{13}{7} - \frac{4}{7} =$

Same Denominators

This look similar to adding Rational Numbers



You try ...

(Remember to write all solution in simplest form)

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

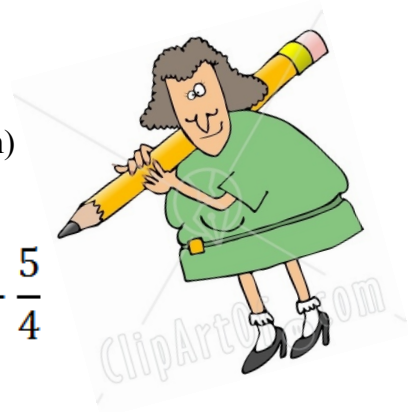
$$= -\frac{3}{2}$$
$$= -1\frac{1}{2}$$

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

$$= -\frac{41}{13}$$
$$= -3\frac{2}{13}$$

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

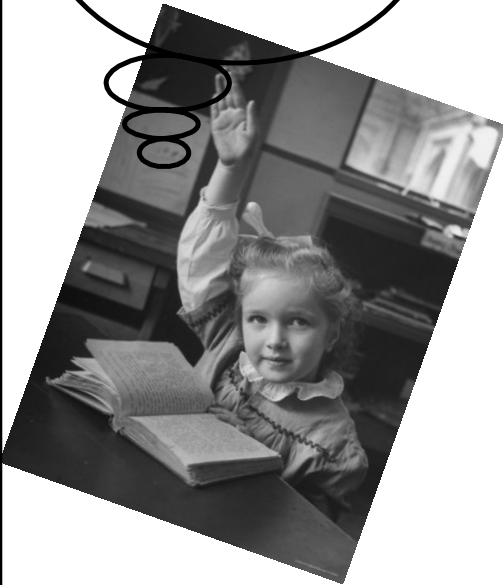
$$= \frac{6}{4}$$
$$= \frac{3}{2}$$
$$= 1\frac{1}{2}$$



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)

Subtract the following rational numbers



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

$\times 3$ $\frac{39}{21} - \frac{28}{21}$ $\times 7$

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

Look at the multiples of each denominator

Find the LCM

7

3

$1 \times 7 = 7$

$1 \times 3 = 3$

$2 \times 7 = 14$

$2 \times 3 = 6$

$3 \times 7 = 21$

$3 \times 3 = 9$

$4 \times 7 = 28$

$4 \times 3 = 12$

$5 \times 3 = 15$

$6 \times 3 = 18$

$7 \times 3 = 21$

Thus the LCM is

You try...



$$1) \frac{17}{12} - \frac{4}{9}$$

$$\begin{array}{l} \times 3 \left(\frac{51}{36} - \frac{16}{36} \right) \times 4 \end{array}$$

$$= \frac{35}{36}$$

$$2) 2\frac{1}{5} - \frac{5}{7} + \frac{2}{3}$$

$$\frac{11}{5} - \frac{5}{7} + \frac{2}{3}$$
$$\frac{33}{15} - \frac{75}{15} + \frac{10}{15}$$

$$- \frac{32}{15}$$

$$- 2\frac{2}{15}$$

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

$$- \frac{8}{28} - \frac{5}{28}$$

$$- \frac{13}{28}$$

Subtracting Negative Numbers

$$8 - (-2) \longrightarrow \text{We add the opposite: } 8 + 2 =$$

No difference with rational numbers

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

Subtracting Rational Numbers in Mixed Number Form

$$3\frac{1}{5} - 2\frac{7}{10}$$

STEP 1) Write each mixed number as an improper fraction

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

STEP 2) Find common denominators and then subtract like before

$$\frac{32}{10} - \frac{27}{10}$$

$$\frac{5}{10}$$

STEP 3) Reduce all fractions

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

Your Turn



1)

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

$$-\frac{20}{9} + \frac{10}{3}$$

$$-\frac{20}{9} + \frac{30}{9}$$

$$\frac{10}{9} \text{ or } 1\frac{1}{9}$$

2)

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

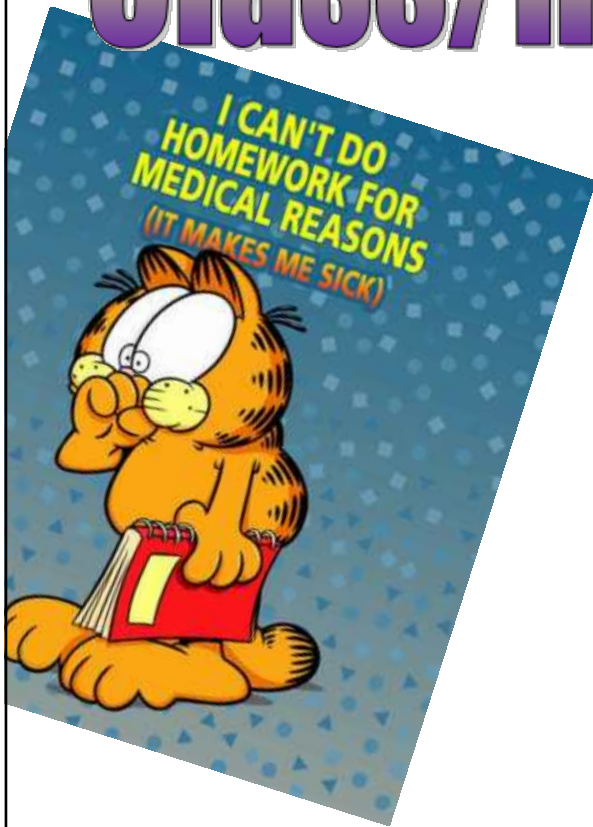
$$\frac{13}{2} - \frac{22}{7}$$

$$\frac{91}{14} - \frac{44}{14}$$

$$\frac{47}{14}$$

$$3\frac{5}{14}$$

Class/Homework



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