Curriculum Outcome

N1: Demonstrate an understanding of rational numbers by: comparing and ordering rational numbers; solving problems that involve arithmetic operations on rational numbers.

Student Friendly:
"Subtracting Fractions and Subtracting Decimals"

Section 3.3
Subtracting Rational Numbers

When subtracting Rational Numbers you must have a ...

Common Denominator

This look similar to adding Rational Numbers

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

Same Denominators

You try ...

(Remember to write all solution in simplest form)

1　$\dfrac{21}{2} - \dfrac{24}{2}$

$$= \dfrac{-3}{2}$$

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

$$= -\dfrac{41}{13}$$

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

$$\dfrac{6}{4}$$

$$= \dfrac{3}{2}$$

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

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

×3   39   28 ×7
        21   21

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

Look at the multiples of each denominator
Find the LCM

7   3

You try...

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

$\times 3$ $\times 4$

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

$= \dfrac{35}{36}$

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

$\times 4$

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

$\dfrac{-3}{28}$

Subtracting Negative Numbers

$8 - (-2)$ ⟶   We add the opposite: $8 + 2 =$

No difference with rational numbers

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

Subtracting Rational Numbers in Mixed Number Form

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

Option 1

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

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

Subtracting Rational Numbers in Mixed Number Form

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

STEP 1) Work with you integers first

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

STEP 2) Work with your fraction

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

$\times 2$

$$\frac{2}{10} - \frac{7}{10} = \boxed{\frac{-5}{10}}$$

STEP 3) Put step 1 & 2 answers together (must be careful here)

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

$$\frac{10}{10} + \frac{-5}{10}$$

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

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

Your Turn

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

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

Your Turn

1) $-2\dfrac{2}{9} \oplus \left(\ominus 3\dfrac{1}{3}\right)$

$-2 + +3 = \boxed{1}$

$\dfrac{-2}{9} + +\dfrac{1}{3}$

$\dfrac{-2}{9} + \dfrac{3}{9}$

$\boxed{1\dfrac{1}{9}}$

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

$-\dfrac{20}{9} + \left(+\dfrac{10}{3}\right)$

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

$\dfrac{10}{9}$

$\boxed{= 1\,^{1}\!/_{9}}$

$1 + ^{1}\!/_{9} = 1\,^{1}\!/_{9}$

Your Turn

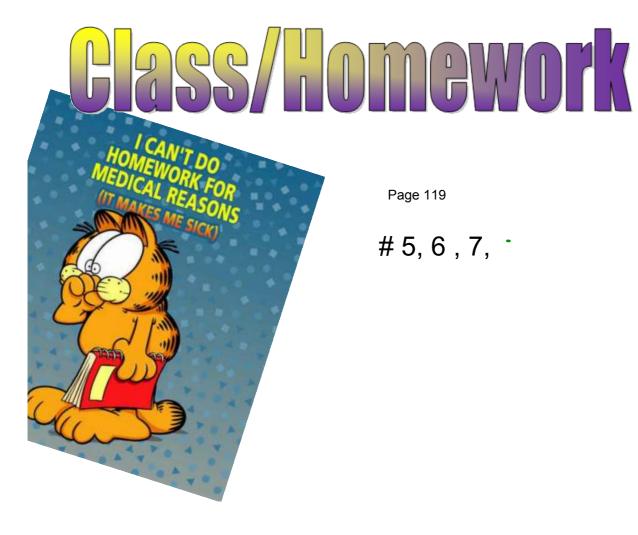2) $6\frac{1}{2} - 3\frac{1}{7}$ $6\frac{1}{2} - 3\frac{1}{7}$

$6 - 3 = \boxed{3}$ $\frac{13}{2} - \frac{22}{7}$

$\frac{1}{2} - \frac{1}{7}$ $\frac{91}{14} - \frac{44}{14}$

$\frac{7}{14} - \frac{2}{14}$

$\boxed{\frac{5}{14}}$ $= \frac{47}{14}$

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

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

Class/Homework

Page 119

5, 6 , 7,