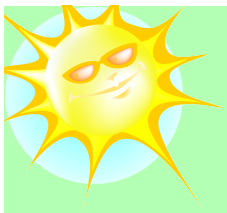


Curriculum Outcome

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

**Student Friendly:
"Adding and Subtracting Fractions"**



Sections

3.2 Adding Rational Numbers

&

3.3 Subtracting Rational Numbers

Addition of Integers



If the signs are the **same**:

Keep the same sign, and ADD.

$$(-4)+(-2)=-6$$

If the signs are **different**:

Cover up the signs

Find the biggest number

Take the sign of the BIGGEST number,

$$(-8)+(2)=-6$$

Eight is bigger than 2, when you don't look at the negative sign.

Subtraction of Integers

If you are subtracting a negative
add:



$$(-4) - (-2) = -6$$

Remember

Eight is bigger than 2, when you
don't look at the negative sign.

Without a calculator determine if the answer is **positive** or **negative**:

$$1) (-2.1) + (-1.7) = \underline{(-)}$$

$$2) (-6.8) + 1.5 = \underline{(-)}$$

$$3) (-7.1) + 12.3 = \underline{(+)}$$

$$4) (6.2) - (5.6) = \underline{(+)}$$

$$5) (3.7) - (4.5) = \underline{(-)}$$

$$6) (-8.5) - (-9.2) = \underline{(+)}$$

If you use a calculator, make sure you know how to input negative numbers!

Write 2 more equivalent fraction to the following:

$$\frac{-4}{9} \quad \frac{4}{-9} \quad -\frac{4}{9}$$

The numerator
is LARGER
than the
denominator.

Improper vs. Mixed Fractions



$\frac{7}{3}$ This is a **Improper Fraction** \rightarrow **Mixed Fraction**
Integer + Fraction $2\frac{1}{3}$

You try: $-\frac{15}{4} = -3\frac{3}{4}$

Mixed Fractions to Improper

$$2 \frac{5}{6} = \frac{17}{6}$$

$$-3 \frac{1}{8} = \frac{-25}{8}$$

You Try

$$5 \frac{3}{7} = \frac{38}{7}$$

$$-4 \frac{1}{3} = \frac{-13}{3}$$

Adding & Subtracting Fractions

*****YOU NEED A COMMON DENOMINATOR*****

$$1) \quad \frac{-5}{8} + \frac{6}{8}$$

$$= \frac{1}{8}$$

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

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

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

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

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

$$\frac{3}{4} + \frac{-5}{6}$$
$$= \frac{9}{12} + \frac{-10}{12}$$

Find the LCM first!

4,8,12,16,
6,12,18



$$= \frac{-1}{12}$$

You try:

$$\frac{3}{5} + \frac{1}{6}$$

5,10,15,20,25,30,35

6,12,18,24,30

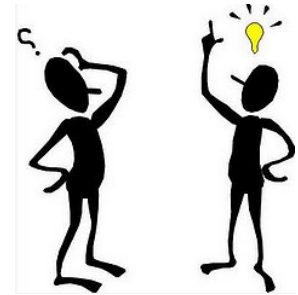
$$= \frac{18}{30} + \frac{5}{30}$$

$$= \frac{23}{30}$$

What about mixed numbers?

$$2\frac{1}{3} + 2\frac{3}{5}$$

Option 1



Step 1: Write each mixed number as an improper fraction.

$$\frac{7}{3} + \frac{13}{5}$$

Step 2: Find a common denominator, and then add numerators.

$$\frac{35}{15} + \frac{39}{15}$$

$$\frac{74}{15}$$

$$4\frac{14}{15}$$

You try!

$$1) 5\frac{7}{8} + (-3\frac{1}{2})$$

$$= \frac{47}{8} + \frac{-7}{2}$$

$$= \frac{47}{8} + \frac{-28}{8}$$

$$= \frac{19}{8}$$

$$= 2\frac{3}{8}$$

Subtracting Rational Numbers in Mixed Number Form

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

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

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

Your Turn



$$\begin{aligned} 2) \quad & 6\frac{1}{2} - 3\frac{1}{7} \\ &= \frac{13}{2} - \frac{22}{7} \\ &= \frac{91}{14} - \frac{44}{14} \\ &= \frac{47}{14} \\ &= 3\frac{5}{14} \end{aligned}$$

You try!

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

$$= \frac{-5}{3} + \frac{-9}{4}$$

$$= \frac{-20}{12} + \frac{-27}{12}$$

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

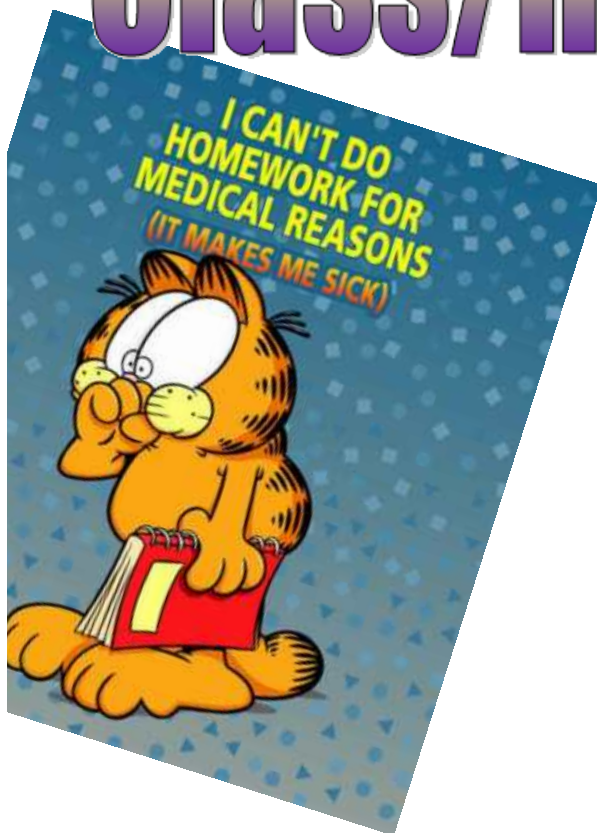
$$= -3\frac{11}{12}$$

Your Turn

$$\begin{aligned} 1) \quad & -2\frac{2}{9} - \left(-3\frac{1}{3}\right) \\ & = \frac{-20}{9} - \left(\frac{-10}{3}\right) \\ & = \frac{-20}{9} + \frac{30}{9} \\ & = \frac{10}{9} \\ & = 1\frac{1}{9} \end{aligned}$$



Class/Homework



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9 (acf) , 11(acegi), 13, 16ab,
17(a, b, c), 18,20(ac)

and

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5(abcd),7(abcdef),
9(abcdef), 13(cd),
15(ab)