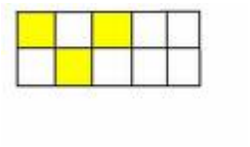
Concept: Improper Fractions and Mixed Numbers

Name:

Warm Up:

1. Write a fraction to represent the shaded part. *Write your final answer in lowest terms.*

(a)

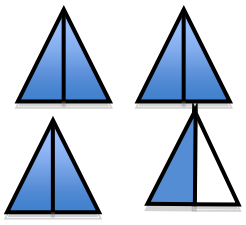


$\frac{3}{10}$

(b)

$2\frac{1}{4}$

(c)



$3\frac{1}{2}$

COMPUTER COMPONENT

Instructions: In UMATH X follow the **Content Menu** path:

Fractions > **Improper Fractions and Mixed Numbers**

Work through all Sub Lessons of the following Lessons **in order**:

- *The Concept ... Packages*
- *The Concept ... Clock*
- *Improper Fractions and Mixed Numbers ... What are they?*
- *The Concept…Cubes*
- *Introductory Problem*
- *Toothpicks and paperclips*
- *Mixed to Improper*
- *Improper to Mixed*
- *Adding Mixed Numbers*
- *Subtracting Mixed Numbers*
- *Multiplying Mixed Numbers*
- *Dividing Mixed Numbers*
- *Fraction Card Game*

As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

NOTES

A *mixed number* has a ***whole*** number and a ***fraction.***

An *improper fraction* has a ***numerator*** which is larger than the ***denominator***

1. Classify the following as either *mixed numbers* (M) or *improper fractions* (I).

$\frac{11}{7}$ ***I*** $2\frac{3}{4}$ ***M*** $8\frac{2}{4}$ ***M*** $11\frac{1}{7}$ ***M*** $\frac{8}{3}$ ***I***

2. Converting *mixed numbers* to *improper fractions.*

Example 2: $2\frac{3}{4} =$

Method 1

$$2\frac{3}{4} = \frac{2}{1} + \frac{3}{4} = \frac{8}{4} + \frac{3}{4} = \frac{11}{4} = 2\frac{3}{4}$$

Method 2

$$2\frac{3}{4} = \frac{2\times 4+3}{4} = \frac{11}{4} = 2\frac{3}{4}$$

3. Converting *improper fractions* to *mixed numbers.*

Example 2: $\frac{11}{4} =$ $4\overline{)11}$ $= 2\frac{3}{4}$

4. How to add *mixed numbers*.

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

Method 1

$$\frac{5}{2} + \frac{7}{4} = \frac{10}{4} + \frac{7}{4} = \frac{17}{4} = 4\frac{1}{4}$$

Method 2

$$2 + 1 + \frac{1}{2} + \frac{3}{4} = 3 + \frac{2}{4} + \frac{3}{4} = 3 + \frac{5}{4} = 4\frac{1}{4}$$

5. How to subtract *mixed numbers.*

$3\frac{2}{5} - 1\frac{1}{3} =$

Method 1

$$\frac{17}{5} - \frac{4}{3} = \frac{51}{15} - \frac{20}{15} = \frac{31}{15} = 2\frac{1}{15}$$

Method 2

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

$$= 2 + \frac{6}{15} - \frac{5}{15}$$

$$= 2 + \frac{1}{15} = 2\frac{1}{15}$$

6. How to multiply *mixed numbers.*

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

$$\frac{9}{2}\times\frac{7}{3}=\frac{21}{2}=10\frac{1}{2}$$

How to divide *mixed numbers.*

$$2\frac{2}{3}\div 1\frac{1}{5}=$$

$$\frac{8}{3}\div\frac{6}{5}=\frac{8}{3}\times\frac{5}{6}=\frac{20}{9}=2\frac{2}{9}$$

OFF COMPUTER EXERCISES

1. Change from a *mixed number* to an *improper fraction* (*in lowest terms*).

(a) $2\frac{3}{8}=\frac{19}{8}$ (b) $9\frac{5}{6}=\frac{59}{6}$ (c) $16\frac{2}{3}=\frac{50}{3}$

2. Change from an *improper fraction* to a *mixed number* (*in lowest terms*).

(a) $\frac{42}{4}=10\frac{1}{2}$ (b) $\frac{33}{5}=6\frac{3}{5}$ (c) $\frac{108}{84}=1\frac{2}{7}$

3. Addition and subtraction of *mixed fractions.*
Simplify the following.

(a) $2\frac{2}{3}+1\frac{7}{12}=\frac{8}{3}+\frac{19}{12}=\frac{51}{21}=\frac{17}{4}$ (b) $3\frac{5}{6}-1\frac{1}{4}=\frac{23}{6}-\frac{5}{4}=\frac{31}{12}=2\frac{7}{12}$

(c) $8\frac{7}{10}-4\frac{1}{4}=\frac{87}{10}-\frac{17}{4}=\frac{89}{20}=4\frac{9}{20}$ (d) $\frac{4}{7}+3\frac{1}{5}=\frac{4}{7}+\frac{16}{5}=\frac{122}{35}=3\frac{17}{35}$

4. Multiplication and division of *mixed fractions.*
Simplify the following.

(a) $\frac{5}{12}\times 7\frac{1}{5}=\frac{5}{12}\times\frac{36}{5}=3$

(b) $3\frac{5}{8}\div\frac{3}{4}=\frac{29}{8}\times\frac{4}{3}=\frac{29}{6}=4\frac{5}{6}$

(c) $3\frac{3}{5}\times 4\frac{1}{2}=\frac{18}{5}\times\frac{9}{2}=\frac{81}{5}=16\frac{1}{5}$

(d) $9\div\frac{11}{4}=\frac{9}{1}\times\frac{4}{11}=\frac{36}{11}=3\frac{3}{11}$

5. Simplify the following. *Watch the signs.*

(a) $2\frac{1}{2}+3\frac{1}{7}=\frac{5}{2}\div\frac{22}{7}=\frac{5}{2}\times\frac{7}{22}=\frac{35}{44}$

(b) $2\frac{3}{4}+2\frac{5}{9}=\frac{11}{4}+\frac{23}{9}=\frac{191}{36}=5\frac{11}{36}$

(c) $5\frac{2}{3}-1\frac{2}{15}=\frac{17}{3}-\frac{17}{15}=\frac{68}{15}=4\frac{8}{15}$

(b) $4\frac{7}{8}\times 5=\frac{39}{8}\times\frac{5}{1}=\frac{195}{8}=24\frac{3}{8}$

(e) $\left(1\frac{3}{4}-\frac{1}{8}\right)\div 1\frac{1}{3}=\left(\frac{7}{4}-\frac{1}{8}\right)\div\frac{4}{3}=\frac{13}{8}\times\frac{3}{4}=\frac{39}{32}=1\frac{7}{32}$

(f) $1\frac{1}{4}\div 7\frac{1}{2}+2\frac{1}{4}\times 1\frac{1}{3}=\frac{5}{4}\div\frac{15}{2}\times\frac{9}{4}\times\frac{4}{3}=\frac{5}{4}\div\frac{2}{15}\times\frac{9}{4}\times\frac{4}{3}=\frac{1}{6}+3=3\frac{1}{6}$