

## MAT 1275CO - Chapter 1.1.2 Problem Set Key

- Write the following improper fractions as mixed numbers.  
(a)  $\frac{39}{12}$   $3\frac{3}{12}$ ,  $3\frac{1}{4}$  (b)  $\frac{54}{7}$   $7\frac{5}{7}$
- Write the following mixed numbers as improper fractions.  
(a)  $-2\frac{7}{9}$   $-\frac{25}{9}$  (b)  $11\frac{4}{5}$   $\frac{59}{5}$
- Find a fraction equivalent to  $\frac{10}{12}$ .  $\frac{5}{6}$ ,  $\frac{20}{24}$ ,  $\frac{30}{36}$ ,  $\dots$
- Reduce.  
(a)  $\frac{8}{36}$   $\frac{2}{9}$  (b)  $-\frac{15}{75}$   $-\frac{1}{5}$
- Multiply. Express your final answer as a reduced proper or improper fraction NOT a mixed number.  
(a)  $(3\frac{2}{3}) \cdot (4\frac{1}{5}) = \frac{77}{5}$  (b)  $\frac{5}{6}(2\frac{3}{7}) = \frac{85}{42}$  (c)  $-\frac{11}{18} \times \frac{5}{2} = -\frac{55}{36}$
- Divide. Express your final answer as a reduced proper or improper fraction NOT a mixed number.  
(a)  $\frac{4}{10} \div \frac{12}{5} = \frac{1}{6}$  (b)  $(3\frac{1}{3}) \div (2\frac{3}{5}) = \frac{50}{39}$  (c)  $\frac{6}{8} \div (-\frac{9}{10}) = -\frac{5}{6}$
- Add. Express your final answer as a reduced proper or improper fraction NOT a mixed number.  
(a)  $\frac{10}{16} + \frac{4}{32} = \frac{3}{4}$  (b)  $-\frac{3}{14} + \frac{15}{14} = \frac{6}{7}$  (c)  $2\frac{6}{21} + 5\frac{3}{7} = \frac{143}{27}$
- Subtract. Express your final answer as a reduced proper or improper fraction NOT a mixed number.  
(a)  $\frac{5}{3} - \frac{17}{9} = -\frac{2}{9}$  (b)  $\frac{15}{4} - (-1\frac{3}{4}) = \frac{11}{2}$  (c)  $-3\frac{8}{30} - 2\frac{2}{5} = -\frac{17}{3}$

### Critical Thinking:

Jasmine, John, and Amber each ate some of their 3 candy bars and are comparing how much candy they have left. Jasmine has  $\frac{3}{4}$  candy left. Amber had  $\frac{2}{3}$  of her candy bar left. John won't say exactly how much he has left, he will only reveal that the amount of candy he has left is an improper fraction. Do you have enough information to say who has the most candy left over? If so, who has the most candy?

We have enough information to say who has the most candy left over. Improper fraction have numerators that are greater than or equal to the denominator and are greater than are equal to one. This means John has at least one whole candy bar. Since both Jasmine and Amber each have less than a whole candy bar, John has the most candy left over.

## MAT 1275CO - Chapter 1.1.1 Problem Set Key

The following problems are to be done without using a calculator.

1. Find the **magnitudes (weights)** and the **opposites** of the following numbers.

(a) 5 **magnitude 5**

(b)  $-118$  **magnitude 118**

2. Demonstrate and briefly explain how to add  $(-8) + (-7)$  using a number line.

3. Add and/or subtract to simplify the following expressions.

(a)  $-(-5) + 20 = 25$

(b)  $16 - (-3) = 19$

(c)  $(-14) + 7 = -7$

(d)  $(-14) + (-7) = -21$

(e)  $23 + (-11) - (-8) - 6 + 3 = 17$

4. Multiply.

(a)  $276 \times 13 = 3588$

(b)  $118 \times 75 = 8850$

5. Divide using long division. Give the remainder when appropriate.

(a)  $1296 \div 7 = 185$  **remainder 1**

(b)  $6456 \div 12 = 538$

6. Multiply and/or divide to simplify the following expressions.

(a)  $15(0) = 0$

(b)  $0 \div 15 = 0$

(c)  $15 \div 0 = \text{DNE, undefined}$

(d)  $-25 \div (-5) = 5$

(e)  $16 \cdot (-3) = -48$

(f)  $-81 \div 9 = -9$

(g)  $-4(-5) = 20$

### Critical Thinking:

1. Explain how addition and subtraction are related. **Subtraction is addition of the opposite.**
2. Explain how multiplication and division are related. **When we divide  $a \div b$ , we want to know the number we need to multiply  $b$  by to get  $a$ .**
3. Julia tells Rebecca that her homework answer is incorrect without seeing the question. Rebecca's answer says "The magnitude/weight of the number is  $-4$ ." How does Julia know Rebecca's homework is incorrect when she hasn't seen the question? **Magnitudes/weights are never negative.**