

**Section 5-1:  
Divisibility Rules &  
Mixed/Improper  
Fractions**

# Divisibility Rules:

A number is divisible by:

- a. 2 if the ones digit is even or zero
- b. 3 if the sum of its digits is divisible by 3
- c. 4 if the last two digits are divisible by 4
- d. 5 if the ones digit is 0 or 5
- e. 6 if the number is divisible by 2 and 3
- f. 9 if the sum of all the digits is divisible by 9
- g. 10 if the ones digit is 0

# Divisibility Rules:

A number is divisible by 2 if the ones digit is even or zero.

## Examples:

6

38

-70

315972

# Divisibility Rules:

A number is divisible by 3 if the sum of its digits is divisible by 3.

## Examples:

6     6

48      $4+8=12$

-72      $7+2=9$

315972      $3+1+5+9+7+2$   
 $= 27$

# Divisibility Rules:

A number is divisible by 4 if the last two digits are divisible by 4.

## Examples:

524

48

-340

315988

# Divisibility Rules:

A number is divisible by 5 if the ones digit is 0 or 5.

## Examples:

60

435

-7005

315970

# Divisibility Rules:

A number is divisible by 6 if the number is divisible by 2 and 3

## Examples:

$$24 \quad 2+4=6$$

$$384$$

$$3+8+4=15$$

$$-120 \quad 1+2+0=3$$

$$315972$$

$$3+1+5+9+7+2=27$$

# Divisibility Rules:

A number is divisible by 9 if the sum of all the digits is divisible by 9.

## Examples:

$$63 \quad 6+3=9$$

$$387 \quad 3+8+7=18$$

$$-72 \quad 7+2=9$$

$$315972 \quad 3+1+5+9+7+2=27$$



# Divisibility Rules:

A number is divisible by 10 if the ones digit is 0

## Examples:

60

380

-700

315970

# Mixed Numbers to Improper Fractions

Ex. 1:  $1 \frac{2}{3} = \frac{5}{3}$

Handwritten notes: "Add" with an arrow pointing to the 1, "Mult" with an arrow pointing to the 3, and  $(3 \cdot 1) + 2 = 5$ .

Ex. 2:  $3 \frac{1}{2} = \frac{7}{2}$

Handwritten notes:  $2 \cdot 3 = 6$   
 $6 + 1 = 7$

# Mixed Numbers to Improper Fractions

Ex. 3:  $5 \frac{3}{8} = \frac{43}{8}$

$8 \cdot 5 = 40 \quad 40 + 3 = 43$

Ex. 4:  $2 \frac{6}{7} = \frac{20}{7}$

$7 \cdot 2 = 14 \quad 14 + 6 = 20$

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

\*\* To change a whole number to an improper fraction, put the whole number over 1. \*\*

# Improper Fractions to Mixed Numbers

Ex. 5:  $\frac{3}{2} = 1\frac{1}{2}$

$$\begin{array}{r} 1 \\ 2 \overline{) 3} \\ \underline{-2} \\ 1 \end{array}$$

Ex. 6:  $\frac{15}{4} = 3\frac{3}{4}$

$$\begin{array}{r} 3 \\ 4 \overline{) 15} \\ \underline{-12} \\ 3 \end{array}$$

# Improper Fractions to Mixed Numbers

$$\text{Ex. 7: } \frac{22}{5} = 4 \frac{2}{5}$$

$$\begin{array}{r} 4 \\ 5 \overline{) 22} \\ \underline{-20} \\ 2 \end{array}$$

$$\text{Ex. 8: } \frac{73}{10} = 7 \frac{3}{10}$$

$$\begin{array}{r} 7 \\ 10 \overline{) 73} \\ \underline{-70} \\ 3 \end{array}$$