BASIC SKILLS MATH 1

$1 + 8 \cdot 3$

$2a$

$\times$

$+$

$\frac{1}{2} = 0.5$

sum

$-$

$\div$

$2 + 2 + 2 = 2 \times 3$

4^2

$(5 \times 2) + 7$

$101_2 = 5_{10}$

Table of Contents

Section 1.1
Recognizing Whole Numbers

Learning Objectives:
➢ $Base_{10}$ Place Values
➢ Recognizing Whole Numbers in *Standard, Written*, and *Expanded* Form
➢ Rounding Whole Numbers

Notes:
o In our decimal number system, the value of a digit depends on its place, or position, in the number. Each place has a value of 10 times the place to its right. The prefix deci means ten, hence we use ten digits in our number system 0 – 9.
o The idea of place value is at the heart of our number system. First, however, a symbol for nothing– our zero had to be invented. Zero "holds the place" for a particular value, when no other digit goes in that position. For example, the number "100" in words means one hundred, no tens and no ones. Without a symbol for nothing, our decimal number system wouldn't work.

Place Value														
Trillions			Billions			Millions			Thousands			Ones		
Hundred trillion	Ten trillions	Trillions	Hundred billions	Ten billions	Billions	Hundred million	Ten million	Millions	Thundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
								2	4	7	1	3	8	6

o A number in **standard form** is separated into groups of three digits using commas. Each of these groups is called a period.
o A number in **expanded form** is written as a sum of the value of each digit.
o A number in **written form** is expressed in words only.

Standard Form	Written Form	Expanded Form
32	thirty-two	30 + 2
491	four hundred nintey-one	400 + 90 + 1
2,705	two thousand, seven hundred five	2,000 + 700 + 5
63,822	sixty three thousand, eight hundred twenty-two	60,000 + 3,000 + 800 + 20 + 2
345,917	three hundred forty-five thousand, nine hundred seventeen	300,000 + 40,000 + 5,000 + 900 + 10 + 7
1,076,800	one million, seventy-six thousand, eight hundred	1,000,000 + 70,000 + 6,000 + 800

o Rounding Guidelines
  • Find the place value you want (the "*rounding digit*") and look to the digit just to the right of it.
  • If that digit is less than 5, do not change the "rounding digit" but change all digits to the right of the "rounding digit" to zero.
  • If that digit is greater than or equal to 5, add one to the rounding digit and then change all digits to the right of the rounding digit to zero

Examples:

Fill in the Chart

Standard Form	Written Form	Expanded Form
26		
	three hundred sixteen	
		8,000 + 500 + 4
18,749		
	eight hundred fifty thousand, twelve	
		2,000,000 + 80,000 + 9,000 + 300 + 7

Round 4,926 to the following place values

• tens

• hundreds

• thousands

• ten thousands

Standard, Expanded and Written – Fill in the blanks

Standard	Expanded	Written
9,952		
	6000 + 200 + 50 + 5	
		Five thousand, eighty-seven
7,674		
	5000 + 600 + 10	
		One hundred thirty-seven
	6000 + 600 + 30 + 6	
5,216		

Round to the nearest ten.

1) 48 _____

2) 263 _____

3) 197 _____

4) 3,084 _____

Round to the nearest hundred.

5) 195 _____

6) 49 _____

7) 309 _____

8) 7,480 _____

Round to the nearest thousand.

9) 5,284 _____

10) 2,963 _____

11) 997 _____

12) 13,874 _____

Round to the nearest ten thousand.

13) 61,295 _____

14) 42,049 _____

15) 185,329 _____

16) 7,480 _____

San Diego has an estimated population of 1,339,000.

17) Round to the nearest hundred thousand.

_____

18) Round to the nearest million.

_____

The elevation of San Jacinto Peak is 10,833ft.

19) Round to the nearest thousands.

_____

20) Round to the nearest ten thousands.

_____

Section 1.2
Adding Whole Numbers

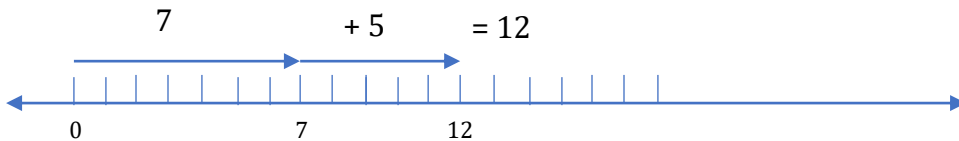**Learning Objectives:**
➢ Definition of Addition
➢ Addition Properties
➢ Addition Algorithms

Notes:
o *Addition* is combining two or more numbers.

o This is the symbol for addition **+**
o Words/phrases that tell us to add
- Add
- More than
- Total
- **Sum**
- Altogether
- Increased by

o Commutative Property of Addition: $a + b = b + a$
o Addition Property of Zero (Identity Property of Addition): $a + 0 = a$
o Associative Property of Addition $(a + b) + c = a + (b + c)$:

o Algorithms - a process or set of rules to be followed in calculations or other problem solving operations.

Add 7+5 using the count on method, we would start at 7 and add 5 more

As numbers get bigger we change our method by combining the base ten pieces that represent the numbers: 35 + 47

* combining 10 ▭ to make 1 stick

$$35 \longrightarrow 30 + 5$$
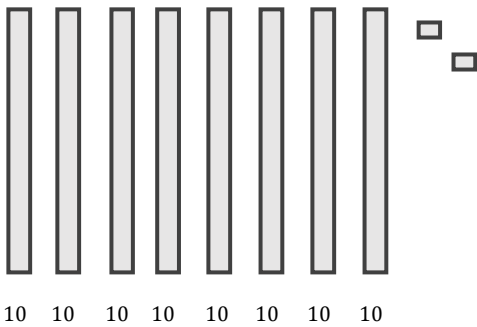$$+ 47 \longrightarrow + 40 + 7$$
$$82 \qquad 70 + 12 \;=\; 82$$

10 10 10 10 10 10 10 10

Examples:

1) 16
   + 32
   ――――

2) 187
   + 26
   ――――

3) 405
   + 831
   ――――

4) 2450
   + 719
   ――――

5) 48
   + 1968
   ――――

6) 7465
   + 8915
   ――――

7) 12789
    953
   + 46
   ――――

8) 187
    4309
   + 25
   ――――

9) Calculate the sum of twelve, three hundred forty-seven, and nine.

10) Jack drove 2971 miles in May and 830 miles in June. How many miles did he drive during the two months?

11) What property of addition do these equations demonstrate?
   - $6 + 2 = 2 + 6$
   - $3 + (1 + 5) = (3 + 1) + 5$
   - $12 + 0 = 12$

6

1)   21
    + 47
_____

2)   197
    + 34
_____

3)   708
    + 536
_____

4)   3950
    + 918
_____

5)   36
    + 1976
_____

6)   5467
    + 9825
_____

7) 12879
    593
    + 64
_____

8)   287
    6309
    + 45
_____

9) Calculate the sum of sixteen, four hundred eighty-five, and thirty.

10) The Farmer's Market sold 325 lbs. of Avocados on Monday, 648 lbs. on Wednesday, and 570 lbs. on Friday. How many pounds were sold during the three days altogether?

What property of addition do these equations demonstrate?

11. $4 + 7 = 7 + 4$

12. $(1 + 2) + 3 = 1 + (2 + 3)$

13. $(4 + 1) + 5 = 5 + (4 + 1)$

14. $0 + 9 = 9$

15. $6 + (5 + 4) = (6 + 5) + 4$

16. $3 + 0 = 3$

17. $(6 + 8) + 2 = 6 + (8 + 2)$

18. $(6 + 2) + 3 = (2 + 6) + 3$

Learning Objectives:
➢ Definition of Subtraction
➢ Order of Operations

Notes:
o Subtraction is the process of taking one number away from another.
o This is the symbol for subtraction   —
o Words/phrases that tell us to subtract

- Subtract

- Minus

- Take away

- Less than

- **Difference**

- Decreased by

o Order of Operations
- Do inside (parenthesis) first
- Addition **or** Subtraction - as they appear from LEFT to RIGHT

Examples:

❑ Take 6 from 13   ❑ From 100, subtract 48

❑ Decrease 18 by 11   ❑ Find 3 less than 21

❑ Find the difference between 105 and 79   ❑ The difference of 85 and 59

Subtract 16 from 34
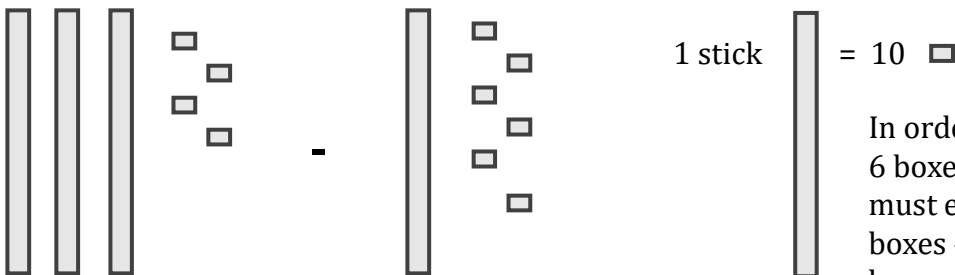
1 stick = 10

In order for us to subtract the 6 boxes from the 4 boxes, we must exchange 1 stick for 10 boxes – this is what we call borrowing!

$$\begin{array}{r} {}^2\cancel{3}{}^14 \\ -\,1\,6 \\ \hline 1\,8 \end{array}$$

1)   16
    - 5
   _____

2)   31
    - 27
   _____

3)   83
    - 20
   _____

4)   90
    - 56
   _____

5)   405
    - 38
   _____

6) 7465
   - 7459
   _____

7) 12089
   - 307
   _____

8) 1000
    - 174
   _____

9) What is the difference between fifty-one and nineteen.

10) If 3 more students are added to this class, we will have 31 students. How many students do we have **now**?

11)   9 – 3 + 2

12)   9 – (3 + 2)

13)   6 + 4 - 8

Basic Skills Math 1 – **Homework**
Unit 1 Section 3 - Subtracting Whole Numbers

1)   17
     - 8
   _____

2)   41
     - 19
   _____

3)   75
     - 30
   _____

4)   60
     - 28
   _____

5)   304
     - 27
   _____

6)   4258
     - 1679
   _____

7) 21095
     - 708
   _____

8)   1000
     - 263
   _____

9) What is the difference between seventy and seventeen.

10) Sixteen more than a number is twenty-one. What is the number?

Simplify the expressions:

11)   8 – 4 - 1

12)   8 – (4 - 1)

13)   17 – (9 + 2)

14)   23 – 4 + 10

15)   (6 - 2) - 3

16)   6 – 2 - 3

Section 1.4
Multiplying Whole Numbers

Learning Objectives:
➢ Definition of Multiplication
➢ Multiplication Properties
➢ Exponents
➢ Multiply by powers of 10

Notes:
o Definition of Multiplication is repeated addition – *it is a memorized shortcut!*

  $3 + 3 + 3 + 3 = 3 \times 4$, 3 is being added 4 times (this is also stated as 4 groups **of** 3)

o Key words that imply multiplication
  - times
  - **product** (factor x factor = product)
  - double
  - triple
  - groups **of**

o Different ways to write 2 times 5: 2×5, $2 \cdot 5$, $2(5)$
  [2c - when a number is in front of a variable this means 2 times the value of c]

o Multiplication Properties

  - Multiplication Property of 0
      $a \times 0 = 0$

  - Identity Property of Multiplication or Multiplication Property of 1
      $a \times 1 = a$

  - Commutative Property of Multiplication
      $a \times b = b \times a$

  - Associative Property of Multiplication
      $(ab)c = a(bc)$

  - Distributive Property of Multiplication
      $a(b + c) = ab + ac$

o Definition of an Exponent – repeated multiplication

  $3 \times 3 = 3^2$, 3 is the **base** number which is being raised to the 2nd **power/exponent**

Exponent notes cont.:

$2^2 = 2 \times 2$ This is read as 2 to the 2nd power or 2 squared

$2^3 = 2 \times 2 \times 2$ This is read as 2 to the 3rd power or 2 cubed

$2^4 = 2 \times 2 \times 2 \times 2$ This is read as 2 to the 4th power.

In general, everything after the 3rd power is read as, … to the nth power.

o Multiplying by powers of 10

     ❑ 7 x 1 = 7

     ❑ 7 x 10 = 70

     ❑ 7 x 100 = 700

     ❑ 7 x 1000 = 7000

Examples:

a) 6 × 4 = 24 This is a memorized multiplication fact so we don't have to add 6 four times.

b) 16 × 5 can be solved like this

$$
\begin{array}{r}
3 \\
16 \\
\times\ 5 \\
\hline
80
\end{array}
$$

$$
\begin{aligned}
5 \times 16 &= 5 \times 10 + 5 \times 6 \\
&= 50 + 30 \\
&= 80
\end{aligned}
$$

1)
$$
\begin{array}{r}
23 \\
\times\ 4 \\
\hline
\end{array}
$$

2)
$$
\begin{array}{r}
541 \\
\times\ 8 \\
\hline
\end{array}
$$

3)
$$
\begin{array}{r}
19 \\
\times\ 26 \\
\hline
\end{array}
$$

4)
$$
\begin{array}{r}
7 \\
\times\ 56 \\
\hline
\end{array}
$$

5)
$$
\begin{array}{r}
692 \\
\times\ 30 \\
\hline
\end{array}
$$

6)
$$
\begin{array}{r}
765 \\
\times\ 213 \\
\hline
\end{array}
$$

7)
$$
\begin{array}{r}
12089 \\
\times\ 17 \\
\hline
\end{array}
$$

8) 23 x 1000 =

9) A paint crew earns $235 an hour. How much will it earn in 8 hours?

10) A concrete block weighs 28 lbs. How much would 1674 such blocks weigh?

11) 5^3

12) 11^2

Multiplication Chart

x	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Basic Skills Math 1 – **Homework**
Unit 1 Section 4 - Multiplying Whole Numbers

1)   13
          x 8

2)   52
          x 14

3)   79
          x 60

4)   80
          x 25

5)   38
        x 402

6)   528
        x 167

7) 21095
         x 27

8) 62 x 100 =

9) John charges $65 to clean a pool. What will it cost to have the pool cleaned 12 times?

10) A quarter horse weighs about 450 kg. If a trailer holds 6 horses, how many kilograms is it carrying?

Simplify the expressions:

11) 5^3

12) 9^2

13) 12^2

State the property of multiplication demonstrated be each equation.

14)   4 (7) = 7 (4)

(3 x 5) x 2 = 3 x (5 x 2)

6(4 + 1) = 6(4) + 6(1)

1 x 19 = 19

14

Section 1.5
Dividing Whole Numbers

Learning Objectives:
➢ Definition of Division

Notes:
o Definition of Division is repeated Subtraction
How many groups of 9 can I make out of 27 objects?

$$
\begin{array}{r}
27 \\
-9 \longrightarrow 1 \\
\hline
18 \\
-9 \longrightarrow 2 \\
\hline
9 \\
-9 \longrightarrow 3 \\
\hline
0
\end{array}
$$
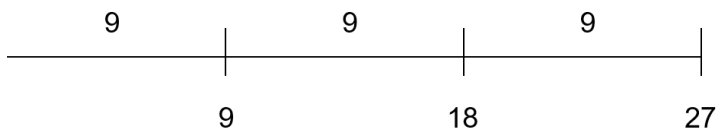
27 objects made 3 groups of 9

o Different ways to write 27 divided by 9.

$27 \div 9 = 3$

$\dfrac{27}{9} = 3$

$$
\begin{array}{r}
3 \\
9\overline{)27} \\
-27 \\
\hline
0
\end{array}
$$

$$27 \div 9 = 3$$
Dividend ÷ Divisor = Quotient

o Key words that mean to divide
  o Quotient
  o Finding equal parts

Examples:

1) $4\overline{)32}$

2) $7\overline{)26}$

3) $8\overline{)309}$

Section 1.5
Dividing Whole Numbers

Examples cont.:

4) 6) 3012

5) 14) 67

6) 21) 135

7) 48) 9237

8) 55) 16724

9) 300) 135000

10) Tony has 96 match box cars. He wants to sell them in groups of 6. How many groups of cars will he sell?

11) Isabella made a bid for a job of $345. If it takes her 23 hours to complete her job, what is her hourly rate of pay?

1) 7 | 42

2) 9 | 58

3) 4 | 309

4) 11 | 5522

5) 17 | 98

6) 23 | 165

7) 37 | 9304

8) 65 | 18734

9) 350 | 143500

10) One batch of caramel yields about 165 dipped pretzel rods. If they are bagged in groups of 5, how many goody bags does one batch of caramel make?

11) A HOA resurfaced the streets of a community for $30925. If the amount is divided equally among the 25 residents, how much will each household pay?

Section 1.6
Order of Operations and Evaluating Mathematical Expressions

Learning Objectives:
➤ Order of Operations: The rules that say which calculation comes first in an expression.

Notes:
o When solving an expression *give priority to the following operations:*
- **P**arenthesis ( )
- **E**xponents
- **M**ultiplication or **D**ivision – left to right as they appear
- **A**ddition or **S**ubtraction – left to right as they appear

$$P\ E\ M\ D\ A\ S$$

❑ *Multiplication or Division is worked together in the order they appear from left to right. Addition or Subtraction is also done together in the order they appear from left to right.*

o When Evaluating a mathematical expression, you substitute a particular number for a letter, and then follow the order of operations rules.

Examples:

1) $41 - 20 + 15$

2) $41 - (20 + 15)$

3) $16 - 3(4)$

4) $48 \div (8 + 4) - 1$

5) $18(7 - 5) - 8 \div 2$

6) $42 \div (10-4) \times 2$

7) $3(4 + 5) - 5^2$

8) $\dfrac{6(1+2)}{9}$

9) $(4 \cdot 5 - 12)^2$

Section 1.6
Examples continued

Evaluate each expression with the following values:

10) $2m$ for $m = 6$

11) $x - y$ for $x = 11, y = 3$

12) y^2 for $y = 7$

13) $5a - 3$ for $a = 4$

14) $8(x - y)$ for $x = 9, y = 3$

15) $2(v + 3)$ for $v = 7$

For 16-19 evaluate each expression for a = 3, b = 5, c = 2

16) $(a + 4) \div (b + c)$

17) $\dfrac{a + 4}{b + c}$

18) $3b - c^2$

19) $(ac - b)^2$

1) $16 - 8 + 4$

7) $3(2^3) + 5(4^2)$

2) $16 - (8 + 4)$

8) $8(1 + 4 \times 2)$

3) $16 - \dfrac{8}{4}$

9) $\dfrac{15 + 5(4)}{17 - 12}$

4) $20 \div 2(10)$

10) $\dfrac{5^2 - 6(2)}{6 + 7}$

5) $4(5) - 3(2)$

11) $6 + 3[8 - 3(1 + 1)]$

6) $5^2 + 7^2$

12) $8 \times 2^4 + 25 \div 5 - 3^2$

Evaluate each expression with the following values:

13) $3x$ for x = 9

14) x – y for x = 13, y = 5

15) y^2 for y = 11

16) 4a - 9 for a = 7

17) 6(x – y) for x = 8, y = 4

18) 3(y + 1) for y = 15

For 19 - 22 evaluate each expression for a = 6, b = 8, c = 2

19) (a + 4) ÷ (b + c)

20) $\dfrac{a + 4}{b + c}$

21) $3b - c^2$

22) $(ac - b)^2$

Section 1.7
Geometric Applications

Learning Objectives:
➢ Perimeter
➢ Area

Notes:
❖ What is the difference between fencing in a back yard and laying down sod(grass)?

o Definition of **perimeter:** the distance around an object

   ▪ To calculate the <u>perimeter</u> of an object, it is the *sum* of all of the sides

   ❑ P = sum of all the sides

o Definition of **area**: the number of square units that covers a closed figure. *(Area can be measured in different units, such as square feet **ft²**, square meters **m²**, or square inches **in².**)*

   ▪ To calculate <u>area</u> of a basic rectangle or a square, it is the *product* of the length and the width.

   ❑ A = length × width

Examples:

Calculate the perimeter of the following objects:

1)

2)

3)

Examples cont.:

4) *The perimeter of a Rectangle can be calculated in 3 different ways.*

```
┌──────────┐
│  10m     │
21m        21m
│          │
└──────────┘
   10m
```

$P = s_1 + s_2 + s_3 + s_4$ $P = 2s_1 + 2s_2$ $P = 2(s_1 + s_2)$

5) *The perimeter of a Square* (all 4 sides are equal) *can be calculated in 2 different ways.*

```
┌────────┐
│        │
│        │
└────────┘
  12 cm
```

$P = s_1 + s_2 + s_3 + s_4$ $P = 4s_1$

Calculate the area of the following objects: A = length × width

```
┌──────┐          ┌───┬───┐
│      │          │   │   │
│   3 ft│         │   │   │  3 ft
│      │          ├───┼───┤
│      │          │   │   │  1 ft
└──────┘          └───┴───┘
  2 ft              1 ft
                    2 ft
```

6)   A = length × width

7)   A = length × width

```
┌────────────┐
│            │
│8 in        │
│            │
└────────────┘
    13 in
```

8)   A = length × width or s^2

```
┌────────┐
│        │
│        │
└────────┘
  9 yds
```
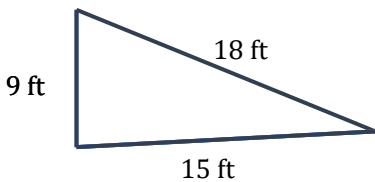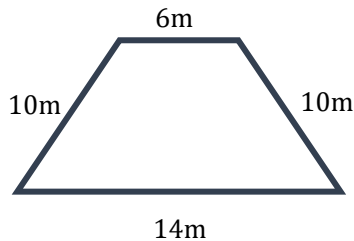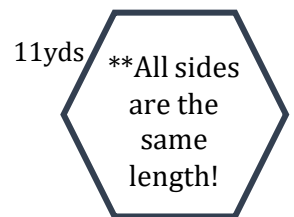
Section 1.7
Geometric Applications

Examples cont.:

9) *Calculate the perimeter and the area of the following rectangle.*

P =   A =

18ft

11ft

10) *Calculate the perimeter and the area of the following composite figure. All angles are 90°*

2 cm

2 cm

4 cm

6 cm
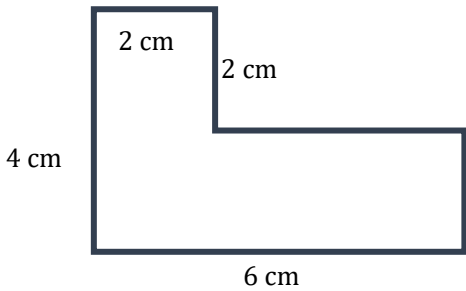
P =   A =

11) *Calculate the perimeter and the area of the following composite figure. All angles are 90°*
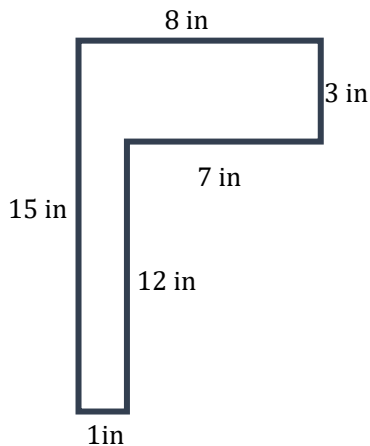
8 in

3 in

7 in

15 in

12 in

1in

P =   A =

Calculate the perimeter for the following shapes. P = sum of all the sides

10 ft   10 ft

8 ft

1)

26 yds

12 yds

2)

**All sides
are the
same
length!

9 m
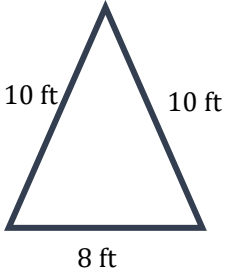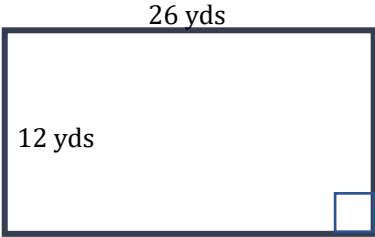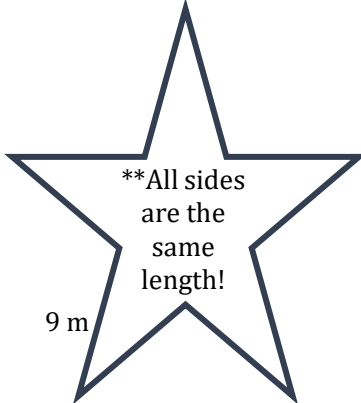
3)

Calculate the area for the following rectangular shapes. A = length x width

30 in

14 in

4)

**All sides
are the
same
length!

11 yds

5)

8 m

4 m

8 m

4 m

4 m
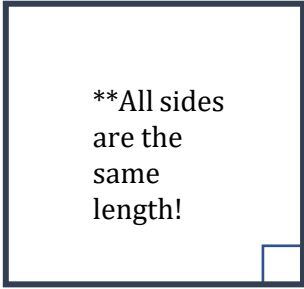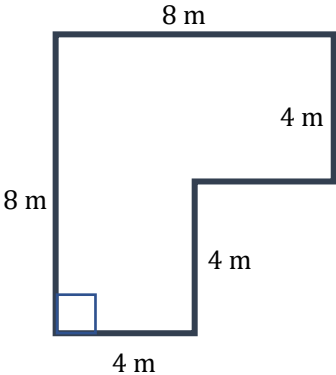
6)

7) *Calculate the perimeter and the area of the following rectangle.*

15ft

9ft

P =   A =

8) *Calculate the perimeter and the area of the following rectangular shaped figure.*

4 cm

4 cm

8cm

12 cm

P =   A =

9) *Calculate the perimeter and the area of the following rectangular shaped figure.*

9 in

3 in

8 in

14 in

11 in

1 in

P =   A =

Calculators will NOT be allowed on the test. You must show all of your work. You will not receive credit for answers that are not supported by your work.

Name:

Date:
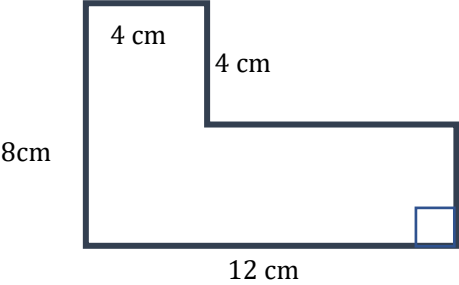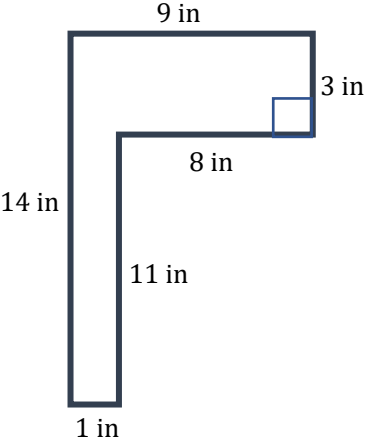
1) Give the place value of 7 in 9,748,501.	2) Give the word name for 1,412,505.
3) Write three million, four hundred sixty thousand, eighteen as a number.	4) Write 749 in expanded form.
Perform the indicated operation: 5) $\qquad \begin{array}{r} 378 \\ 963 \\ +\ 156 \\ \hline \end{array}$	*Perform the indicated operation:* 6) $\qquad \begin{array}{r} 28 \\ 3819 \\ +\ 20645 \\ \hline \end{array}$
Solve the following problem: 7) What is the sum of 308; 44; 8660 and 12907?	*Perform the indicated operation:* 8) $\qquad \begin{array}{r} 378 \\ -65 \\ \hline \end{array}$

Name:

Date:

Perform the indicated operation: 9) 63386 – 21064	***Solve the following problem:*** 10) The maximum load for a light plane with full gas tanks is 550 pounds(lb). Mr. Whitney weighs 205 lb, his wife 125 lb, and their son 68 lb. How much luggage can they take on the trip without exceeding the load limit?
Find the products 11) $\begin{array}{r} 74 \\ \times\ 106 \\ \hline \end{array}$	**Find the products** 12) 3497 × 51
Solve the following problem: 13) A truck firm has ordered 35 new vans at a cost of $11750 per van. What will be the total cost of the order?	**Divide using long division.** 14) 1830 ÷ 20

Divide using long division. 15) $$361\overline{)20938}$$	*Solve the following problem:* 16) Jack was paid $4080 for a job. If his hourly rate is $17 per hour, how many hours did Jack work to complete the job.
17) Suppose that you need a total of 360 points on four tests during the semester to receive an A for the course. Your scores on the first three tests were 93, 87, and 92. What is the lowest score you can get on the fourth test and still receive an A?	18) A refrigerator is advertised as follows: "pay $75 down and $35 a month for 24 months." If the cash price of the refrigerator is $720, how much extra will you pay if you buy on the installment plan?
19) Using numbers and symbols, write *six times twelve* three different ways.	**Simplify – Order of Operations** 20) 7(6 - 2) + 9 ÷ 3

Simplify – Order of Operations	**Evaluate the expression for a = 3, b = 5, c = 4**
21) $\quad 4 \bullet 9 + 3 \bullet 4^2$	22) $\quad 2(a+b) -3c$
Evaluate the expression for a = 3, b = 5, c = 4	**Identify the following as one of the math properties of Addition or Multiplication.**
23) $8\ c^2 - 3a$	24) $\quad 1 + (2 + 3) = (1 + 2) + 3$
Identify the following as one of the math properties of Addition or Multiplication.	**Identify the following as one of the math properties of Addition or Multiplication.**
25) $\quad 12 \times 1 = 12$	26) $\quad 3 + (7 + 9) = (7 + 9) + 3$

Identify the following as one of the math properties of Addition or Multiplication.

27) 7 × 2 = 2 × 7

Find the Perimeter of the following Figures.
28)
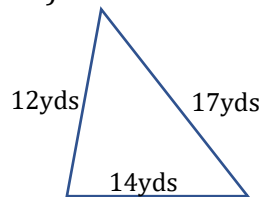
12yds   17yds
14yds

Find the Perimeter of the following Figures.
29)

5 in

Each side is the same length
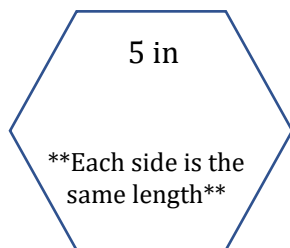
Find the Perimeter of the following Figures.
30)

10 m
3 m
7 m
3 m
4 m
7 m
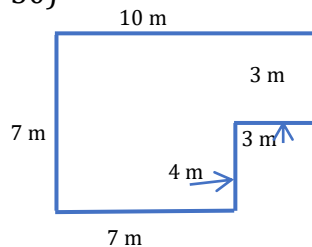
Find the Perimeter of the following Rectangular Figure.
31)

4 ft
7 ft
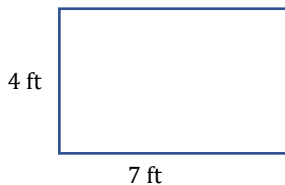
Find Area of the following Rectangular Figure.
32)

4ft
7 ft
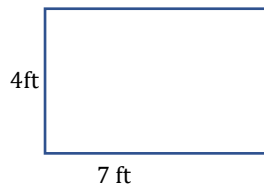
Learning Objectives:
➢ Recognizing Fractions
➢ Types of Fractions

Notes:
o Definition of **<u>fractions</u>:** a way of showing portions of 1 whole.
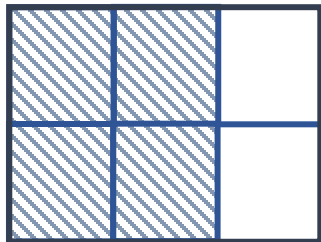
$$\frac{4}{6} \quad = \quad \frac{\text{numerator}}{\text{denominator}} \quad = \quad \frac{\text{number of pieces you have}}{\text{how many pieces make a whole}}$$

We can read this fraction as:
- *four-sixths,*
- *four over six,*
- *four divided by six*

o <u>Proper Fraction</u>: when the numerator is less than the denominator

   ▪ These are some examples of proper fractions.

$$\frac{7}{9}, \quad \frac{1}{2}, \quad \frac{8}{15}, \quad \frac{3}{4}, \quad \frac{2}{3}, \quad \frac{6}{7}, \quad \frac{11}{20}, \quad \frac{5}{8},$$

o <u>Improper Fraction</u>: when the numerator is greater than or equal to the denominator

   ▪ These are some examples of improper fractions.

$$\frac{3}{2}, \quad \frac{8}{5}, \quad \frac{12}{10}, \quad \frac{7}{4}, \quad \frac{13}{9}, \quad \frac{3}{1}, \quad \frac{6}{6}, \quad \frac{14}{8},$$

o <u>Mixed Fraction</u>: when an expression consists of a whole number and a proper fraction

   ▪ Theses are some examples of mixed fractions.

$$1\frac{7}{9}, \quad 2\frac{1}{4}, \quad 5\frac{3}{7}, \quad 4\frac{2}{3}, \quad 10\frac{1}{2},$$

❖ Question:
   - Why do 7 quarters equal 1 dollar and 3 quarters? The reason why demonstrates our ability to convert improper fractions to mixed fractions.
   - How do we do this? We use division!

Notes cont.:

$$\frac{7}{4} \longrightarrow \begin{array}{r} 1\frac{3}{4} \\ 4\overline{\smash{\big)}\,7} \\ \underline{-\,4} \\ 3 \end{array}$$

✓ *We made 1 whole group of four, with three out of four remaining.*

✓ *Any improper fraction can be changed into a mixed fraction simply by doing the division that is stated.*

❖ Question: if improper fractions can be turned into mixed fractions, how are mixed fractions turned into improper fractions?
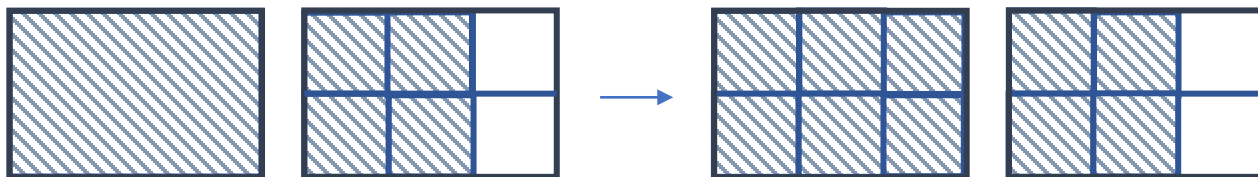
$$1\frac{4}{6} \longrightarrow \frac{(1\times6)+4}{6} = \frac{10}{6}$$

✓ *First, multiply the whole number by the denominator of the fraction.*
✓ *Then add the numerator of the fraction to the product.*
✓ *Finally, write the sum over the original denominator.*

Examples:

In the shape provided, represent the following fractions.

1) $\frac{3}{4}$

2) $\frac{2}{5}$

3) $\frac{7}{9}$
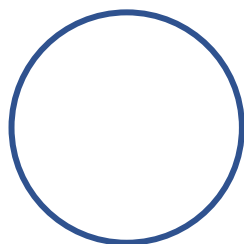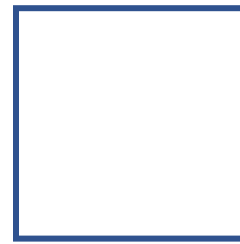
Examples cont.:

4) $1\dfrac{2}{8}$

5) $\dfrac{9}{6}$
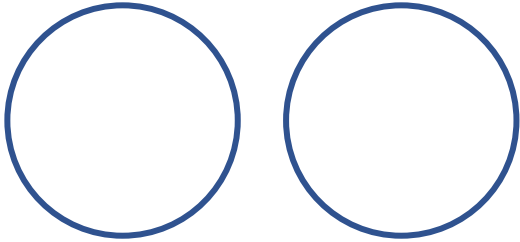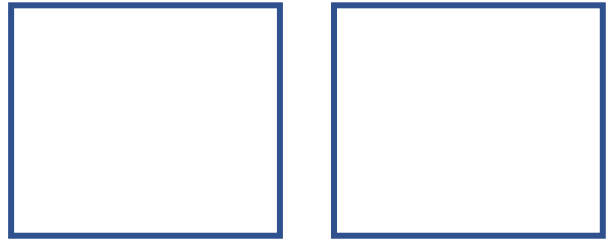
Convert the following improper fractions to mixed fractions

6) $\dfrac{8}{3}$

7) $\dfrac{13}{7}$

8) $\dfrac{19}{5}$

9) $\dfrac{6}{2}$

10) $\dfrac{14}{14}$

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

Convert the following mixed fractions to improper fractions

12) $1\dfrac{5}{8}$

13) $1\dfrac{2}{3}$

14) $1\dfrac{1}{6}$

15) $2\dfrac{1}{7}$

16) $2\dfrac{6}{11}$

17) $12\dfrac{1}{2}$

In the shape provided, represent the following fractions.

1) $\dfrac{3}{8}$
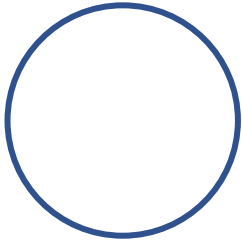
2) $\dfrac{3}{10}$

3) $\dfrac{4}{9}$

4) $1\dfrac{2}{8}$

5) $\dfrac{9}{6}$
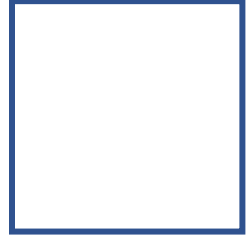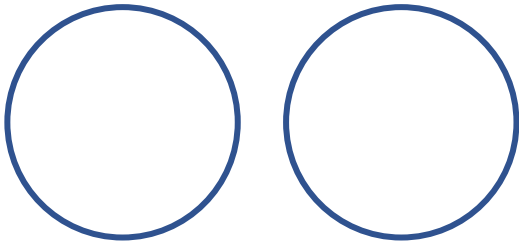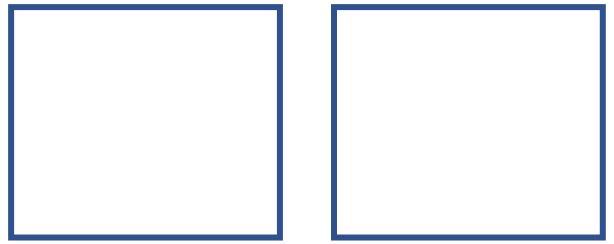
Convert the following improper fractions to mixed fractions.

6) $\dfrac{7}{3}$

7) $\dfrac{13}{4}$

8) $\dfrac{23}{5}$

9) $\dfrac{8}{2}$

10) $\dfrac{19}{19}$

11) $\dfrac{8}{7}$

Convert the following mixed fractions to improper fractions

12) $1\dfrac{5}{6}$

13) $1\dfrac{2}{4}$

14) $1\dfrac{1}{15}$

15) $2\dfrac{1}{8}$

16) $2\dfrac{6}{12}$

17) $18\dfrac{1}{2}$

Convert the mixed fraction to an improper fraction back to a mixed fraction.

18) $3\dfrac{1}{4}$

Section 2.2
Factors and Factoring

Learning Objectives:
❖ Prime Factorization
❖ **G**reatest **C**ommon **F**actors - GCF

Notes:
○ Definition of **<u>Factor</u>**: A factor is simply a number that is multiplied to get a product

$$\text{Factor} \times \text{Factor} = \text{Product}$$

○ **<u>Factoring</u>** a number means taking the number apart to find its factors; it's like multiplying in reverse.

   ❑ Factors are either *composite* numbers or ***prime*** numbers.
       ■ A **prime** number has only two factors, one and itself, so it cannot be divided evenly by any other numbers. Here's a list of prime numbers up to 100. You can see that none of these numbers can be factored any further.

       ■ A **composite** number is any number that has more than two factors. Here's a list of composite numbers up to 20. You can see that they can all be factored further. For example, 4 = 2 × 2, 6 = 2 × 3, 8 = 2 × 4 and so forth.

Prime Numbers
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

Composite Numbers
4, 6, 8, 9, 10, 12, 14, 15,16,18,20…

       ■ Zero(0) and one(1) are considered <u>NEITHER</u> prime nor composite numbers.

○ **Prime Factorization**: You can write any composite number as a *product* of prime factors. This is called a prime factorization. To find the prime factors of a number, you divide the number by the smallest possible prime number and work up the list of prime numbers until the result is itself a prime number.

○ **GCF** is the greatest factor that divides two numbers or more numbers.
   ❑ You can find the GCF of two umbers by using a couple of different methods:

Examples:

Method 1: Prime factorization of 12 using a factor tree (you can start with any set of factors)
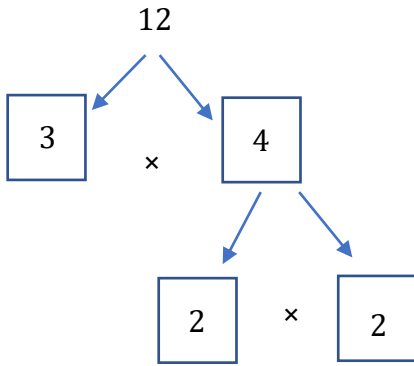
$$12 = \underline{\quad 2 \quad} \times \underline{\quad 2 \quad} \times \underline{\quad 3 \quad}$$
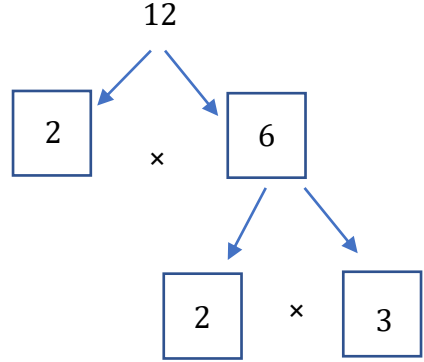
$$12 = \underline{\quad 2 \quad} \times \underline{\quad 2 \quad} \times \underline{\quad 3 \quad}$$

Method 2: Prime factorization of 12 by division (starting with the smallest prime number).

$$\begin{array}{c|c} 2 & 12 = \\ \hline 2 & 6 \\ \hline & 3 \end{array}$$
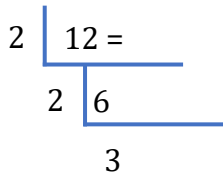
$$12 = \underline{\quad 2 \quad} \times \underline{\quad 2 \quad} \times \underline{\quad 3 \quad}$$

Factors of 12 listed two different ways: $1 \times 12, 2 \times 6, 3 \times 4$ or   (1, 2, 3, 4, 6, 12)

✓ These are all different methods(tools) to help you find the GCF of two different numbers.

List the factors of the following numbers and circle the GCF.

1) 8 and 20   2) 6 and 24   3) 9 and 14?   4) 18 and 27?

Directions: Look at each composite number. Complete the factor tree.

75

□ × 25

□   □

54

□ × □

□ × □   □ × □
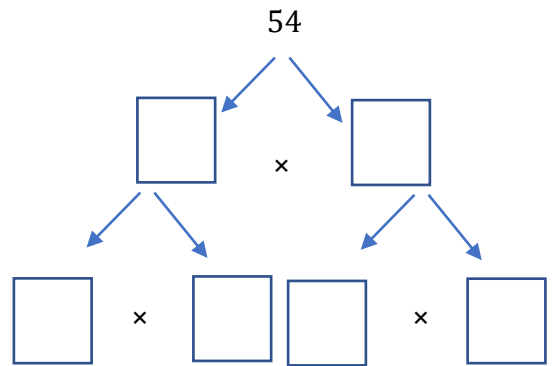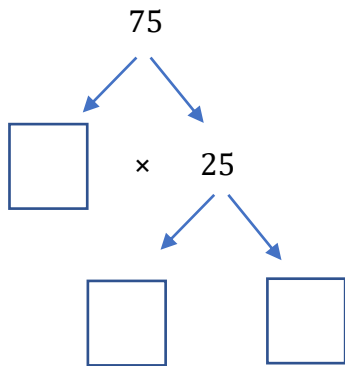
75 = _____ × _____ × _____

54 = _____ × _____ × _____ × _____

Using a prime factorization, what is the GCF of 18 and 30?

Basic Skills Math 1 – **Homework**
Unit 2 Section 2 – Factors and Factoring

Directions: List all of the factors for each pair of numbers.

9   6

15   18

12   14

30   27

Directions: List all of the factors for each pair of numbers. Circle the GCF

4   10   12

14   20   30

4   16   9

5   18   27

8   24   36

28   32   48

Learning Objectives:
➢ Changing fractions between equivalent forms
➢ Simplify/Reduce fractions to lowest terms

Notes:
o Identity Property of Multiplication   b = b × 1,   as a fraction $1 = \frac{2}{2}, \frac{3}{3}, \frac{4}{4} \dots \frac{12}{12} \dots$
o 2 dimes = 4 nickels, Why?
o Definition of **equivalent fractions:** fractions with different numerators and denominators that represent the same value or portion of the whole.

$$\frac{1}{2} \qquad = \qquad \frac{2}{4} \qquad = \qquad \frac{3}{6} \qquad = \qquad \frac{4}{8}$$

$$\frac{1}{2} \times \frac{1}{1} = \frac{1}{2} \qquad \frac{1}{2} \times \frac{2}{2} = \frac{2}{4} \qquad \frac{1}{2} \times \frac{3}{3} = \frac{3}{6} \qquad \frac{1}{2} \times \frac{4}{4} = \frac{4}{8}$$
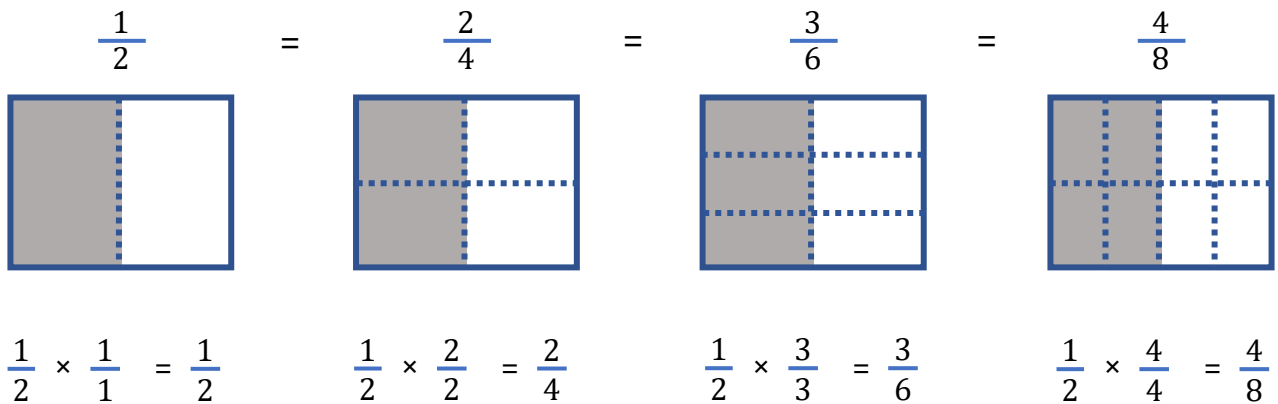
❑ $\frac{1}{2}$ can be changed into any <u>multiple </u>of 2

o We **simplify/reduce** a fraction to lowest terms by finding an equivalent fraction in which the numerator and denominator are as small as possible.

▪ This means that there is no number, except 1, that can be divided evenly into both the numerator and the denominator.

❑ When asked to simplify or reduce a fraction this means "changing the size of the fractions pieces from *small to big*" (like pennies exchanged to dimes)

$$\text{simplify} \quad \frac{4}{6} \;=\; \frac{2 \times 2}{2 \times 3} \;=\; \frac{2}{3}$$

Examples:
Calculate the numerator of the following equivalent fractions.

1) $\frac{2}{3} = \frac{\square}{6}$ 2) $\frac{4}{5} = \frac{\square}{15}$ 3) $\frac{1}{4} = \frac{\square}{28}$ 4) $\frac{8}{9} = \frac{\square}{63}$

Examples cont.:

5) $\dfrac{3}{5} = \dfrac{\square}{45}$

6) $\dfrac{9}{15} = \dfrac{\square}{45}$

7) $\dfrac{4}{7} = \dfrac{\square}{28}$

8) $\dfrac{11}{12} = \dfrac{\square}{60}$

Reduce the following fractions to simplest terms.

9) $\dfrac{6}{9} =$

10) $\dfrac{9}{15} =$

11) $\dfrac{8}{10} =$

12) $\dfrac{4}{12} =$

13) $\dfrac{6}{8} =$

14) $\dfrac{9}{14} =$

15) $\dfrac{28}{84} =$

16) $\dfrac{12}{51} =$

Change the following improper fractions to a mixed fraction and reduce if possible.

17) $\dfrac{10}{8} =$

18) $\dfrac{9}{4} =$

19) $\dfrac{27}{9} =$

20) $\dfrac{24}{10} =$

Basic Skills Math 1 – **Homework**
Unit 2 Section 3 – Equivalent Fractions

Directions: Calculate the numerator of the following equivalent fractions.

.

1) $\dfrac{1}{3} = \dfrac{\square}{9}$

2) $\dfrac{3}{7} = \dfrac{\square}{14}$

3) $\dfrac{3}{4} = \dfrac{\square}{32}$

4) $\dfrac{5}{8} = \dfrac{\square}{72}$

5) $\dfrac{2}{5} = \dfrac{\square}{55}$

6) $\dfrac{9}{12} = \dfrac{\square}{48}$

7) $\dfrac{7}{10} = \dfrac{\square}{100}$

8) $\dfrac{11}{12} = \dfrac{\square}{72}$

Reduce the following fractions to simplest terms.

9) $\dfrac{6}{8} =$

10) $\dfrac{9}{18} =$

11) $\dfrac{8}{12} =$

12) $\dfrac{4}{16} =$

13) $\dfrac{10}{14} =$

14) $\dfrac{16}{21} =$

15) $\dfrac{32}{80} =$

16) $\dfrac{14}{91} =$

Change the following improper fractions to a mixed fraction and reduce if possible.

17) $\dfrac{14}{8} =$

18) $\dfrac{11}{5} =$

19) $\dfrac{28}{7} =$

20) $\dfrac{44}{10} =$

Section 2.4
Comparing Fractions

Learning Objectives:
➢ Comparing fractions with the same *numerator*
➢ Comparing fractions with the same *denominator*
➢ Comparing fractions when the *numerators* and *denominators* are different
➢ **L**east **C**ommon **M**ultiple – LCM (also known as least common denominator – LCD)

Notes:
o Comparing fractions with the same *numerator*
  ▪ The larger the denominator, the smaller the fraction.

o Comparing fractions with the same *denominator*
  ▪ The larger the numerator, the larger the fraction.

$$\frac{1}{5} \qquad \frac{2}{5} \qquad \frac{3}{5} \qquad \frac{4}{5} \qquad 1$$
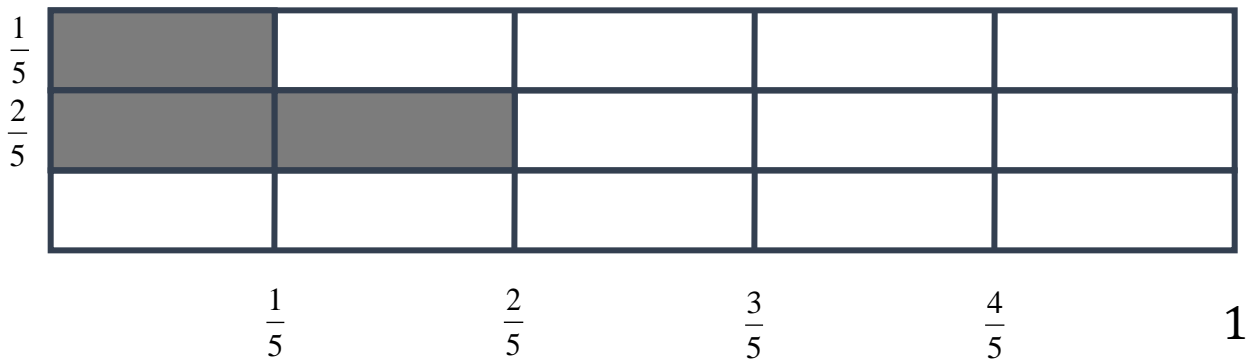
o Comparing fractions when the *numerators* and *denominators* are different
  ▪ Change them to ***equivalent fractions*** with the same denominator. Choose their LCM as their common denominator, and then, compare the numerators.

Section 2.4
Comparing Fractions

Notes cont:

o Which is bigger $\dfrac{1}{2}$ or $\dfrac{3}{8}$?

We can't always draw the fractions out to determine which one is larger, but we can cut the whole denominator into the same number of pieces and then compare which numerator has the larger amount.

❑ First list the multiples of both the denominators

2: 2, 4, 6, **8**, 10 …

8: **8**, 16, 24 …

❑ Change into equivalent fractions using 8 as the LCM

$\dfrac{1}{2} = \dfrac{4}{8}$ $\dfrac{3}{8}$ Does not need to be changed

❑ 4 is greater than 3, so $\dfrac{4}{8}$ is bigger than $\dfrac{3}{8}$.

**This is another method to calculate the LCM of two numbers.

$$2 \quad | \quad 2 \quad 8$$
$$\quad \quad \quad 1 \quad 4$$
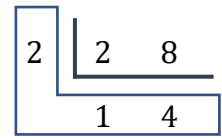
LCM = 2 × 1 × 4 = 8

Examples:

Arrange these fractions from smallest to largest.

1) $\dfrac{1}{4}$ $\dfrac{1}{2}$ $\dfrac{1}{3}$ $\dfrac{1}{6}$ $\dfrac{1}{5}$

2) $\dfrac{2}{9}$ $\dfrac{2}{7}$ $\dfrac{2}{10}$ $\dfrac{2}{3}$ $\dfrac{2}{5}$

3) $\dfrac{8}{12}$ $\dfrac{4}{12}$ $\dfrac{2}{12}$ $\dfrac{11}{12}$ $\dfrac{1}{12}$

4) $\dfrac{4}{7}$ $\dfrac{5}{7}$ $\dfrac{4}{9}$

5) $\dfrac{4}{5}$ $\dfrac{3}{7}$ $\dfrac{3}{5}$

Change the following pairs of fractions into equivalent fractions, and then circle the largest fraction.

6) $\dfrac{1}{2}$ $\dfrac{7}{16}$

7) $\dfrac{9}{32}$ $\dfrac{1}{4}$

8) $\dfrac{4}{15}$ $\dfrac{2}{5}$

9) $\dfrac{1}{3}$ $\dfrac{5}{12}$

10) $\dfrac{5}{6}$ $\dfrac{7}{9}$

11) $\dfrac{3}{8}$ $\dfrac{5}{12}$

12) $\dfrac{7}{10}$ $\dfrac{11}{15}$

13) $\dfrac{2}{3}$ $\dfrac{3}{4}$

Basic Skills Math 1 – **Homework**
Unit 2 Section 4 – Comparing Fractions

Arrange these fractions from smallest to largest.

1) $\dfrac{4}{7}$ $\quad \dfrac{4}{5}$ $\quad \dfrac{4}{6}$ $\quad \dfrac{4}{9}$ $\quad \dfrac{4}{10}$

2) $\dfrac{3}{4}$ $\quad \dfrac{3}{9}$ $\quad \dfrac{3}{8}$ $\quad \dfrac{3}{12}$ $\quad \dfrac{3}{15}$

3) $\dfrac{11}{14}$ $\quad \dfrac{1}{14}$ $\quad \dfrac{6}{14}$ $\quad \dfrac{9}{14}$ $\quad \dfrac{8}{14}$

4) $\dfrac{6}{7}$ $\quad \dfrac{5}{8}$ $\quad \dfrac{5}{7}$

5) $\dfrac{9}{11}$ $\quad \dfrac{8}{11}$ $\quad \dfrac{8}{12}$

Change the following pairs of fractions into equivalent fractions, and then circle the largest fraction.

6) $\dfrac{1}{2}$ $\quad \dfrac{7}{12}$

7) $\dfrac{1}{5}$ $\quad \dfrac{8}{35}$

8) $\dfrac{5}{18}$ $\quad \dfrac{2}{9}$

9) $\dfrac{8}{21}$ $\quad \dfrac{3}{7}$

10) $\dfrac{3}{4}$ $\quad \dfrac{5}{6}$

11) $\dfrac{5}{8}$ $\quad \dfrac{7}{12}$

12) $\dfrac{7}{9}$ $\quad \dfrac{4}{6}$

13) $\dfrac{1}{4}$ $\quad \dfrac{3}{10}$

14) $\dfrac{1}{2}$ $\quad \dfrac{13}{24}$

15) $\dfrac{2}{5}$ $\quad \dfrac{1}{9}$

16) $\dfrac{7}{8}$ $\quad \dfrac{18}{20}$

17) $\dfrac{5}{14}$ $\quad \dfrac{8}{21}$

Section 2.5
Adding Fractions

Learning Objectives:
➢ Adding fractions with like denominators
➢ Adding fractions with unlike denominators
➢ Understand why the denominators are not added together when adding fractions

Notes:
o Changing a mixed fraction into an improper fraction demonstrates adding fractions.

$$2\frac{1}{4} \longrightarrow \frac{4}{4} + \frac{4}{4} + \frac{1}{4} = \frac{9}{4}$$

$\frac{9}{4}$ 9 fourths means you have 9 pieces that are a fourth in size

o *Rule #1: When adding fractions, the denominators must be the same! (remember the denominator tells us the size of the pieces we are counting.*

Adding fractions checklist:
  ✓ Denominators, are they the same?
  ✓ Add the numerators, put the sum of the numerators over the denominator
  ✓ Simplify, if possible
    • Change improper fractions to mixed fractions
    • Reduce using the GCF.

Examples:

Directions: Add and then simplify, if possible (put your answers in lowest terms)

1) $\frac{2}{7}$

$+ \frac{3}{7}$
_____

2) $\frac{4}{9}$

$+ \frac{2}{9}$
_____

3) $\frac{4}{5}$

$+ \frac{3}{5}$
_____

4) $\frac{6}{10}$

$+ \frac{8}{10}$
_____

Examples cont.:

5) $1\dfrac{2}{9}$

$+ \quad \dfrac{5}{9}$

_____

6) $3\dfrac{4}{10}$

$+ \quad \dfrac{7}{10}$

_____

7) $2\dfrac{5}{8}$

$+ \quad 4\dfrac{5}{8}$

_____

8) $\dfrac{2}{3}$

$+ \quad \dfrac{1}{4}$

_____

9) $\dfrac{4}{6}$

$+ \quad \dfrac{5}{9}$

_____

10) $6\dfrac{4}{5}$

$+ \quad \dfrac{3}{15}$

_____

11) $7\dfrac{2}{3}$

$+ \quad \dfrac{5}{9}$

_____

12) $1\dfrac{2}{4}$

$+ \quad 3\dfrac{5}{6}$

_____

13) $13\dfrac{6}{7}$

$+ \quad 8\dfrac{1}{2}$

_____

Basic Skills Math 1 – **Homework**

Unit 2 Section 5 – Adding Fractions

Directions: Add and then simplify, if possible (put your answers in lowest terms)

1) $\dfrac{2}{4}$

$+ \quad \dfrac{1}{4}$
_____

2) $\dfrac{1}{6}$

$+ \quad \dfrac{3}{6}$
_____

3) $\dfrac{4}{7}$

$+ \quad \dfrac{3}{7}$
_____

4) $\dfrac{6}{12}$

$+ \quad \dfrac{8}{12}$
_____

5) $2\,\dfrac{6}{9}$

$+ \quad \dfrac{1}{9}$
_____

6) $8\,\dfrac{4}{11}$

$+ \quad \dfrac{9}{11}$
_____

7) $9\,\dfrac{6}{8}$

$+ \ 5\,\dfrac{6}{8}$
_____

8) $\dfrac{2}{3}$

$+ \quad \dfrac{1}{2}$
_____

9) $\dfrac{4}{6}$

$+ \quad \dfrac{4}{9}$
_____

10) $8\,\dfrac{6}{7}$

$+ \quad \dfrac{3}{14}$
_____

11) $7\,\dfrac{5}{6}$

$+ \quad \dfrac{7}{8}$
_____

12) $5\,\dfrac{3}{4}$

$+ \ 5\,\dfrac{2}{6}$
_____

13) $14\,\dfrac{2}{13}$
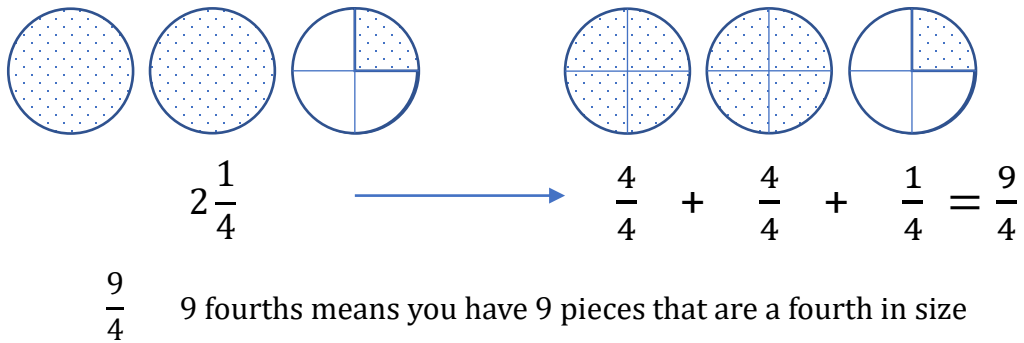
$+ \ 9\,\dfrac{1}{2}$
_____

Section 2.6
Subtracting Fractions

Learning Objectives:
➢ Subtracting fractions with like denominators
➢ Subtracting fractions with unlike denominators
➢ Understanding the borrowing step!

Notes: Subtracting fractions is similar to adding fractions
o *Rule #1: When subtracting fractions, the denominators must be the same! (remember the denominator tells us the size of the pieces we are counting.*
o Borrowing step example

$$2$$

$$-\ \frac{5}{6}$$

$$1\,\not{2}\ \frac{6}{6}$$

$$-\ \frac{5}{6}$$

Why was this broken up into 6 pieces?

Examples:
Directions: Subtract and then simplify, if possible (put your answers in lowest terms)

1) $\frac{6}{7}$

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

2) $\frac{8}{9}$

$-\ \frac{2}{9}$

3) 2

$-\ \frac{5}{6}$

4) 5

$-\ \frac{8}{10}$

5) 8

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

6) $3\ \frac{4}{11}$

$-\ \frac{9}{11}$

7) $9\ \frac{1}{8}$

$-\ 5\ \frac{6}{8}$

8) $\frac{3}{4}$

$-\ \frac{5}{12}$

Basic Skills Math 1 – **Homework**

Unit 2 Section 6 – Subtracting Fractions

Directions: Subtract and then simplify, if possible (put your answers in lowest terms)

1) $\dfrac{2}{4}$

   $- \dfrac{1}{4}$

2) $\dfrac{5}{6}$

   $- \dfrac{3}{6}$

3) $\dfrac{4}{7}$

   $- \dfrac{3}{14}$

4) 7

   $- \dfrac{5}{12}$

5) 4

   $- \dfrac{6}{9}$

6) $8\dfrac{4}{11}$

   $- \dfrac{9}{11}$

7) $12\dfrac{6}{8}$

   $- 5\dfrac{6}{8}$

8) $\dfrac{2}{3}$

   $- \dfrac{1}{2}$

9) $\dfrac{4}{6}$

   $- \dfrac{4}{9}$

10) $8\dfrac{6}{8}$

   $- \dfrac{3}{10}$

11) $4\dfrac{7}{8}$

   $- \dfrac{7}{8}$

12) $5\dfrac{3}{4}$

   $- 5\dfrac{2}{6}$

13) $14\dfrac{1}{4}$

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

Learning Objectives:
➢ Multiply Proper, Improper, and Mixed Fractions
➢ Understand overtime pay, "time and a half," as $1\frac{1}{2}$ times your hourly wage
➢ Reciprocals

Notes:
o The product of two fractions is the fraction whose numerator is the product of the two numerators and whose denominator is the product of the two denominators.

  ▪ We can write this rule in symbols as follows: If *a, b, c*, and *d* represent any numbers and *b* and *d* are not zero, then

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

o A recipe calls for $\frac{3}{4}$ cup of oil, if you are only making $\frac{1}{2}$ **of** the recipe, how much oil will you use?

$$\frac{3}{4} \times \frac{1}{2} = \frac{3 \times 1}{4 \times 2} = \frac{3}{8}$$
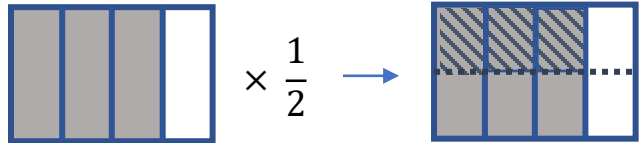
o Definition of **reciprocal:** Two numbers whose product is 1 are said to be reciprocals.

  ▪ We can write this rule in symbols as follows: If *a* and *b* represent any numbers; *a* and *b* are not zero, then

$$\frac{a}{b} \times \frac{b}{a} = \frac{a \times b}{b \times a} = \frac{a \times b}{a \times b} = 1 \qquad \frac{4}{5} \times \frac{5}{4} = \frac{4 \times 5}{5 \times 4} = \frac{20}{20} = 1$$

Examples:
Directions: Multiply the fractions and then simplify the answers, if possible.

1) $\frac{1}{4} \times \frac{1}{2}$

2) $\frac{3}{5} \times \frac{7}{9}$

3) $\frac{2}{3} \times \frac{3}{4}$

Examples cont.:
Multiply the fractions and simplify the answers, if possible.

4) $3 \times \dfrac{1}{2}$

5) $\dfrac{7}{12} \times 9$

6) $2\dfrac{1}{3} \times \dfrac{1}{4}$

7) $\dfrac{6}{7} \times 1\dfrac{3}{4}$

8) $\dfrac{4}{5} \times 1\dfrac{1}{4}$

9) $2\dfrac{5}{8} \times 1\dfrac{2}{3}$

10) Jack is paid weekly according to the following schedule: $16 an hour for the first 40 hours and then time and a half pay for his over time work.

a)   What is Jack's over time pay rate?

b)   If he works 47 hours, how much will his paycheck be?

Find the reciprocal of the following numbers:

11) $\dfrac{6}{7}$

12)   5

13) $2\dfrac{1}{8}$

Basic Skills Math 1 – **Homework**
Unit 2 Section 7 – Multiplying Fractions
Directions: Multiply the fractions and then simplify the answers, if possible.

1) $\dfrac{3}{7} \times \dfrac{2}{7}$

2) $\dfrac{5}{8} \times \dfrac{2}{11}$

3) $\dfrac{4}{9} \times \dfrac{3}{4}$

4) $2 \times \dfrac{3}{5}$

5) $\dfrac{5}{8} \times 6$

6) $2\dfrac{4}{5} \times 3$

7) $\dfrac{4}{9} \times 3\dfrac{3}{8}$

8) $\dfrac{7}{9} \times 1\dfrac{2}{7}$

9) $4\dfrac{5}{8} \times 1\dfrac{2}{3}$

10) Jack is paid weekly according to the following schedule: $18 an hour for the first 40 hours and then time and a half pay for his over time work.

  a)   What is Jack's over time pay rate?

  b)   If he works 49 hours, how much will his paycheck be?

Find the reciprocal of the following numbers:

11) $\dfrac{11}{14}$

12)   18

13) $1\dfrac{3}{5}$

Dividing Fractions

Learning Objectives:
➢ Divide Proper, Improper, and Mixed Fractions
➢ All division problems can be turned into a multiplication problem, using the reciprocal

Notes:
o It takes $\frac{3}{4}$ yards of paper to wrap 1 box. How many boxes can be wrapped with 9 yards of paper?
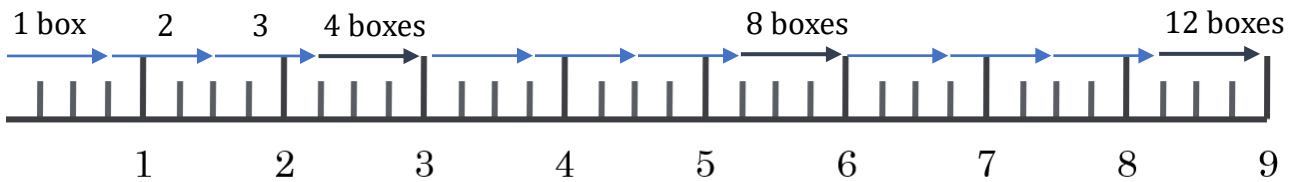
■ In this example, we are repeatedly taking $\frac{3}{4}$ away from 9 yds of paper. We know by definition that repeated subtraction is division. Hence, this problem really is:

$$9 \div \frac{3}{4} = 12 \quad \text{Now, ask how do we show our work?}$$

o Quotient of 2 fractions: if a, b, c, and d are integers and b, c, and d are all not equal to 0, then

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} \quad \longrightarrow \quad \text{Where} \quad \frac{d}{c} \quad \text{is the reciprocal of} \quad \frac{c}{d}$$

■ To finish the wrapping problem

$$9 \div \frac{3}{4} = 9 \times \frac{4}{3} = \frac{9}{1} \times \frac{4}{3} = \frac{36}{3} = 12 \ boxes$$

Examples:
Divide the fractions and simplify the answers, if possible.

1) $\frac{1}{4} \div \frac{2}{3}$

2) $\frac{3}{5} \div \frac{4}{9}$

3) $\frac{3}{4} \div \frac{1}{8}$

Examples cont.:
Divide the fractions and simplify the answers, if possible.

4) $6 \div \dfrac{2}{3}$

5) $\dfrac{3}{7} \div 12$

6) $\dfrac{3}{5} \div 1\dfrac{1}{2}$

7) $4\dfrac{1}{3} \div \dfrac{1}{6}$

8) $4\dfrac{3}{10} \div 1\dfrac{1}{2}$

9) $1\dfrac{9}{20} \div 2\dfrac{1}{2}$

10) A $12\dfrac{1}{2}$ ounce can of soup makes $3\dfrac{1}{2}$ servings. How many ounces is each serving?
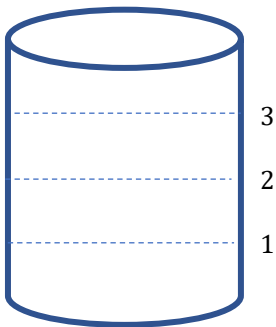
Basic Skills Math 1 – **Homework**
Unit 2 Section 8 – Dividing Fractions
Directions: Divide the fractions and simplify the answers, if possible.

1) $\dfrac{1}{10} \div \dfrac{2}{3}$

2) $\dfrac{3}{5} \div \dfrac{9}{10}$

3) $\dfrac{6}{11} \div \dfrac{6}{11}$

4) $2\dfrac{5}{8} \div \dfrac{3}{4}$

5) $\dfrac{10}{13} \div 2$

6) $\dfrac{2}{3} \div 2\dfrac{1}{5}$

7) $15 \div 2\dfrac{1}{7}$

8) $4\dfrac{1}{2} \div 5\dfrac{1}{4}$

9) $7\dfrac{1}{2} \div 3\dfrac{1}{3}$

10) An $11\dfrac{1}{4}$ ounce can of soup makes $4\dfrac{1}{2}$ servings. How many ounces is each serving?

Learning Objectives:
➢ Identifying the key words which instruct us to use the correct math operations.

Examples:

1) John collected $10\frac{3}{5}$ pounds of scrap newspapers today and $8\frac{3}{4}$ pounds yesterday. How many pounds did he collect in total?	2) A recipe calls for the following ingredients. $\qquad$ 1 tsp baking powder $\qquad$ $1\frac{1}{2}$ tsp baking soda $\qquad$ $\frac{1}{2}$ tsp salt $\qquad$ If a cook wants to double the recipe, how much baking soda will he need?
3) Mary spends 12 hours each week doing volunteer work. If she has completed $3\frac{3}{4}$ hours, how many more hours does she need to work?	4) Mary spends 12 hours each week doing volunteer work. If she has completed $\frac{3}{4}$ of her hours, how many more hours does she need to work?

Section 2.9
Applied Fraction Problems

Examples cont.:

5) A candy bar contains $1\frac{2}{8}$ ounces of peanuts. How many ounces of peanuts are in $3\frac{1}{2}$ candy bars?	6) Fiona walked $\frac{6}{8}$ of a mile to school and $\frac{3}{4}$ of a mile to work. How many miles did she walk in total?
7) Gloria is serving a dinner for 13 people. She is cooking a $6\frac{1}{2}$ pound roast. How much meat would each person get if she divided the roast evenly?	8) If a box weighs $7\frac{2}{3}$ pounds, how much will 10 boxes weigh?

Examples cont.:

9) Jake spent $\frac{2}{4}$ of an hour swimming and $\frac{2}{3}$ of an hour jogging. How much longer did he spend jogging than swimming?	10) Ms. Sonia works in a daycare center. She worked $8\frac{3}{4}$ hours this week and $7\frac{1}{2}$ hours last week. How many hours did she work in the two weeks together?
11) Mrs. Baker borrowed $9\frac{1}{2}$ cups of flour to bake cookies. If she only used $7\frac{2}{3}$ cups of the flour, how much flour did she have left over?	12) A can of chili is 15 ounces. If 1 can is used for $2\frac{1}{2}$ equal servings, how large would each serving be?

1) If you spent one-half of your money for a book and one-fifth for lunch, what part did you spend in all?	2) Marco's books weigh $3\frac{3}{4}$ lb, $2\frac{1}{2}$ lb, $3\frac{1}{2}$ lb, and $3\frac{1}{4}$ lb. He carries all the books in his backpack, what is the total weight of the books in his backpack?
3) Mary spends 16 hours each week doing volunteer work. If she has completed $3\frac{3}{4}$ hours, how many more hours does she need to work?	4) Mary spends 16 hours each week doing volunteer work. If she has completed $\frac{3}{4}$ of her hours, how many more hours does she need to work?

5) A candy bar contains $1\frac{3}{8}$ ounces of peanuts. How many ounces of peanuts are in $3\frac{1}{2}$ candy bars?	6) Fiona walked $\frac{5}{6}$ of a mile to school and $\frac{3}{4}$ of a mile to work. How many miles did she walk in total?
7) Bolt runs a lap every $2\frac{3}{4}$ minutes. How many laps can he run in $16\frac{1}{2}$ minutes?	8) A can of chili is 15 ounces. If 1 can is used for $2\frac{1}{2}$ equal servings, how many ounces would each serving be?

9) Jake spent $\frac{3}{10}$ of an hour swimming and $\frac{3}{5}$ of an hour jogging. How much longer did he spend jogging than swimming?	10) Rain City, had the following rain measurements for one year. Winter $12\frac{1}{2}$ in., spring had $13\frac{3}{4}$ in., summer had 9 in., and fall had $8\frac{5}{8}$ in. What is the total amount of rain that fell in Rain City?
11) Jack planted a tree that was $5\frac{1}{2}$ feet high. It is now $7\frac{1}{3}$ feet tall. How much has the tree grown since it was planted?	12) A can of Que Bueno is 30 ounces. If 1 can is used for $2\frac{1}{2}$ equal servings how many ounces would each serving be?

*You must show all of your work. You will not receive credit for answers that are not supported by your work. **All answers must be simplified!***

Fraction Review

---

1. Draw and shade the fraction $\frac{3}{8}$
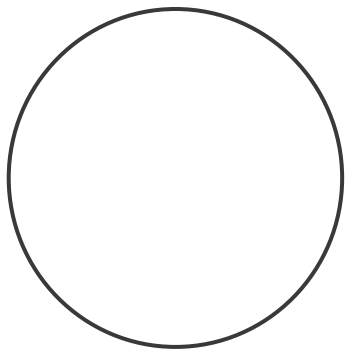
5. Draw lines to show that $1\frac{8}{10} = \frac{18}{10}$

---
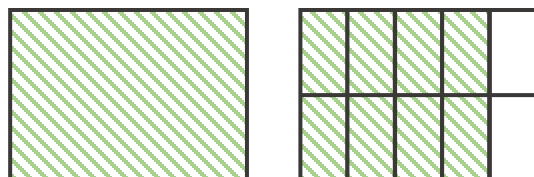
2. Draw lines to show that $\frac{1}{3} = \frac{4}{12}$

6. In the equivalent fractions $\frac{12}{18} = \frac{2}{3}$, What is happening to the size of the fraction pieces, when it goes from eighteenths to thirds?

---

3. List the first four multiples of 8.

7. What multiplication property does this equation state?

$$\frac{1}{5} \times \frac{3}{3} = \frac{3}{15}$$

---

4. What is the Greatest Common Factor (**GCF**) between the numbers 20 and 24?

8. Which fraction is bigger, $\frac{3}{4}$ *or* $\frac{4}{6}$?

---

9. Add: $\dfrac{3}{7}$ $+\dfrac{4}{7}$	13. Add: $\dfrac{3}{7}$ $+\dfrac{2}{5}$
10. Subtract: $\dfrac{7}{8}$ $-\dfrac{1}{8}$	14. Subtract: $\dfrac{2}{3}$ $-\dfrac{5}{12}$
11. Add: $1\dfrac{5}{12}$ $+\dfrac{9}{12}$	15. Multiply: $\dfrac{4}{9}\times\dfrac{2}{3}=$
12. What is the reciprocal of $1\dfrac{6}{7}$?	16. Divide: $\dfrac{6}{7}\div\dfrac{2}{3}=$

17.

$$7$$
$$-2\frac{3}{11}$$

18.

$$5\frac{1}{3}$$
$$+8\frac{1}{4}$$

19.

$$6\frac{2}{3}\times 1\frac{2}{5}=$$

20.

$$2\frac{2}{5}\div 4\frac{2}{3}=$$

21.

$$5\frac{3}{4}\div\frac{1}{4}$$

22. What is $\frac{4}{5}$ *of* 55?

23. What is the **difference** between the following two fractions?

$$123\frac{6}{7} \ and \ 23\frac{6}{7}$$

24. Which one of the following fractions has the largest value?

$$\frac{7}{8}, \frac{2}{3}, \frac{1}{2}, \frac{4}{5}$$

25. $8\frac{1}{5}$ $-3\frac{3}{5}$ _____ $d =$ 　　　　　 $e =$	In order to solve this problem, we must rename $8\frac{1}{5}$ as $d\frac{e}{5}$ What are the values of *d and e?*
29. Mr. Jack has $6\frac{2}{4}$ pounds of cheddar cheese. He wants to put the cheese into $\frac{1}{4}$ lb packages. How many packages can he make?	

26. Simplify: (Change into a mixed fraction and reduce if possible) $\frac{28}{16}$	30. If you studied for $\frac{1}{12}$ of the day and spent $\frac{2}{8}$ of the day working, what part of the day did you spend studying and working?

27. A pie had 15 pieces. Mary served $\frac{2}{3}$ of the pieces. How many pieces did she serve?	31. The Smith's bought 10 pounds of flour. They used $8\frac{1}{4}$ pounds to make cinnamon rolls. How many pounds of flour is left?

28. A can contains $12\frac{1}{2}$ ounces of tomatoes. If the can makes $2\frac{1}{2}$ servings, how many ounces is each serving?	32. Jake spent $\frac{1}{5}$ of an hour swimming and $\frac{1}{3}$ of an hour jogging. How much longer did he spend jogging than swimming?

Recognizing Decimals

Learning Objectives:
- Decimal point separates the whole numbers from the fractional parts
- Understand the difference between tens place value and the ten**ths** place value
- Write a decimal number correctly
- Comparing decimal numbers
- Rounding decimal numbers

Notes:
- $2\frac{1}{2}$ this is said as 2 **and** 1 half; if we had 2 **and** a half dollars we would write that as $2.50 - We say this as 2 dollars **and** 50 cents. The **and** *(decimal point)* separates the whole numbers from the fractional or decimal part.
- Because of money, we are familiar with the first two decimal places after the decimal point but what are their names?
    - $1 = \frac{10}{10}$ $\longrightarrow$ 1 whole thing is broken up into ten parts making the ***tenths*** place value

    - $1 = \frac{100}{100}$ $\longrightarrow$ 1 whole thing is broken up into 100 parts making the ***hundredths*** place value

        - ✓ Money: 23cents = $0.23 which means you have 23 pennies out of a 100.

Place Value														
Thousands			**Ones**			**Decimal -- *ths* endings**								
Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones	**Decimal point**	Tenths (**dime**)	Hundredths (**penny**)	Thousandths	Ten thousandths	Hundred Thousandths	Millionths	Ten millionths	Hundred millionths
						•								
							$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$					

- When reading a decimal number, say the number and then label it with the place value of the last digit
    - 0.3   three tenths
    - 0.03   three hundredths
    - 0.003 three thousandths
    - 0.1**2**   twelve **hundredths**
    - 0.01**2** twelve **thousandths**
    - 0.34**7** three hundred forty-seven **thousandths**

Recognizing Decimals

Examples:
Write the following decimal numbers in words.

1) 0.9

2) 0.15

3) 0.062

4) 0.173

5) 1.8

6) 4.05

7) 16.203

Write the following decimal numbers in digits.

8) Two tenths   11) Seven and eighty-two thousandths

9) Sixteen hundredths   12) Five hundred seventy-one thousandths

10) Three hundred six thousandths   13) Five hundred and seventy-one thousandths

Compare the following decimal numbers, which one is the largest?

a) 9 pennies or 2 dimes
     0.09   0.**2**   Compare the place values starting from the left (tenths), 2 > 0

14)	0.3	15)	0.15	16)	0.1	17)	0.7
	0.4		0.6		0.029		0.70

18)	1.03	19)	2.00185	20)	0.129	21)	4.08
	1.15		2.004		0.1209		4.079

Examples cont.:
Round to the nearest place value – digit to the right of the place value determines if you round up or remain at the current value.

❑ 270.8346

- Thousandths
- **Hundredths***
- Tenths
- Nearest whole number
- Tens
- Hundreds
- Thousands

- 270.835
- **270.83***
- 270.8
- 271
- 270
- 300
- 0

*Rounding to the nearest hundredths is what happens every day when money is rounded to the nearest penny.

22) 754.6208
- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds
- Thousands

23) 214.9738
- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds
- Thousands

24) 81.4075
- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds

25) 501.9936
- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds
- Thousands

Basic Skills Math 1 – **Homework**
Unit 3 Section 1 – Recognizing Decimals

Write the following decimal numbers in words.

1) 0.4   2) 0.13

3) 0.037   4) 0.214

5) 1.9   6) 8.01

7) 11.506   8) 620.804

Write the following decimal numbers in digits.

9) Nine tenths   10) Three and sixty-one thousandths

11) Fourteen hundredths   12) Seven hundred fifty-four thousandths

13) Two hundred eight thousandths   14) Seven hundred and fifty-four thousandths

Compare the following decimal numbers, circle the largest number.

15)	0.6	16)	0.19	17)	0.087	18)	0.05
	0.8		0.2		0.4		0.050

Order from smallest to largest.

19)   0.061, 0.601, 0.610   20)   0.09, 8, 3.95

21)   5.4, 5.39, 5.41   22)   9.9, 98, 9.6, 0.97

Round to the nearest place value.

23) 627.8014

- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds
- Thousands

24) 873.599

- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds
- Thousands

25) 39.1702

- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds

26) 250.9996

- Thousandths
- Hundredths
- Tenths
- Nearest whole number
- Tens
- Hundreds
- Thousands

Round to the nearest cent.

27) $4.299

28) $0.666

29) $1.996

30) $0.0775

Section 3.2
Changing Fractions ⟷ Decimals

Learning Objectives:
➢ All fractions have a decimal value!
➢ Repeating decimal notation-*Bar Notation*

Notes:
○ $\frac{6}{10}$ = 0.6, both of these values are read as six tenths

○ All fractions have a decimal equivalent: It can be calculated by dividing the numerator by the denominator.

$$\frac{6}{10} \longrightarrow 10\overline{\smash{\big)}\,6.000}\;\;{}^{0.6}$$
$$\underline{-\;6\,0}$$
$$0$$

6 is a whole number, the decimal point is to the right of it. Zero's are then used to represent the tenths, hundredths, thousandths … place values.

○ All decimals have a fraction equivalent

$$0.12 \longrightarrow \frac{12}{100} \longrightarrow \frac{3 \times 4}{25 \times 4} \longrightarrow \frac{3}{25} \longrightarrow 25\overline{\smash{\big)}\,3.000}\;\;{}^{0.12} \longrightarrow 0.12$$
$$\underline{-\;2\,5}$$
$$50$$
$$\underline{-\;50}$$
$$0$$

Examples:
Calculate the equivalent decimal for each fraction.

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

2) $\frac{1}{4}$

3) $\frac{2}{4}$

4) $\frac{3}{4}$

5) $\frac{1}{5}$

6) $\frac{2}{5}$

7) $\frac{3}{5}$

8) $\frac{4}{5}$

9) $\frac{1}{8}$

10) $\frac{3}{10}$

11) $\frac{9}{6}$

12) $\frac{11}{4}$

13) $1\frac{7}{10}$

14) $2\frac{1}{2}$

15) $1\frac{6}{15}$

Examples cont.:
Calculate the equivalent decimal for each fraction.

$$\frac{1}{3} \longrightarrow$$

$$
\begin{array}{r}
0.333 \\
3\overline{\smash{)}1.000} \\
-\underline{9} \\
10 \\
-\underline{9} \\
10 \\
-\underline{9} \\
1
\end{array}
$$

This fraction turns into a repeating decimal. To state that the 3 repeats we put a line "bar" above it like this. (*Bar Notation*)

$$\frac{1}{3} = 0.\overline{3}$$

16) $\frac{2}{3}$

17) $\frac{1}{6}$

18) $\frac{1}{9}$

19) $\frac{4}{9}$

20) $\frac{7}{11}$

21) $\frac{3}{7}$

Change each decimal into a fraction and simplify if possible.

22)   0.8

23) 0.28

24) 0.035

25) 1.6

Basic Skills Math 1 – **Homework**
Unit 3 Section 2 – Changing Fractions ⟷ Decimals

Calculate the equivalent decimal for each fraction.

1) $\dfrac{3}{4}$

2) $\dfrac{5}{8}$

3) $\dfrac{6}{25}$

4) $\dfrac{3}{2}$

5) $\dfrac{5}{6}$

6) $1\dfrac{2}{5}$

7) $\dfrac{35}{100}$

8) $\dfrac{4}{15}$

9) $\dfrac{63}{1000}$

10) $4\dfrac{12}{15}$

Change each decimal into a fraction and simplify if possible.

11) 0.5

12) 0.48

13) 0.27

14) 0.065

15) 1.4

16) 8.032

Learning Objectives:
➢ Adding Decimals
➢ Subtracting Decimals
➢ Money Applications

Notes:
o Remember 0.4 = 0.40, *money* always uses the hundredths place value.

o When adding or subtracting decimal numbers, the decimal points need to be lined up.
    ✓ Remember the decimal is to the right of a whole number

$$2 + 1.5 =$$

Wrong
$$\begin{array}{r} 2 \\ + 1.5 \\ \hline 1.7 \end{array}$$

Correct
$$\begin{array}{r} 2.\mathbf{0} \\ + 1.5 \\ \hline 3.5 \end{array}$$

> *You can write an extra zero to the right of the last digit of the first decimal so that both decimals have the same number of decimal digits.*

Examples:

1) 0.2 + 5.6

2) 1.8 + 0.64

3) 0.72 + 10.9

4) 0.3 + 8 + 6.57

Calculate the sum of the following numbers:

5) Twelve hundredths, nine,
   and seven and two tenths

6) Twenty, eight hundredths, **and**
   five and eleven thousandths

7) $3, $5.78, and $0.84

8) $12, $9.80, and $0.20

Section 3.3
Adding and Subtracting Decimals

Examples cont.:

Subtracting Decimal Numbers

$$8 - 3.4 =$$

$$\begin{array}{r} 8.0 \\ -3.4 \\ \hline 4.6 \end{array}$$

→

$$\begin{array}{r} {}^{7}\cancel{8}{}^{1}.0 \\ -3.4 \\ \hline 4.6 \end{array}$$

> *Add a zero in the tenths place, and then borrow from the eight*

9) 6.2 – 1.2

10) 1.09 – 0.9

11) 2.85 – 1.5

12) 0.093 – 0.06

13) Subtract 0.123 from 4

14) How much more than 3.2 is 7.15

15) What remains if you take 0.15 from 3?

16) Take 11.2 from 21.2. What is the answer?

17) $35.60 – $ 16.92 =

18) $67.00 – $12.01

Perform the following math operations:

1)
$$\begin{array}{r} 0.7 \\ +\ 0.8 \\ \hline \end{array}$$

2)
$$\begin{array}{r} 0.9 \\ +\ 0.28 \\ \hline \end{array}$$

3)
$$\begin{array}{r} 13 \\ +\ 4.65 \\ \hline \end{array}$$

4)
$$\begin{array}{r} 7.08 \\ +\ 13.5 \\ \hline \end{array}$$

5)
$$\begin{array}{r} 0.8 \\ -\ 0.1 \\ \hline \end{array}$$

6)
$$\begin{array}{r} 0.5 \\ -\ 0.39 \\ \hline \end{array}$$

7)
$$\begin{array}{r} 20 \\ -\ 10.64 \\ \hline \end{array}$$

8)
$$\begin{array}{r} 9.01 \\ -\ 3.5 \\ \hline \end{array}$$

9) $67 + 27.21 =$

10) $8.84 + 57.958 =$

11) $29.3 + 83.35 =$

12) $2 + 5.9 + 0.78 =$

13) $89 – 64.8 =$

14) $79.88 – 76.498 =$

15) $98.51 – 98.21 =$

16) $34.28 – 34.24 =$

17 – 20 Calculate the sum of the following numbers:

17) Eighteen hundredths, thirteen, **and** eleven and three tenths

18) Forty, two hundredths, **and** seventeen and sixty-one thousandths

19) $5, $9.17, and $0.88

20) $31.50, $10.80, and $0.20

21) What remains if you take 0.82 from 4?

22) Take 2.9 from 6.7. What is the answer?

23) How much more than $2.14 is $5.37?

24) If a bat costs $13.68, How much change will you receive from $20?

25) 10 – 1.3 + 0.97 =

26) 10 – (1.3 + 0.97) =

Section 3.4
Multiplying Decimals

Learning Objectives:
➢ Multiplying Decimals
➢ Multiplying by powers of 10
➢ Money Applications

Notes:
o Rules for multiplying decimal numbers:
  ▪ Multiply the numbers just as if they were whole numbers:

    ❑ Line up the numbers on the right--do not align the decimal points.
    ❑ Starting on the right, multiply each digit in the top number by each digit in the bottom number, just as with whole numbers.
    ❑ Add the products.

  ▪ Total the number of decimal places, from right to left, in both numbers that were multiplied. In your answer start from the right end of the number and count to the left the total number of places you counted from before. Place the decimal there.

o Powers of 10: when multiplying by powers of 10, move the decimal point to the right 1 space for each zero.

Examples:

a) $6 \times \dfrac{1}{2} = \dfrac{6}{1} \times \dfrac{1}{2} = \dfrac{6}{2} = 3$ $\qquad$ $\dfrac{1}{2} = 0.5$ $\qquad$ $6 \times 0.5 = \begin{array}{r} 0.5 \\ \times \quad 6 \\ \hline 3.0 \end{array}$

b) $\dfrac{1}{2} \times \dfrac{1}{2} = \dfrac{1}{4}$ $\qquad$ $\dfrac{1}{4} = 0.25$ $\qquad$ $0.5 \times 0.5 = \begin{array}{r} 0.5 \\ \times \quad 0.5 \\ \hline 0.25 \end{array}$

c) $\dfrac{1}{2} \times \dfrac{1}{4} = \dfrac{1}{8}$ $\qquad$ $\dfrac{1}{8} = 0.125$ $\qquad$ $0.5 \times 0.25 = \begin{array}{r} 0.25 \\ \times \quad 0.5 \\ \hline 125 \\ +0000 \\ \hline 0.125 \end{array}$

Section 3.4
Multiplying Decimals

Examples Cont.:
Directions: Using multiplication, calculate the products for the following problems.

1)
$$\begin{array}{r} 1.2 \\ \times \quad 8 \\ \hline \end{array}$$

2)
$$\begin{array}{r} 3.2 \\ \times \quad 0.4 \\ \hline \end{array}$$

3)
$$\begin{array}{r} 1.75 \\ \times \quad 0.6 \\ \hline \end{array}$$

4)
$$\begin{array}{r} 0.125 \\ \times \quad 0.1 \\ \hline \end{array}$$

5)
$$\begin{array}{r} 1.2 \\ \times \quad 45 \\ \hline \end{array}$$

6)
$$\begin{array}{r} 0.39 \\ \times \quad 5.1 \\ \hline \end{array}$$

7)
$$\begin{array}{r} 9.03 \\ \times \quad 0.27 \\ \hline \end{array}$$

8)
$$\begin{array}{r} 0.055 \\ \times \quad 0.01 \\ \hline \end{array}$$

9) If you buy 10.3 gallons of gas at, $4.289 how much will you pay at the pump? *(Round to the nearest penny.)*

10) $(0.3)^2$

11) $(0.1)^3$

12) $9 \times 10 =$

13) $9 \times 100 =$

14) $9 \times 1000 =$

15) $0.9 \times 10 =$

16) $0.9 \times 100 =$

17) $0.9 \times 1000 =$

Basic Skills Math 1 – **Homework**
Unit 3 Section 4 – Multiplying Decimals

Directions: Using multiplication, calculate the products for the following problems.

1)
$$\begin{array}{r} 3.4 \\ \times\ \ 2 \\ \hline \end{array}$$

2)
$$\begin{array}{r} 2.5 \\ \times\ \ 0.3 \\ \hline \end{array}$$

3)
$$\begin{array}{r} 1.95 \\ \times\ \ 0.8 \\ \hline \end{array}$$

4)
$$\begin{array}{r} 0.846 \\ \times\ \ 0.1 \\ \hline \end{array}$$

5)
$$\begin{array}{r} 2.1 \\ \times\ \ 65 \\ \hline \end{array}$$

6)
$$\begin{array}{r} 0.73 \\ \times\ \ 4.4 \\ \hline \end{array}$$

7)
$$\begin{array}{r} 8.09 \\ \times\ \ 0.37 \\ \hline \end{array}$$

8)
$$\begin{array}{r} 0.067 \\ \times\ \ 0.01 \\ \hline \end{array}$$

9) If you buy 11.7 gallons of gas at $4.189, how much will you pay at the pump? *(Round to the nearest penny.)*

10) $(0.04)^2$

11) $(0.2)^3$

12) $5 \times 10 =$

13) $1.2 \times 100 =$

14) $0.04 \times 1000 =$

15) $0.03 \times 10 =$

16) $76 \times 100 =$

17) $8.19 \times 1000 =$

Learning Objectives:
➢ Dividing Decimals
➢ Dividing Decimals by Powers of 10
➢ Money Applications

Notes:

○ *Dividing is the most challenging of our four basic operations. In fact, you have to use subtraction and multiplication in order to divide, and you also have to be pretty good at rounding and estimating! Many students have trouble with division, perhaps because most problems don't come out nice and even--you really have to use your mental muscle when dividing.*

○ To divide decimal numbers:

❑ If the divisor is not a whole number:
1) Move the decimal point in the divisor all the way to the right (to make it a whole number).
2) Move the decimal point in the dividend the same number of places.

❑ Divide as usual. If the divisor doesn't go into the dividend evenly, add zeroes to the right of the last digit in the dividend and keep dividing until it comes out evenly or a repeating pattern shows up.

❑ Position the decimal point in the result directly above the decimal point in the dividend.

❑ Check your answer: Use the calculator and multiply the quotient by the divisor. Does it equal the dividend?

Examples:
Directions: Using division calculate the quotients for the following problems.

1) $3\overline{)12}$ 2) $3\overline{)1.2}$ 3) $3\overline{)0.12}$ 4) $0.3\overline{)12}$

5) $0.3\overline{)1.2}$ 6) $0.3\overline{)0.12}$ 7) $0.03\overline{)0.12}$ 8) $5\overline{)13.5}$

Examples Cont.:

9) $0.7 \overline{\smash{)}21}$ 10) $0.14 \overline{\smash{)}2.8}$ 11) $0.019 \overline{\smash{)}1.9}$ 12) $15 \overline{\smash{)}15.3}$

13) These are the prices for Chick-fil-A Nuggets. Which one has the better value? ($/1nugget)

Chick-fil-A Nuggets	8 Pc.	**$4.15**
Chick-fil-A Nuggets	12 Pc.	**$5.99**

14) $7 \div 10 =$ 20) $0.03 \div 10 =$

15) $7 \div 100 =$ 21) $4.5 \div 100 =$

16) $7 \div 1000 =$ 22) $8.15 \div 1000 =$

17) $0.2 \div 10 =$ 23) $1.03 \div 10 =$

18) $0.2 \div 100 =$ 24) $7.6 \div 100 =$

19) $0.2 \div 1000 =$ 25) $93.2 \div 1000 =$

Basic Skills Math 1 – **Homework**
Unit 3 Section 5 – Dividing Decimals

Directions: Using division calculate the quotients for the following problems.

1) $7\overline{)1.4}$

2) $0.5\overline{)1.2}$

3) $3\overline{)0.102}$

4) $0.9\overline{)126}$

5) $0.8\overline{)0.32}$

6) $0.13\overline{)3.9}$

7) $0.415\overline{)4.15}$

9) $8\overline{)16.4}$

10) These are the prices for Chick-fil-A Nuggets. Which one has the better value? ($/1nugget)

Chick-fil-A Nuggets	12 Pc.	**$5.99**
Chick-fil-A Nuggets	30 Pc.	**$14.95**

11) If you earned $92 in 8 hours, what is your hourly rate of pay?

12) $8 \div 10 =$

13) $0.02 \div 100 =$

14) $4.1 \div 1000 =$

15) $7.752 \div 100 =$

Section 3.6
Applied Decimal Problems

Learning Objectives:
➢ Evaluate a variety of arithmetic computations involving rational numbers and solve problems as they relate to the workforce.

Examples:

1) Antonio received $59.20 for 3.2 hours of work. What was Antonio's hourly wage?	2) Marilyn is paid time and a half to work holiday hours. If she works 12 hours over Black Friday weekend, how much will she earn if her normal pay is $18.70?
3) Sammy bought 4 Double Big Gulps for $2.64 each. If she gave the cashier $20, what amount of change should she receive?	4) Ray has 23 pennies, 6 dimes, and 9 quarters. How much more money must he save to have exactly $6.00?

Section 3.6
Applied Decimal Problems

Learning Objectives:
➤ Evaluate a variety of arithmetic computations involving rational numbers and solve problems as they relate to the workforce.

Examples Cont:

5) If 7 oranges cost $.98, what will 5 oranges cost?	6) Reba wanted to buy T-shirts that cost $12 each. She had two $20 bills and three $5.00 bills. What is the greatest number of T-shirts Reba could buy?
7) A store bought 6 blankets for $16 and sold them for $9 each. What was the store's profit?	8) John's bank account has a balance of $435.20. He makes a withdrawal of $63.00 and a deposit of $48.75. What is his new balance?

Learning Objectives:
➢ Evaluate a variety of arithmetic computations involving rational numbers and solve problems as they relate to the workforce.

Examples Cont:

9) Isabel bought a radio for $58.85 plus an $11.15 charger. If Isabel pays for her purchase in installments of $5 per week, how many weeks will it take her to pay for the items?	10) Kim bought a computer with a $200 down payment and made payments of $45 for each of the 12 months. What was the total cost of the computer?

11) Alex bought a couch for $1173 with a down payment of $300. He wants to pay it off in 6 months. What will his monthly payment be?	12) Miley is paid weekly according to the following schedule:
	        $5.00 an hour for the first 40 hours
	        $7.50 an hour for each additional hour.
	How much will Miley earn if she works 48 hours this week?

Section 3.6
Applied Decimal Problems

Learning Objectives:
➢ Evaluate a variety of arithmetic computations involving rational numbers and solve problems as they relate to the workforce.

Examples Cont:

13) Mrs. White's car averages 24.5 miles per gallon. How many miles can she drive using 7.6 gallons of gasoline?	14) A ticket for a basketball game costs $12.50. How much do 10 tickets cost?
15) Nancy jogs 7.5 miles each week. At this rate, how many miles will she jog in 3 weeks?	16) Mr. Rosario is preparing a 12.4 pound roast for 8 guests. If each serving is about the same, how much of the roast will each guest receive?

1) Antonio received $53.25 for 3.75 hours of work. What was Antonio's hourly wage?	2) Marilyn is paid time and a half to work holiday hours. If she works 8 hours over New Years Eve, how much will she earn if her normal pay is $17.90 per hour?
3) Sammy bought 6 Double Big Gulps for $2.79 each. If she gave the cashier $20, what amount of change should she receive?	4) Ray has 37 pennies, 9 dimes, and 13 quarters. How much more money must he save to have exactly $6.00?

5) If 8 oranges cost $1.28, what will 5 oranges cost?	6) Reba wanted to buy T-shirts that cost $14 each. She had four $20 bills and three $5.00 bills. What is the greatest number of T-shirts Reba could buy?
7) A store bought 8 blankets for $15 and sold them for $12 each. What was the store's profit?	8) John's bank account has a balance of $565.20. He makes a withdrawal of $73.00 and a deposit of $50.25. What is his new balance?

9) Isabel bought a phone for $135.90 plus a $18.15 case. If Isabel pays for her purchase in installments of $15 per week, how many weeks will it take her to pay for the items?	10) Kim bought a computer with a $150 down payment and made payments of $65 for each of the 12 months. What was the total cost of the computer?

11) Alex bought a couch for $1,430 with a down payment of $350. He wants to pay it off in 6 months. What will his monthly payment be?	12) Miley is paid weekly according to the following schedule:
	      $15.00 an hour for the first 40 hours
	      $22.50 an hour for each additional hour.
	How much will Miley earn if she works 48 hours this week?

13) Mrs. White's car averages 18.6 miles per gallon. How many miles can she drive using 21.4 gallons of gasoline?	14) A ticket for a basketball game costs $16.**7**5. How much do 10 tickets cost?
15) Nancy jogs 16.25 miles each week. At this rate, how many miles will she jog in 3 weeks?	16) Mr. Rosario is preparing a 18.6 pound roast for 12 guests. If each serving is about the same, how much of the roast will each guest receive?

Calculators will not be allowed on the test. You must show all of your work. *You will not receive credit for answers that are not supported by your work.* ***All answers must be simplified!***

Name:

Decimal Review

1) Write twelve hundredths as a fraction.	5) Write $7\frac{6}{24}$ in decimal form.
2) Write twelve hundredths as a decimal.	6) Write $\frac{8}{11}$ in decimal form (use bar notation).
3) Give the place value of the 7 in 0.436175.	7) Write thirteen and six thousandths in decimal form.
4) Write $\frac{8}{25}$ in decimal form.	8) Write four hundred five thousandths in decimal form.

Calculators will not be allowed on the test. You must show all of your work. You will not receive credit for answers that are not supported by your work. **All answers must be simplified!**

Name:

Decimal Review

9) Write 0.024 as a fraction. Simplify if possible.	13) Evaluate: 7.3 + 0.204 + 1.95
10) Write 8.74 as a mixed fraction. Simplify if possible.	14) On a business trip, Martin bought the following amounts of gasoline: 13.3, 11, 12.4, and 9 gallons (gal). How much gasoline did he purchase on the trip?
11) Add: $\begin{array}{r} 6.78 \\ +14.79 \\ \hline \end{array}$	15) Subtract: $\begin{array}{r} 14.43 \\ -6.67 \\ \hline \end{array}$
12) Calculate the sum of sixty-four hundredths, six**, and** three and eighteen thousandths.	16) Subtract 1**.**639 from 4**.**72

Calculators will not be allowed on the test. You must show all of your work.
You will not receive credit for answers that are not supported by your work.
All answers must be simplified!

Name:

Decimal Review

17) Evaluate: $11 - $7.61 + $4.38	21) Evaluate: $(0.1)^3$
18) You pay for purchases of $12.99, $19.75, $8.20, and $6 with a $50 bill. How much cash will you have left?	22) You fill up your car with 9.2gal of fuel at $1.799 per gal. What is the cost to fill up? (round to the nearest penny)
19) Multiply: 41.9 $\times 0.63$	23) Divide: $7\overline{)3.255}$
20) Multiply: 3.25×0.61	24) Divide: $4.704 \div 0.64$

Calculators will not be allowed on the test. You must show all of your work.
You will not receive credit for answers that are not supported by your work.
All answers must be simplified!

Name:

Decimal Review

25) Divide: $4.2 \div 100$	29) A street improvement project will cost $88740 and that cost is to be divided among the 250 families in the area. What will be the cost to each individual family?
26) Simplify: $\dfrac{9.81}{0.9}$	30) A baseball team has a winning percentage of 0.628. Write this as a fraction in simplest form.
27)The triple Crown consist of three horse races: • the Kentucky Derby (1.25 miles) • the Preakness Stakes (1.1878 miles) • the Belmont Stakes (1.5miles) **Circle** the longest race.	31) A fisherman catches 2 trout. If one fish is 10" long and the other is 6.75" long, what is the difference in length?
28) Manny worked 32.5 hours in a week and earned $273. What is his hourly rate of pay?	32) The odometer of your car reads 10099.7 miles. After driving $4\frac{1}{2}$ miles more, what will it read?

Basic Skills Math 1

20   19

"I can accept FAILURE everyone fails at something, but what I can't accept is NOT TRYING!" -Michael Jordan