

Name: _____

Big Bend Community College

Emporium Model Math 94 Course Workbook

A workbook to supplement
video lectures and online homework by:

Tyler Wallace
Salah Abed
Sarah Adams
Mariah Helvy
April Mayer
Michele Sherwood

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Conversion Factors

LENGTH	
<u>English</u>	<u>Metric (meter)</u>
12 in = 1 ft 3 ft = 1 yd 1 mi = 5280 ft	1000 mm = 1 m 100 cm = 1 m 10 dm = 1 m 1 dam = 10 m 1 hm = 100 m 1 km = 1000 m
<u>English to Metric</u>	
1 in = 2.54 cm	

TEMPERATURE
$C = \frac{5(F - 32)}{9}$
$F = \frac{9}{5}C + 32$

VOLUME	
<u>English</u>	<u>Metric (liter)</u>
8 fl oz = 1 cup (c) 2 cups (c) = 1 pint (pt) 2 pints (pt) = 1 quart (qt) 4 quarts (qt) = 1 gallon (gal)	1000 mL = 1 L 100 cL = 1 L 10 dL = 1 L 1 daL = 10 L 1 hL = 100 L 1 kL = 1000 L 1 mL = 1 cc = 1 cm ³
<u>English to Metric</u>	
1 gallon (gal) = 3.79 liter (L) 1 in ³ = 16.39 mL	

TIME
60 seconds (sec) = 1 minute (min) 60 minutes (min) = 1 hour (hr) 24 hours (hr) = 1 day 52 weeks = 1 year 365 days = 1 year

WEIGHT (MASS)	
<u>English</u>	<u>Metric (gram)</u>
16 oz = 1 pound (lb) 2,000 lb = 1 Ton (T)	1000 mg = 1 g 100 cg = 1 g 10 dg = 1 g 1 dag = 10 g 1 hg = 100 g 1 kg = 1000 g
<u>English to Metric</u>	
2.20 lb = 1 kg	

INTEREST
Simple: $I = Prt$ Continuous: $A = Pe^{rt}$ Compound: $A = P \left(1 + \frac{r}{n} \right)^{nt}$ Annual: $n=1$ Semiannual: $n=2$ Quarterly: $n=4$

Geometric Formulas

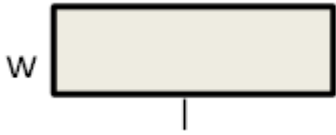
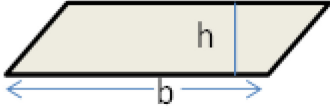
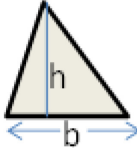
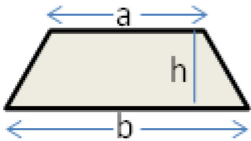


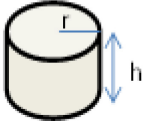


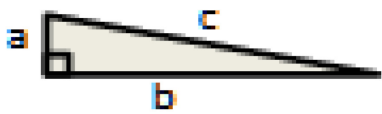
Name	Diagram	Area
Rectangle		$A = lw$ $P = 2l + 2w$
Parallelogram		$A = bh$
Triangle		$A = \frac{1}{2}bh$
Trapezoid		$A = \frac{1}{2}h(a + b)$
Circle		$A = \pi r^2$ $C = \pi d = 2\pi r$
Name	Diagram	Volume
Rectangular Solid		$V = lwh$
Right Circular Cylinder		$V = \pi r^2 h$
Right Circular Cone		$V = \frac{1}{3}\pi r^2 h$
Sphere		$V = \frac{4}{3}\pi r^3$
Right Triangle		
Pythagorean Theorem: $a^2 + b^2 = c^2$		

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Unit 1:

Integers and Algebraic Expressions

To work through the unit, you should:

1. Watch a video, as you watch, fill out the workbook (top and example sections).
2. Complete Q1 and Q2 in WAMAP, put your work in the right column of the page.
3. Repeat #1 and #2 with each page until you reach the .
4. Complete the homework assignment on your own paper.
5. Repeat #1 thru #4 until you reach the end of the unit.
6. Complete the review/practice test on your own paper.
7. Take the unit exam.

1.1 Adding and Subtracting Whole Numbers, Decimals, and Negatives

1.1a Rounding Whole Numbers

Whole numbers are:

Place Value:

4,	2	8	7,	1	9	2

Rounding: Look at the _____ digit. Round up if it is _____ and round down if it is _____.

Example 1:

Round 5,459,246
To the nearest thousand

Q1:

Example 2:

Round 5,459,246
To the nearest hundred thousand

Q2:

1.1b Rounding Decimals

Decimals are _____ of the _____

Place Value:

8.	1	7	2	6	9	3

Example 1:

Round 4.01276
To the nearest thousandth

Q1:

Example 2:

Round 4.01276
To the nearest hundredth

Q2:

1.1c Add Whole Numbers

To add we _____ place values and work _____ to _____.

Example 1:

$$458 + 321$$

Q1:

Example 2:

$$716 + 485$$

Q2:

1.1d Add Decimals

When adding decimals, we must _____ the _____

Place decimal:

Example 1:

$$4.21 + 8.962$$

Q1:

Example 2:

$$0.523 + 0.08$$

Q2:

1.1e Subtract Whole Numbers

To subtract we _____ place value and work _____ to _____.

Example 1:

$$967 - 341$$

Q1:

Example 2:

$$5037 - 2419$$

Q2:

1.1f Subtract Decimals

When subtracting decimals, we must _____ the _____.

Important: We may need additional _____ to line up!

Place decimal:

Example 1:

$$3.4 - 1.29$$

Q1:

Example 2:

$$4.03 - 0.051$$

Q2:

1.1g Integers and Absolute Value

Integers:

Opposite means a _____ over _____ on the _____.

The symbol _____ means _____, _____ AND _____ !

Absolute Value is the _____ from zero. It is always _____.

Example 1:

$$-(-6)$$

Q1:

Example 2:

$$-(3)$$

Q2:

Example 3:

$$|-8|$$

Q3:

Example 4:

$$|4|$$

Q4:

Example 5:

$$-|-7|$$

Q5:

Example 6:

$$-|2|$$

Q6:

1.1h Add with the Same Sign

Adding and Subtracting Integers: Keep the _____ with the _____ after it.

Rules for Dealing with Double Signs:

Adding a negative, or subtracting a positive, is the same as simple _____.

Subtracting a negative is the same as _____.

$$3 + (-4) =$$

$$3 - (-4) =$$

Visualize: $-2 + (-3)$

Add with the same sign:

Example 1:

$$-7 + (-4)$$

Q1:

Example 2:

$$(-6) + (-8)$$

Q2:

1.1i Add with Different Signs

Visualize: $-2 + 4$

Visualize: $1 + (-3)$

Adding with different signs:

Example 1:

$$5 + (-2)$$

Q1:

Example 2:

$$-9 - (-4)$$

Q2:

1.1j Add and Subtract Several Integers

When adding and subtracting many integers we work _____ to _____.

Example 1:

$$-5 + (-2) - (-6) - 4 + 8$$

Q1:

Example 2:

$$4 - 8 + (-3) - (-1) + 3$$

Q2:



You have completed the videos for 1.1 Adding and Subtracting Whole Numbers, Decimals, and Negatives. On your own paper, complete the homework assignment.

1.2 Multiplying and Dividing Whole Numbers, Decimals, and Negatives

1.2a Multiply Whole Numbers

Multiply _____ the digits together.

Use _____ to hold place value.

After multiplying we _____.

Different ways to show “multiply”:

Example 1:

$$23 \bullet 56$$

Q1:

Example 2:

$$167(48)$$

Q2:

1.2b Multiply Decimals

Place decimal:

Example 1:

$$4.2 \bullet 1.8$$

Q1:

Example 2:

$$2.6(3.52)$$

Q2:

1.2c Divide Whole Numbers

Long division places the _____ number in front!

The leftovers:

Different ways to show “divide”:

Example 1:

$$452 \div 13$$

Q1:

Example 2:

$$\begin{array}{r} 12024 \\ \hline 24 \end{array}$$

Q2:

1.2d Divide with Zero

When dividing by zero, it helps to remember the _____ of division.

$6 \div 3$ implies how many _____ of 3 I have.



$0 \div 4$ implies how many _____ of 4 I have.



$6 \div 0$ implies how many groups of _____ I have.



Example 1:

$$20 \div 0$$

Q1:

Example 2:

$$\frac{0}{24}$$

Q2:

1.2e Divide Decimals

No decimals in the _____ or _____.

Move the _____ in both the _____ and _____.

If you run out of digits you can _____.

Place decimal:

Example 1:

$$\begin{array}{r} 2.568 \\ 2.4 \end{array}$$

Q1:

Example 2:

$$19.5 \div 25$$

Q2:

1.2f Multiply and Divide with Different Signs

A pattern to multiplying:

$$2 \times 2 =$$

$$2 \times 1 =$$

$$2 \times 0 =$$

$$2 \times (-1) =$$

Multiplying and dividing with a negative and a positive (or positive and negative) is a _____.

To remember: When _____ things happen to _____ people it is a _____ thing.

To remember: When _____ things happen to _____ people it is a _____ thing.

Example 1:

$$-54 \div 9$$

Q1:

Example 2:

$$3(-8)$$

Q2:

1.2g Multiply and Divide with the Same Sign

A pattern to multiplying:

$$-2 \square 2 =$$

$$-2 \square 1 =$$

$$-2 \square 0 =$$

$$-2 \square (-1) =$$

Multiplying and dividing a negative times a negative is a _____.

To remember: When _____ things happen to _____ people it is a _____ thing.

Example 1:

$$-7(-4)$$

Q1:

Example 2:

$$\frac{-15}{-3}$$

Q2:



You have completed the videos for 1.2 Multiplying and Dividing Whole Numbers, Decimals, and Negatives. On your own paper, complete the homework assignment.

1.3 Order of Operations

1.3a Exponents

Exponents are _____.

$$5^3 =$$

Example 1:

$$2^5$$

Q1:

Example 2:

$$7^2$$

Q2:

1.3b Exponents on Negatives

Exponents only effect what they are _____.

$$(-5)^2 = -5^2 =$$

Example 1:

$$-3^4$$

Q1:

Example 2:

$$(-2)^6 =$$

Q2:

1.3c Order of Operations

Why we need an order: $2+3(4)$

$2+3(4)$

The order:

Example 1:

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

Q1:

Example 2:

$$24 \div 6 \bullet 2 - 3^2(7 - 9)$$

Q2:

1.3d Order with Absolute Value

Absolute values work just like _____ but makes the number inside _____ after it has been _____.

Example 1:

$$3 - 2|7 - 4^2|$$

Q1:

Example 2:

$$|4(2) - 6|^3 - 4^2$$

Q2:

1.3e Order with a Fraction

Simplify numerator _____

Simplify denominator _____

Last _____

Example 1:

$$\frac{2 \cdot 4^3 - 4(32)}{2(-1)^2}$$

Q1:

Example 2:

$$\frac{2^3 - 4^2}{2^3 - 10}$$

Q2:



You have completed the videos for 1.3 Exponents and Order of Operations. On your own paper, complete the homework assignment.

1.4 Simplify Algebraic Expressions

1.4a Substitute a Value

I have a _____ eggs, this means I have _____ eggs.

Variables are _____ that represent _____ amounts.

If we know the amount, we can _____ it in an expression.

Whenever we make a substitution or _____ put it in _____.

Example 1:

Evaluate: $-x^2 - 7x - 12$

When $x = -4$

Q1:

Example 2:

Evaluate: $b^2 - 4ac$

When $a = 2, b = -3$, and $c = -5$

Q2:

1.4b Is it a Solution?

An equation is made up of two _____ expressions.

A solution is the value of the _____ that makes the equation _____.

Example 1:

Is $x = 3$ the solution to
 $-2x + 7 = 1$?

Q1:

Example 2:

Is $x = -3$ the solution to
 $2x - 5 = 7x + 5$?

Q2:

1.4c Combine Like Terms

John has 5 cats and 3 dogs. Sue has 2 cats and 1 dog. Together they have _____ cats and _____ dogs.

Terms are _____ and _____ that are _____ together.

Like terms are terms that have matching _____ and _____.

Combine like terms: _____ the coefficients or _____ from _____.

Example 1:

$$9x + 2y - 7x - 5y + 2x$$

Q1:

Example 2:

$$5x^2 - 2x - 9 + 4x - 7x^2 + 6$$

Q2:

1.4d Distributive Property

Multiplication is _____

$$3(2x + 5) =$$

Distributive Property: $3(2x + 5)$

Example 1:

$$-4(2x + 5y - 7)$$

Q1:

Example 2:

$$7(9x^2 - 7x + 8)$$

Q2:

1.4e Distribute and Combine Like Terms

Order of operations states we _____ before we _____.

Therefore, we will _____ first and then _____ second.

Example 1:

$$5(2x + 6y - 2) - 4(x + 3 - 6y)$$

Q1:

Example 2:

$$2(4x^2 - 6x + 1) - (x^2 + 5x + 3)$$

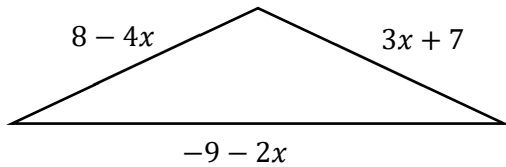
Q2:

1.4f Perimeter Problems

Perimeter:

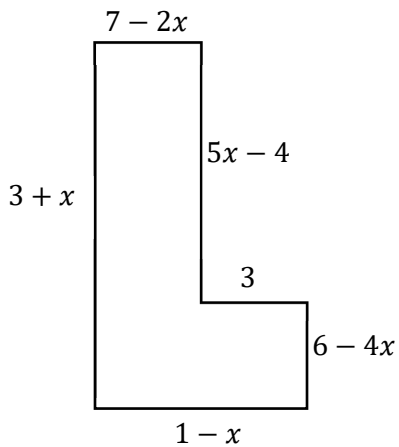
Find the perimeter by _____ the sides together.

Example 1:



Q1:

Example 2:



Q2:



You have completed the videos for 1.4 Simplify Algebraic Expressions. On your own paper, complete the homework assignment.




Congratulations! You made it through the material for Unit 1: Integers and Algebraic Expressions. It is time to prepare for your exam. On a separate sheet of paper, complete the review/practice test. Once you have completed the review/practice test, ask your instructor to take the test. Good luck!

Unit 2:

Fractions

To work through the unit, you should:

1. Watch a video, as you watch, fill out the workbook (top and example sections).
2. Complete Q1 and Q2 in WAMAP, put your work in the right column of the page.
3. Repeat #1 and #2 with each page until you reach the .
4. Complete the homework assignment on your own paper.
5. Repeat #1 thru #4 until you reach the end of the unit.
6. Complete the review/practice test on your own paper.
7. Take the unit exam.

2.1 Prime Factorization
2.1a Prime and Composite

Prime numbers are divisible by _____ and _____.

Examples of Primes:

Composite numbers are divisible by _____.

Example 1:

Prime or Composite:
89

Q1:

Example 2:

Prime or Composite:
147

Q2:

2.1b Divisibility Tests

A number is divisible by a smaller number if the small number _____ into the number.

Divisibility tests:

2:

3:

5:

7, 11, 13, 17, 19:

Example 1:

2730 is divisible by which prime numbers?

Q1:

Example 2:

133 is divisible by which numbers?

Q2:

2.1c Prime Factorization

Prime Factorization: a _____ of _____ numbers.

To find a prime factorization we divide by _____.

Example 1:

Find the prime factorization of
360

Q1:

Example 2:

Find the prime factorization of
1224

Q2:



You have completed the videos for 2.1 Prime Factorization. On your own paper, complete the homework assignment.

2.2 Reduce Fractions
2.2a Introduction to Fractions

Fraction is a _____ of a _____.

Example: $\frac{4}{5}$ where the 4 is the _____, called the _____ and the 5 is the _____ called the _____.

Example 1:

What fraction is shaded?



Q1:

Example 2:

What fraction is shaded?



Q2:

2.2b Equivalent Fractions

Equivalent fractions:

To find an equivalent fraction _____ the _____ and _____
_____ by the _____

Example 1:

Find three equivalent fractions:

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

Q1:

Example 2:

Find three equivalent fractions:

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

Q2:

2.2c Reduce with Prime Factorizations

Reduced Fraction: The _____ and _____ have no common _____.

To reduce we find the _____ and divide out _____.

Example 1:

Simplify:

$$\frac{24}{36}$$

Q1:

Example 2:

Simplify:

$$\frac{105}{70}$$

Q2:

2.2d Reduce

Sometimes we can _____ the common factors and _____.

Example 1:

$$\frac{24}{36}$$

Q1:

Example 2:

$$\frac{105}{70}$$

Q2:

2.2e Reduce with Variables

When reducing with variables, _____ the variables that are in _____.

With exponents it may help to _____.

Example 1:

$$\frac{4x^2yz}{10xy^3}$$

Q1:

Example 2:

$$\frac{27a^3bc}{9a^2b^2c}$$

Q2:

2.2f Convert Fractions to Decimals

The fraction bar represents _____.

To convert a fraction to a decimal we _____.

To work through this process, we will use _____.

If the decimal repeats we will use a _____.

Example 1:

Convert to decimal: $\frac{7}{32}$

Q1:

Example 2:

Convert to decimal: $\frac{32}{99}$

Q2:

2.2g Convert Decimals to Fractions

To convert a decimal to a fraction we use _____ of the last digit.

Last check to see if the fraction can be _____

Example 1:

Convert to a fraction:
0.43

Q1:

Example 2:

Convert to a fraction:
0.2435

Q2:



You have completed the videos for 2.2 Reduce Fractions. On your own paper, complete the homework assignment.

2.3 Multiply and Divide Fractions

2.3a Multiply with No Reducing

Multiply the _____ together and multiply the _____ together.

Example 1:

$$\frac{4}{7} \cdot \frac{5}{3}$$

Q1:

Example 2:

$$\frac{1}{6} \cdot \frac{5}{4}$$

Q2:

2.3b Multiply with Reducing

Consider: $\frac{4}{9} \cdot \frac{6}{5} =$

But if we factor each: $\frac{4}{9} \cdot \frac{6}{5} =$

When _____ we can _____ a common factor from the _____ and _____.

Example 1:

$$\frac{6}{35} \cdot \frac{14}{15}$$

Q1:

Example 2:

$$\frac{6}{14} \cdot \frac{35}{13}$$

Q2:

2.3c Multiply with Variables

With exponents on variables it may help to _____

Remember, repeated _____ is done with _____

Example 1:

$$\frac{6x^2y}{7} \cdot \frac{14y}{3x}$$

Q1:

Example 2:

$$\frac{30a}{3b^2} \cdot \frac{21ab}{10}$$

Q2:

2.3d Multiply with Whole Numbers and Fractions

Whole numbers can be made into fractions by putting them over _____.

Example 1:

$$\frac{3}{8} \square 20$$

Q1:

Example 2:

$$35 \square \frac{6}{7}$$

Q2:

2.3e Reciprocals

Reciprocal:

Reciprocals multiply to _____.

Example 1:

Find the reciprocal of $\frac{6}{5}$

Q1:

Example 2:

Find the reciprocal of -8

Q2:

2.3f Divide Fractions

Divide fractions by _____ by the _____.

Example 1:

$$\frac{14}{15} \div \frac{35}{6}$$

Q1:

Example 2:

$$\frac{3}{10} \div \frac{6}{15}$$

Q2:

2.3g Divide with Variables

With exponents on variables it may help to _____

Remember, repeated _____ is done with _____

Example 1:

$$\frac{10x}{3y^2} \div \frac{10}{21xy}$$

Q1:

Example 2:

$$\frac{14m}{3n} \div \frac{7}{6m^2n}$$

Q2:

2.3h Divide with Whole Numbers and Fractions

Whole numbers can be made into fractions by putting them over _____.

Example 1:

$$28 \div \frac{7}{8}$$

Q1:

Example 2:

$$\frac{4}{9} \div 14$$

Q2:



You have completed the videos for 2.3 Multiply and Divide Fractions. On your own paper, complete the homework assignment.

2.4 Least Common Multiple

2.4a Multiples

Multiples are found by _____ by other numbers.

Example 1:

Find the first three multiples of 8

Q1:

Example 2:

Find the first three multiples of -7

Q2:

2.4b LCM Using Mental Math

Least Common Multiple (LCM):

Multiples of 15:

Multiples of 20:

Common multiples of 15 and 20:

Least common multiple of 15 and 20:

Using mental math: Test _____ of the _____ number: Can it be divided by the _____

Example 1:

Find the LCM of 12 and 9

Q1:

Example 2:

Find the LCM of 20 and 4

Q2:

2.4c LCM Using Prime Factorization

To find an LCM of two larger numbers:

1. Find the _____ of each
2. Use all the unique _____

Assign the _____ to each factor

Example 1:

Find the LCM of 24 and 36

Q1:

Example 2:

Find the LCM of 54 and 90

Q2:

2.4d LCM with Variables

To find the LCM with variables:

1. Use all the unique _____
2. Assign the _____ to each variable

Example 1:

Find the LCM of a^3b^2c and $a^2b^7d^2$

Q1:

Example 2:

Find the LCM of $6x^2z$ and $8x^3y^2$

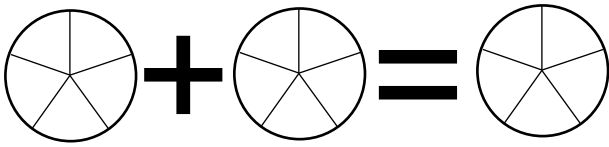
Q2:

You have completed the videos for 2.4 Least Common Multiple. On your own paper, complete the homework assignment.

2.5 Add and Subtract Fractions

2.5a With Common Denominator

Consider: $\frac{2}{5} + \frac{1}{5}$



To add fractions that have the same denominator: _____ numerators and _____ denominators.

When adding fractions always check to _____ at the _____ of the problem.

Example 1:

$$\frac{4}{7} - \frac{2}{7}$$

Q1:

Example 2:

$$\frac{7}{10} + \frac{5}{10}$$

Q2:

2.5b With Different Denominators

If the denominators don't match, we will find the _____.

Multiply _____ by missing factors.

Then multiply the _____ by the _____ factors.

If you do not know the LCD you can always _____ the two _____.

Example 1:

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

Q1:

Example 2:

$$\frac{3}{4} - \frac{5}{6}$$

Q2:

2.5c With Different Large Denominators

We may have to use _____ to find the LCD.

To build up to the LCD we multiply by any _____ factors.

Example 1:

$$\frac{7}{24} + \frac{11}{36}$$

Q1:

Example 2:

$$\frac{5}{54} - \frac{7}{90}$$

Q2:



You have completed the videos for 2.5 Add and Subtract Fractions. On your own paper, complete the homework assignment.

2.6 Order of Operations with Fractions

2.6a Exponents on Fractions

Exponents mean _____

$$\left(\frac{2}{3}\right)^2 =$$

Or we could put the exponent on the _____ and _____

Example 1:

$$\left(\frac{3}{2}\right)^3$$

Q1:

Example 2:

$$\left(\frac{7}{4}\right)^2$$

Q2:

2.6b Order of Operations with Fractions

The order

- 1.
- 2.
- 3.
- 4.

You may need some _____

Example 1:

$$\frac{9}{10} \div \frac{12}{5} + \left(\frac{5}{2}\right)^2 \square \frac{1}{30}$$

Example 2:

$$\left(\frac{8}{5}\right)^2 - \frac{9}{10} \left| \frac{7}{3} - \frac{9}{2} \right|$$

Q1:

Q2:



You have completed the videos for 2.6 Order of Operations with Fractions. On your own paper, complete the homework assignment.

2.7 Mixed Numbers

2.7a Mixed Numbers and Conversions

Mixed number:

Change a mixed number to a fraction: _____ the whole and _____

and _____ the _____.

Change a fraction to a mixed number: _____, the remainder is the new _____.

Example 1:

Convert $5\frac{9}{11}$ to a fraction

Q1:

Example 2:

Convert $\frac{73}{12}$ to a mixed number

Q2:

2.7b Add and Subtract Mixed Numbers

To do math with mixed numbers it is easiest to _____ to a _____

When you have your answer, _____

Example 1:

$$5\frac{2}{5} + 7\frac{3}{10}$$

Q1:

Example 2:

$$-2\frac{1}{3} + 6\frac{4}{9}$$

Q2:

2.7c Multiply and Divide Mixed Numbers

To do math with mixed numbers it is easiest to _____ to a _____.

When you have your answer, _____.

Example 1:

$$2\frac{4}{5} \times 3\frac{4}{7}$$

Q1:

Example 2:

$$5\frac{1}{3} \div 2\frac{1}{6}$$

Q2:



You have completed the videos for 2.7 Mixed Numbers. On your own paper, complete the homework assignment.




Congratulations! You made it through the material for Unit 2: Fractions. It is time to prepare for your exam. On a separate sheet of paper, complete the review/practice test. Once you have completed the review/practice test, ask your instructor to take the test. Good luck!

Unit 3:

Linear Equations

To work through the unit, you should:

1. Watch a video, as you watch, fill out the workbook (top and example sections).
2. Complete Q1 and Q2 in WAMAP, put your work in the right column of the page.
3. Repeat #1 and #2 with each page until you reach the .
4. Complete the homework assignment on your own paper.
5. Repeat #1 thru #4 until you reach the end of the unit.
6. Complete the review/practice test on your own paper.
7. Take the unit exam.

3.1 One Step Equations

3.1a Addition Principle

A _____ to an equation is the value for the _____ that makes the equation _____.

We can _____ anything to _____ of the equation.

Addition Principle: To move a negative term we do the opposite and _____ it to _____.

Very Important to _____ your work!

Example 1:

$$x - 9 = 4$$

Q1:

Example 2:

$$-3 = -5 + x$$

Q2:

3.1b Subtraction Principle

We can _____ anything to _____ of the equation.

Subtraction Principle: To move a positive term we do the opposite and _____ it from _____.

Very Important to _____ your work!

Example 1:

$$x + 8 = -4$$

Q1:

Example 2:

$$3 = 7 + x$$

Q2:

3.1c Division Principle

We can _____ anything to _____ of the equation.

Division Principle: To undo multiplication of factors we do the opposite and _____ it from _____.

Very Important to _____ your work!

Example 1:

$$7x = 147$$

Q1:

Example 2:

$$-8x = 72$$

Q2:

3.1d Multiplication Principle

We can _____ anything to _____ of the equation.

Multiplication Principle: To clear division we do the opposite and _____ it by _____.

Very Important to _____ your work!

Example 1:

$$\frac{x}{7} = -4$$

Q1:

Example 2:

$$5 = \frac{x}{-2}$$

Q2:



You have completed the videos for 3.1 One Step Equations. On your own paper, complete the homework assignment.

3.2 Two Step Equations

3.2a Two Steps

Simplifying we use order of operations and we _____ before we _____.

Solving we work _____ and we _____ before we _____.

Example 1:

$$5x - 7 = 8$$

Q1:

Example 2:

$$-9 = -5 - 2x$$

Q2:

3.2b Negative Variables

If there is no number in front of a variable, we assume there is a _____ in front.

This means $-x$ is the same as _____.

Example 1:

$$-x + 8 = 5$$

Q1:

Example 2:

$$-4 = -6 - x$$

Q2:



You have completed the videos for 3.2 Two Step Equations. On your own paper, complete the homework assignment.

3.3 General Linear Equations

3.3a Variable on Both Sides

When solving an equation, we want the variable on _____.

If the variable is on both sides, we will _____ the _____ one by _____.

Example 1:

$$5x + 7 = 9x - 2$$

Q1:

Example 2:

$$-6x + 1 = 2x - 12$$

Q2:

3.3b Combine Like Terms

Before we solve, we must _____ the _____ and _____ sides.

One way to do this is _____.

Example 1:

$$5x - 3 - 2x = 7 + 8x - 1$$

Q1:

Example 2:

$$4 + x - 2 = -3x + 8 + 2x$$

Q2:

3.3c Distribute and Combine

Before we solve, we must _____ the _____ and _____ sides.

One way to do this is _____.

Example 1:

$$2(3x - 1) = 4x + 6 - x$$

Q1:

Example 2:

$$3(2x + 1) - 9x = 4(x + 6) - 20$$

Q2:



You have completed the videos for 3.3 General Linear Equations. On your own paper, complete the homework assignment.

3.4 Equations with Decimals and Fractions

3.4a Decimals

When solving with decimals the pattern of solving is _____.

A _____ may be helpful to speed up calculations.

Example 1:

$$3.2x + 7.11 = -19.77$$

Q1:

Example 2:

$$2.1(x - 4.3) = 5.7x - 9.19 - 3.8x$$

Q2:

3.4b Clear Fractions with LCD

If the equation has fractions, we can clear the fractions by _____ each term by the ____.

After multiplying we can _____ to get an equation with no _____.

Example 1:

$$\frac{5}{6}x - \frac{1}{3} = \frac{7}{2}$$

Q1:

Example 2:

$$\frac{3}{8}x + \frac{3}{4} = -5 + \frac{7}{2}x$$

Q2:



You have completed the videos for 3.4 Equations with Decimals and Fractions. On your own paper, complete the homework assignment.




Congratulations! You made it through the material for Unit 3: Linear Equations. It is time to prepare for your exam. On a separate sheet of paper, complete the review/practice test. Once you have completed the review/practice test, ask your instructor to take the test. Good luck!

Unit 4:

Stats, Graphing, Proportions and Percent

(You may use a calculator on this unit)

To work through the unit, you should:

1. Watch a video, as you watch, fill out the workbook (top and example sections).
2. Complete Q1 and Q2 in WAMAP, put your work in the right column of the page.
3. Repeat #1 and #2 with each page until you reach the .
4. Complete the homework assignment on your own paper.
5. Repeat #1 thru #4 until you reach the end of the unit.
6. Complete the review/practice test on your own paper.
7. Take the unit exam.

4.1 Averages

4.1a Mean

Mean: The average if all items were the _____ or spread out _____.

To calculate the mean:

Example 1:

Find the Mean:
5,8,6,7,9,4,8,10

Q1:

Example 2:

Find the Mean:
23,26,27,21,26,22,73,24,23

Q2:

4.1b Missing Value

The mean is when all the items are the _____ or spread out _____.

If we know the mean and are missing a value, calculate the _____ using the _____.

Example 1:

On three tests a student earns 83%, 71%, and 81%.
What must she earn on her fourth test to raise her average of the four tests up to 80%?

Q1:

Example 2:

Another student has a goal of 90% on his four tests.
On the first three tests he earned 92%, 75%, and 89%. Is it possible for him to reach his goal of 90%?
What score would he have to earn?

Q2:

4.1c Weighted Mean

Weighted average: Values that occur _____ have a larger _____ on the average (mean).

To calculate the total, we _____ the _____ by the _____.

Example 1:

In a survey, students were asked how many siblings they had. The results are below. Calculate the average number of siblings of the survey responders.

Siblings	Responses
0	8
1	38
2	21
3	15
4	2

Q1:

Example 2:

Grade Point Average (GPA) is calculated as a weighted average. The credits of a course are considered the “frequency” of the course. In this way, classes that are more credits have a larger effect on grade than classes with fewer credits. Calculate the GPA of the following report card:

Class	Credits	Grade
English	4	3.2
Math	5	4.0
History	3	2.8
PE	1	0.7

Q2:

4.1d Median

Median: The average at which _____ the data is _____ and _____ is _____.

To calculate the median:

If two values are in the middle:

Example 1:

Find the Median:
5,8,6,7,9,4,8,10

Q1:

Example 2:

Find the Median:
23,26,27,21,26,22,73,24,23

Q2:

4.1e Mode

Mode: the average or value that occurs _____.

It is possible to have _____ modes or _____ mode.

Example 1:

Find the Mode:
5,8,6,7,9,4,8,10

Q1:

Example 2:

Find the Mode:
23,26,27,21,26,22,73,24,23

Q2:



You have completed the videos for 4.1 Averages. On your own paper, complete the homework assignment.

4.2 Probability and Plotting Points

4.2a Basic Probability

Probability:

Basic Probability Fraction:

Example 1:

A bag contains 3 blue marbles, 2 red marbles and 1 green marble. If you were to draw one marble at random, what is the probability of drawing...

- 1) A blue marble?
 - 2) A red marble?
 - 3) A black marble?
-

Example 2:

If you roll a standard six-sided die, what is the probability you roll...

- 1) A three?
- 2) An even number?
- 3) A number smaller than three?
- 4) A seven?

Q1:

Q2:

4.2b Compound Events

The probability of this OR that: we _____ the individual probabilities.

The probability of this AND that: we _____ the individual probabilities.

Example 1:

A bag contains 3 blue marbles, 2 red marbles and 1 green marble. If you were to draw one marble at random, what is the probability of drawing...

- 1) A blue or green marble?
- 2) A green or red marble?
- 3) A blue or red or green marble?

Q1:

Example 2:

If you roll a standard six-sided die and then draw a marble out of a bag with 7 red and 3 black marbles, what is the probability you get...

- 1) A three and a black?
- 2) An even and a red?

Q2:

4.2c Give Coordinate

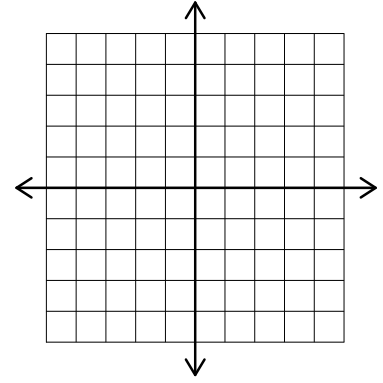
Coordinate Plane:

x-axis:

y-axis:

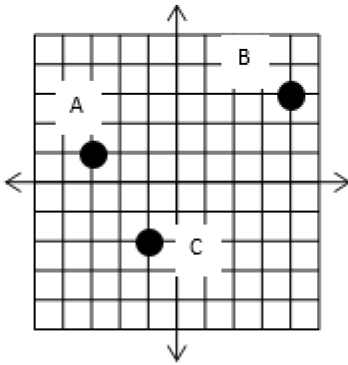
Origin:

Coordinate Point:

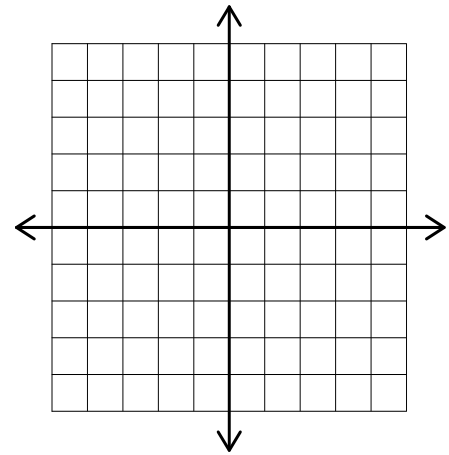


Example 1:

Give the coordinates of points A, B, and C

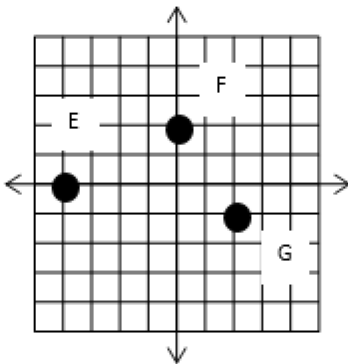


Q1:

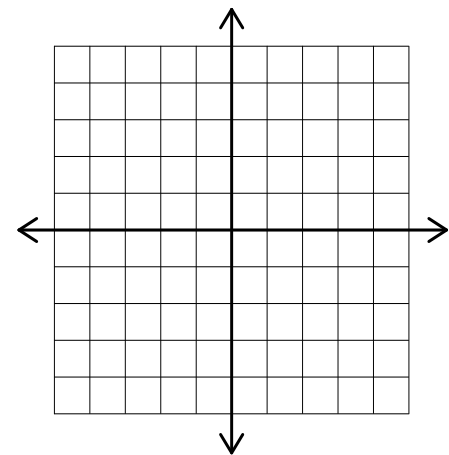


Example 2:

Give the coordinates of points E, F, and G



Q2:



4.2d Plot Points

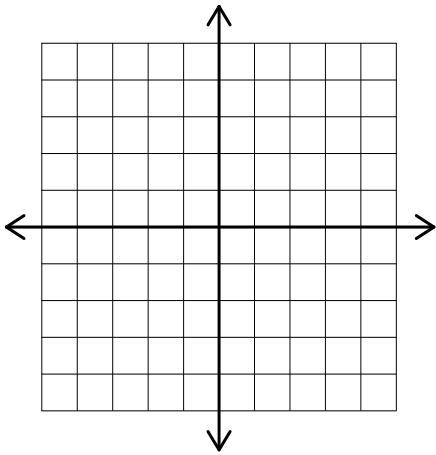
To plot a point start at the _____ and move _____ then _____.

Negatives move the point _____.

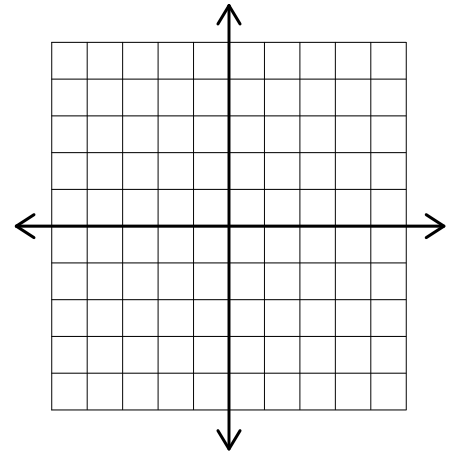
Example 1:

Plot the points:

$$A(2, -4), B(-3, -1), C(0, 2), D(-3, 4)$$



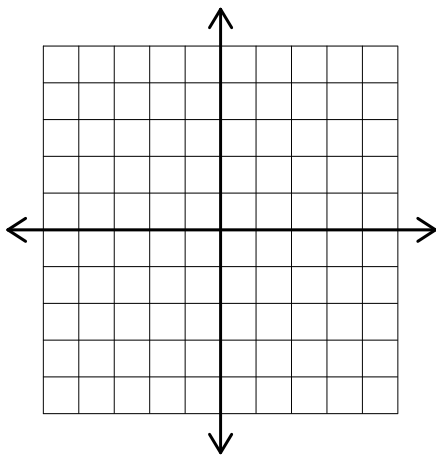
Q1:



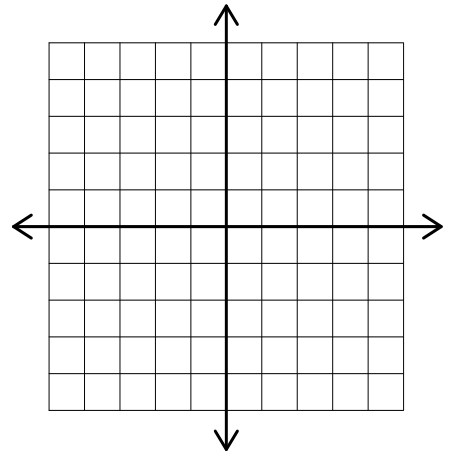
Example 2:

Plot the points:

$$E(1, 2), F(-1, 0), G(0, 0)$$



Q2:



You have completed the videos for 4.2 Probability and Plotting Points. On your own paper, complete the homework assignment.

4.3 Rates and Unit Rates

4.3a Find Rates

Rate: Amount per _____

To set up, the word _____ is the _____.

Example 1:

Rafael made \$22,512 last year. What is his rate of pay per month?

Q1:

Example 2:

Giovanni covered his 2,500 square foot yard with 700 ounces of fertilizer. What is the rate of coverage the fertilizer can cover in ounces per square foot?

Q2:

4.3b Find Unit Rate

Unit Rate: Rate of _____ per _____.

Use unit rates to identify the _____.

Example 1:

A 20-ounce bottle of soda sells for \$1.99. What is the unit price?

Q1:

Example 2:

Lemon juice comes in a 24 oz bottle and a 32 oz bottle. The 24 oz bottle sells for \$1.98 and the 32 oz bottle sells for \$2.98. Which is the better deal and what is the unit price?

Q2:



You have completed the videos for 4.3 Rates and Unit Rates. On your own paper, complete the homework assignment.

4.4 Proportions and Applications

4.4a Solving Proportions

To solve a proportion, we _____ both sides by the _____.

The quick method: Multiply by the _____.

Example 1:

$$\frac{7}{x} = \frac{6}{5}$$

Q1:

Example 2:

$$\frac{8}{5} = \frac{x}{3}$$

Q2:

4.4b Proportion Applications

When solving applications, we must first identify what we are _____.

Clearly label the _____ and _____ of the proportion.

Example 1:

A 65-inch-tall man wants to determine how tall a large tree is. He noticed at a certain time his shadow was 14 inches long. When he measured the shadow of the tree, he found it was 48 inches long. How tall is the tree?

Q1:

Example 2:

A manufacturer knows that out of every 300 parts the company ships, on average 18 are defective. If the company ships 5800 parts in a day, how many will be defective?

Q2:



You have completed the videos for 4.4 Proportions and Applications. On your own paper, complete the homework assignment.

4.5 Introduction to Percent
4.5a Convert Percent and Decimals

Percent:

To convert a decimal to a percent: Multiply by _____ or move the decimal _____ to the _____.

To convert a percent to a decimal: Divide by _____ or move the decimal _____ to the _____.

Example 1:

Convert 0.582 to a percent

Q1:

Example 2:

Convert 145.6% to a decimal

Q2:

4.5b Convert Percent and Fractions

To convert a fraction to a percent: First _____ then convert the _____ to a _____.

To convert a percent to a fraction: Put the percent over _____ and _____.

Example 1:

Convert $\frac{17}{20}$ to a percent

Q1:

Example 2:

Convert 32% to a fraction

Q2:



You have completed the videos for 4.5 Introduction to Percent. On your own paper, complete the homework assignment.

4.6 Translate Percent and Applications

4.6a Translate and Solve

Key words to translate:

- What
- Is
- Of
- Percent

Example 1:

What is 70% of 40?

Q1:

Example 2:

45% of what is 70?

Q2:

4.6b Discount

Discount Equation:

Example 1:

A computer that normally costs \$549 is on sale at 22% off. What is the new price of the computer?

Q1:

Example 2:

A desk that normally sells for \$224 is on sale for \$188.16. What is the percent discount?

Q2:

4.6c Sales Tax

Sales Tax Equation:

Example 1:

What is the sales tax on a \$499 television if the tax rate is 8.5%? What would you pay for the TV?

Q1:

Example 2:

Marc purchased a \$390 table and paid \$25.35 in sales tax. What is the tax rate?

Q2:

4.6d Commission

Commission Equation:

Example 1:

A cell phone company pays a 14% commission to its representatives. If an employee sells \$23,000 worth of product in a month, how much will she be paid?

Q1:

Example 2:

A real estate agent sold \$845,000 worth of properties and earned \$16,900 in his commission. What is his commission rate?

Q2:

4.6e Simple Interest

Interest:

Simple Interest Equation:

Time must be in _____.

Example 1:

A bank account pays 2.1% simple interest on a certain account. If you invest \$3500 for 4 years, how much will you earn in interest?

Q1:

Example 2:

A bank gives a loan with 4.5% simple interest for 9 months on a \$12,000 loan. How much is owed back to the bank at the end of the loan?

Q2:



You have completed the videos for 4.6 Translate Percent and Applications. On your own paper, complete the homework assignment.

4.7 Percents as Proportions and Applications

4.7a Translate and Solve

Percent Proportion:

Example 1:

What percent of 25 is 16?

Q1:

Example 2:

14 is 60% of what?

Q2:

4.7b General Applications

“OF” represents _____

“IS” represents _____

Example 1:

Among male smokers, the lifetime risk of developing lung cancer is 17.2%. According to the Washington State Department of Health, in 2011 the state had 760,000 smokers. How many are at risk of developing lung cancer in their lifetime?

Q1:

Example 2:

In 2010, women made up 58% of Big Bend Community College’s students. If there were 1688 women enrolled in 2010, how many students were there total?

Q2:

Percent Increase/Decrease Proportions:

Example 1:

The price of a sofa was \$299. During a weekend sale the price was dropped to \$179. What was the percent decrease?

Q1:

Example 2:

The population of a small town was 12,345 in 2000. This represents a decrease of 39.3% from 1990. What was the population in 1990?

Q2:



You have completed the videos for 4.7 Percents as Proportions and Applications. On your own paper, complete the homework assignment.




Congratulations! You made it through the material for Unit 4: Stats, Graphing, Proportions, and Percents. It is time to prepare for your exam. On a separate sheet of paper, complete the review/practice test. Once you have completed the review/practice test, ask your instructor to take the test. Good luck!

Unit 5:

Geometry and Intro to Polynomials

(You may use a calculator on this unit)

To work through the unit, you should:

1. Watch a video, as you watch, fill out the workbook (top and example sections).
2. Complete Q1 and Q2 in WAMAP, put your work in the right column of the page.
3. Repeat #1 and #2 with each page until you reach the .
4. Complete the homework assignment on your own paper.
5. Repeat #1 thru #4 until you reach the end of the unit.
6. Complete the review/practice test on your own paper.
7. Take the unit exam.

5.1 Convert Units
5.1a One Step Conversions

Consider: $\left(\frac{57\text{ in}}{1}\right)\left(\frac{1\text{ ft}}{12\text{ in}}\right) =$

Divide out units by placing them in the _____ part of the fraction.

Conversion factor: Same _____ in numerator and denominator, but different _____.

Dimensional analysis: Multiply by a _____ to convert units.

Example 1:

17.2 mi = _____ km

Q1:

Example 2:

88 lbs = _____ kg

Q2:

5.1b Multi-Step Conversions

If we do not have the correct conversion factor, we can convert using _____ conversion factors.

Example 1:

$$365 \text{ g} = \underline{\hspace{2cm}} \text{ lbs}$$

Q1:

Example 2:

$$5 \text{ gal} = \underline{\hspace{2cm}} \text{ cups}$$

Q2:

5.1c Dual Unit Conversions

Dual Unit:

“Per” is the _____.

With dual units we convert _____.

Example 1:

35 mi per hr = _____ ft per sec

Q1:

Example 2:

45 oz per min = _____ lbs per hr

Q2:



You have completed the videos for 5.1 Convert Units. On your own paper, complete the homework assignment.

5.2 Area, Volume, and Temperature
5.2a Area of a Rectangle and a Parallelogram

Area of a rectangle:



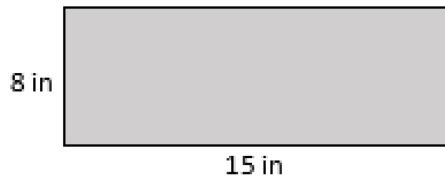
Area of a parallelogram:



Important: Height must meet the base at a perfect _____ angle.

Example 1:

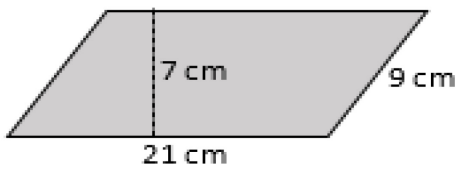
Find the area:



Q1:

Example 2:

Find the area:



Q2:

5.2b Area of a Triangle

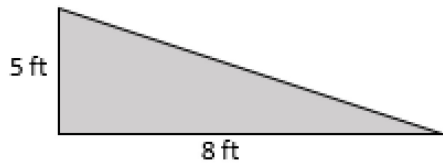
Area of a triangle:



Important: Height must meet the base at a perfect _____ angle.

Example 1:

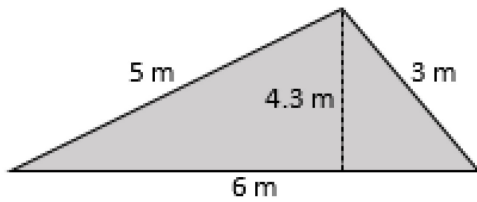
Find the area:



Q1:

Example 2:

Find the area:



Q2:

5.2c Area of a Trapezoid

Area of a trapezoid:

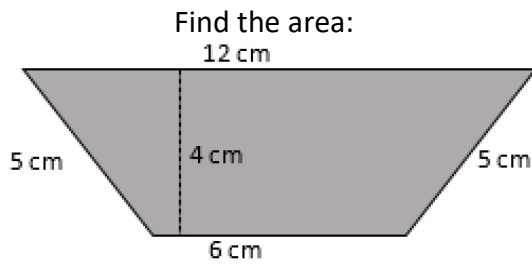
The bases (a and b) must be _____.

The _____ connects the two _____.

Important: height must meet the base at a perfect _____ angle.

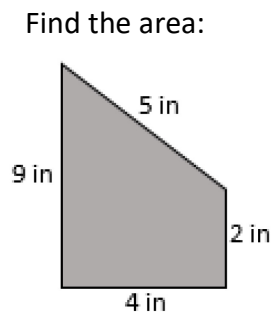


Example 1:



Q1:

Example 2:



Q2:

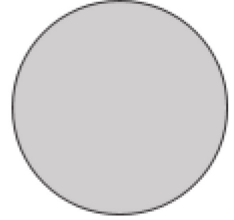
5.2d Area of a Circle

Diameter:

Radius:

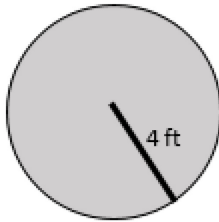
$\pi =$

Area of a Circle:



Example 1:

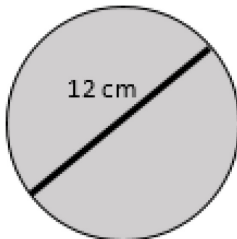
Find the area:



Q1:

Example 2:

Find the area:



Q2:

5.2e Composition of Shapes

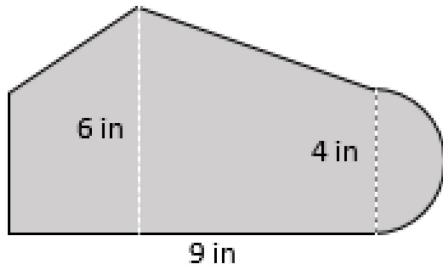
If we do not have a formula for a shape, we must _____.

Shapes attached to each other are _____.

Shapes cut out are _____.

Example 1:

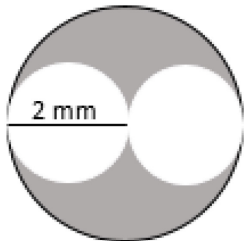
Find the area:



Q1:

Example 2:

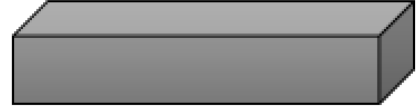
Find the shaded area:



Q2:

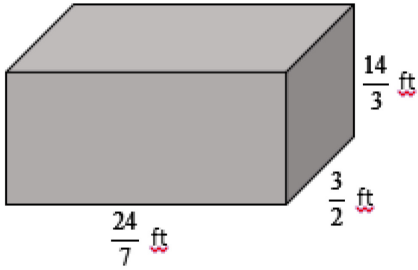
5.2f Volume of a Rectangular Solid

Volume of rectangular solid:



Example 1:

Find the volume:



Q1:

Example 2:

On Southwest Airlines, the maximum size of a carry-on bag is a length of 24 inches, a width of 10 inches and a height of 16 inches. How much is packed in this maximum sized bag?

Q2:

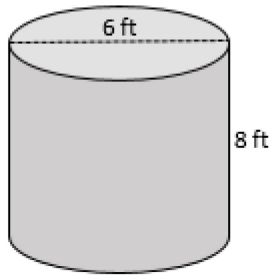
5.2g Volume of a Cylinder

Volume of a cylinder:



Example 1:

Find the volume:



Q1:

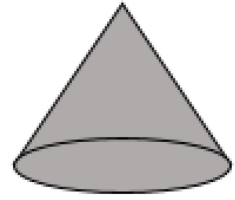
Example 2:

A can of soda is about 5 inches tall with a diameter of 2.5 inches. How much soda can fit into the can?

Q2:

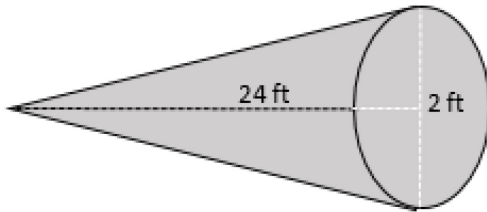
5.2h Volume of a Cone

Volume of a cone:



Example 1:

Find the volume:



Q1:

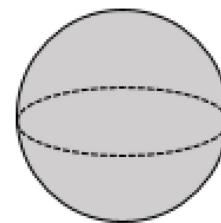
Example 2:

How much ice cream can fit inside a cone that is 5 cm tall and 3 cm wide?

Q2:

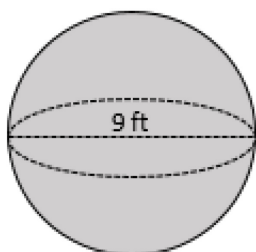
5.2i Volume of a Sphere

Volume of a sphere:



Example 1:

Find the volume:



Q1:

Example 2:

Find the volume of the “planet” Pluto if the radius is approximately 1195 km.

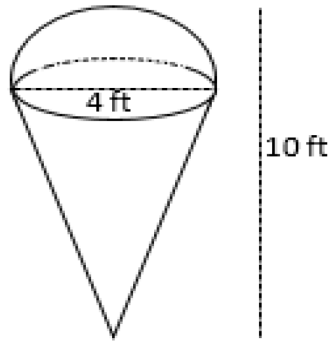
Q2:

5.2j Composition of Solids

If we do not have a formula for a shape, we must _____.

Example 1:

Find the volume



Q1:

5.2k Convert Temperature

Formulas to convert temperature:

$C =$

$F =$

Example 1:

98.6° F is body temperature. Find body temperature in degrees Celsius.

Q1:

Example 2:

100° C is the boiling point of water. Find at what temperature water boils in degrees Fahrenheit.

Q2:

You have completed the videos for 5.2 Area, Volume, and Temperature. On your own paper, complete the homework assignment.

5.3 Pythagorean Theorem

5.3a Square Roots

Square root asks the question what number _____ is the inside number?

$$\sqrt{25} =$$

On calculator use the _____ button (may have to use the _____ or _____ button first)

Example 1:

$$\sqrt{225}$$

Q1:

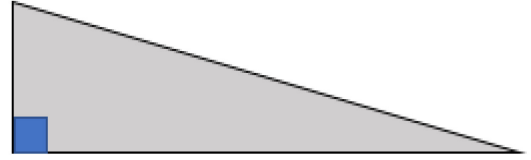
Example 2:

$$\sqrt{456}$$

Q2:

5.3b Find Missing Side

Name the sides of the right triangle:



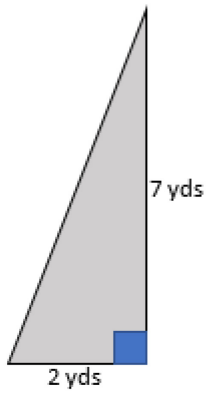
Pythagorean Theorem:

C is always the _____.

When finding a leg with the Pythagorean theorem, first _____ then _____.

Example 1:

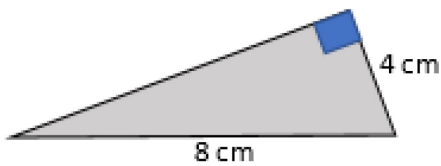
Find the missing side:



Q1:

Example 2:

Find the missing side:



Q2:

5.3c Applications

With applications it is always helpful to _____.

Example 1:

The base of a ladder is four feet from a building.
The top of the ladder is eight feet up the building.
How long is the ladder?

Q1:

Example 2:

A young boy is flying a kite. He let out 21 meters of string until the kite was flying over the head of his sister who was 9 meters away. How high is the kite?

Q2:



You have completed the videos for 5.3 Pythagorean Theorem. On your own paper, complete the homework assignment.

5.4 Introduction to Polynomials

5.4a Add Polynomials

Term:

Monomial:

Binomial:

Trinomial:

Polynomial:

Adding Polynomials: _____ the _____.

Example 1:

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

Q1:

Example 2:

$$(3ab^3 - 2a^2b + ab) + (4a^2b - 2ab^3 + 4ab)$$

Q2:

5.4b Subtract Polynomials

First _____ the _____.

Then _____.

Example 1:

$$(3x^2 - 7x + 8) - (2x^2 + 9x - 4)$$

Q1:

Example 2:

$$(2x - 8y + 6) - (-3y - 7 + 5x)$$

Q2:

5.4c Multiply Monomials

Consider $a^3 \cdot a^2 =$

When multiplying variables, we _____ the exponents.

If there is no exponent, then we assume the exponent is a _____.

Example 1:

$$(4x^3y^2z)(2x^7yz^4)$$

Q1:

Example 2:

$$-7a^3b^2c^4 \cdot 2ab^8c^4$$

Q2:

5.4d Multiply a Monomial by a Polynomial

Consider: $5(3x - 6) =$

When multiplying a monomial by a polynomial we _____.

Example 1:

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

Q1:

Example 2:

$$-2a^3b(5ab^4 - 6a^2b^7 + 2a^4)$$

Q2:



You have completed the videos for 5.4 Introduction to Polynomials. On your own paper, complete the homework assignment.

5.5 Scientific Notation

5.5a Convert Scientific Notation to Standard Notation

Scientific Notation: $a \times 10^b$

a is greater than or equal to _____ but less than _____. This means the decimal is always after the _____ digit.

b tells us how many times to _____ the decimal.

If b is negative, then standard notation is _____. If b is positive, then standard notation is _____.

Example 1:

Convert to standard notation:

$$4.21 \times 10^5$$

Q1:

Example 2:

Convert to standard notation:

$$6.2 \times 10^{-3}$$

Q2:

5.5b Convert Standard Notation to Scientific Notation

To convert to scientific notation _____ the number of times the _____ must move.

If standard notation is small, then the exponent is _____ if it is big then the exponent is _____.

When converting we will _____ the extra _____.

Example 1:

Convert to scientific notation:
48,100,000,000

Q1:

Example 2:

Convert to scientific notation
0.0000235

Q2:



You have completed the videos for 5.5 Scientific Notation. On your own paper, complete the homework assignment.



Congratulations! You made it through the material for Unit 5: Geometry and Intro to Polynomials. It is time to prepare for your exam. On a separate sheet of paper, complete the review/practice test. Once you have completed the review/practice test, ask your instructor to take the test. Good luck!

Unit 6:

Proficiency Exam #1

To work through this unit, you should:

1. Complete the review/practice tests on your own paper.

NOTE: There are three parts to the review/practice test – Part A, B, and C.

2. Take the (three part) unit exam.

Conversion Factors

LENGTH	
<u>English</u>	<u>Metric (meter)</u>
12 in = 1 ft 3 ft = 1 yd 1 mi = 5280 ft	1000 mm = 1 m 100 cm = 1 m 10 dm = 1 m 1 dam = 10 m 1 hm = 100 m 1 km = 1000 m
<u>English to Metric</u>	
1 in = 2.54 cm	

TEMPERATURE
$C = \frac{5(F - 32)}{9}$
$F = \frac{9}{5}C + 32$

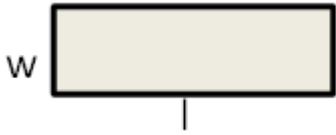
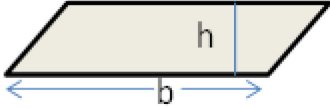
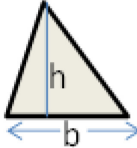
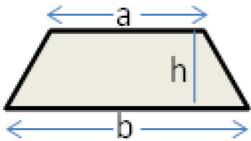


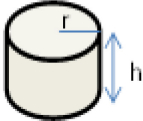


VOLUME	
<u>English</u>	<u>Metric (liter)</u>
8 fl oz = 1 cup (c) 2 cups (c) = 1 pint (pt) 2 pints (pt) = 1 quart (qt) 4 quarts (qt) = 1 gallon (gal)	1000 mL = 1 L 100 cL = 1 L 10 dL = 1 L 1 daL = 10 L 1 hL = 100 L 1 kL = 1000 L 1 mL = 1 cc = 1 cm ³
<u>English to Metric</u>	
1 gallon (gal) = 3.79 liter (L) 1 in ³ = 16.39 mL	

TIME
60 seconds (sec) = 1 minute (min) 60 minutes (min) = 1 hour (hr) 24 hours (hr) = 1 day 52 weeks = 1 year 365 days = 1 year

WEIGHT (MASS)	
<u>English</u>	<u>Metric (gram)</u>
16 oz = 1 pound (lb) 2,000 lb = 1 Ton (T)	1000 mg = 1 g 100 cg = 1 g 10 dg = 1 g 1 dag = 10 g 1 hg = 100 g 1 kg = 1000 g
<u>English to Metric</u>	
2.20 lb = 1 kg	

INTEREST
Simple: $I = Prt$ Continuous: $A = Pe^{rt}$ Compound: $A = P \left(1 + \frac{r}{n} \right)^{nt}$ Annual: $n=1$ Semiannual: $n=2$ Quarterly: $n=4$

Geometric Formulas

Name	Diagram	Area
Rectangle		$A = lw$ $P = 2l + 2w$
Parallelogram		$A = bh$
Triangle		$A = \frac{1}{2}bh$
Trapezoid		$A = \frac{1}{2}h(a + b)$
Circle		$A = \pi r^2$ $C = \pi d = 2\pi r$
Name	Diagram	Volume
Rectangular Solid		$V = lwh$
Right Circular Cylinder		$V = \pi r^2 h$
Right Circular Cone		$V = \frac{1}{3}\pi r^2 h$
Sphere		$V = \frac{4}{3}\pi r^3$
Right Triangle		
Pythagorean Theorem: $a^2 + b^2 = c^2$		