

WELCOME BACK TO SCHOOL

Ms. Engbrecht

Algebra 1.5



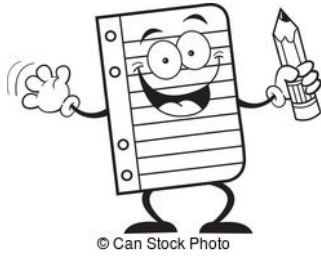
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About Me



Oldest of 4

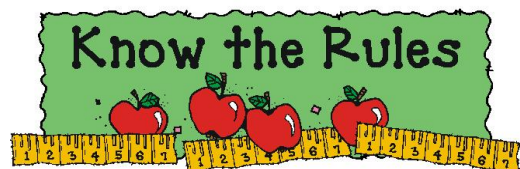
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Syllabus & Hall Passes

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BE HERE
WORK HARD
BE NICE



Sep 6-8:20 PM

Class Rules

- No food or beverage (except water)
- No electronics except your calculator
(No Phone, iPod, iPad, etc.)
- Be on time (In your seat when bell rings)
- **Have a good attitude**
- Follow the rules set forth by the school

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GRADES

50% tests

30% quizzes

20% assignments



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Homework

- Expect it daily
- Typically due at the Beginning of next class

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Testing Procedure

- Review Day
- Test Day
- Outside of class Retake if you have all assignments done



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Rules Continued...

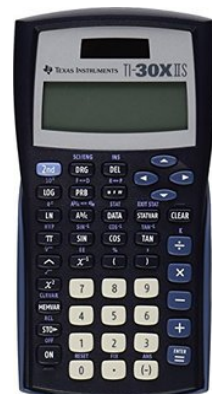
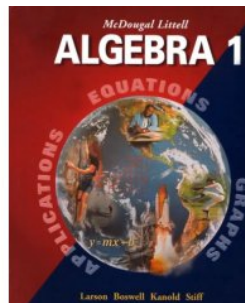
- passes (only during work time)
- end of the hour (stay in your seat)
- sharpening pencils
(do it before class or during work time)
- be prepared
(notes in binder, book, pencils, paper)
- NO PHONE



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Every Day You Will NEED...

- Pencils
- Paper
- Binder (your notes)
- Textbook
- Calculator
- Planner



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Any Questions?



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Student Survey

Eng-brekt



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Textbooks



*Will be dismissed by rows

*Make sure you sign out the book on the survey (top corner)

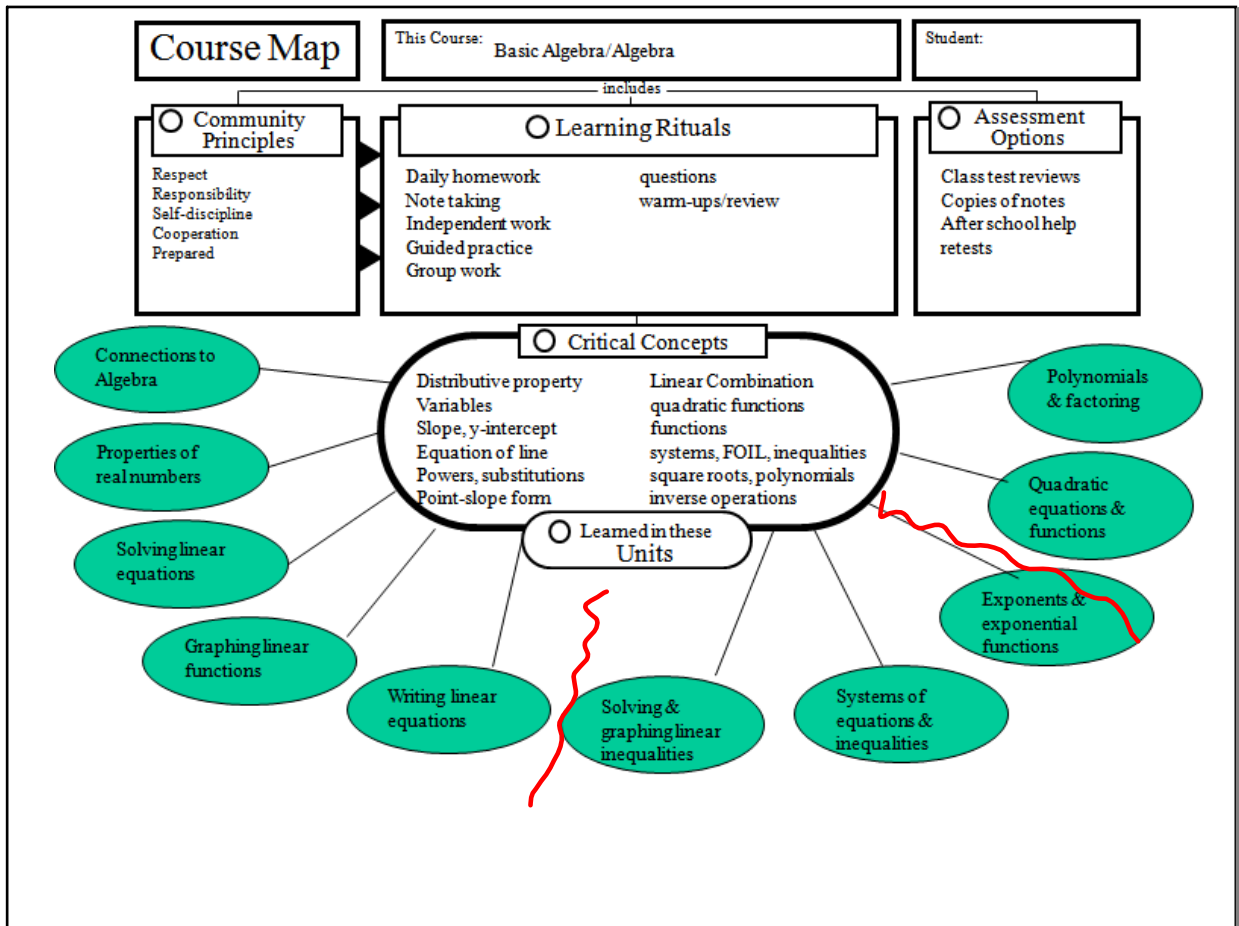
***COVER YOUR BOOK**

- Bring In PAPER BAG if you need help

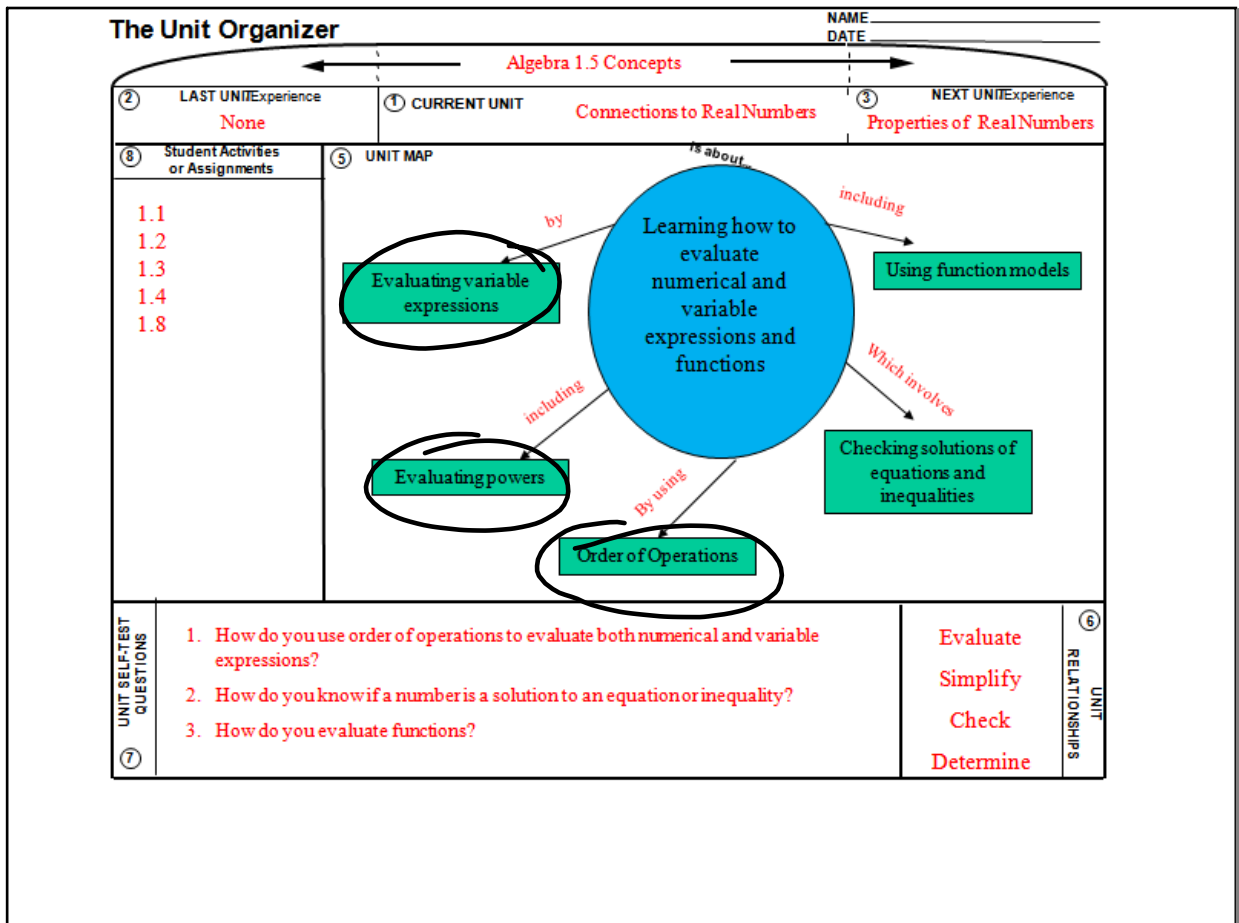
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Teacher(s): Engbrecht Time: 2015-2016	<h2 style="margin: 0;">The Course Organizer</h2>	Student: Course Dates:															
<input type="radio"/> This Course: Algebra 1.5 & Algebra 1.5 Concepts <div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block;"> is about Using algebraic tools to solve problems. </div>	<input type="radio"/> Course Standards <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">What ?</th> <th style="text-align: left;">How?</th> <th style="text-align: left;">Value?</th> </tr> </thead> <tbody> <tr> <td>Daily homework</td> <td></td> <td>20%</td> </tr> <tr> <td>Weekly quizzes</td> <td></td> <td>30%</td> </tr> <tr> <td>Chapter tests</td> <td></td> <td>50%</td> </tr> <tr> <td>Final test</td> <td></td> <td>Part of tests</td> </tr> </tbody> </table>	What ?	How?	Value?	Daily homework		20%	Weekly quizzes		30%	Chapter tests		50%	Final test		Part of tests	
What ?	How?	Value?															
Daily homework		20%															
Weekly quizzes		30%															
Chapter tests		50%															
Final test		Part of tests															
<input type="radio"/> Course Questions: <ol style="list-style-type: none"> 1. How do you use expressions, equations, and inequalities to model and solve real-life situations? 2. How can you solve linear equations? 3. How do you graph lines and evaluate functions? 4. How do you write linear equations and apply them to real-life situations? 5. How do you solve linear inequalities? 6. How do you solve systems of two linear equations? 7. How do you simplify expressions involving exponents, graph exponential functions, and model real-life situations? 8. How can various techniques be used to solve and graph quadratic equations and functions? 9. How can different techniques and operations be used with polynomials? 																	

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1.1 Variables in Algebra

- Goals:**
- Evaluate a variable expression.
 - Write a variable expression that models a real-life situation.

EQ: How do you evaluate an expression that has variables?

plug in value for variable, then solve

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Vocabulary

Variable: letters used to represent numbers

Values: numbers

Variable expression: letters, numbers, operations
 Multiply \div $\frac{3}{25}$ +, -
 $2x, 2 \cdot x, 2(x)$

Evaluating the expression:

Find the answer

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Write the variable expression.



Substitute values for variables.



Simplify the numerical expression.

Example 1: Evaluating a Variable ExpressionEvaluate the expression when $x = 3$.

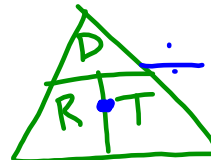
a. $6x$	b. $\frac{9}{x}$	c. $x + 4$	d. $13 - x$
$6(3)$	$\frac{9}{3}$	$3 + 4$	$13 - 3$
$= 18$	$= 3$	$= 7$	$= 10$

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Example 2: Evaluating a Real-Life Expression

Average speed is given by the following formula.

$$\text{Average speed} = \frac{\text{Distance}}{\text{Time}} = \frac{d}{t}$$



$$D = R \cdot T$$

$$R = \frac{D}{T}$$

Find the average speed (in miles per hour) of a car that traveled 240 miles in 6 hours.

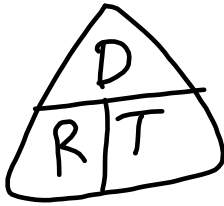
$$R = \frac{240}{6} = 40 \text{ mph}$$

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Try It

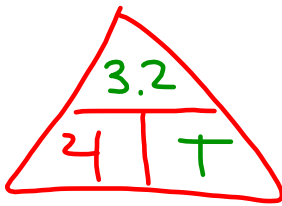
Complete the following exercises.

1. Find the average speed of a car that traveled 200 miles in 4 hours.



$$200 \div 4 = 50 \text{ mph}$$

2. You plan to jog at an average rate of 4 miles per hour for a distance of 3.2 miles. How long will it take you?



$$T = \frac{3.2}{4} = .8 \text{ hours}$$

$$48 \text{ mins.}$$

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Example 3: Evaluating a Geometric Expression

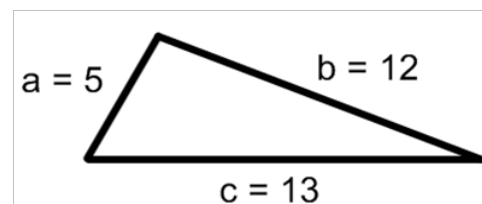
Find the perimeter of the triangle. The dimensions are in inches.

Hint: The perimeter of a triangle is equal to the sum of the lengths of its sides: $a + b + c$

$$P = a + b + c$$

$$= 5 + 12 + 13$$

$$P = 30 \text{ in.}$$



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1.2 Exponents and Powers

- Goals:**
- Evaluate expressions containing exponents.
 - Use exponents in real-life problems.

EQ: If something is in () or [], what does that mean?

DO FIRST

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Vocabulary

Power: repeated multiplication

Base: 5^3 5 is the Base (Factors)

Exponent: $5^3 = 5 \cdot 5 \cdot 5 = 25 \cdot 5 = 125$ 3 is Exponent (How many?)

$\boxed{\wedge}$ $\boxed{y^x}$ $\boxed{x^y}$

Grouping symbols:

$[()]$
DO FIRST

ex: $(3 \cdot 4) + 7 = 12 + 7 = 19$
 $3 \cdot (4 + 7) = 3 \cdot 11 = 33$

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Example 1: Reading and Writing Powers

EXPONENTIAL FORM	WORDS	MEANING
a. 10^1	ten to the first power	10
b. 4^2	four to the second power, or four <u>squared</u>	$4 \cdot 4$
c. 5^3	five to the third power, or five <u>cubed</u>	$5 \cdot 5 \cdot 5$
d. 7^6	seven to the sixth power	$7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$
e. x^n	x to the n th power	$x \cdot x \cdot x \cdot x \cdot \dots \cdot x$
.....		↖ and so on

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Example 2: Evaluating Powers

Evaluate the expression x^5 when $x = 2$.

$$\begin{aligned}
 &2^5 \\
 &= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \\
 &= 32
 \end{aligned}$$

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Example 3: Evaluating an Exponential Expression

1. Evaluate the expression $(a - b)^4$ when $a = 5$ and $b = 3$.

$$(5-3)^4 = 2^4 = 2 \cdot 2 \cdot 2 \cdot 2 \\ = 16$$

2. Evaluate the expression $(a^2) + (b^2)$ when $a = 7$ and $b = 4$.

$$(7^2) + (4^2) \\ = 49 + 16 \\ = 65$$

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Try It Evaluate the expression for the given value of the variable.

1. $3^n + n^3$ when $n = 5$

$$3^5 + 5^3 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 + 5 \cdot 5 \cdot 5 \\ = 243 + 125 \\ = 368$$

2. $(3c^4 - 18)^c$ when $c = 2$

$$(3(2)^4 - 18)^2 \\ = (3 \cdot 16 - 18)^2 \\ = (48 - 18)^2 \\ = (30)^2 \\ = 900$$

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1.3 Order of Operations

- Goals:**
- Use the order or operations to evaluate algebraic expressions.
 - Use a calculator to evaluate real-life expressions.

EQ: What does PEMDAS stand for?

*Paranthesis, Exponents, Mult. / Division,
Addition / Subtraction*

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Vocabulary

*** Order of operations:

P *E* *M* *D* *A* *S*
() ^{x Powers} x ÷ + -

Left to Right
→

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Example 1: Evaluating Without Grouping Symbols

Evaluate the expression $4x^2 + 3$ when $x = 3$.

$$\begin{aligned} & 4(3)^2 + 3 \\ & = 4(9) + 3 \\ & = 36 + 3 \\ & = \textcircled{39} \end{aligned}$$

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Example 2: Using the Left-to-Right Rule

Hint: Operations that have the same priority, such as multiplication and division or addition and subtraction, are performed using the *left-to-right rule*.

a. $28 - 7 - 4$

$$\begin{aligned} & \overbrace{28 - 7} - 4 \\ & 21 - 4 \\ & = \textcircled{17} \end{aligned}$$

b. $15 + 9 \div 3 - 4$

$$\begin{aligned} & 15 + \overbrace{9 \div 3} - 4 \\ & = 15 + 3 - 4 \\ & = 18 - 4 \\ & = \textcircled{14} \end{aligned}$$

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Example 3: Using a Fraction Bar

$$\frac{5 \cdot 3}{13 + 6^2 - 4} = \frac{15}{13 + 36 - 4} = \frac{15}{49 - 4}$$

$$= \frac{15 \div 15}{45 \div 15}$$

$$= \frac{1}{3}$$

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Summary

PEMDAS

() ^{p.} × ÷ + -

Homework

1.3 Order of Operations Worksheet

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