

# Algebra 1B Live Lesson

## U1L3 – Review of Solving Equations



# Agenda



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1. Review selected problems and topics from U1L3

2. Use the 2-column note system to take better notes in math class. Bring your math notebook and pen or pencil to each math LiveLesson class.

# 2-Column Notes Template



1. Announcements/To Do's
2. School-Wide Learner Outcomes
3. LL Objectives
4. Vocabulary words
5. Problems
6. Summary (End of class)

1. Write down important details.
2. What are you going to work on this week?
3. Write down your own questions.
4. Definitions (fill in as we go)
5. Steps to solving problems
6. 1 or 2 sentences about the LL class.

# Reminders and To – Do's



## Information

1. Complete 1 math lesson per day.
2. Check your WebMail every day
3. Be prepared to spend 4 - 6 hours per day on schoolwork.
4. Remind your Learning Coach to take daily attendance

## What to do

1. Go to your Planner in Connexus to find the math lesson for the day
2. Go to Connexus to find WebMail
3. Complete lessons for the day from your Planner. Do not get behind on lessons.
4. Have your Learning Coach log into Connexus daily.

# Reminders and To – Do's



## Information

5. Go to the Message Board first for information about our math class.

6. Contact Mr. Elizondo for math questions.

Remember: You need at least 2 phone calls with Mr. Elizondo per semester.

## What to do

6. Call (559) 549 - 3244 and leave a voicemail if call is not answered.

Make an appointment at:  
<https://elizondo.youcanbook.me>

Send a WebMail

# California Common Core State Standards

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- HSA-CED.A.1: Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
- HSA-REI.B.3: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- HSA-REI.A.1: Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
- HSN-Q.A.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- HSA-CED.A.4: Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

# U1L3 - Objectives



1. Solve equations using tables and mental math
2. Use tables, equations, and graphs to describe relationships
3. Inductive Reasoning
4. Solve one-step equations in one variable
5. Solve two-step equations in one variable
6. Solve multi-step equations with one variable
7. Rewriting literal equations

# U1L3 - Classifying Equations

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Is the equation *true, false or open*?

$$24 + 18 = 20 + 22$$

True, because both expressions equal 42

$$7 \cdot 8 = 54$$

False, because  $7 \cdot 8 = 56$ , not 54

$$2x - 14 = 50$$

Open, because there is a variable

$$3y + 6 = 5y - 8$$

Open, because there is a variable

$$16 - 7 = 4 + 5$$

True, because both expressions equal 9

$$32 \div 8 = 2 \cdot 3$$

False, because  $32 \div 8 = 4$  and  $2 \cdot 3 = 6$



## U1L3 - Using a Table, an Equation, and a Graph

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Both Carrie and Kim were born on October 25, but Kim was born 2 years before Carrie. How can you represent the relationship between Carrie's age and Kim's age in different ways?

**Step 1** Make a table.

Carrie's Age	1	2	3	4	5	6	7	8	9	10
Kim's Age	3	4	5	6	7	8	9	10	11	12

**Step 2** Write an equation.

Let  $x$  = Carrie's age. Let  $y$  = Kim's age. From the table, you can see that  $y$  is always 2 greater than  $x$ .

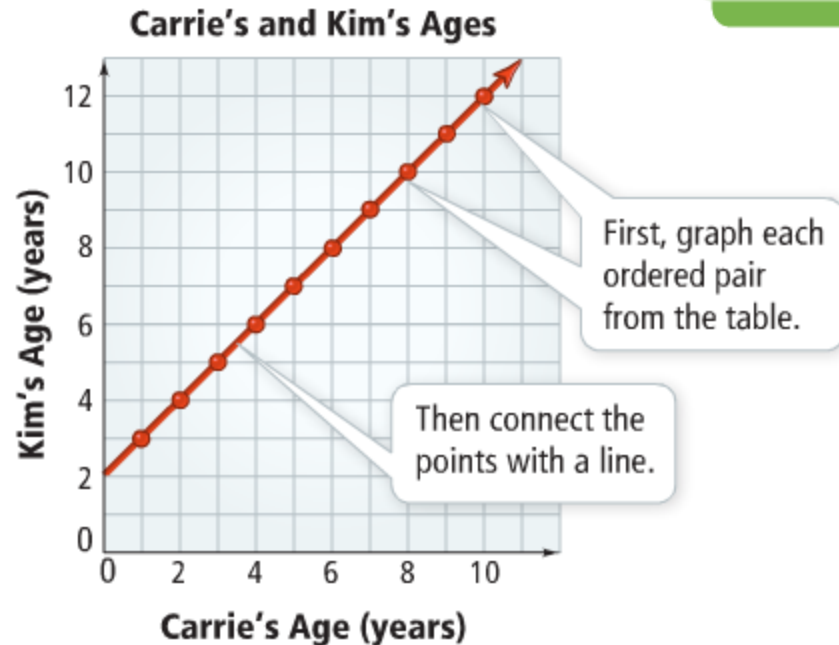
So  $y = x + 2$ .

# U1L3 - Using a Table, an Equation, and a Graph

Both Carrie and Kim were born on October 25, but Kim was born 2 years before Carrie. How can you represent the relationship between Carrie's age and Kim's age in different ways?

**Step 3** Draw a graph.

Carrie's and Kim's Ages (years)										
Carrie's Age	1	2	3	4	5	6	7	8	9	10
Kim's Age	3	4	5	6	7	8	9	10	11	12



# U1L3 - Patterns and Inductive Reasoning

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Peter is traveling on an airplane. The table shows the relationship between the number of hours and the number of miles he travels. Write an equation to represent the relationship. How many total miles will he have traveled after 6 hours?

Number of hours	Total number of miles
1	350
2	700
3	1050
4	1400

$$y = 350x$$

$$y = 350(6)$$

$$y = 2100 \text{ miles}$$

# U1L3 - Solving Equations

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- To solve an equation, you must **isolate** the variable. You do this by getting the variable with a coefficient of 1 on one side of the equation.
- You can isolate a variable using the properties of equality and inverse operations. An **inverse operation** undoes another operation.

# U1L3 - Solving an Equation Using Multiplication



What is the solution of  $\frac{x}{4} = -9$  ?

Objective: Isolate x

$$\frac{x}{4} = -9$$

Multiply each side by 4.  
(Multiplication undoes division.)

$$4 \cdot \frac{x}{4} = \frac{9}{1} \cdot 4$$

Simplify both sides of the equation.

$$x = -36$$

Check your work.

$$\frac{-36}{4} = -9$$

$$-9 = -9$$

# U1L3 – Solving 2-step equations

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- To solve two-step equations, you can use the properties of equality and inverse operations to form a series of simpler equivalent equations.
- You can use the properties of equality repeatedly to isolate the variable.

# U1L3 - Solving a Two-Step Equation

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What is the solution of  $\frac{x-7}{3} = -12$  ?

Objective: Isolate x

$$\frac{x-7}{3} = -12$$

Multiply both sides by 3.

$$3\left(\frac{x-7}{3}\right) = -12 \cdot 3$$

Simplify both sides of the equation.

$$x - 7 = -36$$

Add 7 to both sides.

$$x - 7 + 7 = -36 + 7$$

Simplify.

$$x = -29$$

# U1L3 - Solving Multi-Step Equations

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What is the solution of  $-3(3x - 2) = 8$  ?

Apply the distributive property

$$-3(3x) - (-3)(2) = 8$$

Simplify

$$-9x + 6 = 8$$

Subtract 6 from both sides

$$-9x + 6 - 6 = 8 - 6$$

Simplify

$$-9x = 2$$

Divide both sides by -9

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

Simplify

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



# U1L3 - Guidelines for Solving Equations

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- **Step 1:** Use Distributive Property to remove any grouping symbols (parentheses). Use Properties of Equality to clear Decimals and Fractions.
- **Step 2:** Combine Like Terms on each side of the equation.
- **Step 3:** Use properties of equality to get the variable terms on side of the equation and the constants (numbers) on the other.
- **Step 4:** Use the properties of equality to solve for the variable
- **Step 5:** Check your solution in the original equation.

## U1L3 - Solving Equations with Variables on Both Sides

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What is the solution of  $5x + 2 = 2x + 14$  ?

Objective: Isolate x to one side

$$5x + 2 = 2x + 14$$

Subtract 2x from both sides

$$5x - 2x + 2 = 2x - 2x + 14$$

Simplify

$$3x + 2 = 14$$

Subtract 2 from each side

$$3x + 2 - 2 = 14 - 2$$

Simplify

$$3x = 12$$

Divide both sides by 3

$$\frac{3x}{3} = \frac{12}{3}$$

Simplify

$$x = 4$$

# U1L3 - Rewriting Literal Equations

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Solve the following equation for x:  $y = \frac{x - v}{b}$

Objective: Isolate x to one side

$$y = \frac{x - v}{b}$$

Multiply both sides by b

$$b \cdot (y) = \left( \frac{x - v}{b} \right) \cdot b$$

Simplify

$$by = x - v$$

Add v to both sides

$$by + v = x - v + v$$

Simplify

$$by + v = x$$

Rewrite

$$x = by + v$$

# U1L3 - Formulas



Recall these formulas that you learned from previous years.

Formula Name	Formula	Definitions of Variables
Perimeter of a rectangle	$P = 2\ell + 2w$	$P$ = perimeter, $\ell$ = length, $w$ = width
Circumference of a circle	$C = 2\pi r$	$C$ = circumference, $r$ = radius
Area of a rectangle	$A = \ell w$	$A$ = area, $\ell$ = length, $w$ = width
Area of a triangle	$A = \frac{1}{2}bh$	$A$ = area, $b$ = base, $h$ = height
Area of a circle	$A = \pi r^2$	$A$ = area, $r$ = radius
Distance traveled	$d = rt$	$d$ = distance, $r$ = rate, $t$ = time
Temperature	$C = \frac{5}{9}(F - 32)$	$C$ = degrees Celsius, $F$ = degrees Fahrenheit

# Questions?

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- Check the Message Board first
- Send a WebMail
- You can also make an appointment at <https://elizondo.youcanbook.me>
- You can also call me at (559) 549-3244. If I'm not available to answer your call, please leave a voicemail with your full name and phone number.