MATH 9
Wolfe

Week 9 & 10 (Mar 30 – April 10)

There is NO REQUIRED OR RECOMMENED WORK during this period.

For those of you who are concerned about losing your gains during a long break, or who would like something to keep your math brain active, here are a few resources for you to try. Unfortunately, they are all online. If anyone is in need of work that can be done offline, I can probably email you some worksheets – please email me!

Review of Math 9, Unit 2c material:

Most of this is from Khan Academy. If you create a (free) account there, you can "enroll" in classes and do practice problems and quizzes and keep score. You can also use the site without registering. I have provided some links for particular topics:

These links are background material that you may have learned in Math 8:

If you are unclear about solving one-step algebra equations (like 4x = 12) or need a review to get your head back in the game, try any or all of the Khan Academy lesson on this:
https://www.khanacademy.org/math/pre-algebra/pre-algebra-equations-expressions

For a quick review, these videos go over the more important concepts:

Why we do the same thing to both sides of an equation:
https://www.khanacademy.org/math/pre-algebra/pre-algebra-equations-expressions/pre-algebra-solving-equations/v/why-we-do-the-same-thing-to-both-sides-simple-equations?modal=1

One-step equations with adding and subtracting:
https://www.khanacademy.org/math/pre-algebra/pre-algebra-equations-expressions/pre-algebra-one-step-add-sub-equationss/v/adding-and-subtracting-the-same-thing-from-both-sides?modal=1

One-step equations with multiplying and dividing:
https://www.khanacademy.org/math/pre-algebra/pre-algebra-equations-expressions/pre-algebra-one-step-mult-div-equations/v/one-step-multiplication-and-division-equations-with-fractions?modal=1

Word problems using one-step equations:
https://www.khanacademy.org/math/pre-algebra/pre-algebra-equations-expressions/pre-algebra-equation-word-problems/v/constructing-basic-equations-examples?modal=1

The following is a comprehensive review of everything we have done in Unit 2c to date:

2c.1

Intro to two-step equations
https://www.khanacademy.org/math/pre-algebra/pre-algebra-equations-expressions/pre-algebra-2-step-equations-intro/v/why-we-do-the-same-thing-to-both-sides-two-step-equations?modal=1

Worked example: two-step equations
https://www.khanacademy.org/math/pre-algebra/pre-algebra-equations-expressions/pre-algebra-2-step-equations-intro/v/solving-equations-1?modal=1

Summary:

A **two-step equation** can be solved in two steps using any of the four basic operations: addition, subtraction, multiplication, and division.

We *solve* equations by working order of operations backwards with the goal of getting the variable all by itself on one side of the equals sign. First look for any addition or subtraction, then look for any multiplication or division.

Example:

$5x - 4 = 31$	Equation as given
$+4 \quad +4$	Use the Addition Property of Equality to add 4 to both sides
$5x \quad = 35$	
$/5 \quad \quad /5$	Use the Division Property of Equality to divide both sides by 5
$x \quad = 7$	Answer

2c.2

Combining like terms
https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-expressions-and-variables/cc-6th-combining-like-terms/v/combining-like-terms-1

Solving equations with variables on both sides of the equation:
https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:solve-equations-inequalities/x2f8bb11595b61c86:linear-equations-variables-both-sides/v/equations-3

https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:solve-equations-inequalities/x2f8bb11595b61c86:linear-equations-variables-both-sides/v/solving-equations-2

Summary:

When solving equations with variables on both sides of the equals sign, our first goal is to get all the variable terms on one side and everything else on the other. That turns it into a problem we already know how to solve, so from there we can solve it!

4x + 8	= 2x – 6	
-2x	-2x	Take away 2x from both sides. (You could also take away 4x from both sides, but this way we avoid unnecessary negative numbers.)
2x + 8	= -6	Don't forget that minus sign in front of the 6!
-8	-8	
2x	= -14	Now this is just a one-step algebra problem, so solve it!
/2	/2	
x	= -7	This is a good candidate for checking by plugging it in to the original equation before you circle your answer.

2c.3

Distributive property explained using numbers
https://www.khanacademy.org/math/pre-algebra/pre-algebra-arith-prop/pre-algebra-ditributive-property/v/the-distributive-property

Some distributive property examples with variables
https://www.youtube.com/watch?v=wPXmM194RY0

Summary:

When you see a set of brackets in an algebra problem, one of the first things you want to do is get rid of it. This can usually be done by **distributing** what is outside the brackets through everything inside. Then you will have a familiar looking algebra problem that you already know how to solve.

3 (5x – 7) = 9

3*5x – 3*7 = 9	Distribute by multiplying each term in the brackets by 3.
15x – 21 = 9	Simplify. You might not have to do the middle step above if you can easily multiply in your head.
+ 21 +21	Now you have a two-step algebra problem, so start by adding.
15x = 30	

/15   /15   Then divide

x   = 2   Now it's solved! Plug it back in to the original equation to check.

$$3 (5*2 – 7) = 9 ?$$
$$3(10-7) = 9 ?$$
$$3*3 = 9 \quad \text{Yes! Our answer is correct.}$$

Enrichment:

The following links will take you to general stuff of mathematical interest (not part of Math 9.)

University of Waterloo Problem of the Week:
https://www.cemc.uwaterloo.ca/resources/potw.php

I recommend doing EVERY grade level up through your own. The ¾ problems are meant to be done over the course of the week in a math class, so doing them on your own is still a good math workout!

https://student.desmos.com/activitybuilder/student/5e8614288fdec72e0d87b16b

https://student.desmos.com/?prepopulateCode=4fcn5f

https://student.desmos.com/?prepopulateCode=aqmx5z