

Summer Assignment
College Preparatory and Honors Geometry
Summer 2014

Dear Algebra 1b, College Prep and Honors Geometry students,

By now you are probably familiar with the traditional ASFG math summer packet – a bunch of review problems that are downloaded from the school webpage, printed out on your printer and then tediously completed by-hand. You are expected to carry it out completely and correctly on your own. You are given no reference materials except for a list of websites that offer math tutorials. It is up to you to find the tutorial(s) that you need and can understand. Of course your Algebra I (or Honors Algebra I) notebook would come in handy, but you probably threw it away when you cleaned out your locker.

Since you are a 1:1 laptop computer generation, your summer program will be different. You will utilize an online independent study and assessment program in mathematics based on the *Khan Academy*. Like all summer study programs, the goal of this program is to help you practice the concepts learned in Algebra I (or Honors Algebra I) so that you are prepared to study math at the next level this fall. The content and philosophy of this summer packet is consistent with the math department goals and will enable you to:

- (1) value mathematics,
- (2) become confident in your ability to do mathematics,
- (3) become mathematical problem solvers,
- (4) communicate mathematically, and
- (5) reason mathematically.

History of the *Khan Academy*:

The *Khan Academy* (<http://www.khanacademy.org>) is a free virtual study center designed to help people of all ages learn a variety of subjects using a series of focused videos and assessments. It was created in 2006 by Salman “Sal” Khan, a bright young man with three degrees from MIT and a Harvard MBA. He began his professional career as a hedge fund manager, but spent a fair amount of his spare time tutoring his cousins in math and science over the Internet. Eventually this led to the uploading of his instructional videos to *YouTube* where their popularity exploded as learners outside Khan’s family began viewing them. Answering to a higher calling, he quit his job in finance, began the *Khan Academy* as a non-profit organization, and starting making more instructional videos out of his home in Mountain View, California. Currently YouTube hosts over 4,100 of Khan’s videos.

The beauty of Khan’s system is that you can start at your own level, progress at your own pace and receive immediate feedback after responding to a question. If the feedback is negative (and you desire a better foundation of the key concepts), you can follow the link from the troubling question to the appropriate instructional video to put you back on track. To keep learners motivated, “gaming tricks” are employed. For example, after a learner answers a series of questions correctly on a consistent basis, he or she is considered “proficient” in that particular topic and other slightly more advanced topics are suggested

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for the student to tackle next. An elaborate “medal” system is also available to reward student performance and persistence.

You have already received a brief orientation to the Khan Academy webpage in your 8th grade math class and have selected an ASFG math teacher as your “coach”. **Now all that is left for you to do is earn the following five (or six for Honors Geometry) categories this summer:**

- a. Fractions**
- b. Rates and ratios**
- c. Exponents, radicals and scientific notation**
- d. Linear equations**
- e. Graphing points, equations and inequalities.**
- f. Quadratics (Honors Geometry students only)**

If you are currently performing at grade level, we anticipate that this will take you no more than a total of ten (10) hours.

There will be a very brief review of the summer assignment topics during the first week of class and then you will be formally evaluated on your knowledge of these topics. For college preparatory students, this exam will not count towards your grade. Still, if you are not able to pass the exam, then you will be obliged to spend your 2nd recesses at “Homework Club” practicing Algebra I material until you pass a re-take examination. For honors students, this exam will count as 10% of your first quarter grade. The prepared Honors Geometry student should easily score over 90% on such an exam.

If you have any questions, please email samantha.johnson@asfg.edu.mx or rhett.butler@asfg.edu.mx

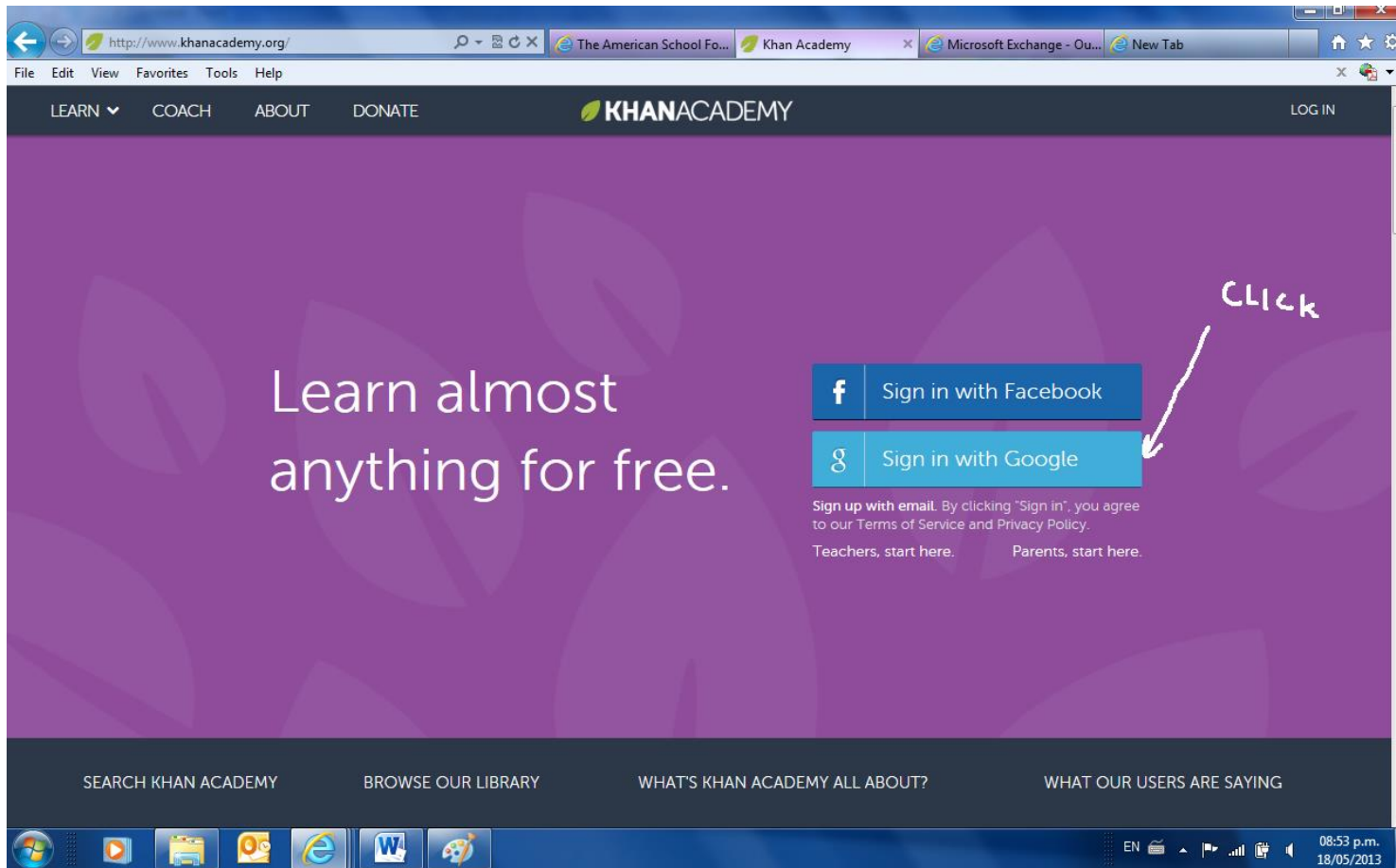
Enjoy your summer and do your best!

Sincerely,

The ASFG Math Department

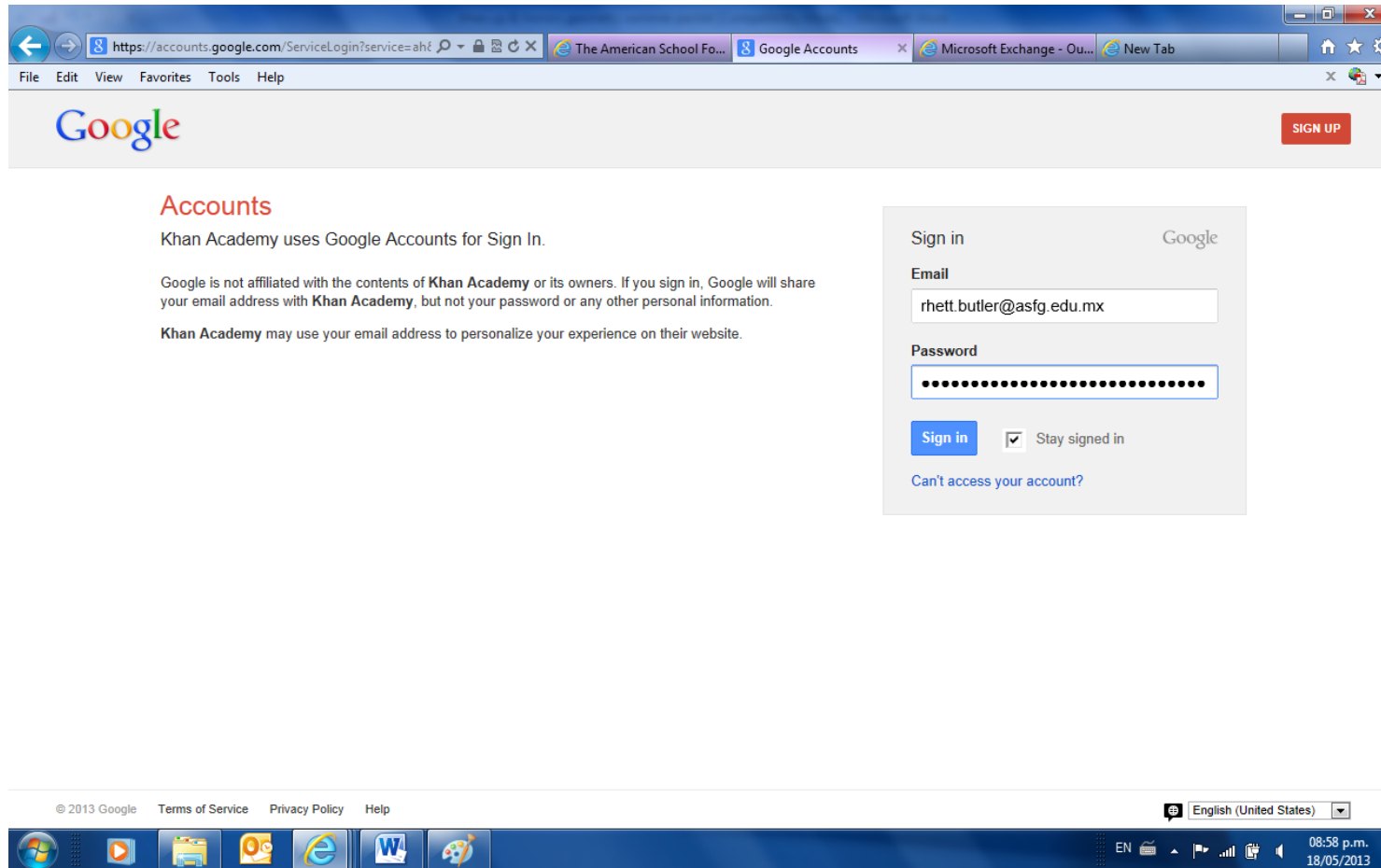
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1. Go to <http://www.khanacademy.org/> and click on the “Sign in with Google” button.



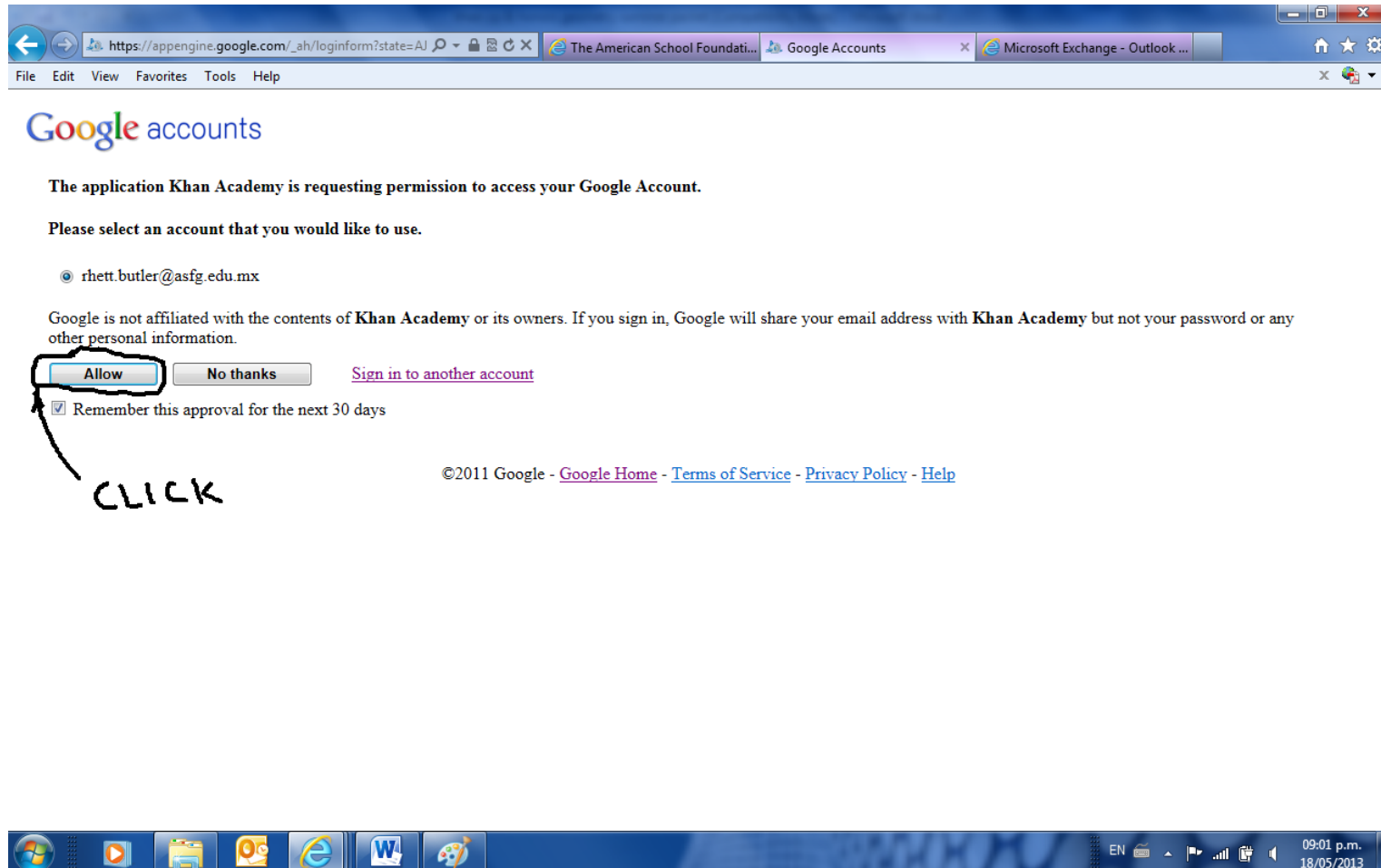
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2. Enter your ASFG Google account username and password on the form provided.



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3. Click the “Allow” button.



The screenshot shows a web browser window with the URL https://appengine.google.com/_ah/loginform?state=AJ. The page title is "Google accounts". The main heading reads: "The application Khan Academy is requesting permission to access your Google Account." Below this, it says: "Please select an account that you would like to use." A single account is listed: "rhett.butler@asfg.edu.mx". A disclaimer states: "Google is not affiliated with the contents of Khan Academy or its owners. If you sign in, Google will share your email address with Khan Academy but not your password or any other personal information." At the bottom, there are three options: "Allow", "No thanks", and "Sign in to another account". The "Allow" button is circled in black, and a hand-drawn arrow points to it with the word "CLICK" written in black. A checkbox labeled "Remember this approval for the next 30 days" is checked. The footer contains copyright information: "©2011 Google - [Google Home](#) - [Terms of Service](#) - [Privacy Policy](#) - [Help](#)". The Windows taskbar at the bottom shows the date and time as 09:01 p.m. on 18/05/2013.

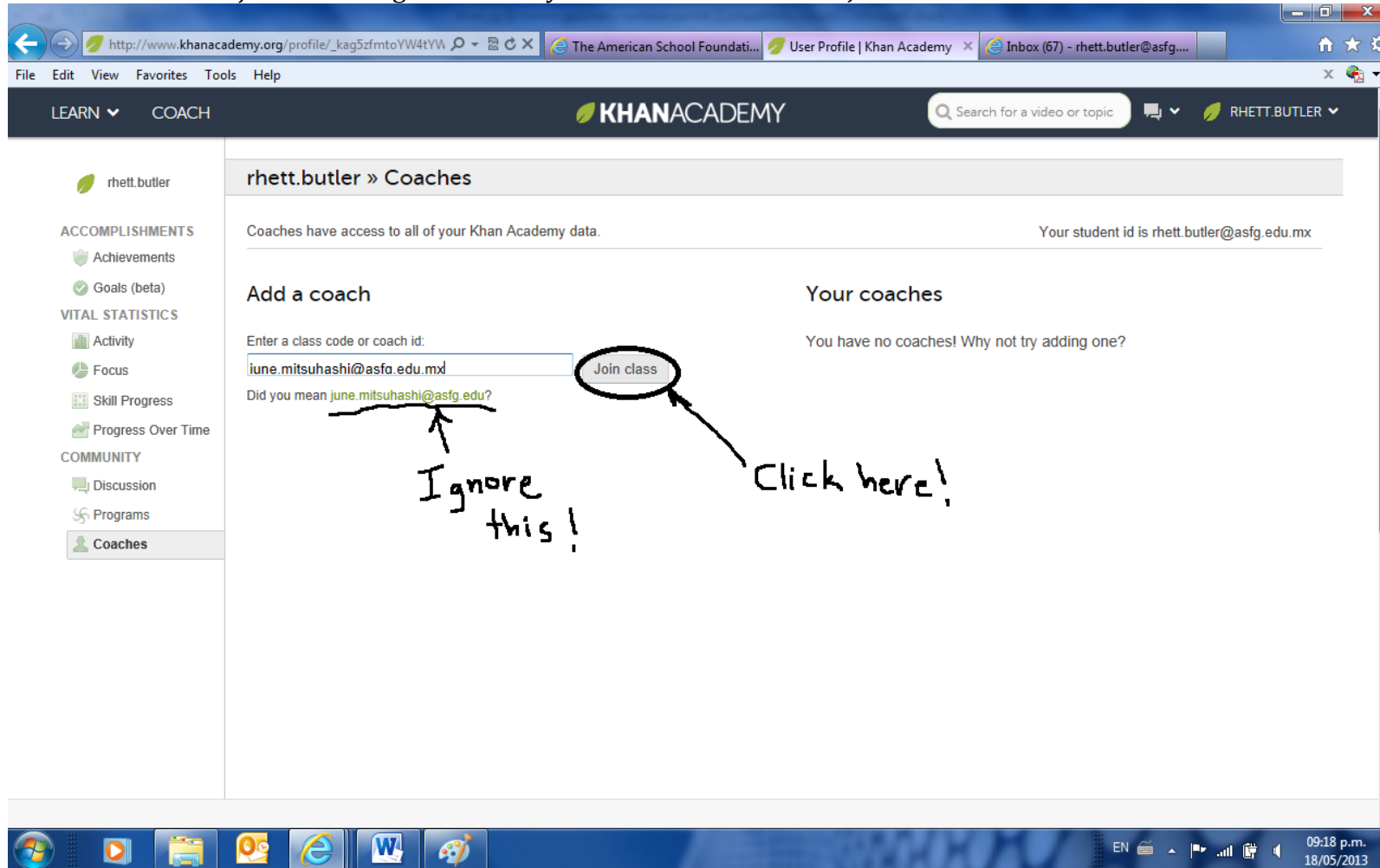
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4. Click the "Coaches" button.

The screenshot shows a web browser window displaying the Khan Academy profile for 'rhett.butler'. The browser's address bar shows the URL 'http://www.khanacademy.org/profile/_kag5zfmoYW4tYW...'. The page header includes the Khan Academy logo, a search bar, and the user's name 'RHETT.BUTLER'. The left sidebar contains navigation options: LEARN, COACH, ACCOMPLISHMENTS (Achievements, Goals), VITAL STATISTICS (Activity, Focus, Skill Progress, Progress Over Time), and COMMUNITY (Discussion, Programs, Coaches). A handwritten black circle and arrow labeled 'CLICK' points to the 'Coaches' button. The main content area shows the user's profile with a green leaf icon, the name 'rhett.butler', and the text 'Joined 12 months ago'. Below this are statistics: 24,557 Energy Points and 16/414 out of 0/4140 Energy Points. A row of five shield icons is visible. A 'Profile is private' lock icon is present. The 'Suggested Activity' section lists: 'Order of operations' (Rock out), 'Recognizing fractions 0.5' (Rock out), 'Radio Interview: Sal on AirTalk talking abo...' (Watch on), 'Math Mechanics of Thai Banking Crisis' (Watch on), and 'Financial Crisis in Thailand Caused by Spe...' (Watch on). The 'Featured Programs' section contains the text: 'Show off your creativity! Click here to choose a few programs to feature on your profile.' The Windows taskbar at the bottom shows the time as 09:07 p.m. on 18/05/2013.

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5. Enter "samantha.johnson@asfg.edu.mx" as your coach and click the "Join class" button.



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6. Make sure your coach is verified.

Add a coach

Enter a class code or coach id:

Join class

Did you mean [june.mitsuhashi@astg.edu](#)?

Your coaches

(june.mitsuhashi@astg.edu mx)

Remove

Coach
verified

dashboard



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7. Under the “Learn” tab, go to Math, then Arithmetic and Pre-Algebra

The screenshot shows the Khan Academy website interface. The browser's address bar displays <https://www.khanacademy.org/mission/math>. The navigation bar includes 'KHANACADEMY', 'LEARN', and 'COACH'. A search bar contains the text 'I want to learn...'. The user's profile is identified as 'SSJOHNSO10' with 30,167 energy points. The left sidebar lists 'Dashboard', 'ACCOMPLISHMENTS' (Badges, Progress), and 'COMMUNITY' (Discussion, Programs, Coaches). The main navigation menu is open, showing 'Math' selected. The 'Math' menu lists various topics, with 'Arithmetic and pre-algebra' highlighted. Below the menu, the page content shows a practice problem: 'Fractional bases raised to fractional exponents with non-1 numerators.' with a 'PRACTICE' button. Another practice problem is visible: 'Decimals on the number line 2' with a 'PRACTICE' button. The 'MISSION PROGRESS' section on the right shows a grid representing progress, with '1% mastered' indicated at the bottom. The browser's taskbar at the bottom shows various application icons.

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8. You will see a menu like this.

The screenshot shows a web browser window with the URL <https://www.khanacademy.org/math/arithmetric>. The page features a dark navigation bar with the Khan Academy logo, 'LEARN' and 'COACH' buttons, and a search bar. Below the navigation bar, the main content area is divided into two columns. The left column has a teal background with the text 'Arithmetic and pre-algebra' and a brief description: 'The first math topic. Start here if you want to learn the basics (or just want to make sure you know these topics). After this, you should be ready for algebra. This topic includes videos from the former developmental math playlists.' Below this is a 'Community Questions' link. The right column contains a list of eight math topics, each with a circular icon, a title, a short description, and a progress indicator (a square icon followed by a number and a star icon).

Topic	Progress
Addition and subtraction	18 / 8
Multiplication and division	42 / 15
Factors and multiples	20 / 10
Negative numbers and absolute value	22 / 13
Decimals	80 / 39
Fractions	100 / 47
Ratios, proportions, units and rates	33 / 5
Applying mathematical reasoning	32 / 15

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9. From this menu, click on the following topics and complete the assignments listed:
Hint: the assignments have stars next to them. Follow steps 10 and 11 to see how.

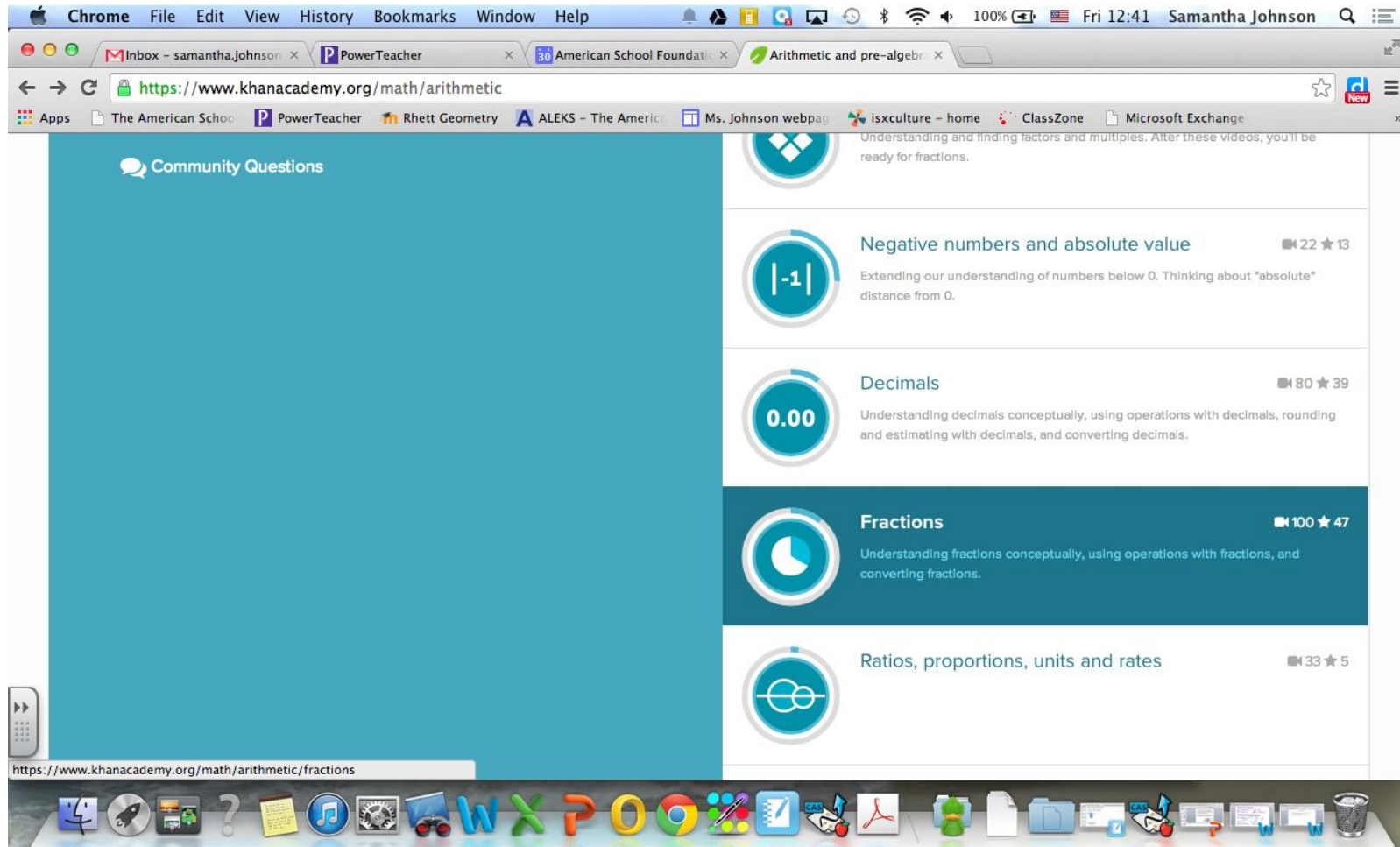
- FRACTIONS
 - *"Simplifying fractions"*
 - *"Comparing fractions 2"*
 - *"Adding and subtracting fractions"*
 - *"Adding and subtracting mixed numbers 1"*
 - *"Multiplying mixed numbers"*

- RATIOS, PROPORTIONS, UNITS, AND RATES
 - *"Ratio word problems"*
 - *"Rate problems 2"*
 - *"Units"*

- EXPONENTS, RADICALS, AND SCIENTIFIC NOTATION
 - *"Positive and zero exponents of integers"*
 - *"Adding and subtracting radicals"*
 - *"Cube roots"*
 - *"Scientific notation"*
 - *"Computing in scientific notation"*

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10. For example, first click on “Fractions”



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11. Then, scroll down and click on “*simplifying fractions*”

The screenshot shows a Chrome browser window with the following elements:

- Address Bar:** <https://www.khanacademy.org/math/arithmetic/fractions>
- Page Title:** Fractions | Arithmetic and Fractions
- Page Content:**
 - Do you want $\frac{2}{3}$ or $\frac{4}{6}$ of this pizza? Doesn't matter because they are both the same fraction. This tutorial will help us explore this idea by really visualizing what equivalent fractions represent.
 - Equivalent fractions and simplified form**

There are literally infinite ways to represent any fraction (or number for that matter). Don't believe us? Let's take $\frac{1}{3}$, $\frac{2}{6}$, $\frac{3}{9}$, $\frac{4}{12}$... $\frac{10001}{30003}$ are all equivalent fractions (and we could keep going)! If you know the basics of what a fraction is, this is a great tutorial for recognizing when fractions are equivalent and then simplifying them as much as possible!
- Table of Contents:**
 - Equivalent fraction word problem example
 - Equivalent fraction word problem example 2
 - Equivalent fraction word problem example 3
 - Visualizing equivalent fractions
 - Fractions cut and copy 1 exercise
 - Fractions cut and copy 1
 - Fractions in lowest terms
 - Simplifying fractions** (highlighted)
 - Equivalent fractions
 - Equivalent fractions example
 - Finding common denominators
 - Equivalent fractions

The address bar at the bottom of the browser shows the full URL: https://www.khanacademy.org/math/arithmetic/fractions/Equivalent_fractions/e/simplifying_fractions

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12. Once you have completed the three categories in “Arithmetic and Pre-Algebra”, go back to the “Learn” tab, go to math, and now click “Algebra 1”

The screenshot shows a web browser window with the Khan Academy website. The address bar displays <https://www.khanacademy.org/math/arithmet/fractions>. The navigation bar includes 'KHANACADEMY', 'LEARN', and 'COACH'. A search bar contains the text 'I want to learn...'. The user's profile is identified as 'SSJOHNSO10'. A dropdown menu is open under 'LEARN', showing a list of subjects: 'Math', 'Science', 'Economics and finance', 'Arts and humanities', 'Computing', 'Test prep', 'Partner content', 'Talks and interviews', 'Coach and classroom resources', and 'Browse all'. The 'Math' category is selected, and a sub-menu is displayed with the following items: 'Early math', '3rd grade (U.S.)', '4th grade (U.S.)', '5th grade (U.S.)', '6th grade (U.S.)', '7th grade (U.S.)', '8th grade (U.S.)', 'Arithmetic and pre-algebra', 'Algebra I', 'Geometry', 'Algebra II', 'Trigonometry', 'Probability and statistics', 'Precalculus', 'Differential calculus', 'Integral calculus', 'Multivariable calculus', 'Differential equations', 'Linear algebra', 'Applied math', 'Recreational math', and 'Math contests'. The 'Algebra I' item is highlighted. Below the navigation menu, a video player is visible, showing a video titled 'new ways. You'll see that everything doesn't have to be a whole. You'll be able to slice and dice and then put it all back together (and if you order now, we'll throw in a spatula warmer for no extra charge)'. The video player includes a progress bar and a list of video titles: 'Numerator and denominator of a fraction', 'Identifying numerators and denominators', and 'Plotting basic fractions on the number line'. The browser's taskbar at the bottom shows various application icons, including a music player, a file explorer, and a web browser.

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13. From this menu, click on the following topics and complete the assignments listed:

- LINEAR EQUATIONS:
 - *"Constructing and solving equations in the real world 1"*
 - *"2-Step equations"*
 - *"Equations with variables on both sides"*
 - *"Solving equations in terms of a variable"*
 - *"Multi-step equations with distribution"*

- GRAPHING AND ANALYZING LINEAR FUNCTIONS:
 - *"Points on the coordinate plane"*
 - *"Graphing linear equations"*
 - *"Graphing and solving linear inequalities"*

- EXPONENT EXPRESSIONS AND EQUATIONS:
 - *"Evaluating expressions with exponents"*
 - *"Simplifying rational expressions with exponent properties"*
 - *"Radical equations"*

- RATIOS AND PROPORTIONS:
 - *"Proportions 1"*
 - *"Constructing proportions to solve application problems"*
 - *"Writing proportions"*

- QUADRATIC EQUATIONS: Honors Geometry Only
 - *"Solving quadratics by taking the square root"*
 - *"Solving quadratics by factoring"*
 - *"Solving quadratics by completing the square 1"*
 - *"Graphing parabolas in standard form"*

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14. The best study routine during the summer months is to constantly review topics and do a few exercises each day. Do not attempt to do the entire program the day before school starts.
15. You should not use a calculator to do these exercises unless the instructions explicitly permit you to do so.
16. GOOD LUCK! We look forward to meeting you in the fall.