Dear Parents and Guardians,

As summer approaches, we want to continue to support student learning. Throughout the summer break, we recommend that students practice previously learned math skills and get ready for high school math. We listed some activities and math sites that your child can “Practice through Play”. To get positive results, we recommend that all students practice math for at least 45 minutes a day for 30 days.

By the end of Grade 8, a student is expected to

- formulate and reason about expressions and equations, including modeling an association in bivariate data with a linear equation
- solve linear equations and systems of linear equations
- grasp the concept of a function and using functions to describe quantitative relationships
- analyze two- and three-dimensional space and figures using distance, angle, similarity, and congruence
- understand and apply the Pythagorean Theorem
- solve problems involving volumes of cones, cylinders, and spheres

Games (interactive web based)

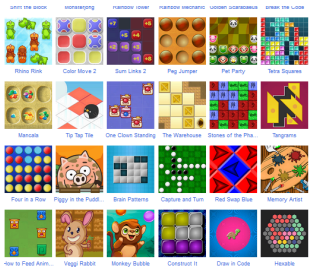
1. **GregTangMath.com**

    - **Expresso:** Each game consists of 4 expressions. For each expression, the objective is to pick the correct operators as quickly as possible. There are 4 levels of difficulty designed for all players.

    - **Satis Fraction**: Identify, simplify, compare, and compute with fractions.

- **Minus Mania**: 6 different levels of practice involving integers and coordinate planes.

2. **Math Playground** : This website provides math skill games, logic games, math arcade, math videos and story math. You may choose by grade level.
3.

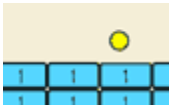
Pre-Algebra Game Algebra Game Candy Challenge Game Candy Challenge Junior Deep Sea Math Mystery Far Out Functions Four Wheel Fracas Jumping Aliens Martian Hoverboards Model Algebra Musical Mix-up Save the Zogs Shuttle Mission Jr Shuttle Mission Pro Shuttle Mission Workshop Sweet Shop Algebra Swimming Otters Weigh the Wangdoodles X Detectives	Transformation Games Block Turns Rotation Painter Shape Mods Transformations Reflect and Rotate Reflection Painter	Logic Games (all HTML5)  Mancala Hex Box Capture and Tile (over 100 games to choose from.

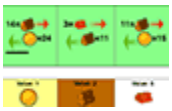
4. **Nrich Interactive Games and Puzzles for age 11-14 and Interactive Games and Puzzles for 14-16 year olds.**

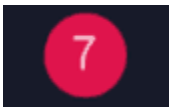
The activities all include an online interactivity where you can test your ideas and make discoveries. The stars represent the challenge level, with three stars indicating the most challenging activities.

You may also wish to explore Interactive Games and Puzzles for 7-11 year olds

5. **Applied Math Games by Cool Math Game**


Idle Breakout: Build the ultimate brick-busting machine!


Tradecraft: Cha-ching! Make trades to turn wood into gold.



Rullo: Remove the right numbers from the grid.


Pre-Civilization Bronze Age: Grow your civilization.


Learn to Fly Idle: Launch snowballs. Destroy icy structures. Get cash.

Clicker Heroes: Defeat monsters and level up your heroes.

Game (Not web based)

1. **Race For 20**: This game works for all ages, from young children who can count to 20 to adults who haven't yet thought about the game. Young children benefit from the game because it gives them experience with practicing counting, taking turns when playing a game, learning how to win (or lose) gracefully, and enjoying the interaction with a sibling or parent. All good.

How to Play: Decide who goes first. Then take turns. When it's your turn, count 1 or 2 numbers. (The first player says "1" or "1, 2." The second player continues the count with 1 or 2 numbers.) The winner is the play who says 20.

After a few rounds, players can engage with the challenge of figuring out a winning strategy for *Race for 20* and playing variations on the game.
Ah, there are so many ways to vary the game. Here are some, but kids can think of others.

Variations:

Race for 21
Same rules with one tweak: The winner lands on 21. This is perfect for kids who have cracked the strategy for winning *Race for 20*.

Race for 20, Count 3
For this version, instead of being allowed to count 1 or 2 numbers, you can count 1, 2, or 3 numbers. So, the first player can say, "1" or "1, 2" or "1, 2, 3." Then the next player continues by counting the next 1, 2, or 3 numbers.

Race for Whatever, Count Any Number
Have kids decide the rules. Here's a prompt where they can enter a number for the landing number and for how many to count on each turn: *Race for* ___, *Count* ___ *Numbers*.

2. **PIG**:Pig is a game for 2 to 6 players. Players roll the dice and collect points. You can go as long as you want, but roll the wrong number and you lose all your points from that turn! Download PDF

How to Play: Players take turns rolling a die as many times as they like. If a roll is a 2, 3, 4, 5, or 6, the player adds that many points to their score for the turn. A player may choose to end their turn at any time and "bank" their points. If a player rolls a 1, they lose all their unbanked points and their turn is over.
Beginner's Game: The first player to score 50 or more points wins.
Advanced Game: The first player to score 100 or more points wins.

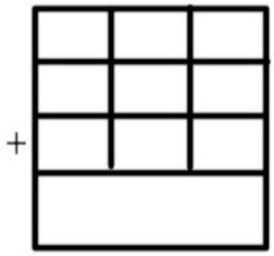
Variations

Big Pig
This variation is played with two dice. It is like Pig: on your turn you can roll or hold. If you roll a 1, you lose your points for that turn and your turn ends.

However, you roll a pair of 1s, add 25 to your turn total. If other doubles are rolled, the player adds twice the value of the dice to the turn total. Play to 150.

Odd Pig Out
Roll two dice and multiply them. You can keep rolling as long as the product is even. If the product is odd, you lose all unbanked points for that turn, and pass the dice. Play to 500.

3. **Don't Break the Bank**



(game board)

This game can be played with any number of players. Each player needs a game board. Players take turns rolling the dice. Whatever number it lands on, everyone enters it in one of the nine spots on his/her board. After nine turns, the board becomes an addition problem with three 3-digit numbers to add together. The winner is the player having the highest sum without going over 1000.

4. **Penny, Nickel, Dime**

Penny	Nickel	Dime

(Game Board)

This game can be played with any number of players. Each player needs a game board. Players take turns rolling the dice. Whatever number it lands on, each player can choose to take that many pennies, that many nickels, or that many dimes. Players can just record the numbers in a T-chart like the one to the right. Repeat for six times total, with each player choosing whether each

number goes in the dimes or pennies column as you go. The winner is the person who comes as close as possible to reaching $1 without going over.

5. **Oh No! 99!**: The card game gives practice with mentally adding one- and two-digit numbers and with adding and subtracting 10 from two-digit numbers. The game encourages strategic thinking as students decide which cards to play and which to keep.

   How to Play: One player shuffles the cards and deals 4 cards to each player. The undealt cards remain in a stack, face down. Players take turns playing one card at a time, adding or subtracting the value of their card to or from their jointly accumulating score. Each time a player plays a card, he or she must replace it with the top card on the face-down stack. Play continues until one player forces his/her partner to go over 99.

   Aces: add 1
   Jacks: subtract 10
   Queens: wild card that can represent any card in the deck
   Kings: add zero
   All others (2-10): add their face value

Understanding Common Core Mathematics (articles written for adults): Parents are partners with teachers in teaching children mathematics. Your understanding and support of Common Core Math which advocates a balance between conceptual understanding and procedural fluency are crucial to your child's mathematical development. The following articles are a compendium from YouCubed.com parent resource, a Stanford University affiliated website designed to inspire ALL Students with Open, Creative Mindset Mathematics. You may use Google Chrome Translate Add-On to access these articles in all languages.

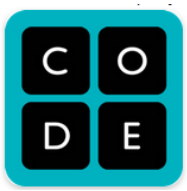
1. Why We Need Common Core Math
2. How Math Should be Taught
3. Advice for Parents: Helping Children with Maths
4. Why a Math Revolution?

5. Parents' Beliefs about Math Change Their Children's Achievement
6. 6 Ways to Support your Child's Mathematical Development
7. The Stereotypes About Math That Hold Americans Back
8. Learn math without fear, Stanford expert says
9. Memorizers are the lowest achievers and other Common Core math…
10. 100 Percent Is Overrated

Websites: Supplemental Math Online Program accessible through AUSD PowerSchool Clever)

1. iReady
   All AUSD students can use the same iReady account until August 2, 2020. Your child can log in to his/her current account to continue personalized math learning in the summer.

2. Code.org: Learning computer science at home.



3. Khan Academy by Grades

Websites: Free online access

1. **ST Math** (Spatial Temporal Math for PreK-8) is a web-based visual instructional program that leads to deep conceptual understanding of math developed by Mind Institute.ST Math is available at no cost to parents, schools, and districts affected by closures. **FREE through June 30, 2020.**

2. **Prodigy** is a fun math practice for grades 1-8. Content adapts to each player. Every major math topic - more than 1500 skills are embedded into the game.