Bridging the Gap

Supporting Students Through Change

Thursday, April 23 | 6-7:30 pm

FEDERAL WAY PUBLIC SCHOOLS

FAMILY ACADEMY

Bridging the Gap

Looking Ahead: Making the most of Math Transitions from Middle School to High School

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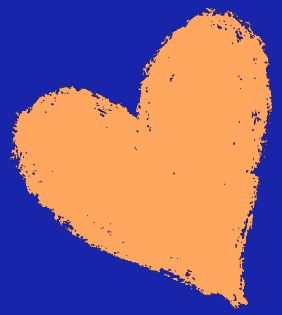
We're glad you're here!



Looking Ahead: Making the most of Math Transitions from Middle School to High School

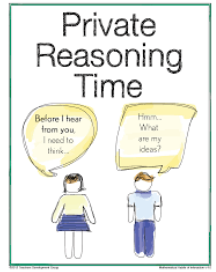
Kimberly Tarnowieckyi

- Secondary Math Facilitator, 9-12 Math

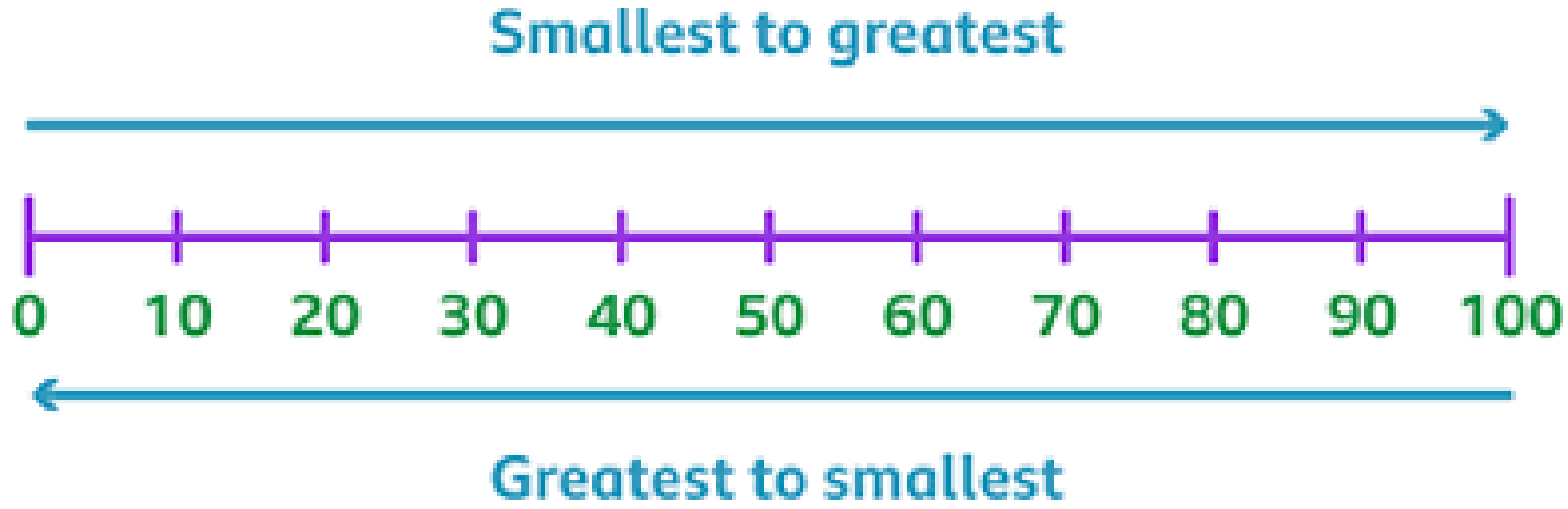
What is you estimate …

How many Legos were used to make the pilot?

Write on a post it but don't show anyone!



Line up from smallest to greatest




LEGO
LEGO
34 230
Bricks
76
Kg
170
Hours
Designed and hand built by The LEGO Group.

one

THE EARLY YEARS

Building the Foundation

two

WHOLE CHILD

Thriving, Confident, Responsible Individuals

three

ACTIVE LEARNERS

Engaged, Empowered Critical Thinkers

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four

CONTENT-AREA COMPETENCE

Mastery of All Subjects

five

PERSISTENCE TO GRADUATION

High School Graduation Through Successful Transitions

Bridging the Gap

- Creating a Math-Positive Home Environment
- Establishing Productive Study Routines and Spaces
- Maintaining Open Communication with Teachers
- Support Social-Emotional Wellness During Transition
- Resources for Summer
- Algebra 1 and Geometry Curriculum Resources

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Creating a Math-Positive Home Environment

- **Share** your Math Identity
- **Share** how you continue to learn and grow
- **Share** problem solving skills you use
- **Share** when together doing math and problem solving

- **Encourage** students they can learn math through
  - Effort
  - Practice
  - Curiosity
  - Questions

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Establishing Productive Study Routines and Spaced

- Consistent homework times

- Distraction – free study space with supplies

  Paper, pencils/pens, graph paper, ruler, calculators

- Encourage use of school planner

  Check in regularly to see what they have written down and what is coming up

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Maintaining Open Communication with Teachers

- Attend Back-to School nights and SLCs
- Establish communication with math teachers sharing your preference for communication
- Don’t wait until grades drop to reach out – proactive communication helps identify small issues before they become major problems.
- Learn about when Tutoring or Extra Help Sessions are available, and learn what additional supports are available online

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Supporting Social-Emotional Wellness During Transition

Families can normalize struggle as part of learning, celebrate effort and growth rather than just grades, and help students develop a growth mindset about their mathematical abilities.

Encourage students to ask questions in class, attend tutoring, and form study groups with classmates—these habits build both academic skills and social connections that ease the high school transition.

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Summer Math

Launchpad for Learning

Carnegie Learning MATHia

- MATHia
- Customize your Avatar
- Turn on Text to Speech
- Turn on Translate
- Getting Started
- Readiness Modules
  - Algebra
  - Geometry

Available June 4 – July 24

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After School Support and Tutoring

- DHS – Gater Aid
- FWHS – Eagle Vision
- TAF – After School Tutoring
- TJHS – Raider Advantage
- TBHS – Titan Quest

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How to support Algebra, Geometry, Algebra 2

How to support your student as they learn about

Quantities and Relationships

Mathematics is a connected set of ideas, and your student knows a lot. Encourage them to use the mathematics they already know when encountering new concepts in this topic.

Where are we?

MODULE 1 Searching for Patterns — **TOPIC 1** Quantities and Relationships — TOPIC 2 Sequences — TOPIC 3 Linear Regressions

In this MATHbook topic, students explore a variety of different functions. The intent is merely to introduce these new functions, providing an overview but not a deep understanding. The topic helps students recognize that function families have different key characteristics. Later in this course, they will formalize their understanding of the defining characteristics of each type of function.

Where have we been?

In previous grades, students defined a function and used linear functions to model the relationship between two quantities. They have written linear functions in slope-intercept form and can identify the slope and *y*-intercept in the equation. Students have also characterized graphs as functions using the terms *increasing, decreasing, constant, discrete, continuous, linear,* and *nonlinear*.

Where are we going?

The study of functions is a primary focus of high school mathematics. This topic builds the foundation for future, more in-depth study by familiarizing students with the concept of a function. They will continue to use formal function notation throughout this course and in higher-level math courses.

MATHia

Encourage your students to work through the sequence of MATHia assigned to them. These workspaces deepen their understanding and provide practice with the concepts of ***Quantities and Relationships***.

Understanding Quantities and Their Relationships
- Identifying Quantities

Recognizing Functions and Function Families
- Interpreting Function Notation
- Identifying Domain and Range
- Identifying Key Characteristics of Graphs of Functions
- Introduction to Function Families

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ONLINE RESOURCES FOR FAMILIES
www.carnegielearning.com/home-connection

MARK YOUR CALENDAR
End of Topic Test: _____

Talking Points

Discuss With Your Student

Your student is learning about types of functions and function relationships. You can further support your student's learning by asking questions about the work they do in class or at home.

Questions to Ask

1. *How does this problem look like something you did in class?*
2. *Can you show me the strategy you used to solve this problem? Do you know another way to solve it?*
3. *Does your answer make sense? How do you know?*
4. *Is there anything you don't understand? How can you use today's lesson to help?*

KEY TERMS

increasing function
If a function increases across the entire domain, then the function is an increasing function.

decreasing function
If a function decreases across the entire domain, then the function is a decreasing function.

function family
A function family is a group of functions that all share some characteristics.

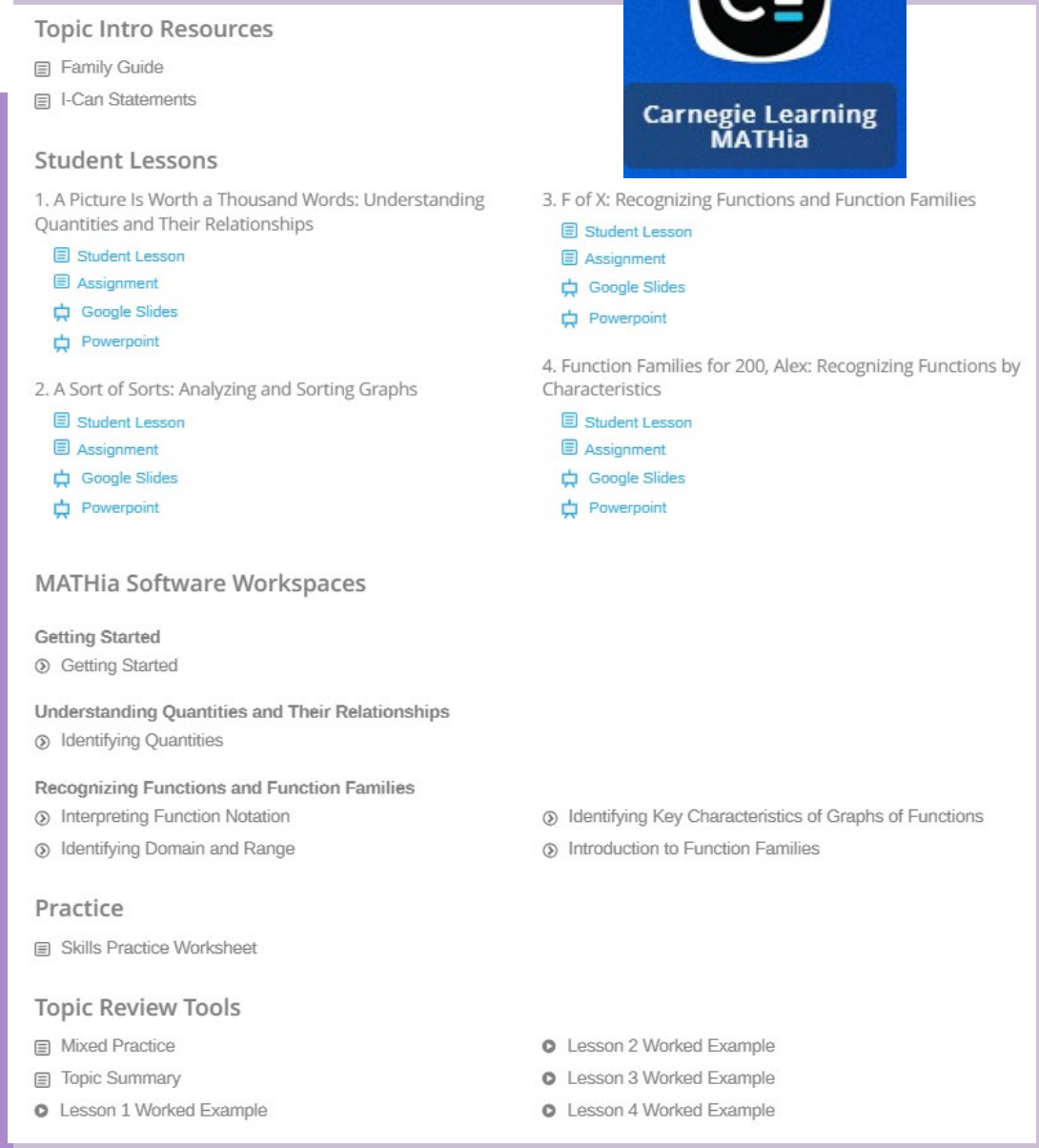
***x*-intercept**
The *x*-intercept is the point where a graph crosses the *x*-axis.

***y*-intercept**
The *y*-intercept is the point where a graph crosses the *y*-axis.

How to support Alg, Geo, Alg 2

Carnegie Learning Online resource

- Mathia
- Skills Practice Worksheet
- Mixed Practice
- Topic Summary with videos



How to support High School

Edia

- Calendar
- Practice
- IA Coaching
- Explanation with visuals
- Videos
- Pathway

How to support High School

IA Coaching

Solve the equation for a. Leave your answer as an exact fraction if necessary.

$$4a + 1 = 9a + 6$$

AI Coaching 1 message

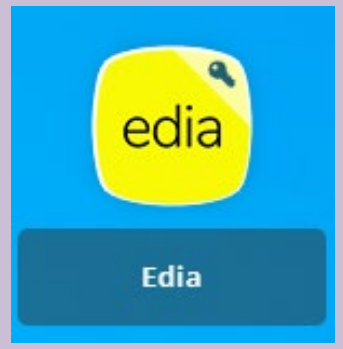
To solve for a, remember that you want to get all terms with a on one side and all numbers on the other. What principle helps you move terms from one side of an equation to the other?

Student answer 1 of 1 points

$$a = -1$$

How to support High School

Explanation with visuals



Explanation

The median is one way to measure the center of a data set by finding the middle data point.

To calculate the median, sort the data points from least to greatest and then pick the one in the middle. If there are an even number of data points, take the mean of the two numbers closest to the middle.

Here, sorting the data points yields $\{2, 4, 9, 9, 11, 12\}$

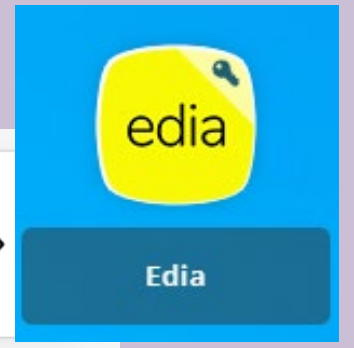
Because there are an even number of data points, there are two numbers that are in the middle of the data set, 9 and 9. The median is the mean (or "average") of these two numbers.

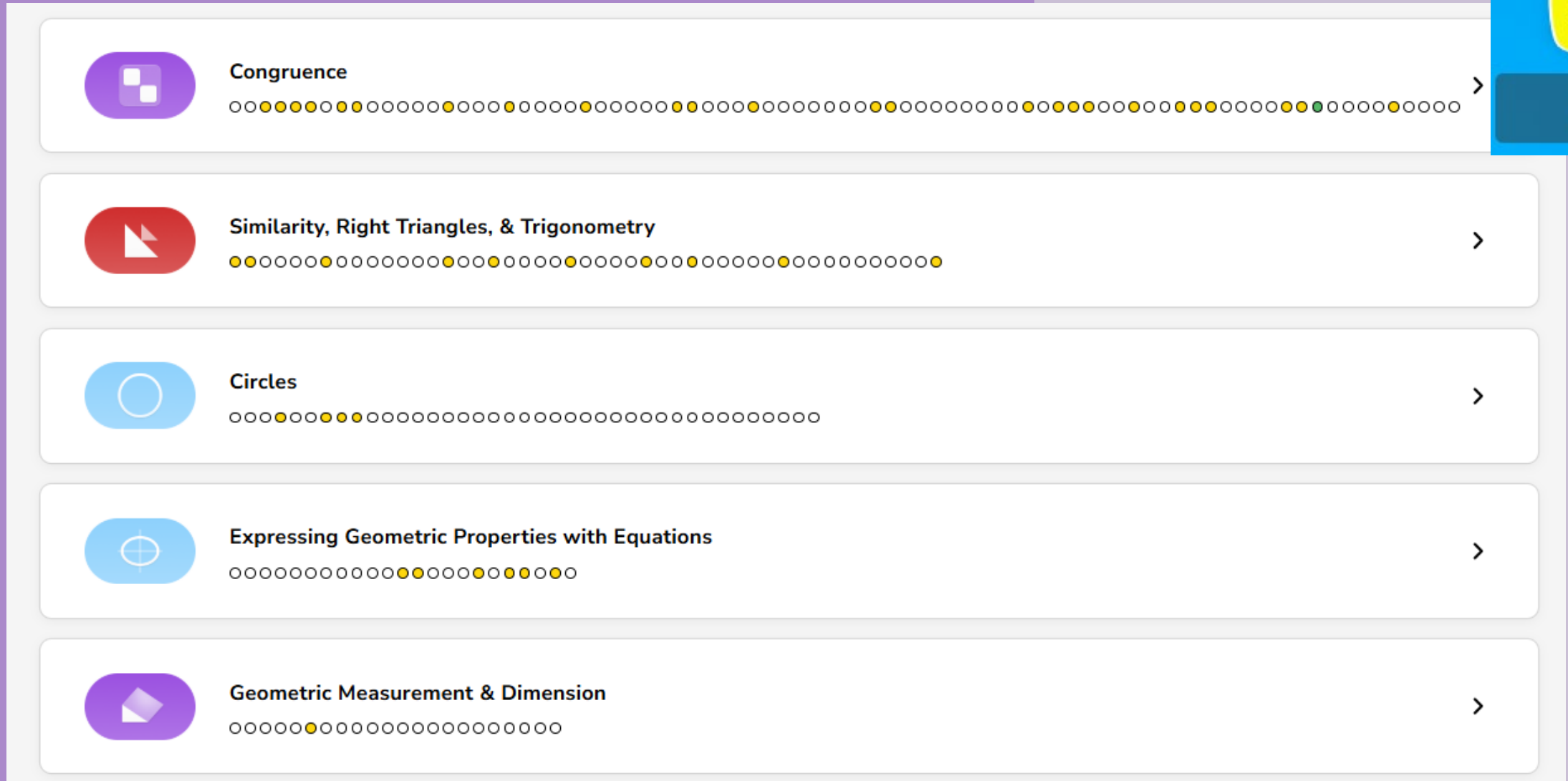
$$\text{median} = \frac{9 + 9}{2} = 9$$

Suggested video

via James Sousa

How to support High School - Pathway





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Before You Go!

Please pose any questions

Kimberly Tarnowieckyi

Secondary Math Facilitator

Feedback Survey

Please help us improve by sharing your feedback about today's event:

Encuesta posterior al evento: !Ayúdenos a mejorar!

Sau buổi sự kiện: Hãy giúp chúng tôi cải thiện!

Опрос мнения по окончании мероприятия: Помогите нам учесть недочёты!

پست-نظرسنجی : رویدادبه ما کمک می کند بهبود یابیم!

Scan the QR code or, Visit:
www.fwps.org/FamilyAcademySurvey

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Additional Resources to Support Middle School Math at Home

Supporting your middle schooler's math learning at home has never been easier with the wealth of quality online resources available today. These platforms offer interactive lessons, practice problems, and clear explanations that make math concepts accessible for both students and parents who want to help.

Free Interactive Learning Platforms

- Khan Academy stands out as one of the most comprehensive free resources available, offering step-by-step video lessons covering all middle school math topics from basic arithmetic through pre-algebra. The platform includes practice exercises with immediate feedback and allows students to work at their own pace while parents can track progress through detailed reports.
- IXL Math provides targeted practice with thousands of problems organized by grade level and specific skills, making it easy for families to focus on areas where students need extra support. While it requires a subscription for full access, the diagnostic tools help identify learning gaps and create personalized learning paths.
- Prodigy Math gamifies learning by embedding math practice within an engaging fantasy adventure game that motivates students to solve problems to progress through quests. This approach particularly appeals to reluctant math learners who might otherwise avoid practice.

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Additional Resources to Support Middle School Math at Home

Video-Based Learning Resources

- Professor Leonard on YouTube offers clear, detailed explanations of middle school math concepts with a teaching style that breaks down complex ideas into manageable steps. His videos are particularly helpful for parents who want to understand concepts well enough to help their children.
- Math Antics provides short, animated videos that explain math concepts in simple, visual ways that make abstract ideas more concrete for middle school learners. The accompanying worksheets allow families to practice concepts together after watching the videos.
- Crash Course Kids and TED-Ed offer engaging math videos that connect mathematical concepts to real-world applications, helping students understand why math matters beyond the classroom.

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Additional Resources to Support Middle School Math at Home

Interactive Tools and Calculators

- Desmos Graphing Calculator serves as both a powerful calculation tool and an interactive way to explore mathematical relationships, particularly useful for pre-algebra topics like graphing linear equations. The classroom activities section provides guided explorations that families can work through together.
- GeoGebra offers interactive math apps covering geometry, algebra, and graphing that allow students to manipulate mathematical objects and see how changes affect outcomes. This hands-on approach helps build conceptual understanding rather than just procedural skills.
- Wolfram Alpha provides step-by-step solutions to math problems, making it an excellent resource for parents who want to understand the process behind solving specific types of problems their children encounter.

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Additional Resources to Support Middle School Math at Home

Structured Online Courses

- edX offer free middle school math courses from universities and educational organizations that provide structured learning paths with assignments and assessments. These courses can supplement classroom learning or provide review during summer breaks.

Parent Support Resources

- Zearn Family offers resources specifically designed to help parents support their children's math learning, including guides for understanding different problem-solving strategies and tips for creating positive math experiences at home.

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Playing Math Games Support Middle School Math at Home

Playing math games at home transforms learning from a chore into an enjoyable family activity while reinforcing essential mathematical concepts. These games use everyday materials and create positive experiences that help students develop number sense, problem-solving skills, and mathematical confidence in a relaxed, supportive environment.

Card and Dice Games

- Fraction War uses a standard deck of cards where families remove face cards and use the remaining cards to create fractions, with players comparing fractions to determine the winner of each round. This game builds fraction comparison skills and equivalent fraction understanding while maintaining the excitement of traditional card games. Players can modify rules to practice adding, subtracting, or multiplying fractions as skills develop.
- 24 Game challenges players to use four numbers and basic operations to create equations that equal 24, developing mental math skills and creative problem-solving strategies. Families can use dice, playing cards, or even random numbers from around the house to create endless variations of this engaging puzzle game.
- Probability Dice Games involve rolling multiple dice and predicting outcomes, calculating theoretical versus experimental probability, and exploring concepts like independent events. Families can create charts to track results over multiple games, making abstract probability concepts concrete and observable.

Board and Strategy Games

- Math Monopoly transforms the classic property game by requiring players to solve math problems before making purchases, paying rent, or collecting money. Families can adapt difficulty by using different types of problems appropriate for their student's level, from basic operations through algebraic expressions.
- Coordinate Battleship uses coordinate grids where players must use ordered pairs to locate and attack opponent ships, reinforcing coordinate plane concepts while maintaining the strategic excitement of the original game. This game naturally introduces negative coordinates and all four quadrants as players become more sophisticated.
- Prime Number Sieve creates a competitive game where families work together to identify prime numbers within a given range, using physical manipulatives like beans or coins to cross out composite numbers. This hands-on approach makes number theory concepts tangible and memorable.

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Playing Math Games Support Middle School Math at Home

Kitchen and Household Math Games

- Recipe Ratio Challenge involves scaling recipes up or down for different serving sizes, providing practical applications for proportion and ratio concepts that middle schoolers encounter. Families can compete to see who can most accurately adjust ingredient amounts, then test their calculations by actually preparing the modified recipes.
- Measurement Scavenger Hunt sends family members throughout the house to find objects of specific dimensions, estimate measurements, then verify with actual measuring tools. This game reinforces units of measurement, estimation skills, and geometric concepts while encouraging physical activity and exploration.
- Budget Shopping Game uses grocery store flyers or online shopping sites to create mathematical scenarios involving percentages, discounts, tax calculations, and comparison shopping. Families can set spending limits and challenge each other to create the best value meals while practicing real-world math applications.

Mental Math and Number Games

- Number Talk Circles involve family members sharing different strategies for solving the same problem, celebrating multiple approaches and building mathematical discourse skills. These conversations help students understand that mathematics is about reasoning and sense-making, not just getting correct answers quickly.
- Estimation Jars filled with various objects challenge family members to estimate quantities using mathematical reasoning rather than random guessing. Players explain their estimation strategies, building number sense and logical thinking while creating opportunities for mathematical conversations.
- Pattern Block Challenges use geometric shapes to create designs while exploring concepts like area, perimeter, symmetry, and geometric relationships. Families can compete to create specific shapes using the fewest blocks or challenge each other to replicate complex designs.

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Playing Math Games Support Middle School Math at Home

Technology-Enhanced Games

- Graphing Stories involve families creating real-world scenarios that match given graphs, then acting out their stories while measuring and recording data to verify their mathematical models. This activity connects abstract graphing concepts to concrete experiences and builds understanding of mathematical relationships.
- Math Photo Challenges encourage families to find mathematical concepts in their daily environment, taking pictures of geometric shapes, patterns, symmetry, or proportional relationships they discover. These photo collections become ongoing mathematical discussions and help students recognize math everywhere.

Collaborative Problem-Solving Games

- Math Mystery Games present families (https://www.weareteachers.com/middle-school-math-puzzles/) with multi-step problems that require different mathematical skills to solve, encouraging collaboration and showing how various math concepts work together. These mysteries can involve anything from planning a party within budget constraints to designing a garden with specific area requirements.
- Math and Logic Puzzles (https://www.mathsisfun.com/puzzles/) and (https://mathequalslove.net/puzzles/)
- Games: https://mathforlove.com/lessons/games/ and https://kcm.nku.edu/mathfactfluency/games.php
- Building Challenge Games use household materials like cardboard, tape, and measuring tools to create structures that meet specific mathematical criteria, such as maximum volume with limited surface area or strongest bridge using geometric principles.
- Math Debate Games present mathematical scenarios where family members argue for different solutions or approaches, building communication skills while deepening mathematical understanding through discussion and justification of reasoning.

Tips for Successful Family Math Gaming

Focus on effort and strategy rather than speed or perfect answers, creating an environment where mistakes become learning opportunities rather than sources of frustration. Rotate who explains rules and keeps score to ensure everyone feels ownership of the mathematical learning experience, and always celebrate creative thinking and multiple solution strategies

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