

# ALL ABOUT MATH

## K-12 MATH



## HOW TO

## HELP YOUR CHILD with

## Mathematics

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Have a child in K-12th grade? Then this book is for you!

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# CONTENTS

- 04**     **Introduction:** Why care about math?
- 07**     **Chapter 1:** Elementary School Math (K-5th grade)
- 18**     **Chapter 2:** Junior High School Math (6th-8th grade)
- 29**     **Chapter 3:** High School Math (9th-12th grade)
- 36**     **Chapter 4:** PSAT / SAT / ACT Testing
- 40**     **Bonus Resources**

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# **WHY CARE ABOUT MATH?**

## **Introduction**



## Who cares about math anyway?

“If you stop at general math, you’re only going to make general math money,” says Snoop Dogg, a top rap artist. Even celebrities understand how important it is to have a strong math foundation to be successful in your career and life.

Although you may not need to know how to factor a polynomial or graph the inverse of an equation after you graduate, as you practice and learn these concepts you will strengthen your ability to reason and think logically. This will carry you through all levels of school, give you an edge in any job, and help you make wiser life decisions.



Today, learning and understanding math is more important than ever. Our jobs, daily lives, and financial health all depend on our math-based abilities and our logic, reasoning, and problem-solving skills. As the world’s reliance on technology continues to grow in breadth and complexity, so too does the demand on us to think in mathematical and logical terms at work and at home.

While people can still get a good job and succeed day-to-day without an advanced math degree, a lack in foundational math competencies can and will drastically limit a student’s opportunities, successes, and confidence throughout school and beyond.

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**“No employment can be managed without arithmetic,  
no mechanical invention without geometry.”**

- Benjamin Franklin



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**CHAPTER 1**

**ELEMENTARY  
SCHOOL MATH**

**(K-5th grade)**

# K-5th Grade: Concepts Covered

## What does my child learn and when?

To help students with math, parents should be versed in the basics of what is taught in school and when. Although each teacher, class, school, district, and state vary to some degree, here below is a good starting reference point for parents.

K-8 Documents by Domain

| Grade   | K                                 | 1 | 2 | 3         | 4 | 5 | 6                                   | 7 | 8         |  |
|---------|-----------------------------------|---|---|-----------|---|---|-------------------------------------|---|-----------|--|
| Domains | Counting & Cardinality            |   |   |           |   |   | Ratios & Proportional Relationships |   | Functions |  |
|         | Operations and Algebraic Thinking |   |   |           |   |   | Expression and Equations            |   |           |  |
|         | Number and Operations in Base Ten |   |   |           |   |   | The Number System                   |   |           |  |
|         |                                   |   |   | Fractions |   |   |                                     |   |           |  |
|         | Measurement and Data              |   |   |           |   |   | Statistics and Probability          |   |           |  |
|         | Geometry                          |   |   |           |   |   |                                     |   |           |  |

**Source:**  
[Arizona Department of Education](#)

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**K-5th grade concept map overview**  
 (see next pages for more details)



# K & 1st Grade Concepts

## K

**Overview:** learning to count, how to write and recognize numbers, and the basics of number operation and data measurement.

### Details:

#### Counting and Cardinality (CC)

- Know number names & the count sequence.
- Count to tell the number of objects.
- Compare numbers.

#### Operations and Algebraic Thinking (OA)

- Understand: addition as putting together and adding to & subtraction as taking apart and taking from.

#### Number and Operations in Base Ten (NBT)

- Work with numbers 11–19 to gain foundations for place value.

#### Measurement and Data (MD)

- Describe & compare measurable attributes.
- Classify objects & count the number of objects in categories.

#### Geometry (G)

- Identify & describe shapes.
- Analyze, compare, create, & compose shapes.

## 1

**Overview:** further build upon what they started in Kindergarten and develop a deeper understanding of numbers, shapes, & measurement.

### Details:

#### Operations and Algebraic Thinking (OA)

- Represent & solve problems involving addition & subtraction.
- Understand & apply properties of operations & relationship between addition & subtraction.
- Add & subtract within 20.
- Work with addition & subtraction equations.

#### Number and Operations in Base Ten (NBT)

- Extend the counting sequence
- Understand place value.
- Use place value understanding and properties of operations to add & subtract.

#### Measurement and Data (MD)

- Measure lengths indirectly & by iterating length units.
- Tell & write time.
- Represent & interpret data.

#### Geometry (G)

- Reason with shapes & their attributes.

[Source: Arizona Department of Education](#)

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● *K-5th essential concepts on page 13.*

# 2nd & 3rd Grade Concepts

2

**Overview:** extend understanding of base-ten notation, building fluency with addition & subtraction, using standard units of measure, describing & analyzing shapes.

## Detail:

### Operations and Algebraic Thinking (OA)

- Represent & solve problems involving addition & subtraction.
- Add & subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

### Number & Operations in Base Ten (NBT)

- Understand place value.
- Use place value understanding & properties of operations to add & subtract.

### Measurement and Data (MD)

- Measure & estimate lengths in standard units.
- Relate addition & subtraction to length
- Work with time & money.
- Represent & interpret data.

### Geometry (G)

- Reason with shapes & their attributes.

3

**Overview:** develop understanding of multiplication & division within 100, fractions (especially with numerator 1), the structure of rectangular arrays & of area, & two-dimensional shapes.

## Details:

### Operations and Algebraic Thinking (OA)

- Understand properties of multiplication & the relationship between multiplication & division.
- Multiply & divide within 100.
- Solve problems involving the four operations, & identify & explain patterns in arithmetic.

### Number & Operations in Base Ten (NBT)

- Use place value understanding and properties of operations to perform multi-digit arithmetic.

### Number & Operations—Fractions (NF)

- Develop understanding of fractions as numbers.

### Measurement and Data (MD)

- Solve problems involving measurement, estimate intervals of time, liquid volumes, mass of objects
- Represent and interpret data.
- Geometric measurement: relate area to addition, & multiplication, recognize perimeter as an attribute of plane figures & distinguish between linear & area measures.

### Geometry (G)

- Reason with shapes and their attributes.

[Source: Arizona Department of Education](#)

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# 4th Grade Concepts

## 4

**Overview:** understanding & fluency with multi-digit multiplication, dividing to find quotients with multi-digit dividends, fraction equivalence, addition & subtraction of fractions with like denominators, multiplication of fractions by whole numbers, & understanding that geometric figures can be analyzed & classified based on properties such as parallel or perpendicular sides, particular angle measures, & symmetry.

### Details:

#### Operations and Algebraic Thinking (OA)

- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

#### Number and Operations in Base Ten (NBT)

- Generalize place value understanding for multidigit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

#### Number and Operations—Fractions (NF)

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

#### Measurement and Data (MD)

- Solve problems involving measurement & conversion of measurements from larger unit to smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

#### Geometry (G)

- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

[Source: Arizona Department of Education](#)

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● *K-5th essential concepts on page 13.*

# 5th Grade Concepts

## 5

**Overview:** developing fluency with addition and subtraction of fractions, multiplication and division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions), extending division to 2-digit divisors, integrating decimal fractions into the place value system, operations with decimals to hundredths, whole number and decimal operations, and volume.

### Details:

#### Operations and Algebraic Thinking (OA)

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

#### Number and Operations in Base Ten (NBT)

- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

#### Number and Operations—Fractions (NF)

- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply & extend previous understandings of multiplication & division to multiply & divide fractions.

#### Measurement and Data (MD)

- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume & relate volume to multiplication & addition.

#### Geometry (G)

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

[Source: Arizona Department of Education](#)

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● *K-5th essential concepts on page 13.*

# K-5th Grade: Essential Concepts

## Skills Essential for Mastery

While all math skills and concepts learned are important, this section focuses on a few key math concepts that **MUST** be reviewed, practiced, and understood in order for students to successfully build on their math knowledge and increase their mental math speed going forward.

Many times if a student struggles in middle school and/or high school it is because he/she still does not have these essential concepts down.

- 1 Number Sense and Basic Operations
- 2 Multiplication Tables
- 3 Fractions



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# 1 Number Sense and Basic Operations

**Number sense** includes the following and more:

- How do we round a number?
- Where does the comma and period go in numbers?
- What number is in the hundredths place in 1,234.5678?
- What is an integer, whole number, natural number, real number?

**Basic Operations** include addition, subtraction, multiplication, & division of 'simple' numbers. Students need a strong basic understanding of what numbers represent and how we can manipulate them mathematically.




## Red Flags

- Does not line up addition or subtraction problems properly.
- Cannot round numbers consistently without error.
- Does not understand where to put punctuation in numbers.
- Spends a lot of time thinking about problems that should be mastered.
- Expresses stress or anger when working basic math problems.

## Parent Tips

- Review basic rules with child.
- Make practicing a game.

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## 2 Multiplication Tables (or “Times Tables”)

3rd graders and up should be able to do their multiplication tables forward and backward in less than three seconds.

For example,  $7 \times 8 = 56$  and 56 is the same as  $7 \times 8$  or  $8 \times 7$ .

Understanding what multiplication is (just a fast way to add groups of things) and being able to quickly multiply numbers are foundational skills that require practice, repetition, and eventually speed.

|    | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9   | 10  | 11  | 12  |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| 1  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9   | 10  | 11  | 12  |
| 2  | 2  | 4  | 6  | 8  | 10 | 12 | 14 | 16 | 18  | 20  | 22  | 24  |
| 3  | 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27  | 30  | 33  | 36  |
| 4  | 4  | 8  | 12 | 16 | 20 | 24 | 28 | 32 | 36  | 40  | 44  | 48  |
| 5  | 5  | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45  | 50  | 55  | 60  |
| 6  | 6  | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54  | 60  | 66  | 72  |
| 7  | 7  | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63  | 70  | 77  | 84  |
| 8  | 8  | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72  | 80  | 88  | 96  |
| 9  | 9  | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81  | 90  | 99  | 108 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90  | 100 | 110 | 120 |
| 11 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99  | 110 | 121 | 132 |
| 12 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

 = perfect squares





### Red Flags

- Spends a lot of time thinking about problems that should be mastered
- Expresses stress or anger when working basic multiplication problems.
- Reports “not having enough time” on math homework, quizzes, or tests.
- Relies too heavily on the calculator to compute values.

### Parent Tips

- Review & test your child’s speed & accuracy with the times table ([click here for larger times table image!](#)).
- Make practicing a game.

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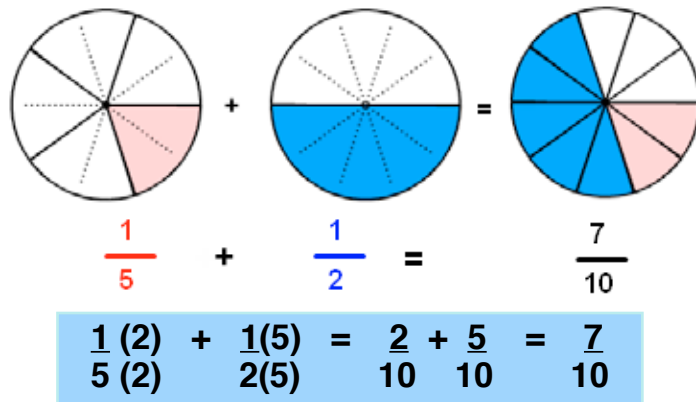


### 3 Fractions

6<sup>th</sup> graders and up should understand how to compare, group, add, subtract, multiply, and divide fractions.

Students should also understand why we need common denominators for adding/subtracting fractions. (We have to have same size pieces to work with).

And they need to know how to convert fractions to decimals and decimals to percentages back and forth.



#### Red Flags

- Doesn't understand that fractions are parts of wholes (not whole numbers themselves).
- Doesn't understand why we need common dominators for adding & subtracting fractions.
- Expresses stress or anger when working fraction problems.
- Reports "not having enough time" on math homework, quizzes, or tests.

#### Parent Tips

- Review & test your child's speed & accuracy with fractions.
- Make practicing a game.

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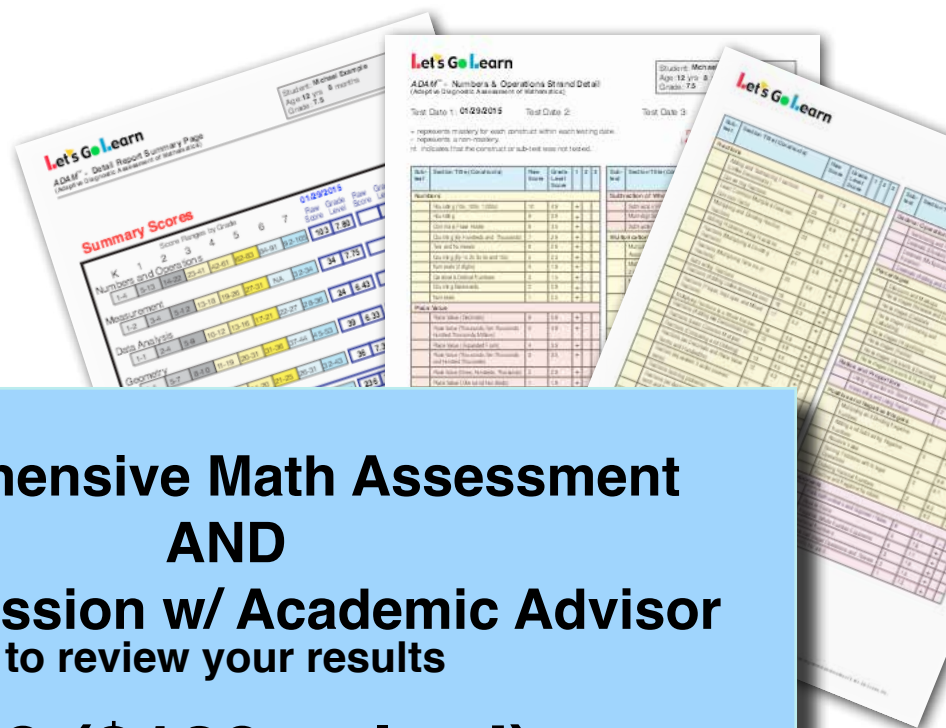




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**CHAPTER 2**

**JUNIOR HIGH  
SCHOOL MATH**

**(6th-8th grade)**

# 6th-8th Grade: Concepts Covered

## What does my child learn and when?

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|         |                                   |   |   | Fractions |   |   |                                     |   |           |  |
|         | Measurement and Data              |   |   |           |   |   | Statistics and Probability          |   |           |  |
|         | Geometry                          |   |   |           |   |   |                                     |   |           |  |

**Source:**  
[Arizona Department of Education](#)

**6th-8th grade concept map overview**  
 (see next pages for more details)

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# 6th Grade Concepts

## 6

**Overview:** work on connecting ratio & rate to whole number multiplication & division; using concepts of ratio and rate to solve problems; completing understanding of division of fractions, extending the notion of number to the system of rational numbers (which includes negative numbers); writing, interpreting, & using expressions & equations; & developing understanding of statistical thinking.

### Details:

#### Ratios and Proportional Relationships (RP)

- Understand ratio concepts and use ratio reasoning to solve problems.

#### The Number System (NS)

- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers.

#### Expressions and Equations (EE)

- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.

#### Geometry (G)

- Solve real-world and mathematical problems involving area, surface area, and volume.

#### Statistics and Probability (SP)

- Develop understanding of statistical variability.
- Summarize and describe distributions.

[Source: Arizona Department of Education](#)

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● *6th-8th essential concepts on page 23.*

# 7th Grade Concepts

7

**Overview:** developing understanding of & applying proportional relationships; operations with rational numbers, working with expressions & linear equations; solving problems involving scale drawings & informal geometric constructions, & working with two- and three-dimensional shapes to solve problems involving area, surface area, & volume; and drawing inferences about populations based on samples.

## Details:

### Ratios and Proportional Relationships (RP)

- Analyze proportional relationships & use them to solve real-world & mathematical problems.

### The Number System (NS)

- Apply & extend previous understandings of operations with fractions to add, subtract, multiply, & divide rational numbers.

### Expressions and Equations (EE)

- Use properties of operations to generate equivalent expressions.
- Solve real-life & mathematical problems using numerical and algebraic expressions & equations.

### Geometry (G)

- Draw, construct and describe geometrical figures and describe the relationships between them.
- Solve real-life & mathematical problems involving angle measure, area, surface area, & volume.

### Statistics and Probability (SP)

- Use random sampling to draw inferences about a population.
- Draw informal comparative inferences about two populations.
- Investigate chance processes and develop, use, & evaluate probability models.

[Source: Arizona Department of Education](#)

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● *6th-8th essential concepts on page 23.*

# 8th Grade Concepts

8

**Overview:** formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; grasping the concept of a function and using functions to describe quantitative relationships; and analyzing two- and three-dimensional space and figures using distance, angle, similarity, & congruence, & understanding & applying the Pythagorean Theorem.

## Details:

### The Number System (NS)

- Know that there are numbers that are not rational, and approximate them by rational numbers.

### Expressions and Equations (EE)

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

### Functions (F)

- Define, evaluate, and compare functions.
- Use functions to model relationships between quantities.

### Geometry (G)

- Understand congruence & similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean Theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

### Statistics and Probability (SP)

- Investigate patterns of association in bivariate data.

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[Source: Arizona Department of Education](#)

● *6th-8th essential concepts on page 23.*

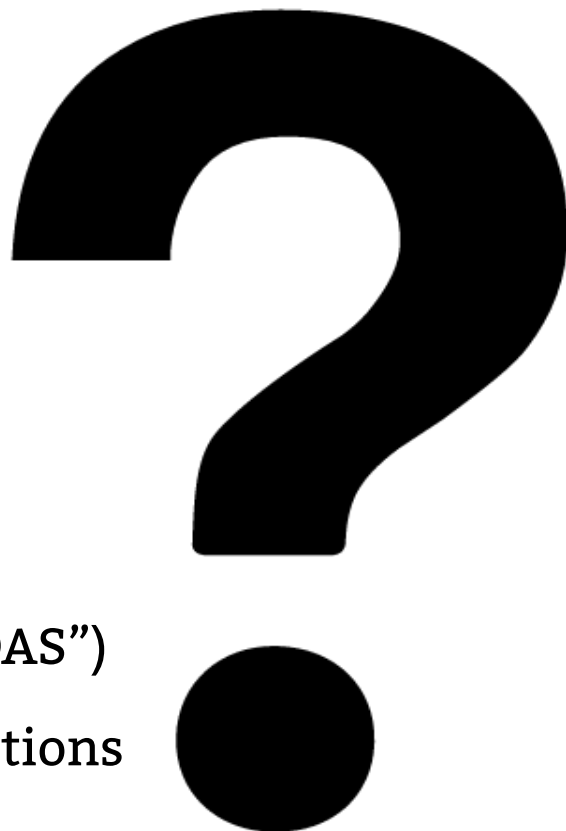
# 6th-8th Grade: Essential Concepts

## Skills Essential for Mastery

While all math skills and concepts learned in 6th-8th grade are important, this section focuses on a few key math concepts that **MUST** be reviewed, practiced, and understood in order for students to successfully build on their math knowledge and increase their mental math speed going forward.

Many times if a student struggles in high school it is because he/she still does not have these essential concepts down from middle school or even earlier.

- 1 Negative Numbers
- 2 Order of Operations (a.k.a. “PEMDAS”)
- 3 Solving multi-step algebraic equations
- 4 Graphing lines



● **Note:** If your child is struggling, he/she may still need to reach mastery in earlier concepts. See page 13.

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# 1 Negative Numbers

6<sup>th</sup> graders and up should know how to add, subtract, multiply, and divide positive and negative numbers.

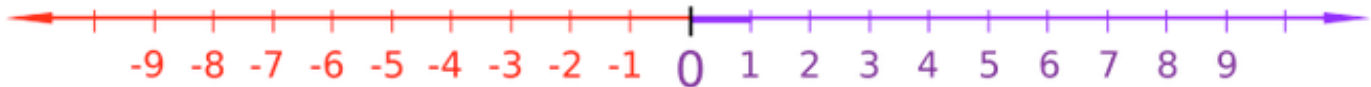
Negative numbers, in particular, can be tough for kids to 'wrap their heads' around.

$$+ + + = +$$

$$- + - = -$$

$$+ + - = +$$

$$+ + - = -$$



## Red Flags

- Spends a lot of time thinking about problems that should be mastered.
- Expresses stress or anger when working with negative numbers or subtraction, in general.
- Relies too heavily on the calculator to compute values.
- Loves addition but gets stuck when a number has a negative sign.

## Parent Tips

- Review & test your child's speed & accuracy with adding & subtracting.
- Connect to real life like digging a hole, temperature, diving under water, & owing money.

## Free Helpful Resources

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1.5 min. video: neg. #'s in real world!

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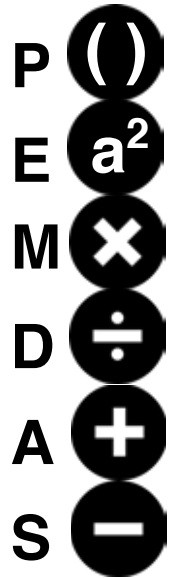
## 2 Order of Operations (a.k.a. “PEMDAS”)

### PEMDAS = Please Excuse My Dear Aunt Sally

...is the fun way to remember the steps we have to follow to solve math problems: Parentheses, Exponents, Multiplication & Division, Addition & Subtraction.

PEMDAS is what helps students know what to tackle first in a problem like this:  $(5 - 1)^2 + 3 \cdot 4 - 2 + 6 / 3$

If one does not follow the order of operations, he or she will come up with an answer, but it will be wrong! Answer to expression above = 28.



### Red Flags

- Does not know what the purpose of PEMDAS is.
- Gets different answers after solving same problem multiple times.
- Spends a lot of time thinking about problems that should be mastered.
- Expresses stress or anger when working basic algebra problems.
- Reports not having enough time on assignments, quizzes, & tests

### Parent Tips

- Review & test your child's speed & accuracy with order of operations.
- Make practicing a game.

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### 3 Solving multi-step algebraic equations

Middle schoolers see algebraic problems getting more complex. Students need to be able to solve - without error - equations and expressions that requires multiple steps.

Single-step algebra:

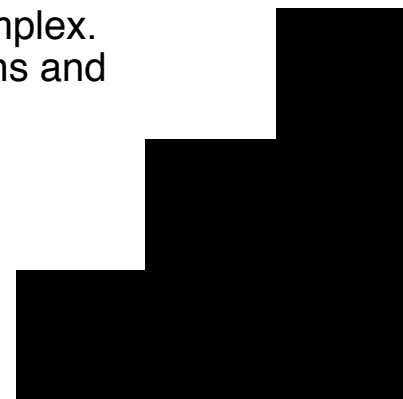
Ex 1:  $3x = 6$

Ex 2:  $2x = 22$

Multi-step algebra:

Ex 1:  $3x + 2 = 4x - 8$

Ex 2:  $(x + 3)^2 - 9 = ?$  (note: answer is NOT  $x^2$ )



#### Red Flags

- Spends a lot of time thinking about problems that should be mastered.
- Expresses stress or anger when working multi-step problems
- Takes a lot of steps that do not get them closer to solving.
- Reports “not having enough time” on math homework, quizzes, or tests.
- Attempts to have calculator compute values for him/her.

#### Parent Tips

- Review & test your child’s speed & accuracy with PEMDAS (see pg 25).
- Make practicing a game.

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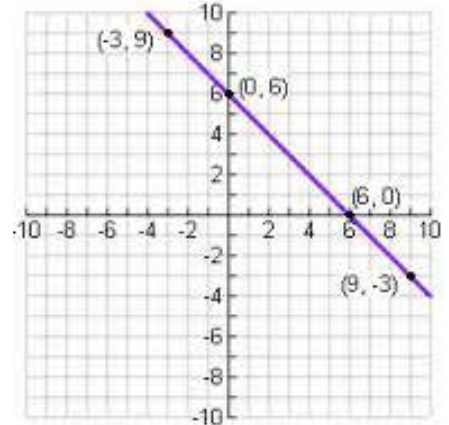
## 4 Graphing Lines

Linear equations are present throughout algebra and students in middle school need to master this skill to be ready for more complexity in high school.

Lines can show up in a few different forms, but the most popular one is “slope-intercept form” or  $y=mx + b$ .

In  $y=mx + b$ ,  $x$  and  $y$  are the variables that represent points on the graph,  $m$  is the slope (rise over run), and  $b$  is the  $y$ -intercept (because if you plug in 0 for  $x$ , you are left with  $b$  or the point  $(0, b)$ ).

Example graphed at right:  $y = -x + 6$



### Red Flags

- Spends time thinking about problems that should be ‘easy.’
- Expresses stress or anger when graphing linear equations.
- Takes a lot of steps that do not get them closer to solving.
- Reports “not having enough time” on math homework, quizzes, or tests.
- Attempts to have calculator compute graph line for him/her.

### Parent Tips

- Make practicing a game: create a giant ‘grid’ on the floor and practice graphing points with your whole body standing where the point should be!

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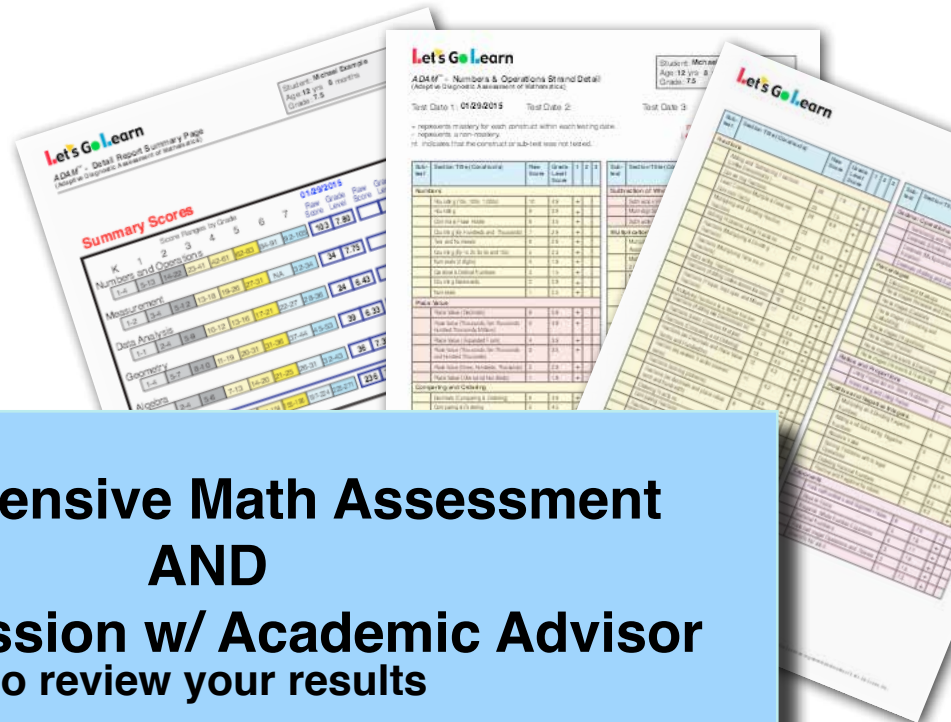
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**CHAPTER**

**3**

**HIGH SCHOOL  
MATH**

**(9th - 12th grade)**

# 9th-12th Grade: Concepts Covered

## What does my child learn and when?

To help students with math, parents should be versed in the basics of the subjects taught in high school and when. Although each teacher, class, school, district, and state vary to some degree, here below is a good starting reference point for parents.



|             | "On-Level"   | Advanced                  |
|-------------|--------------|---------------------------|
| <b>9th</b>  | Algebra I    | Honors Geometry           |
| <b>10th</b> | Geometry     | Honors Algebra II         |
| <b>11th</b> | Algebra II   | Honors Pre-Calculus       |
| <b>12th</b> | Pre-Calculus | AP Calculus or Statistics |

"Dual Credit" classes are available more and more in high school. These are classes that students take in high school that count for both credit toward their high school requirements AND they get college credit too (if they pay a fee + get at least a C and don't miss too many classes).

AP = Advanced Placement. These classes have a tougher work load, but if students pass the AP exam at the end of the year they get college credit (how much depends on scores & individual universities. Scores are 1-5 with 3 or higher passing).

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# 9th-12th Grade: Essential Concepts

## Skills Essential for Mastery

While all math skills and concepts are important, this section focuses on a few key math concepts that **MUST** be reviewed, practiced, and understood in order for students to successfully build on their math knowledge.

**Note:** this section will see the most variation for students depending on a student's level and school. Some students are very advanced and get through multiple levels of Calculus. Others only make it to Pre-Calculus.



- 1 Converting word problems into equations and solving
- 2 Perimeter, area, & volume of geometric shapes & solids
- 3 Basic trigonometry

● **Note:** *If your child is struggling, he/she may still need to reach mastery in earlier concepts. See page 13 and 23.*

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# 1 Converting word problems into equations and solving

Most students report ‘hating’ word problems. And admittedly they look intimidating, often full paragraphs long! But being able to select out relevant information from the word problem and convert it into solvable equations is an important skill that needs to come easily to students in order to be successful throughout high school.

**Example:** Dan has a total of 12 bill in his wallet. Some are \$5 bills and the rest are \$10 bills. The total value of the 12 bills is \$115. How many \$5 bills and how many \$10 bills does he have?

## Write from words

$$\begin{cases} x = \$5 \text{ bill} \\ y = \$10 \text{ bill} \\ x + y = 12 \\ 5x + 10y = 115 \end{cases}$$

## Solve!

$$\begin{cases} y = -x + 12 \\ 5x + 10y = 115 \\ 5x + 10(-x + 12) = 115 \\ 5x - 10x + 120 = 115 \\ -5x = -5 \\ x = 1 \text{ \& } y = 11 \end{cases}$$

## Answer

Dan has one \$5 bill and 11 \$10 bills in his wallet.



## Red Flags

- Spends time thinking about problems that should be ‘easy.’
- Expresses stress or anger when working with word problems.
- Takes a lot of steps that do not get them closer to solving.
- Reports “not having enough time” on math homework, quizzes, or tests.
- Does all homework except ones with word problems.

## Parent Tips

- Make practicing fun.
- Work word problems together and come up with “step-by-step” ways to solve these.

## Free Helpful Resources

Khan Academy

[click me!](#)

Steps to solve word problems

[click me!](#)

Top 10 Free Websites

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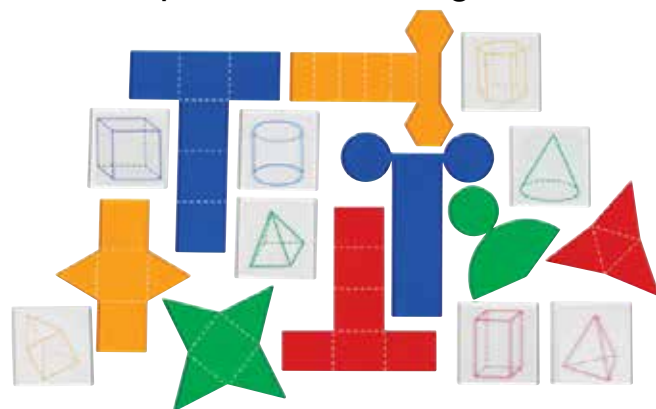
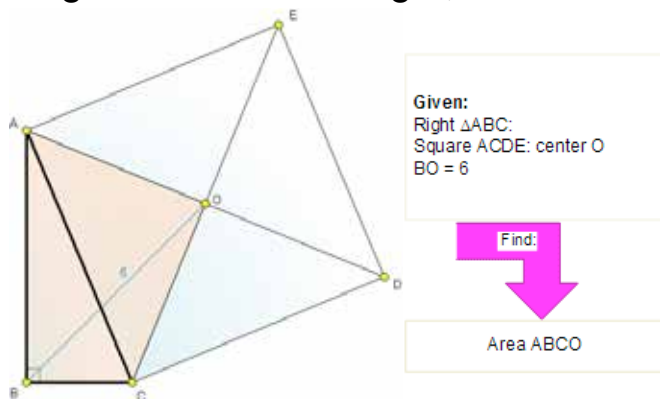
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## 2 Perimeter, area, & volume of geometric shapes & solids

Finding perimeter, area, and even volume is something that students started in elementary school, but in high school the shapes get more complex and are often missing side lengths and buried inside other shapes, meaning students have to first figure out a side length, then calculate what the problem is asking for.



### Red Flags

- Spends time thinking about problems that should be 'easy.'
- Expresses stress or anger when working with shapes/geometry.
- Takes a lot of steps that do not get them closer to solving.
- Reports "not having enough time" on math homework, quizzes, or tests.

### Parent Tips

- Make practicing fun.
- Review concepts of perimeter, area, and volume.

### Free Helpful Resources

Khan Academy

[click me!](#)

P, A, & V formulas!

[click me!](#)

Top 10 Free Websites

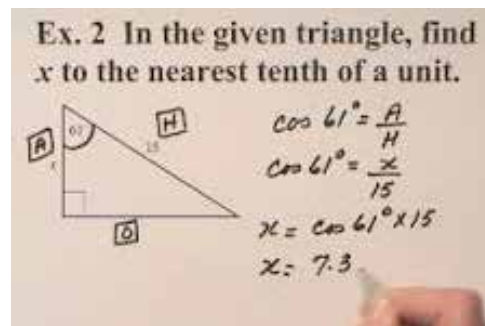
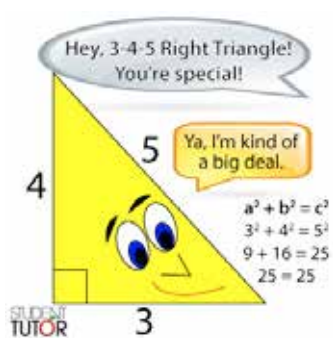
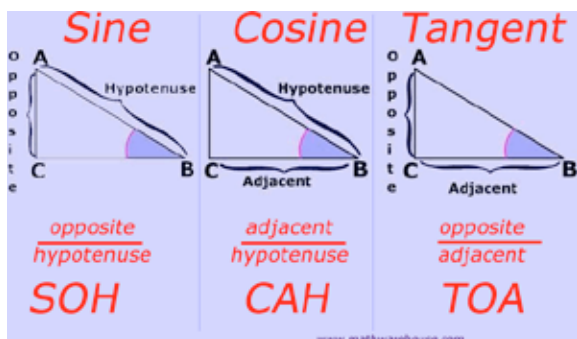
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### 3 Basic Trigonometry

Basic trigonometry includes: Pythagorean Theorem ( $a^2 + b^2 = c^2$ ), Special Right Triangles (45-45-90, 30-60-90, 3-4-5, 5-12-13, etc.), and SOHCAHTOA (remembering the trig ratios of sine, cosine, and tangent and being able to solve problems with them).



#### Red Flags

- Spends time thinking about problems that should be 'easy.'
- Expresses stress or anger when working with trigonometry.
- Takes a lot of steps that do not get them closer to solving.
- Reports "not having enough time" on math homework, quizzes, or tests.
- Does all homework except ones with trig.

#### Parent Tips

- Make practicing fun.
- Review basics of trig and find silly ways to remember SOHCAHTOA.

#### Free Helpful Resources

Khan Academy

[click me!](#)

Trig Cheat Sheet!

[click me!](#)

Top 10 Free Websites

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# CHAPTER **4**

## **PSAT / SAT / ACT TESTING**

# PSAT / SAT / ACT: Concepts Covered

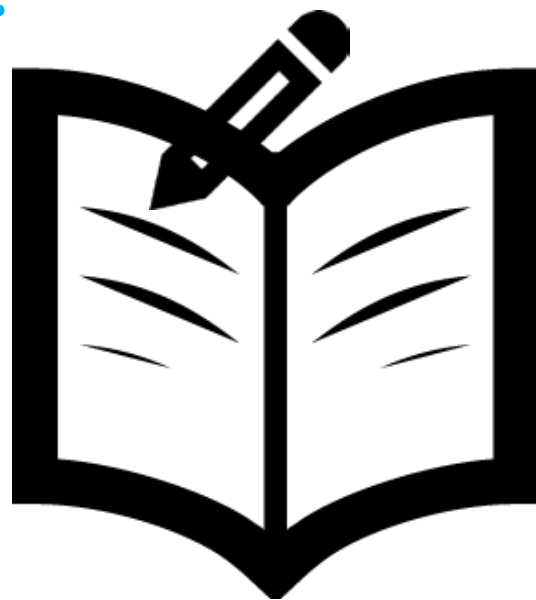
## What math does my child need to know on these exams?

To help students with math, parents should be aware of what is covered on these important exams.

The PSAT is taken in the junior year to qualify for National Merit Scholarships ([read more here](#)) and covers concepts in Algebra I and Geometry.

The SAT goes a little further covering some areas of Algebra II like basic trigonometry.

The ACT goes still further covering more topics in Algebra II like basic trigonometry, logarithms, and matrices.



### PSAT    SAT    ACT

|            | PSAT | SAT  | ACT |
|------------|------|------|-----|
| Algebra I  | yes  | yes  | yes |
| Geometry   | yes  | yes  | yes |
| Algebra II | no   | some | yes |

- **Note:** School alone does not fully prepare students for these exams. Test-taking strategies need to be learned & practiced.

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# PSAT / SAT / ACT: Helpful Resources

## Where can my child and I get help?

There are many great resources out there that are made just for these exams, so we will not go into great detail here. But here's a list of free resources to get you started right now:

### PSAT:

[College Board \(SAT Math\)](#)  
[Cliffs Notes \(PSAT Overview\)](#)  
[Cliffs Notes \(Math by subject\)](#)

### SAT:

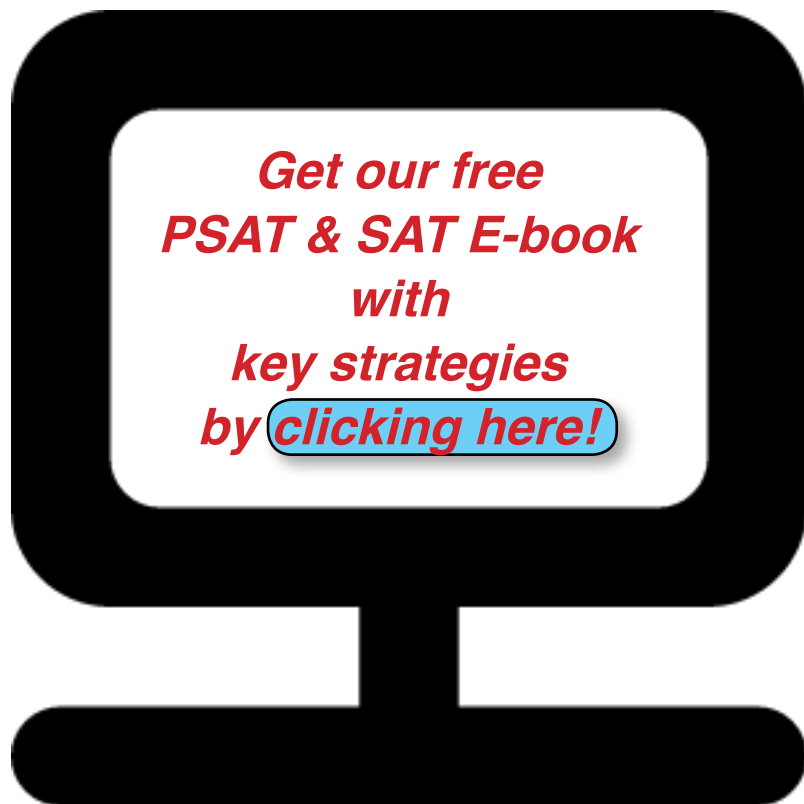
[College Board \(PSAT Math\)](#)  
[Spark Notes \(SAT\)](#)  
[Cliffs Notes \(SAT math\)](#)  
[Cliffs Notes \(Math by subject\)](#)

### ACT:

[ACT.org \(ACT Math\)](#)  
[Spark Notes \(ACT\)](#)  
[Cliffs Notes \(Math by subject\)](#)

### Math in General:

[Top 10 Math Websites \(free article\)](#)  
[43 Math Websites \(free article\)](#)



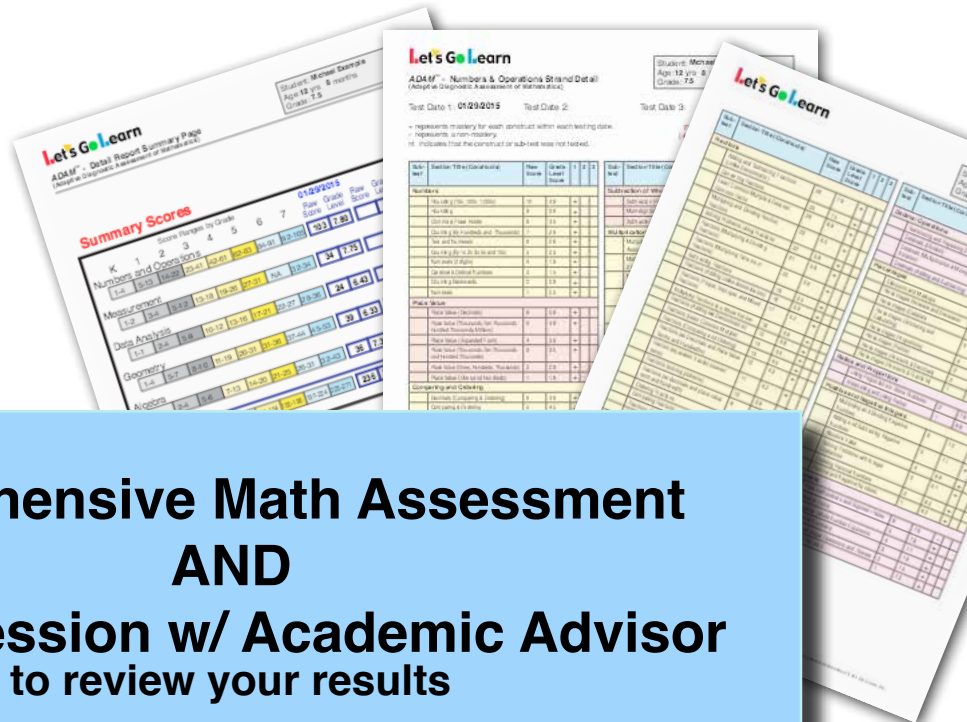
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AND  
Private Session w/ Academic Advisor  
to review your results**

**\$99 (\$129 value!)**

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www.Student-Tutor.com

# CHAPTER **5**

## **BONUS RESOURCES**

## 8 great ways to get math help for your child

- 1 Talk with teacher and get more insight
- 2 Teacher's free tutoring
- 3 After-school tutoring
- 4 Ask a friend for help
- 5 Assessment test
- 6 Call Student-Tutor: (480) 788-7004 or (844) 50-TUTOR
- 7 **Workbooks:** You can also find workbooks to use to assist you with working with your child yourself:
  - *Spectrum Math Workbooks K-5th grade* (for basic math help)
  - *Master Math: Basic Math & Pre-Algebra* (for getting caught up with 1-6th basic math skills)
  - *Forgotten Algebra* (to help with pre-algebra & algebra)

### 8 Find more free websites for games and activities!

[Quiz Hub](#) (many free games for a variety of subjects)

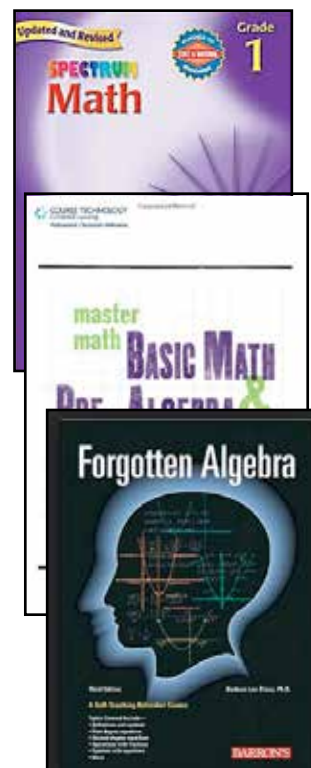
[Learning Games for Kids](#) (fun educational games)

[Cool Math](#) (tons of info on all subtopics of math and more)

[Teachers Pay Teachers](#) (many free items too and good ideas)

[43 Math Websites \(free\)](#) (43 websites that offer math help listed in alpha. order)

[Top 10 Math Websites \(free\)](#) (reviewed & detailed free, helpful math websites)



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## Recap:

In this Math E-Book we have covered many important things including:

- Elementary School Math
- Junior High Math
- High School Math
- PSAT / SAT / ACT Math
- Basic & essential concepts of grade level.
- Resources available to help.

Here again below is a link to a comprehensive math assessment that we at [Student-Tutor](#) provide.

Please take advantage!

**Comprehensive Math  
Assessment**

**AND**

**Private Session w/  
Academic Advisor**  
to review your results

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# Thank you for reading!

Please **share** with other families and friends so they can **benefit** from this great information as well!



Happy Learning!

 Student-Tutor