

Keystone Incoming 5th/6th/7th Grade Middle School Summer Math Work

Dear Parents,

Many parents have asked what can be done over the summer to maintain skills and develop mathematical thinking. Research confirms the importance of spending some time over the summer keeping math skills sharp. Parents can play an important role in preventing a “summer slide” by encouraging your child to continue practicing skills they have learned and to help them build confidence which in turn helps them to be more successful in the coming school year.

Keystone School has purchased a book for your child from the Summer Skills Learning Series. This summer review book is intended to be used only 3 to 4 days per week for ten weeks. A few things to note:

- Work will not be graded by the teacher. There is no penalty for not doing the work. Answers/solutions will be provided to check for understanding and use as a tool to identify areas needing improvement or more practice.
- If a student does not know how to do a certain problem, students should look at the answers/solutions provided for explanations on how to solve the problems or students are encouraged to ask a sibling or parent for help.
- There is a lot of flexibility in when you do the work. If you are going on vacation for a week, do not feel you have to take the work with you. Your child can resume the work when they get back.

Finally, I would like to provide some fun ways families can incorporate math during the year and during summer. In 5th and 6th grade math, we rarely use the calculator, so have your kids compute without the use of a calculator. You could have them check their work with a calculator.

- Budget
 - Share your budget with your child (housing, food, clothing, phone/internet, utilities, etc.)
 - Have your child add up the costs during a month or determine how much money is available in a given category.
- Banking
 - Share interest rates with your child and the monthly cost of a mortgage.
- Shopping
 - Have your child calculate the total cost of buying multiple items.
 - Have your child calculate the tax.
 - Have your child calculate unit prices (\$ price/unit) and determine the better deal.
- Gasoline/Travel
 - Have your child predict the cost of gasoline when you fill up on a tank of gas
 - Have your child predict how far the car will travel on a full tank of gas based on your car’s gas mileage

- Going on Vacation
 - Before going on a trip, ask your child to predict how long the drive will take based on an average speed of 50 mph.

$$\blacksquare \text{ Speed} = \frac{\text{Distance}}{\text{Time}} \text{ or } \text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

- Have your child convert between currencies. This is a skill learned in 5th grade and reinforced in 6th but you can try to show them how to do. Let's say you want to find out how many dollars is equivalent to 10 £. Assume the conversion rate is 1 £ = \$1.25. Write this as ratio or fraction which is equal to 1.

$$\blacksquare \text{ Currency to convert} \times \text{Conversion Rate} = \text{Currency you want to go to}$$

$$\blacksquare \text{ Currency to convert} \times \frac{\text{The Currency you want to go to}}{\text{The Currency to convert}} = \text{Currency you want to go to}$$

$$10 \text{ £} \times \frac{\$1.25}{1 \text{ £}} = \$12.50$$

- Going out to eat
 - Have your child calculate the total bill.
 - Have your child calculate the tip on a restaurant bill. If you like to give a 15% tip, ask your child what 10% of the bill is. Then ask what 20% of the bill is (double the 10% amount). Then have your child average the two amounts to get 15%.
- Baking
 - Have your child scale up or down a recipe. Your child can multiply or divide fractions.
- Construction Project
 - Have your child plan and measure materials.
 - Have your child perform the calculations.
- Sports
 - Share sports statistics with your child (shooting percentages, baseball averages, golf scores, etc.)
- Games
 - The following list of games is an excerpt from *Prerequisite Skills and Mathematical Learning* (Sharma, 2012, 2015). Beside each game title are the skills and concepts which are reinforced. I am not familiar with all of the games, but you may want to check them out!
 - **Battleship** (spatial orientation, visualization, visual memory)
 - **Black-Box** (logical deduction)
 - **Blink** (pattern recognition, visual memory, classification, inductive reasoning)
 - **British Squares** (spatial orientation, pattern recognition)
 - **Card Games** (visual clustering, pattern recognition, number concept—visual clustering, decomposition/recomposition of number, number facts)
 - **Checkers** (sequencing, patterns, spatial orientation/space organization)

- **Chinese Checkers** (patterns, spatial orientation/space organization)
- **Concentration** (visualization, pattern recognition, visual memory)
- **Cribbage** (number relationships, patterns, visual clusters)
- **Cross Number Puzzles** (number concepts, number facts)
- **Dominos** (visual clusters, pattern recognition, number concept and facts, decomposition/recomposition, number)
- **Four Sight** (spatial orientation, pattern recognition, logical deduction)
- **Go Muko** (pattern recognition, spatial organization)
- **Go Make Ten (Go Fish Ten or Big Ten)** (number concept, decomposition/recomposition)
- **Hex** (pattern recognition)
- **Kalah, Mankalah, or Chhonka** (sequencing, counting, estimation, visual clustering, deductive reasoning)
- **Krypto** (number sense, basic arithmetical facts)
- **Math Bingo Games** (number facts)
- **Master Mind** (sequencing, logical deduction, pattern recognition)
- **Number Master Mind** (number concept, place value, properties of numbers)
- **Othello** (pattern recognition, spatial orientation, visual clustering, focus on more than one aspect, variable or concept at a time)
- **Parcheesi** (sequencing, patterns, number relationships)
- **Pyraos** (spatial orientation/space organization)
- **Quarto** (spatial orientation/space organization, patterns, classification)
- **Qubic** (pattern recognition, spatial orientation, visualization, geometrical patterns)
- **Reckon** (number facts, estimation, basic operations)
- **Score Four or Connect Four** (pattern recognition, spatial orientation, visual clustering, geometrical patterns)
- **Shut the Box (sequencing, number concept, and number facts)**
- **Simon or Mini Wizard** (sequencing, following multi-step directions, visual and auditory memory)
- **Snakes and Ladders** (sequencing, following multi-step directions, visualization, number facts)
- **Stratego** (spatial orientation, logical deduction, graphing)