



**DREAM BIG**

**SUMMER**

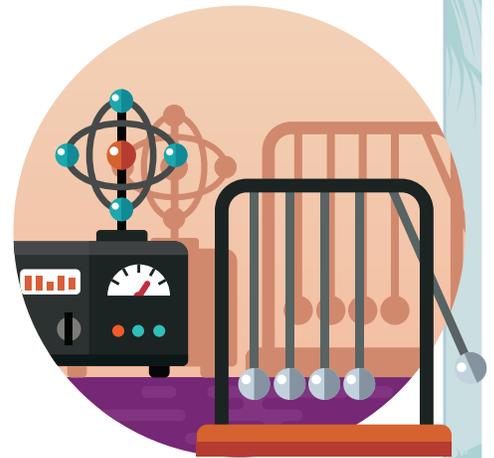
*With*

**TIME 4 LEARNING®**



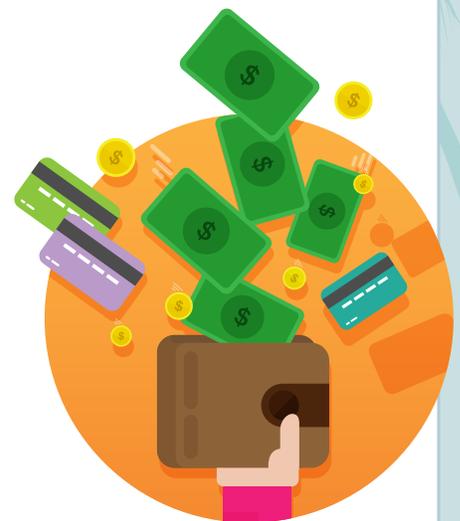
SCIENCE

- Using just a white paper plate and a black permanent marker, figure out how to make a working sundial
- Plant an herb garden and then use the herbs you've grown to spice up your cooking
- Build a rain barrel using simple internet instructions (and then use the rain to water the herb garden!)
- In a long clear tube, experiment with the density of different liquids by adding syrup, liquid soap, and cooking oil to see where they end up
- Using only items they can find in your home, design and make your own fidget spinner
- Create a mold terrarium with just a clear container and different types of foods moistened with water; observe the mold growth over time



MATH

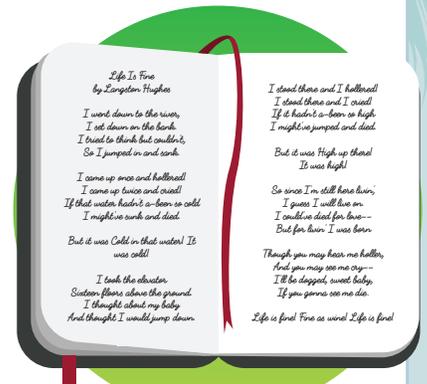
- Set a budget and plan a day out that includes entertainment and meals
- Create an engineering structure that can hold a book using toothpicks and gumdrops
- Learn about a famous mathematician
- Compare interest rates from different banks and determine which would earn you more money
- Learn about tipping guidelines and try to do the math in your head using different amounts
- Pick a starting and ending point on a map and determine how long it will take you to arrive if you are driving  $X$  miles per hour and it is  $X$  miles away





READING

- Read a book written by a homeschooler
- Read a poetry book or short story collection
- Reread a book you haven't read in a long time
- First, watch a movie that was adapted from a book, then read the book, and compare
- Read a book with a city in the name
- Read a book longer than 500 pages



WRITING

- The first thing I want to do after high school is...
- Practice writing a cover letter for a dream job
- Write a list of things you want to do before you graduate high school
- Rewrite the ending to your favorite book or short story
- Email or write a letter to your favorite author
- Create an alternative to your favorite meal and write out the recipe



IDEAS | NOTES

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**BONUS!**

- Learn to play a card game that requires strong math skills such as bridge
- Learn the rules of a sport you know nothing about
- Teach a younger sibling to play your favorite board game
- Design then sketch a new clothing item
- Interview a grandparent or other senior adult you know well and write a short autobiography of their life
- Help a friend or neighbor who will be on vacation by caring for their pet while they are away



**IDEAS | NOTES**

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Solve the multiplication problems below to find what number goes with each word. Then enter each word in the space below to find out the riddle!

1.  $5.7 \times 4.17 =$  Has

2.  $6.3 \times 9.5 =$  Flies

3.  $13.9 \times 4.02 =$  And

4.  $08.74 \times 3.6 =$  What

5.  $543.9 \times 5 =$  Is

6.  $411.3 \times 65.4 =$  Truck

7.  $61.5 \times 602.1 =$  Not

8.  $21.653 \times 1.256 =$  Wheels

9.  $71.7 \times 0.0324 =$  But

10.  $880.21 \times 4.6 =$  A

11.  $30.21 \times 61.77 =$  For

12.  $9349.8 \times 07.12 =$  That

13.  $4.912 \times 1.795 =$  Would

14.  $85.49 \times 99.18 =$  Garbage

15.  $10.531 \times 00.20 =$  Can

16.  $8 \times 9.8299 =$  I

17.  $570.3 \times 42.81 =$  An

18.  $346.85 \times 8467.3 =$  Could

19.  $264.12 \times 03875.4 =$  How

20.  $71.1 \times 2442.2 =$  Aeroplane

31.464

23.769

27.196168

55.878

59.85

2.32308

2,719.5

37,029.15

24,414.543

173,640.42

?

4,048.966

8,478.8982

26,899.02



The ancient Greeks discovered that some numbers cannot be represented as fractions. Rational numbers can; irrational numbers cannot. Express each of the numbers below as a fraction if you can. Label the numbers as rational or irrational.

1.

$\pi$

7.

$14/3$

2.

5

8.

1.5

3.

$\sqrt{99}$

9.

.1111

4.

$\sqrt{3}$

10.

$\sqrt{2}$

5.

$\sqrt{100}$

11.

$\sqrt{9}$

6.

.3333

12.

$\sqrt{-5}$



Looking for a way to engage your family over dinner? What if you could practice some spatial reasoning skills as well? These fun toothpick puzzles are easy to set up at the dinner table, and if your child gets stumped all you'll have to do is refer to the answers for help. The best part about this activity is that you'll be challenging your child to think geometrically while still having fun!

### WHAT YOU NEED

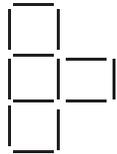
- A copy of the toothpick puzzles (See below)
- 24 toothpicks
- A coin

### WHAT YOU DO

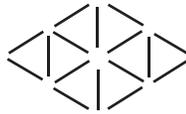
1. Pick one of the puzzles.
2. Lay out the toothpicks in the pattern you see on the paper.
3. Tell your family how you want them to change the pattern.
4. Watch them go!
5. Once they've solved the first puzzle, move on to the next one.
6. The answers are included, but it's more fun if you only refer to them as a last resort.



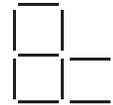
PUZZLES



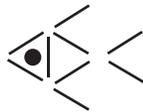
1) Remove one toothpick to leave three squares.



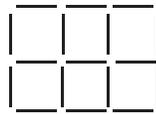
2) Remove six toothpicks to leave four triangles.



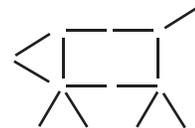
3) Take away two toothpicks and leave two squares.



4) Make the fish swim the opposite way by moving three toothpicks and the coins



5) Remove six toothpicks to leave two squares.



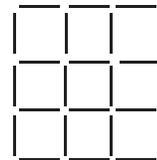
6) Move two toothpicks to make the pig go the opposite way



7) Remove three toothpicks and leave three squares.



8) Move two toothpicks to get the ball out from between the posts.



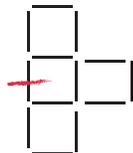
9) Remove eight toothpicks and leave three squares.



10) Move four toothpicks and leave three equilateral triangles.



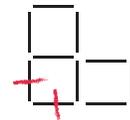
ANSWERS



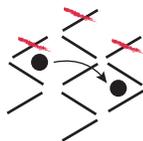
1) Remove one toothpick to leave three squares.



2) Remove six toothpicks to leave four triangles.



3) Take away two toothpicks and leave two squares.



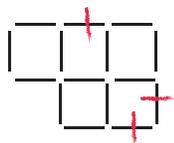
4) Make the fish swim the opposite way by moving three toothpicks and the coins.



5) Remove six toothpicks to leave two squares.



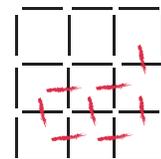
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The SAT likes to test student's nerves by replacing numbers with letters. This can be frustrating, since most high school math problems involve at least one number. The best way to approach these problems is as a code-breaker; they have given you enough clues, if only you can find them. Here's a game that will help your student discover that cracking the code is a lot easier than it looks.

### WHAT YOU NEED

- A pencil
- A few pieces of paper
- 2 or more players (you can be one.)
- Candy or another small prize

### WHAT YOU DO

1. Print or copy the following examples of codes: "Rhe girst oetter nf yhe qord bs trong." "Ths sntnc hs n vwls." "The has words scrambled been the of order" "Edoc doog a eb nac sdrawkcab gnitirw." "ancay ouyay alktay otay igspay inpay atlinay??"
2. Give each player five minutes to crack the codes just by using common sense.
3. Have the players tell you their answers and compare them to the right ones: "The first letter of each word is wrong." "This sentence has not vowels." "The order of the words has been scrambled." "Writing backwards can be a good code." "Can you talk to pigs in Latin?"
4. Offer a prize to the person who got the most right, or to everyone who broke more than 3 codes.
5. "Extend the lesson to math. Show them this SAT problem: "If  $AB + BA = CDC$ , what does C equal? ( $A, B, C$ , and  $D$  represent separate digits

*within a larger number.*) This looks impossible! ..." If we know neither A, B, or D, how can we know C? This is where we need to use a little bit of common sense to crack the code. We could spend a lot of time plugging in numbers for A and B, and trying to come up with an answer that fits the form of CDC. Or, we could use some critical thinking. What's the LARGEST number you can create by adding two 2-digit numbers? If we add 99 and 99, we'll get 198. We can never get a number bigger than that; we'll never even get to 200. No matter what A and B are, the number must be in the hundreds. Therefore, the only possible value for C is "1."

6. One more problem:  $9 \times \underline{x} KL$  If  $K = 4$ , then  $L = ?$  There are two ways to do this: First, we can try to think of a number in the forties that is a multiple of nine. The only possibility is 45, so L must be 5. Or, we might remember that the digits of any multiple of 9 add up to 9. Therefore, we know that  $K + L = 9$ , so  $L = 5$ .