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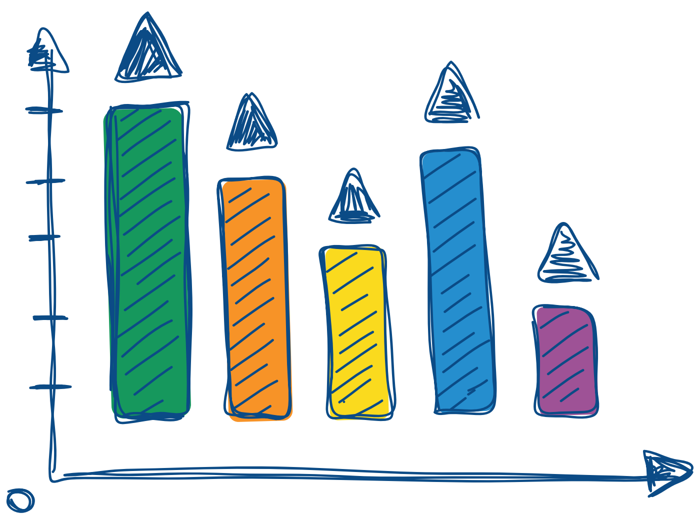
PRINTABLE MATH WORKSHEETS



ELEMENTARY LINEAR EQUATIONS

1.

$15 = x + 19$ $x =$ -4

$15 = x + 19$

$-19 \quad\quad -19$

$-4 = x$

6.

$x - 16 = -10$ $x =$ ______

2.

$-14 = x - 7$ $x =$ ______

7.

$x - 10 = -2$ $x =$ ______

3.

$x + 25 = -5$ $x =$ ______

8.

$x - 8 = -13$ $x =$ ______

4.

$4 + x = 8$ $x =$ ______

9.

$19 + x = -7$ $x =$ ______

5.

$x - 12 = -3$ $x =$ ______

10.

$-17 = x + 5$ $x =$ ______

ELEMENTARY MATH WORD PROBLEMS

There's soup simmering on the stove! Use addition or subtraction to solve the word problems.

SOUP 1

Let's make some soup! Place 2 carrots, 2 celery stalks and 5 pearl onions in the broth. Add 3 potatoes to the soup. How many items altogether are in the soup?

Answer :

SOUP 2

Make another batch of soup. This time, put 1 carrot and 2 celery stalks in the broth. Add 4 pearl onions, 5 mushrooms and 4 potatoes. How many items altogether are in this soup?

Answer :

SOUP 3

The soup has been served into two bowls. The first bowl has 9 pieces of potato and the second bowl has 4 pieces of potato. How much less potato pieces does the second bowl have?

Answer :

SOUP 4

The soup is in two bowls. The first bowl has 3 mushrooms and the second bowl has 7 mushrooms. How many more mushrooms does the second bowl have?

Answer :

MIDDLE SCHOOL ORDER OF OPERATIONS PARENTHESES

Determine what is needed to make the equations true. Some of the equations need parentheses, while others do not. Write in parentheses where needed or circle the equations that do not need them.

EXAMPLE

1. (9 + 7) x 4 - 12 = 52
   16 x 4 - 12 = 52
   64 - 12 = 52

2. 5 + 8 x 2 - 4 = 22

3. 7 - 1 + 55 ÷ 5 = 17

4. 5 x 4 + 9 - 2 = 27

5. 15 + 8 - 4 ÷ 2 = 21

6. 11 + 10 - 4 x 9 = 65

7. 7 + 13 + 6 x 9 = 74

8. 36 ÷ 6 x 2 + 9 = 21

9. 9 x 21 ÷ 3 + 10 = 73

10. 13 - 4 x 18 - 22 = 140

11. 16 + 21 - 3 x 6 = 19

12. 43 - 4 x 4 + 8 = 35

MIDDLE SCHOOL BE A COVERT CODE BREAKER

Who hasn't dreamed of becoming a secret agent—working on clandestine missions and intercepting secret codes? Here's your child's chance to work on her code breaking and writing skills while covertly developing her analytical thinking skills, too!

WHAT YOU NEED

- Pen and Paper

WHAT YOU DO

QBUN QUM NBY ZCLMN MUNYFFCNY NI ILVCN NBY YULNB? NBY GIIH.

REAL: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

CODE: UV… ABC…

1. Your budding secret agent has just intercepted the above code.

2. Ask her if she has any ideas about how to break this code. Have her spend a few minutes working on the code and check her progress. If she broke the code, you really have a future agent on your hands, so skip to step 5!

3. This is an example of a substitution cipher. Each letter of the alphabet has been substituted with a code letter. Substitution ciphers can have random orders and patterns that determine which letter was swapped for which. However, in this case, the alphabet was merely shifted. For example, if the alphabet was shifted 2 letters to the right (which it isn't in this case), the code letter A would really mean C, code letter B would really mean D, and so on. With this in mind have your code breaker take another stab at solving the puzzle above. Sometimes it helps to work on the short words first since there are only so many common short words in the English language (notice how NBY is repeated several times!).

4. Did she solve it? If not, it's time to give away the key. A key allows a code to be translated back into its original language. The key to this substitution cipher is that the alphabet has been shifted six places to the right. Have your child write out the alphabet as shown below, then fill in the code letters underneath (the first couple letters have been filled in. It helps visually if a vertical line is placed between each letter). She can then use her key to break the code by finding each code letter on the bottom line and substituting it with the real letter above.

5. Code broken? Well done. Now it is time to each try writing your own substitution cipher. Have your child write the alphabet again and decide (secretly!) on her substitution pattern. Have her fill the code letters under the real alphabet and use her key to write a secret message. You do the same. Swap messages and try breaking them without the key. When you can't stand it anymore, ask for the key and solve!

6. Advanced Code Breaking: If you have a code whiz on your hands, try writing and solving codes where the word spacing is no longer held intact. For example, group the letters in sets of four, so she can no longer use the short words to help break the code. Much more difficult, isn't it?

MIDDLE SCHOOL REAL-LIFE MATH

To get your child applying math to real-life situations, have her plan a fun night out for herself, and figure out the cost. Using money makes math matter in a big way! Plus, this activity will give your child the opportunity to feel like math can work for her, not against her. You don't need tail and a top hat to go out on the town—just a few math skills!

WHAT YOU NEED

- Pencil and Paper

WHAT YOU DO

Determine how much money you want to give your child for a fun night out. However, she can only get the money if she does the math correctly prior to the night out and does not exceed her budget.

2. Have your child write down her ideas for a fun night out. They must be very specific (i.e. movie, exact food items, etc.). Then have her find out the exact cost of each item on the list. Give her the sales tax for your area.

3. Now that your child has a list of activities with the cost of each one next to each activity, she is ready to do the math!

4. Have her take each activity and determine the cost of it, including the sales tax, if applicable. So, if one activity is to have a McDonald's happy meal, have her call to find out the cost. She will then multiply the cost by the correct sales tax percentage. So, if the meal is $2.99 and the sales tax is 8% she would multiply 2.99 by .08 and find the tax to be .23. She would then add that to the 2.99, and the total cost of the meal is $3.22.

5. After she does the math, check her work. If she has done it all correctly, give her the money for the fun night out and set up a date and time for it.

6. Don't forget to have her figure out how much she will have left over so when you ask for your change, you will know if she is trying to keep some for herself!

Extension Activity:

For older children, you can have them figure out how much gas it will take for you to bring them to and from their fun night out. Tell them how many miles per gallon of gas your vehicle gets. Find out the cost of gas per gallon. Now they will appreciate your taxi service!

MIDDLE SCHOOL TEST THE STABILITY OF NEWSPAPER TOWERS

As your young learner studies structures, he may hear that the strongest shape is the triangle. Put this architectural idea to the test by building two different newspaper towers with your child. He'll test and observe each structure's stability—trying his hand at engineering as he explores this important architectural concept.

WHAT YOU NEED

- Newspapers
- Masking Tape
- Heavy Desk Stapler
- Large Paper Plate
- Pennies

WHAT YOU DO

1. Your child will be building two towers, one made out of cubes (horizontals and verticals) and the other consisting of triangles (cubes with diagonal braces). Each tower will be two cubes tall. Start by helping your child roll newspaper into tubes. Take one sheet of newspaper, folded so that you see one full page. Roll from a short side, making a tube approximately one inch thick. Tape. Make 20 for each tower.

2. Using staples and tape, help your child make a cube. Take 8 more newspaper tubes, and build a second cube on top of the first. Reinforce the joints with tape. You have completed one tower, two cubes tall.

3. Repeat step 2 to build the second tower.

4. The braces are also of rolled newspaper but need to be slightly longer than the original tubes. Take one sheet of newspaper, fold it so that you see one page and fold this page in half, top to bottom. Roll from one corner to other and tape to complete the brace. Repeat to make 11 braces.
5. Staple or tape one of these braces diagonally across each side, the top and the base of the bottom cube in the second tower. Repeat the process with the four sides and the top of the upper cube.

6. Do they both stand easily? It may take some shifting to get the one without braces to remain upright.

7. Place a paper plate on each tower. Add pennies until one tower topples. Which one turned out to be strongest? Why does he think that's the case?

HIGH SCHOOL MULTIPLYING DECIMALS

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 x 4.17 = Has
2. 6.3 x 9.5 = Flies
3. 13.9 x 4.02 = And
4. 08.74 x 3.6 = What
5. 543.9 x 5 = Is
6. 411.3 x 65.4 = Truck
7. 61.5 x 602.1 = Not
8. 21.653 x 1.256 = Wheels
9. 71.7 x 0.0324 = But
10. 880.21 x 4.6 = A
11. 30.21 x 61.77 = For
12. 9349.8 x 07.12 = That
13. 4.912 x 1.795 = Would
14. 85.49 x 99.18 = Garbage
15. 10.531 x 00.20 = Can
16. 8 x 9.8299 = I
17. 570.3 x 42.81 = An
18. 346.85 x 8467.3 = Could
19. 264.12 x 03875.4 = How
20. 71.1 x 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			

HIGH SCHOOL
RATIONAL & IRRATIONAL NUMBERS

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. π

2. 5

3. $\sqrt{99}$

4. $\sqrt{3}$

5. $\sqrt{100}$

6. .3333

7. 14/3

8. 1.5

9. .1111

10. $\sqrt{2}$

11. $\sqrt{9}$

12. $\sqrt{-5}$

HIGH SCHOOL SOLVE TOOTHPICK PUZZLES

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.

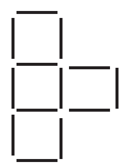
4. Watch them go!

5. Once they've solved the first puzzle, move on to the next one.

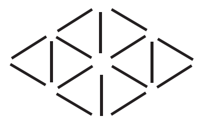
6. The answers are included, but it's more fun if you only refer to them as a last resort.

HIGH SCHOOL SOLVE TOOTHPICK PUZZLES

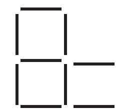
PUZZLES



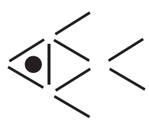
1) Remove one toothpick to leave three squares.



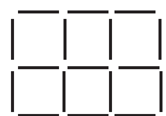
2) Remove six toothpicks to leave four triangles.



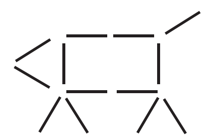
3) Take away two toothpicks and leave two squares.



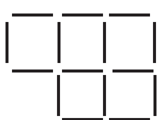
4) Make the fish swim the opposite way by moving three toothpicks and the coins



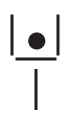
5) Remove six toothpicks to leave two squares.



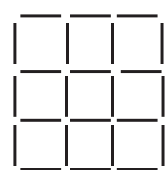
6) Move two toothpicks to make the pig go the opposite way



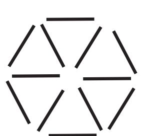
7) Remove three toothpicks and leave three squares.



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



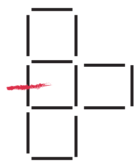
9) Remove eight toothpicks and leave three squares.



10) Move four toothpicks and leave three equilateral triangles.

HIGH SCHOOL SOLVE TOOTHPICK PUZZLES

ANSWERS



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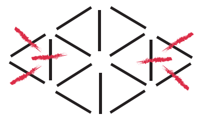

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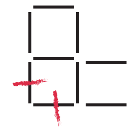

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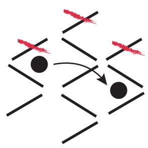
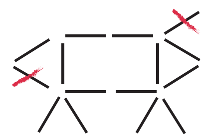


4) Make the fish swim the opposite way by moving three toothpicks and the coins.

5) Remove six toothpicks to leave two squares.



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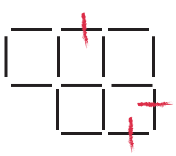

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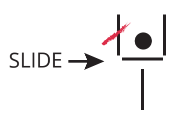

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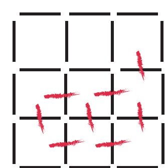

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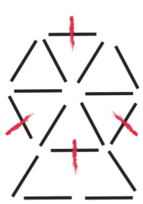

10) Move four toothpicks and leave three equilateral triangles.

HIGH SCHOOL SAT ESPIONAGE: CRACKING THE TEST-MAKER'S CODE

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 xJ 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.