







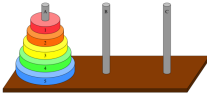



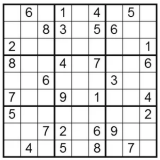
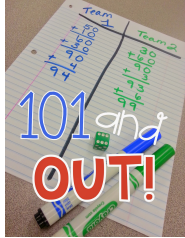




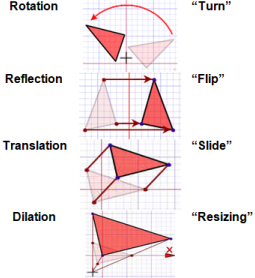




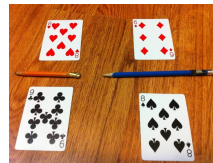






30 DAYS OF MATH SUMMER FUN BOARD











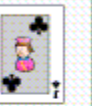

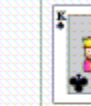










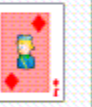
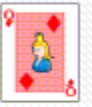



























SUMMER MIDDLE SCHOOL MATH PRACTICE - Framingham Public Schools

Instructions: Listed below are 30 activities to keep mathematics fresh in your mind! During the summer, try as many of these activities as you are able. The majority of these activities are fun and challenging and will really make you think! Keep track of the ones you try. You do not have to do these activities in any particular order. When school resumes in the fall, you will have an opportunity to share your math adventures with your teachers. Have fun!

I		M	A	T	H
<p>1 Play a game of 99!</p> 	<p>2 Find a plant outside and monitor it's growth!</p> 	<p>3 Complete 1 hour of I-Ready on your path!</p> 	<p>4 FOUR 4's and OPERATIONS!</p> 	<p>5 Practice your mental math!</p> <p>Extreme Counting!</p> 	<p>6 Practice with Percentages!!</p> <p>Look around you...what numbers can you find? Look at food labels, house numbers, mailing addresses. Find 50% of each number. Then find 10%, 20%, 30%! See how many you can do!</p>
<p>7 Find a delicious recipe with at least 10 ingredients. Triple the recipe!</p>  <p>To get spicy, you can take half or a third of a recipe as well!</p>	<p>8 Get some fresh air and measure a leaf!</p>  <p>More information below!</p>	<p>9 Play the Tower of Hanoi Game!</p> <p>Tower of Hanoi</p> 	<p>10 You are offered the choice of two options (click here for game instructions):</p> <p>A) \$1,000,000 for the month Or B) One Penny doubled each day.</p> 	<p>11 PRIME NUMBERS CHALLENGE!</p> <p>Prime:  etc...</p> <p>Composite: </p>	<p>12 Complete a Sudoku puzzle.</p>  <p>ex)</p>

<p>13 101... and OUT!</p> <p>See if you can roll dice to get to 101!</p>  <p>Directions are below!</p>	<p>14 Try some of these problems from a previous year's New England Math League contest! How many can you do?</p> <p>When you are done, check your answers here.</p>	<p>15 Flipping a Coin!</p> <p>What is the probability of heads or tails?</p> 	<p>16 Practice your fraction fluency on IXL! Go to:</p>  <p>Grade 6: 6.O.7 Grade 7: 7.G.10 Grade 8: 8.E.5</p>	<p>17 Analyzing a Deck of Cards!</p> <p>Mean, Median Mode, Range</p> 	<p>18 Small items in your house and Probability!</p> 
<p>19 Translations, Rotations, Reflections, Dilations... OH MY!</p> <p>Rotation "Turn" Reflection "Flip" Translation "Slide" Dilation "Resizing"</p>  <p>Explore this type of geometry in the real world!</p>	<p>20 Design your own game!</p> <p>This is where you get to be super creative!</p> 	<p>21 Calculating Deck of Cards Probability!</p> <p>You will need a deck of cards or you can print or create your own!</p> 	<p>22 Daily Mental Math!</p> <p>These numbers change by the day!</p> 	<p>23 Can you figure out the patterns in these sequences? Be sure to describe each pattern in complete sentences!</p> <p>Try this one for an added challenge!</p>	<p>24 Practice your integer operations! Go to IXL:</p>  <p>Grade 6: 6.N.4 Grade 7: 7.C.9 Grade 8: 8.C.4</p>
<p>25 Fraction War!</p> <p>If you love War, you will love this version!</p> 	<p>26 Logic Puzzles!</p> <p>Try this logic puzzle!</p> <p>Grocery Store Shopping</p>  <p>Here is a list of more puzzles by degree of difficulty Click Here</p>	<p>27 Math Riddles!</p> <p>This is a list of a bunch of fun and challenging math riddles! See how many you can answer correctly!</p> <p>Portuguese - Spanish</p> 	<p>28 Complete 1 hour of I-Ready on your path!</p> 	<p>29 Practice your integer operations! Go to IXL:</p> <p>Grade 6: 6.N.9 Grade 7: 7.C.17 Grade 8: 8.C.7</p> 	<p>30 Practice your math skills with these Ready Math worksheets:</p> <p>Grade 6 English Spanish Portuguese Grade 7 English Spanish Portuguese Grade 8 English Spanish Portuguese</p>

Example: Standard Deck of Playing Cards (52 cards in all)

Suit	Ace	2	3	4	5	6	7	8	9	10	Jack	Queen	King
Clubs													
Diamonds													
Hearts													
Spades													

Additional Game Instructions

1) Play a game of 99! - [English 99 Directions](#) - [Spanish 99 Directions](#) - [Portuguese 99 Directions](#)

2) Find a plant outside and measure its progress! Either find one in your yard, on the sidewalk, in the woods, etc. Have a piece of paper and a pencil and chart it's growth over the next month. Track the change in growth each day in centimeters. After you have tracked it for a month, find the average rate at which it grows!

4) Use exactly four 4's to form every integer from 0 to 20 using only the operators +, -, x, /, () (brackets), . (decimal point), x^2 (square), square root and ! (factorial).

ex) $4+4+4+4 = 16$

$$\frac{4}{4} + 4 \times 4 = 17$$

5) Practice Your Mental Math with Extreme Counting! Pick a number between 6 and 25. Count by that number as high as you can!

Ex: 6, 12, 18, 24, 30,.....

Pick another number and try again. Are some numbers easier than others? Why do you think so? Which number is the hardest? The easiest?

6) Practice with Percentages!

Look around you...what numbers can you find? Look at food labels, house numbers, mailing addresses. Find 50% of each number. Then find 10%, 20%, 30%! See how many you can do!

Ex: A nutrition label says that a serving of cookies has 16 grams of carbohydrates.

50% of 16 is $0.50 \times 16 = 8$

10% of 16 is $0.10 \times 16 = 1.6$

20% of 16 is $0.20 \times 16 = 3.2$

30% of 16 is $0.30 \times 16 = 4.8$

Can you think of any shortcuts or patterns to make this easier?

8) Measuring A Leaf! Go outside and find a leaf. Estimate the area and perimeter of the leaf. This isn't as simple as it sounds! First find a small object whose area and length you *can* measure accurately. Then use that object as a tool to estimate the area and perimeter of the leaf! Can you think of another method that is more accurate?

9) Play the Tower of Hanoi game! How many moves did it take you? Can you complete the task in fewer moves?

Challenge yourself by increasing the number of disks! Parents/Guardians: This website includes free translation service.

10) You are offered the choice of two options:

Option A: Receive \$1,000,000 at the end of the month

OR

Option B: Receive 1¢ on the first day, 2¢ on the second day, 4¢ on the third day, 8¢ on the fourth day, etc. The amount continues to double each day.

Which would you choose?

How much money would you have at the end of the month (30 days) if you chose Option B?

11) Prime Numbers Challenge! A prime number is a number that is only divisible by 1 and itself. Examples of prime numbers are 2, 3, 5, 7, 11 and 13. How many prime numbers can you add to this list? Use these [math divisibility rules](#) to help you!

12) Sudoku Puzzle Website Information - You can pick your level of difficulty. *Parents/Guardians: This website contains ads. This website includes free translation service.*

13) 101 and Out... This paper and pencil game works well in second to fifth grade classrooms and can be played by teams of students (like boys against girls) or in pairs. To play you will need a sheet of paper, a pencil, and one dice. The object of the game is to score as close to 101 without going over or "out."

To play, students take turns rolling the dice. As they roll, they can either take the number as a one or a ten. For example, if a student rolls a 5, they could take it as a 5 or a 50. Students keep a running record of their total as they play.

To make this more challenging, you can change the end number! So instead of 101, you can make it 1001 or 2020! Or even use Multiplication!

15) The probability of flipping a coin and getting tails is $\frac{1}{2}$. Does this hold true if you flip the coin over and over and over again? Flip a coin 100 times and record how many times the coin lands heads and how many times the coin lands tails. Keep track of this in a chart or table. How close to $\frac{1}{2}$ did you get? What happens if you flip the coin another 100 times? 1000 times?

17) Using a deck of cards (you can make your own with scraps of paper!): Remove all face cards (jacks, queens, kings) and the jokers. Let a card with an "ace" represent the number 1. Draw cards at random until you have 10 cards. Calculate the mean, median, mode, and range for your set of cards.

Repeat again, this time selecting 12 cards. Repeat again, this time selecting 20 cards.

18) Gather up a collection of small objects. Make a table to list out all of the objects and the quantity of each. Then calculate as many probabilities as you can.

EX: Calculate the probability that an object selected at random will be:

Object	Quantity
Paper clips	5
Blocks	7
Erasers	3

A paper clip

A block

An eraser

A paper clip OR a block

A paper clip OR an eraser

A block OR an eraser

A paper clip AND a block

19) Transformation in the Real World Activity! Preview one of the best units of 8th grade! This powerpoint will explain what a transformation is as well as your activity!

[Transformations in the Real World PPT](#)

20) Design your own game! It can be a board game, solitaire game, dice game, card game, a game that requires physical activity, or any other game you can imagine! Come up with a name for your game, and design its logo. Write out a detailed list of instructions. Be sure to explain how you know when the game is finished and how a winner is determined. Build or draw out your game, including any materials (game board, tokens, or other materials).

Don't forget to play your game!

21) Calculating Deck of Cards Probability!

You will need a deck of cards or you can print or create your own!

Refer to the standard deck of playing cards above. If a card is drawn at random, calculate the probability that the card is:

Red

A club

A 7

A Red 7

A 7 of diamonds

Not a 7

Not a 7 of diamonds

Not a spade

If two cards are drawn at random, what is the probability the sum of the two cards is 7?

What is the probability the sum of the two cards is 7 and their product is 12?

22) Daily Mental Math! These numbers change by the day! What is the date today? Use the month, day, and year to calculate the following. Try to do some of these in your head:

Month + Day =

Month - Day =

Month + Day - Year =

Month - (Year + Month) =

Day x (Month - Day) =

Year - Month + Day =

Month x Day =

Month x Year =

Year ÷ Month =

(Month)² = (month squared, or month raised to the second power)

(Day)² = (day squared, or day raised to the second power)

What other calculations can you do?

25) Fraction War - Students take turns playing "war" using a deck of cards and a pencil to act as the fraction line. The pair of students must then decide who has the larger fraction based on the four cards played. The winner gets to keep all the cards. Player with most cards at end wins.

Goal: to develop quick comparison of fraction values

Rules:

Shuffle and deal the cards. Each player puts their cards faced down in a pile. Both players turn over TWO cards at the same time (one above the pencil and one below).

The player whose cards has the larger fraction wins all four cards. Players may use the paper to figure equivalent fractions or use the Tip Sheet.

If players turn over equivalent fractions, then there is a fraction war. Each player places 2 new cards face down and the 3rd & 4th card face up (one above the pencil and one below).

Whoever has the higher fraction wins all the cards.

The game can continue until one player has all the cards or for a given amount of time.

Fraction War Tips and Tricks

If two fractions have a common denominator, the fraction with the larger numerator is the larger fraction. Ex: $\frac{3}{5} > \frac{2}{5}$

If two fractions have a common numerator, the fraction with the smaller denominator is larger. Ex: $\frac{1}{4} > \frac{1}{8}$

If you are unsure about which fraction is larger, use the fraction strips to compare.