Mathmagic Study Guide

4 Activities

This study guide contains 4 activities you can do with students before or after the Mathmagic Assembly:

1. 10 Math Quickies
2. 25 Math Word Puzzles: www.abrakid.com/materials/math-wordles.pdf
3. 6 Math Puzzlers
4. 3 Mathmagic Tricks

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Math Quickies

Note: You can present these verbally. If you prefer to hand out sheets to students for them to complete, a version without the answers follow this.

1. What is unusual about the number 1961? It's the same upside down.

2. I have 2 American coins in my hand that total 26 cents. One of them is not a penny. What are they?
   A penny and a quarter. The other coin is a penny.

3. A triangle's sides are 4, 6, and 10 inches. What is its area? 0

4. What is the only number that has the same number of letters in its name as its number? 4 (four)

5. Can you arrange five 6's so they total 19? 6+6+6+6/6=19

6. A hole is 2 feet x 2 feet x 2 feet. How much dirt is in a hole this size? None. A hole has no dirt!

7. Amoebas double every minute. It took 1 hour to fill half the bottle. How long to fill the whole bottle?
   61 minutes.

8. How is this equation true: 5x6 =8x4 5x6=thirty. 8x4=thirty too.

9. My math professor says that half of 8 is 3. How is that possible? Or has he lost his marbles?
   Draw a vertical line thru "8". Right half =3!

10. What is the only number whose letters are in reverse alphabetical order? ONE

Math Quickies Worksheet

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2. I have 2 American coins in my hand that total 26 cents. One of them is not a penny. What are they?

3. A triangle's sides are 4, 6, and 10 inches. What is its area?

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Math Wordles

Access 25 Math wordles here: www.abrakid.com/materials/math-wordles.pdf

Print or show them on your screen. Answers are at the end of the file.

To begin, you might show the sheet with 4 sample wordles. Answers are at the end of the file on the answers page, in the upper right corner.

You can hold up 1 sheet after another, having the class try to figure them out.

Another approach is to play a jeopardy-type game with them. Print out each of the 25 wordles, and put in 5 columns of 5, with each column being a different category (Numbers, Measurement, Geometry, Po Por I, and Sports Math). Break the students into 4 or so teams. Teams take turns choosing a category and point value. The team who chooses gets 15 seconds to figure it out. After that, the opportunity is open to the other teams. At the end, have each team come up with their own math wordles and show them to the class.

Math Puzzlers

How many times can you fold a piece of paper in half?

Effect: Ask how many times someone thinks they can fold a sheet of paper in half. Suppose they say 8. Have them try. They can't do it. Why?

Props: 1 sheet of paper (8.5x11 or it can be a half or quarter sheet.)

Petals Around the Rose

Effect: In this puzzle, you roll the 3 dice repeatedly, in each roll announcing how many petals are around the rose. You then see if any of the audience can catch on so they know how many petals are around the rose.

Props/Secret: You'll need 3 (or more) dice. "Petals around the rose" refers to spots on the dice face that are around a dot in the middle. So, 3 has 2 petals around the rose (i.e. 2 spots around the middle spot on its dice face). 5 has 4 petals around the rose (1 dot in the middle and 4 around it). 1,2,4, and 6 have 0 petals around the rose. So, e.g. if you roll a 1,3, and 5, there are 6 petals around the rose (0+2+4). If you roll three 5's, there are 12 petals around the rose (4+4+4). If you roll a 1, 2, and a 4, there are 0 petals around the rose.

Presentation: Make a few rolls, announcing how many petals are around the rose in each roll. See if anyone can catch on so they know how many petals are around the rose. If 1 or 2 people get it, and others still don't, it drives them even more crazy!

4 Triangles

Challenge: Can you make 4 triangle using 6 pencils (or crayons)? No bending or breaking.

Write 100

Challenge: Can you write "100" without lifting pen from paper? There can be no connecting lines between digits. The digits cannot butt up against each other. When you move pen across paper, it must make a mark.

Eight 4's

Challenge: Can you make eight 4's equal 176?

Alphabetical Number

What number's letters are in alphabetical order? Hint: It's between 0-100.

Math Puzzler Answers

How many times can you fold a piece of paper in half?

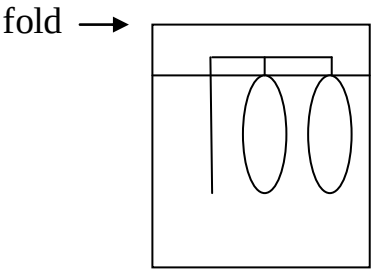
Secret: How many thicknesses is it when you fold it 8x? When you fold it the 1st time, it makes 2. 2nd time: 4. 3rd time: 8. 4th time: 16. 5th time: 32. 6th time: 64. 7th time: 128. 8th time: 256. So when you fold a sheet of paper in half the 8th time, you are folding 256 thicknesses of paper. No wonder you can't fold it in half that many times! Such is the power of exponential addition!

4 Triangles

Put them in the shape of a pyramid.

Write 100

Fold the paper ~1" from the edge. Draw 100 as in diagram. Then unfold the paper. You are left with 3 unconnected numbers!



8 4's

44 + 44 + 44 + 44 = 176

Alphabetical Number

FORTY

Math Tricks

Mighty Mentalist (addition)

Effect: A spectator thinks of a number 1-25. You point to 5 boxes of numbers, asking if his is in each. You then reveal his number!

Props: A sheet with the 5 boxes of numbers. An 8.5x11 sheet Is included if you'd like to use it.

Secret: Whichever box(es) his number is in, add the first number in each box to divine his number. E.g. If it is in the first 2 boxes, the number is 3 (1+2). If in box #2 only: 2.

1	3	5	7	9
11	13	15	17	
19	21	23	25	

2	3	6	7	
10	11	14	15	
18	19	22	23	

4	5			
12	13			
14	15			
20	21			
22	23			

8	9	10	11	
12	13	14		
15	24	25		

16	17	18		
19	20	21		
22	23	24	25	

Tips: For young kids, think of a number 1-10. For older ones, you can add 1or 2 more boxes & go up to 63 or 127.

Dice Tower (subtraction)

Effect: While your back is turned, a spectator rolls 2 dice, then stacks them 1 atop the other. You turn around and point out that while we can see many of the numbers in the dice tower, there are 3 faces we cannot see. (the bottoms of each of the dice, and the top of the bottom dice). While you turn around, you ask a spectator to jot down the 3 numbers that you cannot see, and add them up. You then mind read the total! For a finale, you repeat the trick with 3 dice! In this case, there are 5 faces that cannot be seen when they are stacked (3 bottoms & the tops of the bottom 2). You still mind read the total!

Props/Secret: You'll need 3 dice. When the spectator has stacked the dice, and you face him to explain about adding the faces you can't see, you casually note the number of the top die. Subtract this from 14 when using 2 dice, and from 21 when using 3 dice, and you have the total of the hidden faces! Why? Opposite sides of a die always add to 7. Therefore, the tops & bottoms of 2 dice always total 14, and the tops & bottoms of 3 dice always total 21. If you know the top number of the stack, subtract that from 14 (when using 2 dice) or 21 (when using 3 dice), and you have the total of the hidden faces! E.g. with 2 dice, if the top is 4, the 3 hidden faces = 10 (14-4). With 3 dice, if the top dice = 6, the 5 hidden faces = 15 (21-6).

Note: You can also do it with 1 die. The spectator rolls. You mind read the hidden number on the bottom. It is 7 minus the number rolled.

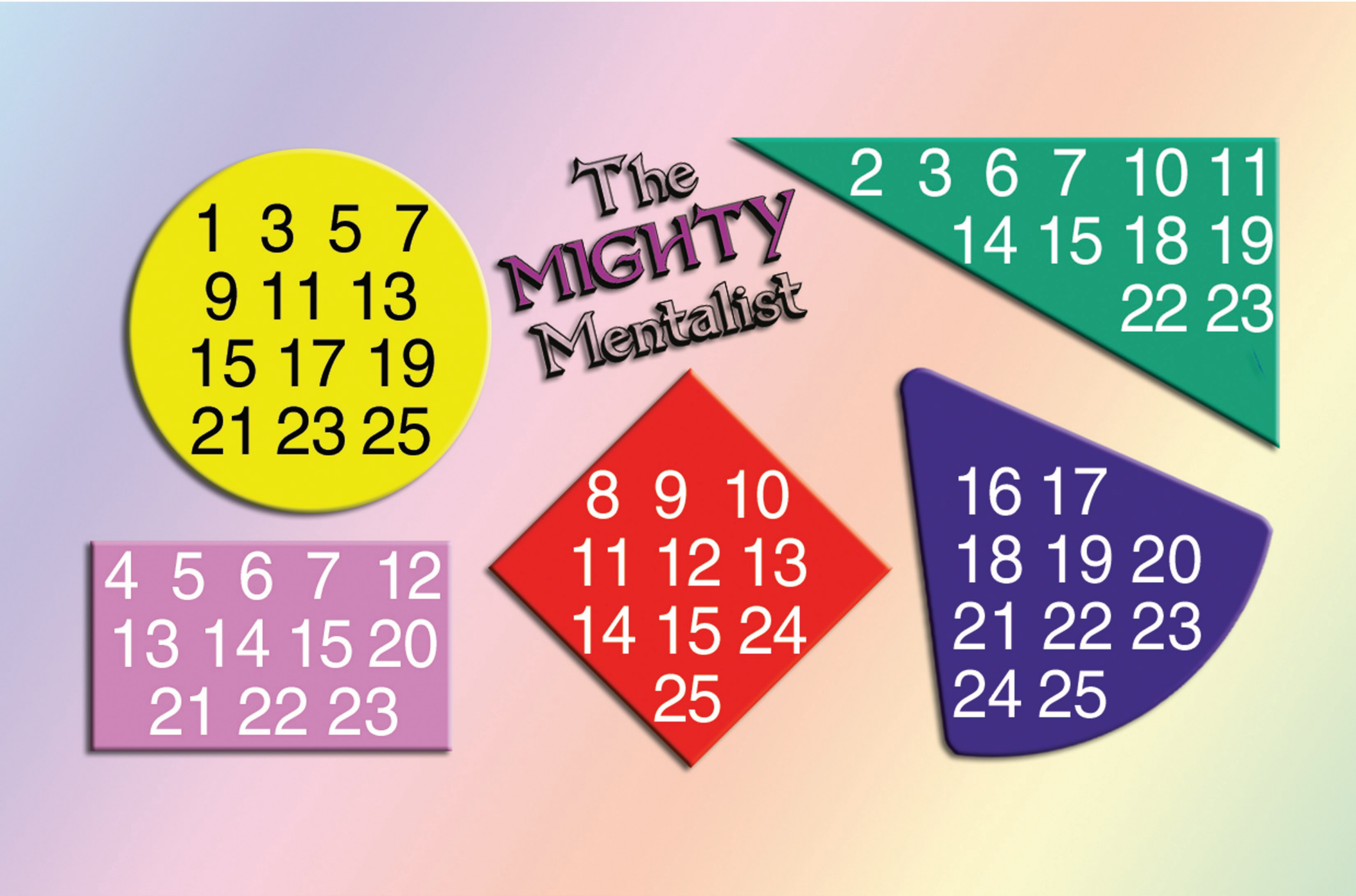
The Even-Odd Psychic (even-odd)

Effect: Announce that you have some coins in your hand. It is either even or odd. You've heard the spectator has great psychic powers. What does the spectator think it is, even or odd? The spectator is correct! She is psychic!

Props/Secret: 3 coins: 1 penny, 1 nickel, & 1 dime, and a ziplock bag to hold them. The 3 coins total 16 cents. Hence, the coins can either be shown as even—16 cents—or odd—3 coins, as the spectator says!

Presentation: "Is it true that you have psychic powers? I've heard that is the case. Let's try an experiment. I have some coins in my hand. (Show fist. You have the 3 coins inside.) I'm going to concentrate on either even or odd, and try to send my thoughts to you. Are you ready? Did you get any impression? What do you think—even or odd? (Specatator answers even or odd.) How did you know that? I think you really are psychic! (Show that spectator is right.)"

Teaching Tip: Don't play this as showing the spectator wrong by showing the opposite of what he says. This could suggest that you are saying that you are the great magician & he is the dumb spectator. Showing the spectator that he has great mental powers is a much better presentation.


1 3 5 7
9 11 13
15 17 19
21 23 25
The MIGHTY Mentalist
2 3 6 7 10 11
14 15 18 19
22 23
4 5 6 7 12
13 14 15 20
21 22 23
8 9 10
11 12 13
14 15 24
25
16 17
18 19 20
21 22 23
24 25