

Lesson Plan
Magic Squares—Math
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Lesson: Magic Square—Math

Length: 45 minutes

Age or Grade Level Intended: 3rd grade

Academic Standard(s):

Math: 3.2.1—Add and subtract whole numbers up to 1,000 with or without regrouping, using relevant properties of the number system.

Performance Objective(s):

After reviewing basic math facts, students will correctly answer 19 out of 20 addition questions correctly

Assessment:

Students will be given a worksheet and asked to answer twenty addition problems correctly.

A—19-20 correct (95-100%)

B—17-18 correct (85-90%)

C—15-16 correct (75-80%)

D—13-14 correct (65-70%)

F—12 and below (60% and below)

Advance Preparation by Teacher:

- Obtain a copy of Ben Franklin and the Magic Squares by Frank Murphy
- Have adequate copies of the magic square template
- Have instructions to complete magic squares copied off
- Be ready to complete a magic square with the class.

Procedure:

Introduction/Motivation:

1. Say to the students, “Who can remember what we the national symbols that we learned about yesterday?” (**Bloom:** Knowledge) What do you think would happen if any of these symbols did not exist? (**Bloom:** Synthesis) How could you determine which symbols are most important to you? (**Bloom:** Evaluation) Well do you remember what bird Ben Franklin wanted to have as our national bird? (**Bloom:** Knowledge) Today we are going to get away from national symbols and talk about one of Ben’s hobbies. So today we are going to explore magic squares and how Franklin worked on them when he was bored.

Step-by-Step Plan: (**Gardner:** Visual-Spatial, Intrapersonal, Verbal-Linguistic, Logical-Mathematical.)

2. The teacher will read Ben Franklin and the Magic Squares by Frank Murphy to introduce magic squares to students. As the teacher reads he/she should ask the students various questions about the text. The class should also create a list of important elements of a magic square.
3. Now as a class the teacher should draw two magic squares on the board to complete with the class. While completing the magic square remind the students about the steps it takes to do one which is found on pages 45-47 of the book. The teacher should also show students how to line up the numbers for an addition problem and how to carry if a number is larger than ten.

Group Activity

4. Hand students work on the worksheet with magic squares and have them create three of their own magic squares in groups of 2 to 3. Remind students to use their addition skills when completing the squares.
5. Once students have completed three magic squares in groups, have a few groups share their magic squares with the class.

Closure

6. Once some students have shared their magic squares, tell students to remember how unique Ben Franklin is for tomorrow 's lesson. Tell them that we will be cooking one of Ben's favorite deserts.

Adaptations/Enrichment:

Student with ADHD

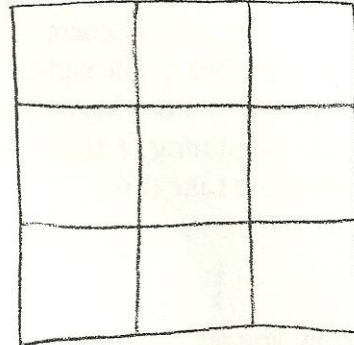
- This student will receive one direction at a time so they do not feel over loaded.
- This student will work with an aide to complete their magic squares for moral support to keep their self esteem up.
- This student will be allowed to have two breaks to prevent them for feeling overwhelmed.

Self-Reflection:

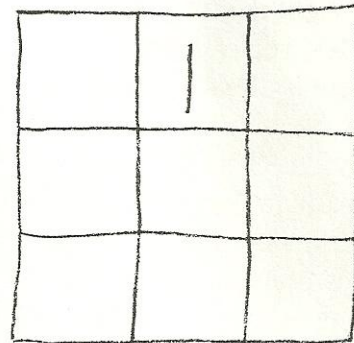
7. Were all students involved during lesson?
8. Did the teacher lose control of the students during the lesson and while reading the story?
9. What went well during the lesson?
10. Did most students meet the objective set forth in the lesson?
11. What went well? What did not go so well?

MAKE YOUR OWN MAGIC SQUARE

A. Draw a square. Draw a tic-tac-toe board inside the square.

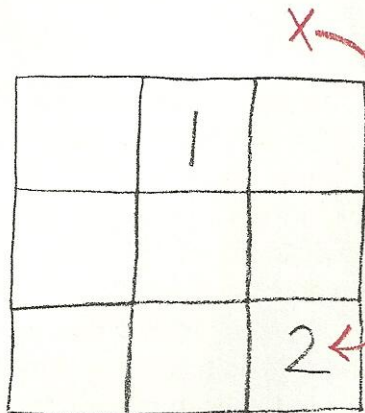


B. Start with the number 1. Put it in the middle of the top row.



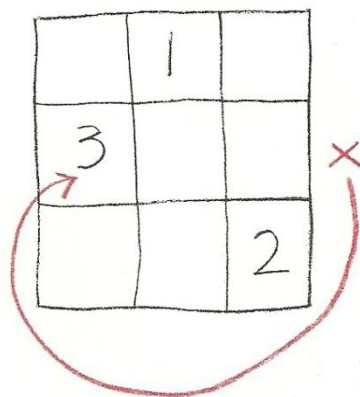
C. Put the number 2 in the box that is directly above and to the right of the 1.

Okay. Wait—hold it! You're probably saying, "There is no box above and to the right of the 1." That's true. So here's what you do: Since there is no box above the 1, drop down to the bottom of the column that holds the 1. *Now* move one square to the right and there you go! Put your number 2 there!



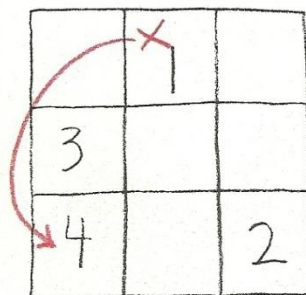
D. Okay, now you're ready for the number 3. So repeat step C: Look for the box above and to the right. Move up one row and then . . . yep, you are correct! There is no box to the right!

What do you do? Move that 3 to the beginning of the row above the 2! Like this!



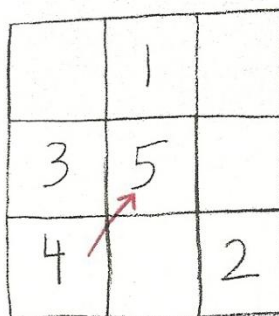
E. Now you are ready for the number 4. Just look above and to the right again!

Yes, you're correct again! There is already a number in the box. So what do you do? Anytime there is a number already in the box you want, just put the next number in the box below the number you just wrote. So put the 4 below the 3.



F. Now for the numbers 5 to 9! Always look for the box above and to the right.

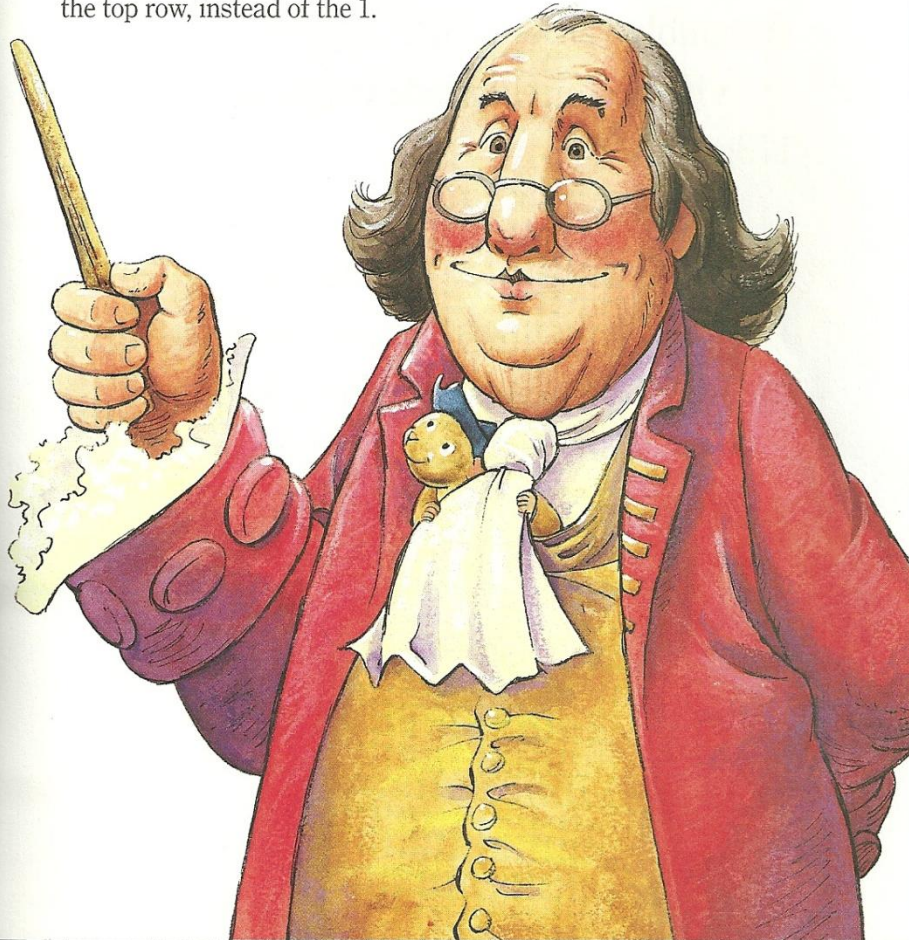
If you get stuck, go step by step. If there is no box above, drop down to the bottom of the column, *then* move to the right. If there is no box to the right, move to the beginning of the row. And so on!



G. Ta-da! Your magic square!
What makes it magic? Add the numbers in each of the rows. Now add each of the columns. And finally, add each of the diagonals. What do you get? 15. A perfect magic square!

There are many ways to make magic squares—big ones and little ones! Try starting with 9 and working down to 1! This time, the 9 goes in the middle of the top row, instead of the 1.

8	1	6
3	5	7
4	9	2



Name: _____

Math Worksheet: Adding 3 digit numbers

(2)	(3)	(4)	
$\begin{array}{r} 257 \\ +680 \\ \hline \end{array}$	$\begin{array}{r} 149 \\ +971 \\ \hline \end{array}$	$\begin{array}{r} 161 \\ +339 \\ \hline \end{array}$	$\begin{array}{r} 854 \\ +138 \\ \hline \end{array}$

(5)	(6)	(7)	(8)
$\begin{array}{r} 394 \\ +936 \\ \hline \end{array}$	$\begin{array}{r} 584 \\ +308 \\ \hline \end{array}$	$\begin{array}{r} 183 \\ +928 \\ \hline \end{array}$	$\begin{array}{r} 662 \\ +762 \\ \hline \end{array}$

(9)	(10)	(11)	(12)
$\begin{array}{r} 31 \\ +393 \\ \hline \end{array}$	$\begin{array}{r} 184 \\ +699 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ +449 \\ \hline \end{array}$	$\begin{array}{r} 455 \\ +292 \\ \hline \end{array}$

(13)	(14)	(15)	(16)
$\begin{array}{r} 151 \\ +955 \\ \hline \end{array}$	$\begin{array}{r} 454 \\ +493 \\ \hline \end{array}$	$\begin{array}{r} 156 \\ +662 \\ \hline \end{array}$	$\begin{array}{r} 819 \\ +173 \\ \hline \end{array}$

(17)	(18)	(19)	(20)
$\begin{array}{r} 399 \\ +502 \\ \hline \end{array}$	$\begin{array}{r} 282 \\ +697 \\ \hline \end{array}$	$\begin{array}{r} 643 \\ +572 \\ \hline \end{array}$	$\begin{array}{r} 884 \\ +116 \\ \hline \end{array}$