

# MATH IS MARVELOUS



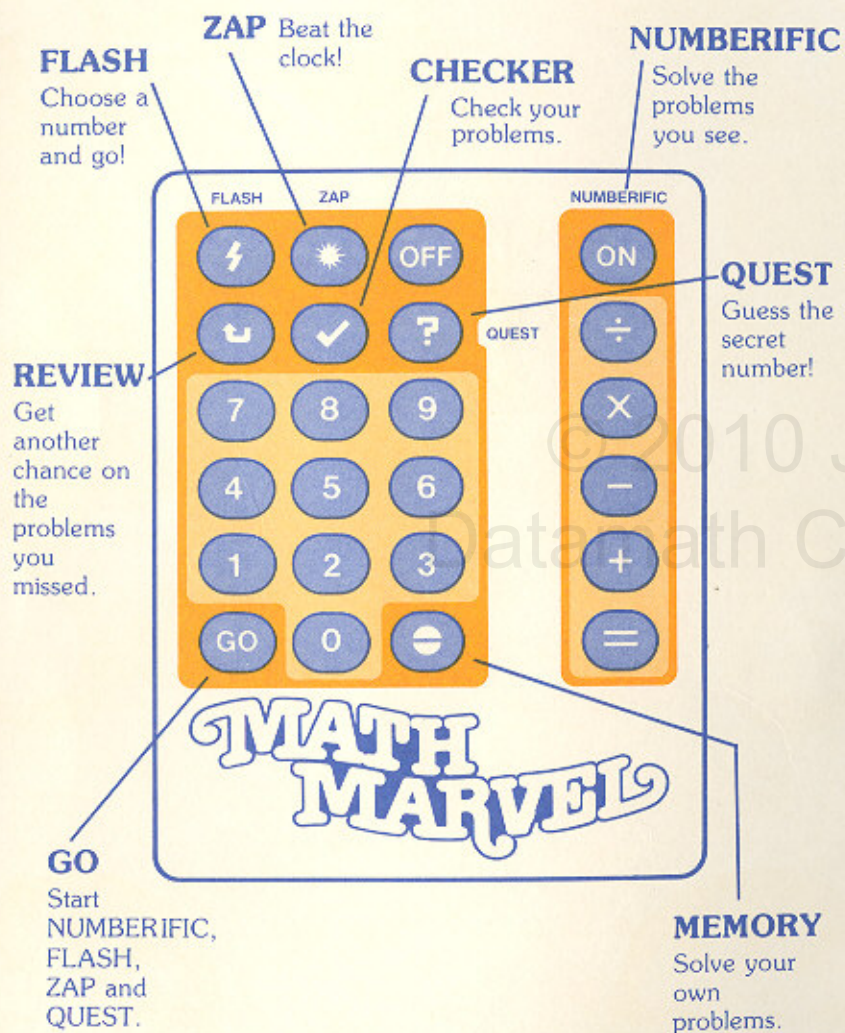
An  
Activity  
Book  
For

**MATH  
MARVELS™**



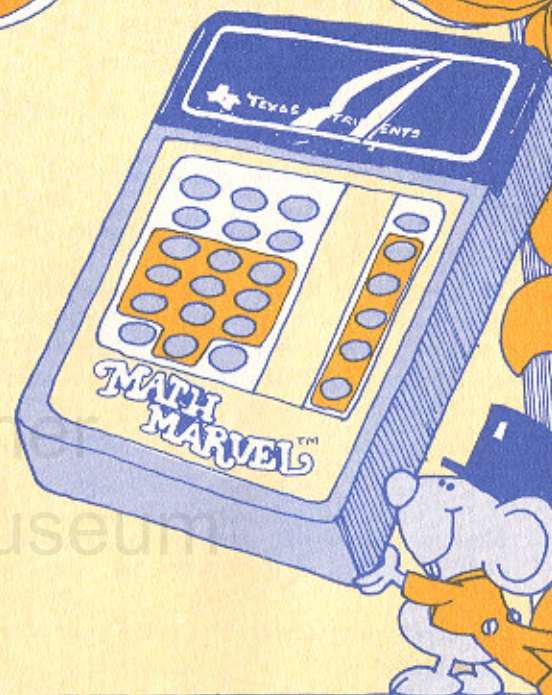


# THE KEYS TO MATH MARVEL™



Developed by the staff of the Texas Instruments Learning Center.  
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# Presenting...



For your entertainment and learning fun.....  
The magnificent MATH MARVEL and Circus!  
Activities to stretch the mind.  
Games to challenge one and all.

Come see  
how "Math is Marvelous!"



# Numberific ON

NUMBERIFIC gives you problems with one missing number. You choose the position of the missing number and the level of difficulty. Math Marvel displays a problem.

1. Press **ON**. The display shows  $+ [1]$ .
2. Move the box by pressing **ON**.
3. Press **+**, **-**, **x**, or **÷** to select the kind of problems you want.
4. Press **2** for more challenging problems.
5. Press **1** for easier problems.
6. Press **GO**.

You have two chances to answer each problem correctly. When your answer is correct, you hear a tune and then see the next problem. If the answer is incorrect, "EEE" appears in the display and you hear a buzz. Math Marvel displays the correct answer after the second incorrect answer to a problem.

Math Marvel keeps score. After ten problems, your score is displayed like this:

8	10	28
Number of answers right on first try.	Number of problems tried.	How long it took you based on Math Marvel's "timer."

Musical tunes accompany scores. The better your score, the longer the tune. Press **GO** for ten more problems. Remember, press **ON** to change operation (+, -, x, or ÷) or level (1 or 2).



# FLASH ⚡

The amazing human cannonball flies through the air at an incredible speed. Challenge him. Beat his speed and Math Marvel will play the winner's tune!

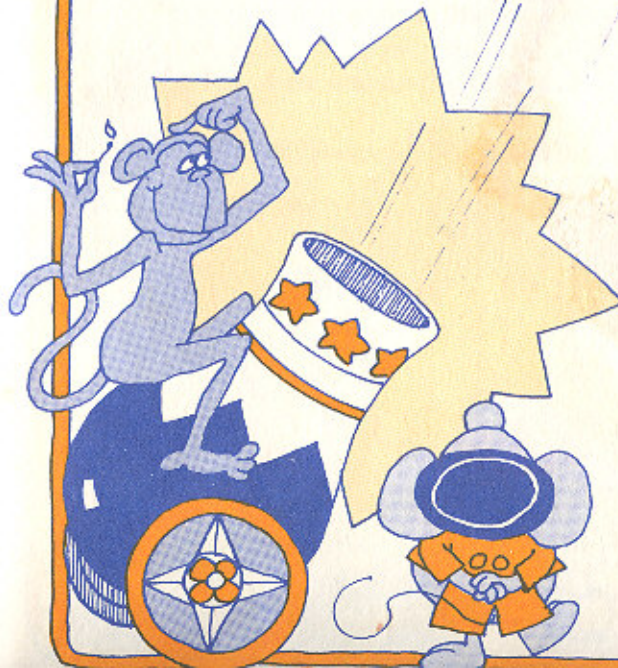
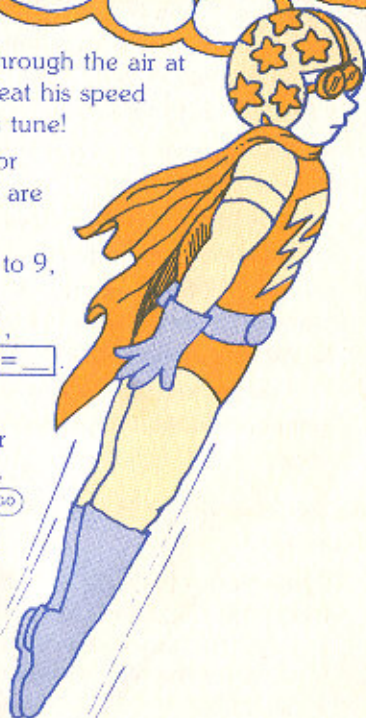
FLASH lets you practice math tables for any number and any operation. There are two ways to practice:

- Press **f** FLASH, a number from 0 to 9, **+**, **-**, **x**, or **÷** and **GO**. For example, if you press **f**, **6**, **x**, and **GO**, your first problem is  $6 \times 0 = \_$ .

OR

- Press **f** FLASH, **+**, **-**, **x**, or **÷**, a number from 0 to 9 and **GO**. This time, press **f**, **x**, **6** and **GO** and your first problem is  $0 \times 6 = \_$ .

After two incorrect answers, Math Marvel displays the correct answer for you. When you complete a set of problems, you are shown your score. Press **GO** to start the next set of problems.



NOTE: Math tables included in FLASH are for the numbers 0-9. Subtraction tables are designed so that negative answers do not occur. Division by 0 is also not included.



# Zap

Combine your addition skills with luck. Challenge one or more friends to a game of ZAP!

ZAP is a fast and furious race against the clock. Only Math Marvel knows when the music will sound. Which player will be zapped?

1. Decide who goes first.
2. Press  $\odot$  ZAP and  $\odot$ . Answer the addition problem in the display as quickly as possible.
3. Pass Math Marvel to the next player after answering one problem. You MUST answer correctly before you pass Math Marvel to someone else.
4. The player holding Math Marvel when the ZAP music sounds gets ZAPPED out of the game.

## REVIEW

For troublesome problems, Math Marvel gives you REVIEW for extra help.

1. If you miss a problem in NUMBERIFIC, FLASH, or ZAP, Math Marvel automatically stores that problem in REVIEW. The first ten you miss in an activity will be stored.
2. After completing ten problems in one of these games, press  $\odot$  REVIEW. You have another chance to answer each problem you missed. Sometimes Math Marvel presents them in a new way. For example,  $[ \quad ] + 6 = 14$  will be presented in REVIEW as  $8 + 6 = [ \quad ]$ .
3. After you finish the problem in REVIEW, your score is displayed.
4. Press  $\odot$  REVIEW again to repeat these problems. Press  $\odot$  to return to the same activity you were in. Press a different activity key to clear REVIEW and try something new.



# Checker

Here's your chance to make and solve your own problems. Math Marvel checks them.

1. Press  $\checkmark$  CHECKER.
2. Press the keys to write your problem. Do this just as you would on a calculator. Press a number key or keys,  $+$ ,  $-$ ,  $\times$ , or  $\div$ , another number key,  $=$  and the answer.
3. If the answer is correct, you hear a musical tune.
4. If the answer is incorrect, you hear a buzz and see "EEE" in the display. Math Marvel is telling you to try again. After two incorrect answers, the correct answer is displayed for you.
5. Math Marvel gives your score with a tune after 10 problems.

NOTE: These are the kinds of problems that Math Marvel can help you check:

- Addition problems that use numbers with one or two digits and result in one, two or three-digit answers. For example,  $23 + 96 = 119$ .
- Subtraction problems that use numbers with one or two digits and result in one or two-digit answers. For example,  $14 - 9 = 5$ . Math Marvel will not accept subtraction problems that result in negative numbers.

- Multiplication problems that use numbers with one or two digits and result in a one, two, or three-digit answer.

For example,  $15 \times 20 = 300$ .

- Division problems that use numbers with one or two digits. Numbers which do not divide evenly require a remainder. Enter the whole number part of the answer. Math Marvel immediately places an "r" beside it, then displays the remainder. Division by zero is not permitted. A smaller number may be divided by a larger number. The answer is always zero with the remainder equal to the smaller number.





# Memory

Have a parent, teacher, or friend enter problems for you.

1. Press  $\checkmark$  CHECKER. Enter a problem like this:  $3 + 3$
2. Instead of pressing  $=$ , press  $\ominus$  MEMORY.
3. Store up to ten problems in MEMORY. Press  $\text{GO}$  and Math Marvel gives you the problems one at a time. You have two chances to answer each problem.
4. Problems are scored as they are in NUMBERIFIC.
5. To repeat these 10 problems, press  $\text{GO}$  and begin again.
6. To store 10 new problems, press  $\checkmark$  CHECKER and repeat the first three steps above.



## "TIMER"

Math Marvel has a built-in "timer." It tells you how much "time" you take to work a set of problems in NUMBERIFIC, FLASH, REVIEW, or MEMORY. The "time" is to the right when your score is displayed. Math Marvel's "time" is not actual time in minutes or seconds.

Use the "timer" to see how quickly you can work different types of problems. Try to improve your "time." Compare "time" scores with a friend. Use the "timer" to add an extra challenge to games.

# Quest

11

63

Math Marvel knows a secret number between 9 and 100. It's up to you to find it. How many guesses will it take you?

45

29

1. Press  $?$  QUEST to start the game.  $9 \quad | \quad 100$  appears in the display.
2. Press any number between 9 and 100. Your number replaces either 9 or 100. The secret number is always BETWEEN the two numbers in the display.
3. Continue guessing. Narrow the choices with each guess.
4. You know you have guessed the secret number when you hear a long tune. Math Marvel shows you how many guesses you took.
5. Math Marvel picks a new secret number each time you press  $?$  QUEST.

30

14

9

100





# Clown Capers

## BALLOONS FOR SALE!

Which balloons must Corky the Clown sell to make exactly \$1.00? Corky may sell any balloon twice, three times or more. Use CHECKER to check your addition on combinations of balloons.

## COLOR ME FUNNY

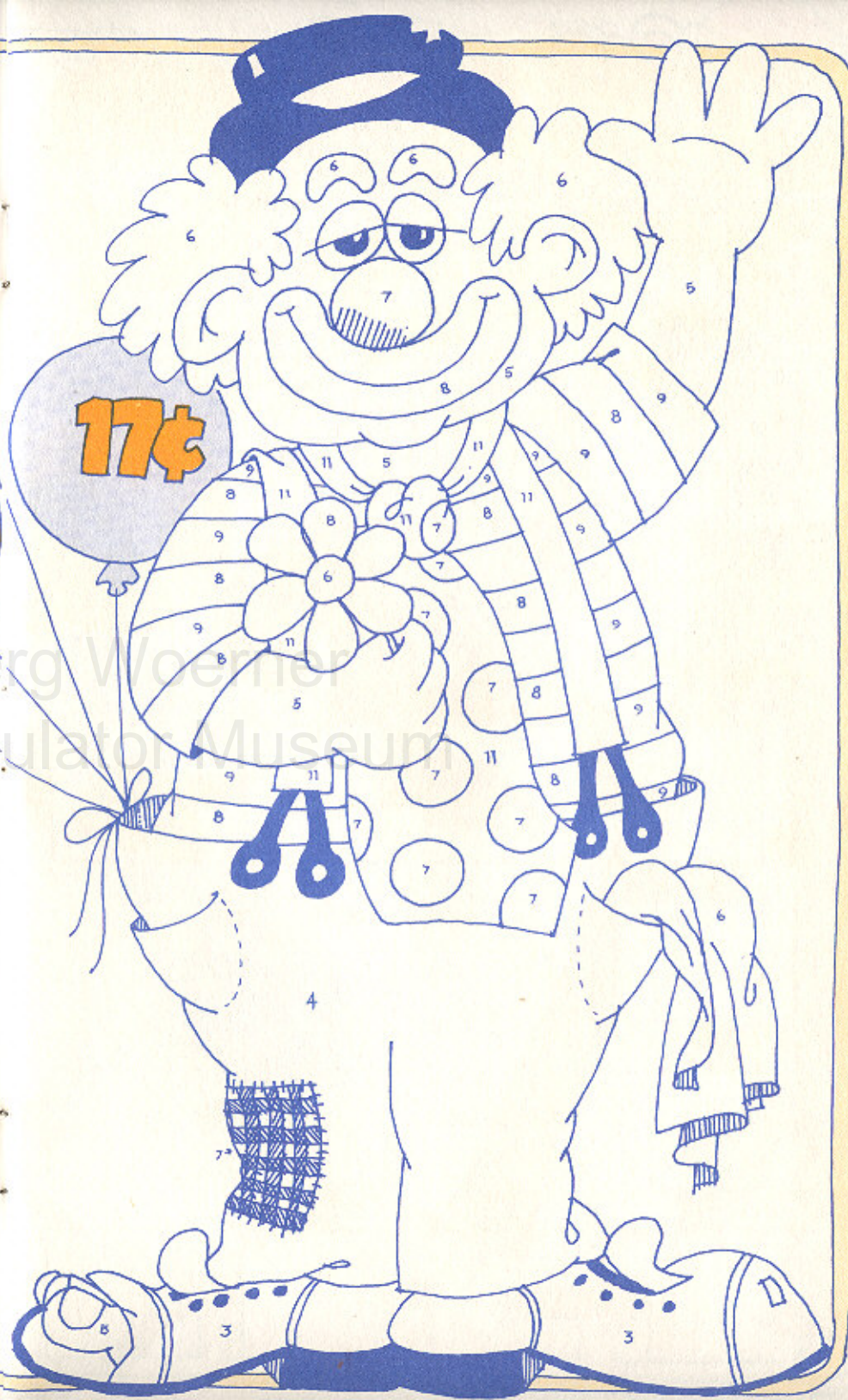
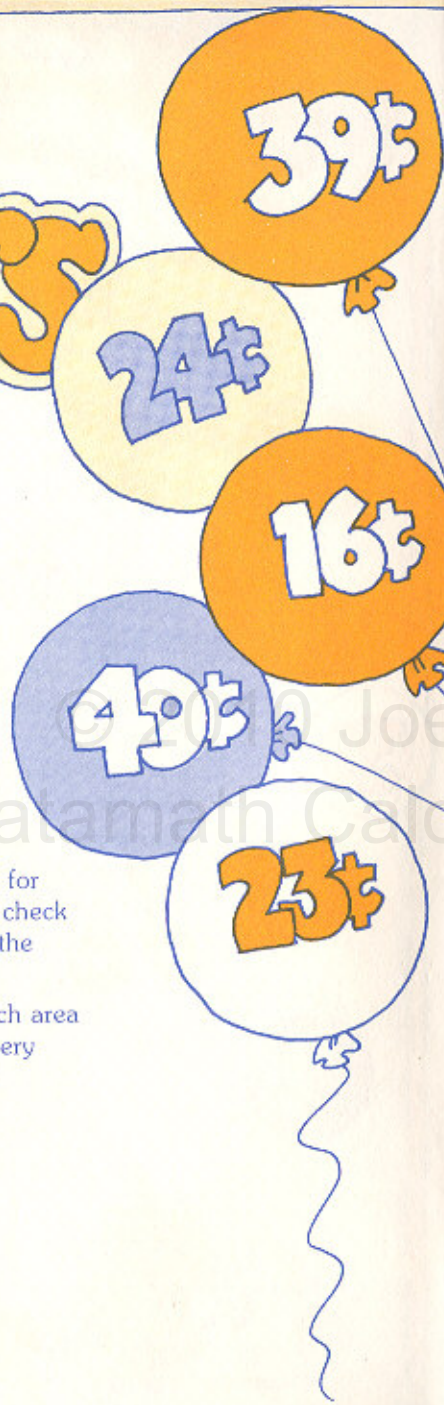
Get out your crayons or felt-tip markers! Corky is waiting for you to color him, but you need Math Marvel's help.

Work all the problems to find the number for each color in the key. Use CHECKER to check your answers. Put the correct answers in the appropriate blanks.

After you have all the answers, match each area with a color by comparing numbers. Be very careful or Corky might look very strange!

## COLOR KEY

- $12 - 5 = \underline{\quad}$ , color the area RED.
- $7 + 4 = \underline{\quad}$ , color the area YELLOW.
- $9 - 6 = \underline{\quad}$ , color the area BLACK.
- $15 - 7 = \underline{\quad}$ , color the area WHITE.
- $10 - 4 = \underline{\quad}$ , color the area ORANGE.
- $2 + 7 = \underline{\quad}$ , color the area GREEN.
- $11 - 7 = \underline{\quad}$ , color the area BLUE.
- $1 + 4 = \underline{\quad}$ , color the area PINK.





# The Grand March

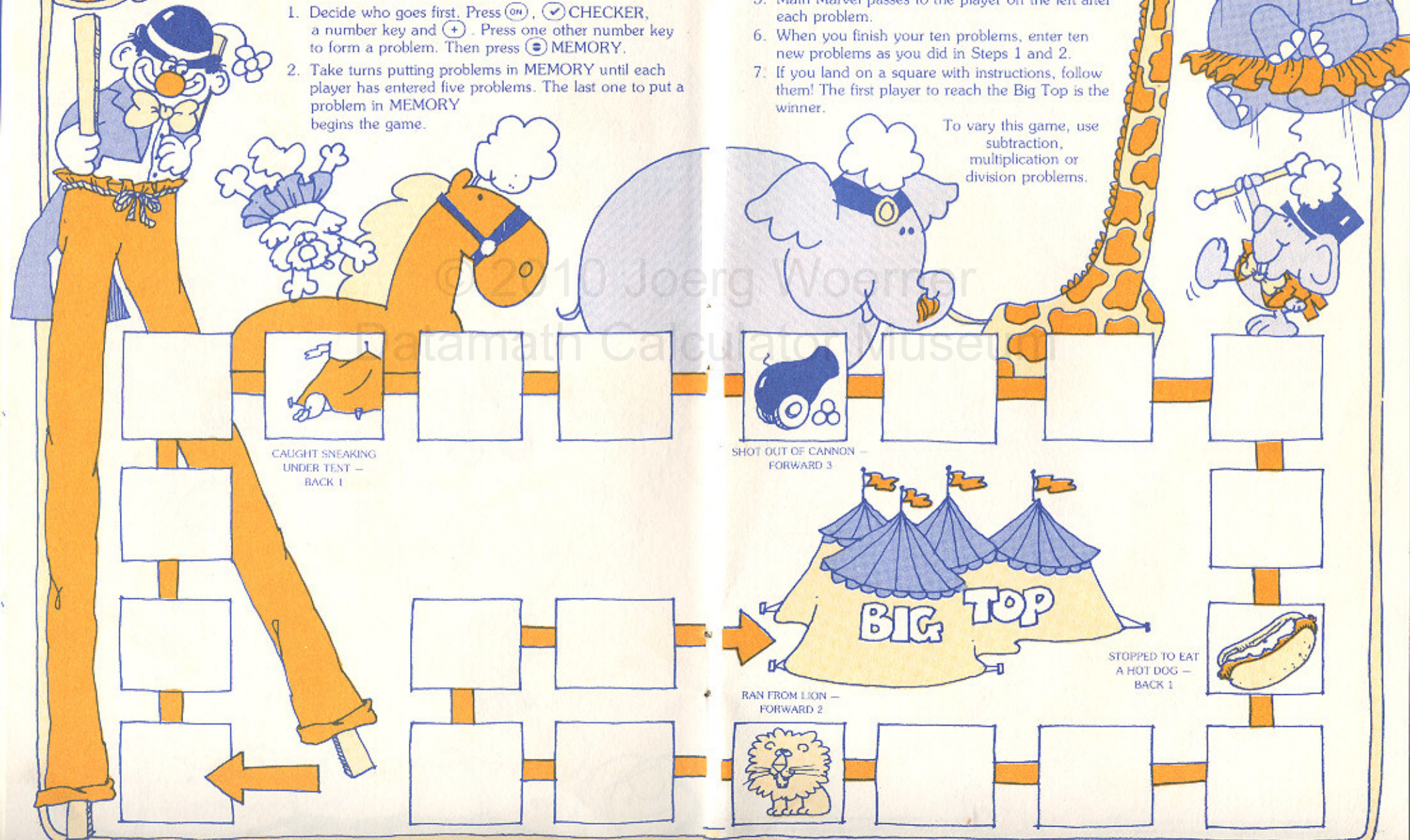
Come join the parade!

You need two or more players, and a marker (a button or penny) for each player.

1. Decide who goes first. Press **ON**, **✓** CHECKER, a number key and **+**. Press one other number key to form a problem. Then press **MEMORY**.
2. Take turns putting problems in MEMORY until each player has entered five problems. The last one to put a problem in MEMORY begins the game.

3. Press **GO** and answer the problem in the display. If the answer is CORRECT and an ODD NUMBER, move FORWARD 1 SPACE. If the answer is CORRECT and an EVEN NUMBER, move FORWARD 2 SPACES. (For example,  $5 + 2 = 7$ , odd, so the player moves forward 1 space.)
4. If the answer is INCORRECT, you may not move.
5. Math Marvel passes to the player on the left after each problem.
6. When you finish your ten problems, enter ten new problems as you did in Steps 1 and 2.
7. If you land on a square with instructions, follow them! The first player to reach the Big Top is the winner.

To vary this game, use subtraction, multiplication or division problems.



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 Patamati Calculators Museum



# Under The Big Top

## THE ELEPHANT PYRAMID

As the drum rolls, the spotlight falls on our tiny ringmaster. He is standing far below his platform, ready to climb to the top. The first player to coax him to the top becomes the elephant trainer!

### RULES:

1. You need two players and a marker (a button or penny) for each player.
2. Choose which side you want to climb and place your marker on a bottom elephant.
3. Play a game of ZAP to see who goes first. If you are NOT zapped, you go first.
4. Follow the instructions on your elephant. If you cannot do what you are instructed to do, stay where you are until your next turn.
5. The first player to reach the top is the winner.

Play QUEST!  
Guess Math Marvel's  
number within six  
tries and move  
to the top.

Have your opponent  
enter five addition  
problems in  
MEMORY. Work all five  
correctly on the first try,  
then go to the next  
elephant.

Play FLASH  
with  $9 \times$ . If  
you miss two or less, go to  
the next elephant.

Press **ON**, then **+** and  
**2**. Press **GO**. Answer  
the first five problems  
correctly in one or two tries  
and you may go to the  
next elephant.

Press **ON** two times, then  
**2**. Press **GO**. Answer  
the first five problems  
correctly in one try and you  
may go to the next  
elephant.

Press **ON** two times, then  
**-** and **2**. Press **GO**.  
Answer the first five  
problems correctly in one  
or two tries and you may  
go to the next elephant.

Press **ON** three times, then  
**+**. Press **GO**. Answer  
10 problems correctly in  
one try and you may go to  
the next elephant.

Play a perfect game of  
FLASH using  $4 \times$  and you  
may go to the next  
elephant.

Have your opponent enter  
five subtraction problems in  
MEMORY. Go to the next  
elephant if you have a  
perfect score on the first try.



# IN THE SPOTLIGHT

## DIZZY DOTS

There's a picture hidden in these dots. To find it, decide which numbers DO NOT belong in each equation.

1. Look at the first equation:  $2 \times 4 \times 3 \times 5 \times 2 \times 2 \times 6 = 576$ . One or more of these numbers does not belong in this equation. Which numbers multiplied together give the correct result? If you multiply  $2 \times 4 \times 3 \times 2 \times 2 \times 6$  (leaving out the 5), you have the correct answer, 576. 5 is the number that DOES NOT belong.
2. Now blacken the dot for 5.
3. Determine which numbers DO NOT belong in each of the other equations and blacken their circles. Use CHECKER to check each of your answers. It takes more than one problem in CHECKER for each equation. (In the example above the problems are:  $2 \times 4 = 8$ ;  $8 \times 3 = 24$ ;  $24 \times 2 = 48$ ;  $48 \times 2 = 96$  and  $96 \times 6 = 576$ .)
4. After you complete all the equations, connect the black dots with one line. Continue until you have connected all the dots.

$$\textcircled{2} \times \textcircled{4} \times \textcircled{3} \times \textcircled{5} \times \textcircled{2} \times \textcircled{2} \times \textcircled{6} = 576$$

$$\textcircled{3} \times \textcircled{5} \times \textcircled{8} \times \textcircled{4} \times \textcircled{9} \times \textcircled{6} \times \textcircled{7} = 84$$

$$\textcircled{9} \times \textcircled{7} \times \textcircled{5} \times \textcircled{3} \times \textcircled{6} \times \textcircled{8} \times \textcircled{11} = 720$$

$$\textcircled{5} \times \textcircled{3} \times \textcircled{6} \times \textcircled{9} \times \textcircled{4} \times \textcircled{7} \times \textcircled{8} = 252$$

$$\textcircled{8} \times \textcircled{9} \times \textcircled{5} \times \textcircled{4} \times \textcircled{10} \times \textcircled{7} \times \textcircled{5} = 72$$

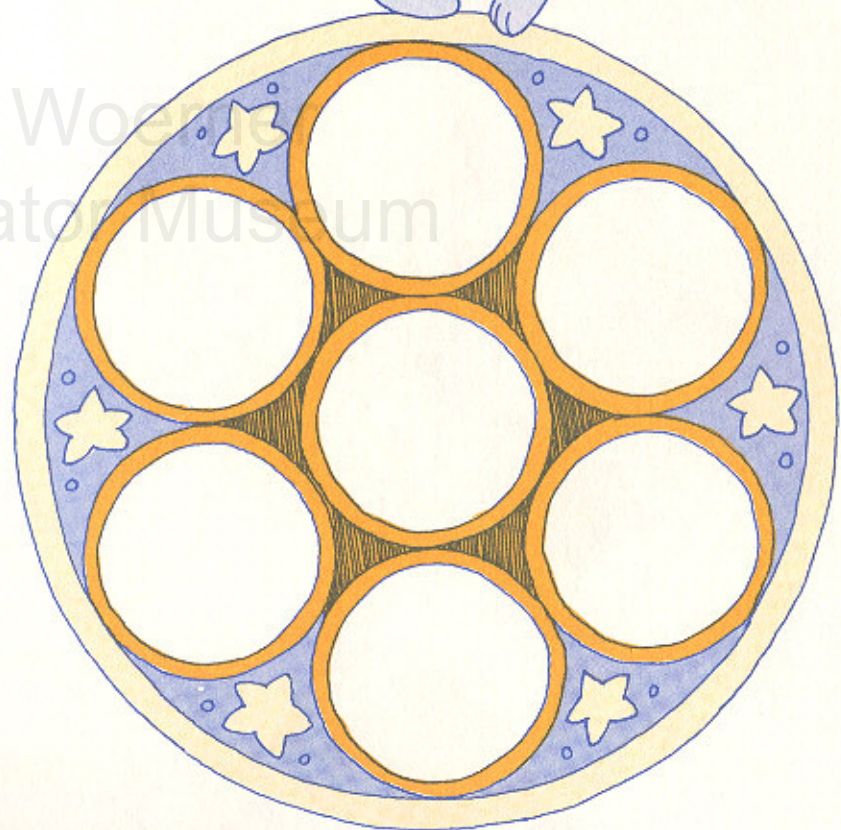
$$\textcircled{7} \times \textcircled{8} \times \textcircled{2} \times \textcircled{9} \times \textcircled{6} \times \textcircled{5} \times \textcircled{10} = 336$$

$$\textcircled{4} \times \textcircled{6} \times \textcircled{11} \times \textcircled{5} \times \textcircled{3} \times \textcircled{9} \times \textcircled{7} = 72$$

## ADDITION LOGIC

Put these numbers — 11, 12, 13, 14, 15, 16 and 17 — where they belong. Each circle needs one of these numbers. The sum of the numbers of any three circles in a row will be the same. Use CHECKER to help!

(Try seven other numbers in a sequence. For example: 1, 2, 3, 4, 5, 6 and 7.)



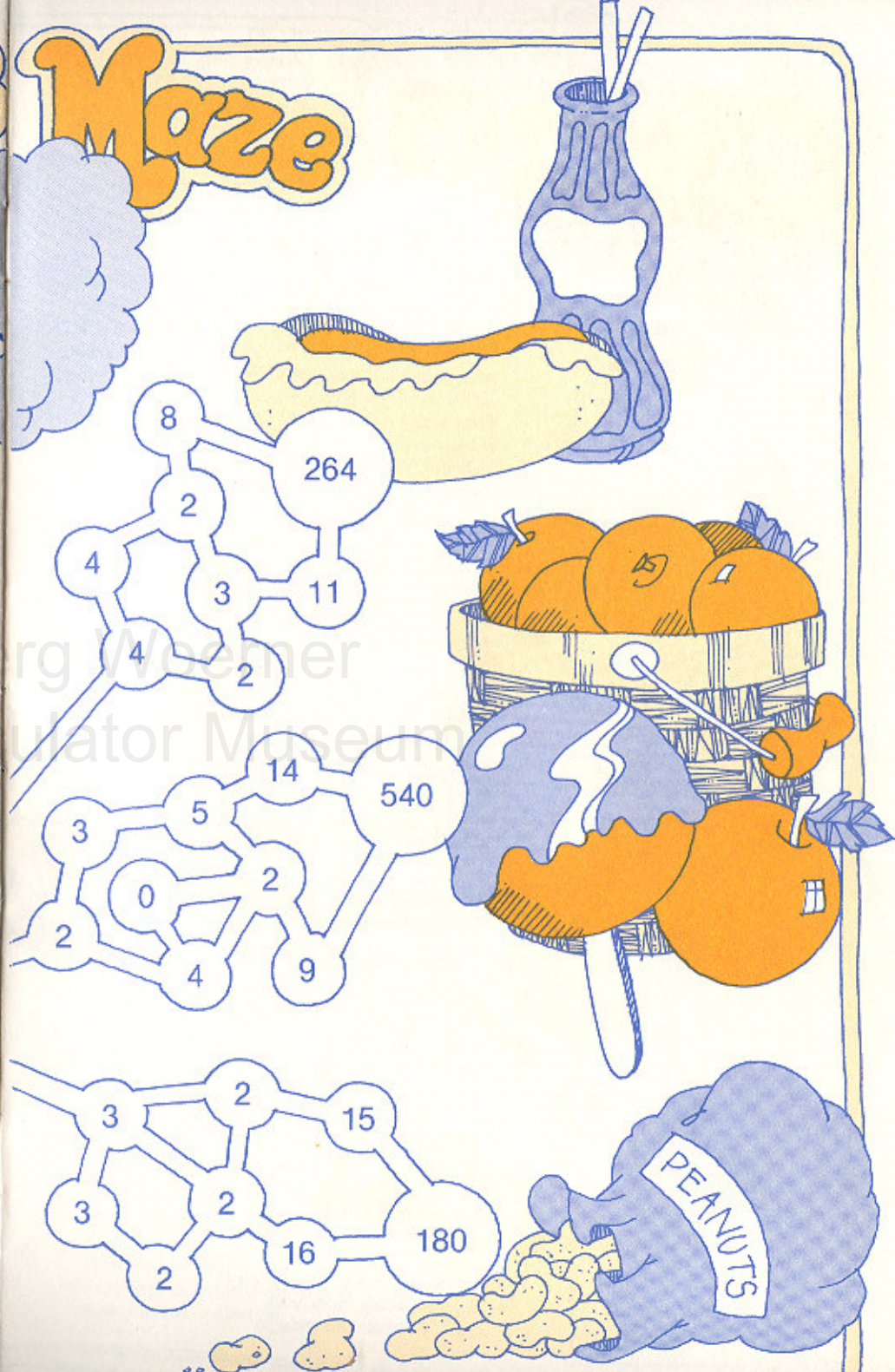


# Circus Mouse Maze

A circus mouse never goes hungry! Our tiny ringmaster has five feeding places. Can you find the correct path to each one?

When all the numbers in the correct path are multiplied together, you have a result that matches the number on the feeding place. You may not cross the same number twice. Use CHECKER to check your answers. Mark each correct path with a pencil as you find it.

As an example, look at the popcorn maze. Try multiplying  $7 \times 4$ . The result is 28. Multiply this result by 20. Does the result equal 360? If so, you have the correct path for the popcorn maze. If not, try another path.





# Feeding Time

What would a circus be without food? Here are some favorite snack time recipes for you. You will need some help from Math Marvel and an adult.

## CIRCUS SAUCE

This recipe makes enough circus sauce for 24 ice cream sundaes, but Math Marvel wants you to make half of it. **DIVIDE ALL OF THE AMOUNTS IN THIS RECIPE BY 2.** Make sure your answers are correct by using CHECKER. Write the correct amounts in the boxes next to each ingredient. Circus sauce will keep in a glass jar in the refrigerator for two weeks. **BE CAREFUL NOT TO TOUCH THE HOT SAUCEPAN WITH YOUR BARE HAND!**



- In a saucepan melt:
  - \_\_\_ 4 squares of baking chocolate
  - \_\_\_ 2 sticks of margarine
- When they are completely melted, stir in:
  - \_\_\_ 2 cups of sugar.
- Gradually stir in:
  - \_\_\_ 16 tablespoons evaporated milk.
- Continue to stir and bring to a boil.
- When the sauce begins to boil, remove from heat and add:
  - \_\_\_ 2 teaspoons vanilla.
- Allow to cool and pour some over ice cream.



## MONKEYSHINES

This recipe makes approximately 12 dozen cookies. How many is that? Four dozen fills a cookie jar. To get the recipe for four dozen, **DIVIDE ALL OF THE AMOUNTS IN THIS RECIPE BY 3.** Use CHECKER to check your answers. Write the correct amounts in the boxes next to each ingredient. Make the cookies look like funny faces.

- Use an electric mixer to mix these ingredients in a bowl:
  - \_\_\_ 3 sticks of margarine
  - \_\_\_ 24 tablespoons of sugar
  - \_\_\_ 3 cups molasses
- Still using the mixer, slowly stir in:
  - \_\_\_ 24 tablespoons milk
  - \_\_\_ 3 teaspoons vinegar

THESE ACTIVITIES REQUIRE ADULT HELP!

## LION TAMER PUNCH

Make the lion tamer's favorite drink. He makes orange for himself with orange sherbet. His assistant likes green made with lime sherbet. The ringmaster uses pineapple sherbet and colors it red. Make lion tamer punch for your favorite people! Decide how many people you are going to serve. You will need 2 scoops of sherbet and 8 ounces of gingerale per person. A half gallon of sherbet contains about 20 scoops. A quart of gingerale contains 32 ounces. Decide how many half gallons of sherbet and quarts of gingerale you need for the number of people you want to serve. Use CHECKER to check your answers.

- Use a large glass for each person.
- Put 2 scoops of sherbet in each glass and wait 5 minutes until it softens.
- Pour cold gingerale slowly over the sherbet.
- Add up to 3 drops of food coloring if you wish.
- Stir slowly, then serve.



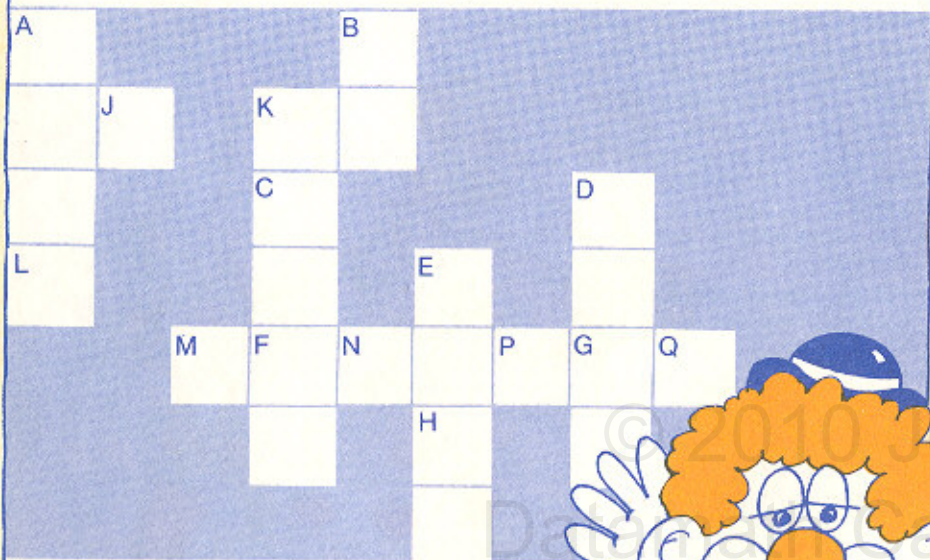
- With the mixer on low speed, stir in:
  - \_\_\_ 3 teaspoons soda
  - \_\_\_ 3 teaspoons salt
  - \_\_\_ 3 teaspoons ginger
  - \_\_\_ 3 teaspoons cinnamon
  - \_\_\_ 9 cups pre-sifted flour
- Drop rounded teaspoonfuls 3 inches apart on ungreased baking sheets.
- Put 3 raisins on each cookie for eyes and a mouth.
- Bake until set at 375° for 10 minutes. Don't burn the raisins! **USE A HOT MITT TO TAKE THE BAKING SHEETS OUT OF THE OVEN.**
- Let them cool on the sheet for 1 minute then remove with a spatula.

Correct amounts for CIRCUS SAUCE and MONKEYSHINES are upside down.

CIRCUS SAUCE  
 2 squares of baking chocolate  
 1 stick of margarine  
 1 cup of sugar  
 8 tablespoons evaporated milk  
 1 teaspoon vanilla  
 MONKEYSHINES  
 1 stick of margarine  
 8 tablespoons evaporated milk  
 1 cup of sugar  
 3 cups molasses  
 8 tablespoons sugar  
 1 cup raisins  
 8 tablespoons milk  
 1 teaspoon vinegar  
 1 teaspoon soda  
 1 teaspoon ginger  
 1 teaspoon salt  
 1 teaspoon soda  
 9 cups pre-sifted flour  
 3 cups evaporated milk  
 3 cups molasses  
 3 cups pre-sifted flour

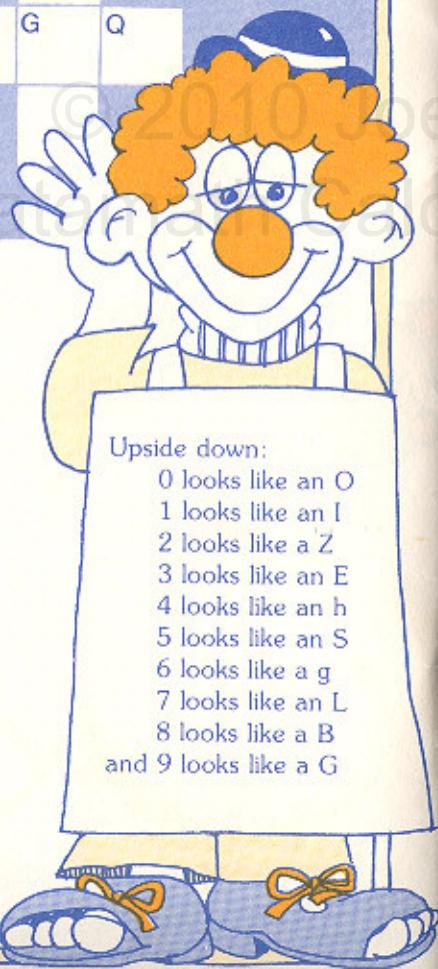


# Cross Number Puzzle



Here's a crossword puzzle that uses numbers instead of letters. Complete it by finding the correct answers to each problem. Use CHECKER to check your answers. Write the correct answers on the puzzle. When you have finished, turn the puzzle upside down. The numbers look like letters if you look closely. Find four things clowns like to hear and three things they do not like to hear.

- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| <b>DOWN</b>                           | <b>ACROSS</b>                        |
| A. $25 \times 20 = \underline{\quad}$ | J. $16 \div 4 = \underline{\quad}$   |
| B. $7 \times 2 = \underline{\quad}$   | K. $11 \times 0 = \underline{\quad}$ |
| C. $11 \times 7 = \underline{\quad}$  | L. $64 \div 8 = \underline{\quad}$   |
| D. $49 \div 6 = \underline{\quad}$    | M. $58 - 5 = \underline{\quad}$      |
| E. $7 \times 7 = \underline{\quad}$   | N. $68 + 11 = \underline{\quad}$     |
| F. $17 \times 2 = \underline{\quad}$  | P. $13 \times 7 = \underline{\quad}$ |
| G. $70 \div 5 = \underline{\quad}$    | Q. $81 \div 9 = \underline{\quad}$   |
| H. $90 \div 6 = \underline{\quad}$    |                                      |



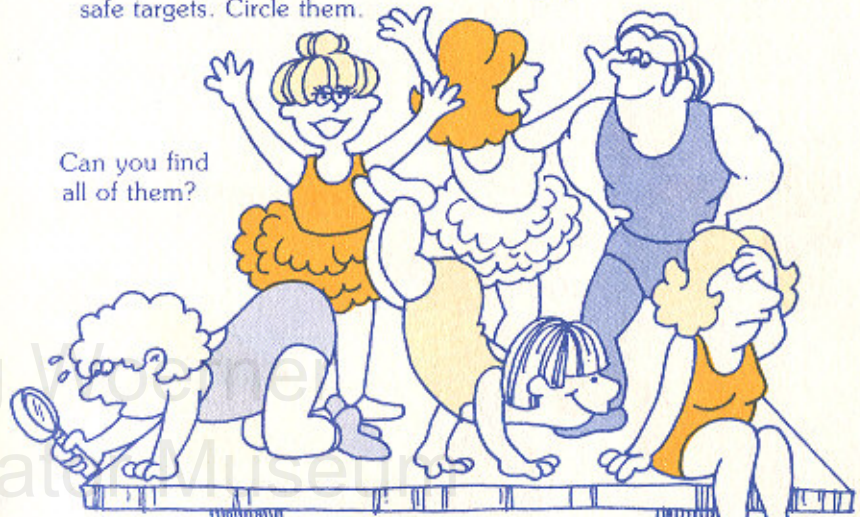
Upside down:

- 0 looks like an O
- 1 looks like an I
- 2 looks like a Z
- 3 looks like an E
- 4 looks like an h
- 5 looks like an S
- 6 looks like a g
- 7 looks like an L
- 8 looks like a B
- and 9 looks like a G

# The Daringtons!

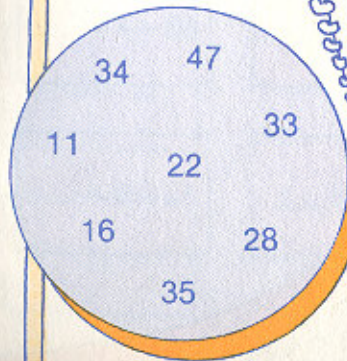
They dive from platforms high above the canvas to the water far below. They must hit their target exactly! Where is it safe for them to land? Use CHECKER to help you determine the safe targets. Circle them.

Can you find all of them?

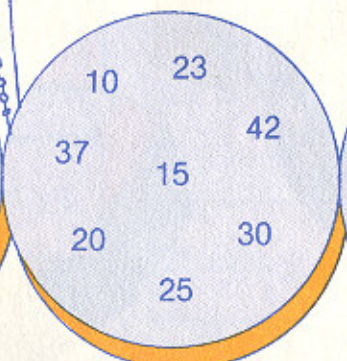


**HINT:** In each pool of water, the safe targets total 99 or 100.

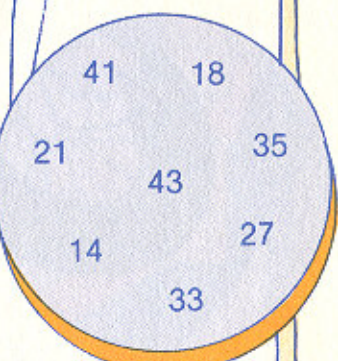
**SAFE TARGETS**  
Numbers divisible exactly by 2.



**SAFE TARGETS**  
Numbers divisible exactly by 5.



**SAFE TARGETS**  
Numbers divisible exactly by 3.



Numbers divisible exactly by 2 — all even numbers. Numbers divisible exactly by 5 — all numbers ending in 5 or 0. Numbers divisible exactly by 3 — all numbers whose digits when added are divisible exactly by 3. For example,  $81 = 8 + 1 = 9$  which is divisible exactly by 3, so 81 is divisible exactly by 3.



# Center Ring

## BRUNO'S FOLLY

Bruno the Bear is confused. He cannot remember which way to go. His act is about to begin! Help him find the path.

Work all of the problems in the ring. Use CHECKER to make sure the answers are correct. Write the answers in the spaces. Bruno's path is made of all the boxes with ten or a multiple of ten as the answer. Draw a line from box to box. This will show him the path. So, let the show go on!



$75 \div 5 = \underline{\quad}$	$50 \div 5 = \underline{\quad}$	$45 \div 9 = \underline{\quad}$	$5 \times 9 = \underline{\quad}$
$7 \times 8 = \underline{\quad}$	$5 \times 8 = \underline{\quad}$	$2 \times 5 = \underline{\quad}$	$7 \times 12 = \underline{\quad}$
$65 \div 5 = \underline{\quad}$	$14 \times 5 = \underline{\quad}$	$5 \times 7 = \underline{\quad}$	$6 \times 9 = \underline{\quad}$
$4 \times 5 = \underline{\quad}$	$63 \div 7 = \underline{\quad}$	$8 \times 4 = \underline{\quad}$	$15 \times 3 = \underline{\quad}$
$3 \times 7 = \underline{\quad}$	$12 \times 9 = \underline{\quad}$	$6 \times 15 = \underline{\quad}$	$65 \div 5 = \underline{\quad}$
	$60 \div 12 = \underline{\quad}$	$90 \div 15 = \underline{\quad}$	$40 \div 2 = \underline{\quad}$
		$9 \times 8 = \underline{\quad}$	$6 \times 15 = \underline{\quad}$
		$9 \times 9 = \underline{\quad}$	$5 \times 6 = \underline{\quad}$
		$35 \div 5 = \underline{\quad}$	$25 \times 2 = \underline{\quad}$
			$90 \div 3 = \underline{\quad}$

## MULTIPLICATION FUN

Only ODD numbers can be put in these empty spaces. What multiplication problem can you write that uses all odd-numbered digits? It must also have an answer with all odd-numbered digits. Use CHECKER to check your multiplication.

These rules may help:

Odd  $\times$  odd = odd ( $7 \times 3 = 21$ )

Odd  $\times$  even = even ( $7 \times 4 = 28$ )

Even  $\times$  even = even ( $6 \times 4 = 24$ )

Even + even = even ( $6 + 4 = 10$ )

Even + odd = odd ( $6 + 3 = 9$ )

Odd + odd = even ( $7 + 7 = 14$ )

$$\begin{array}{r} \underline{\quad} \quad \underline{\quad} \\ \times \quad \underline{\quad} \\ \hline \underline{\quad} \quad \underline{\quad} \end{array}$$

Look at this possible solution:

$$\begin{array}{r} 35 \\ \times 5 \\ \hline 175 \end{array}$$

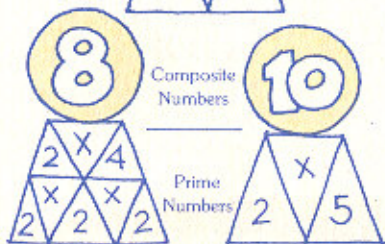
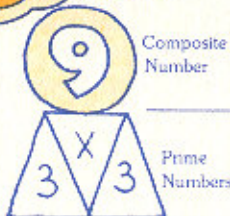


# PRIME Performers★

Be a Prime Performer. Fill in the empty triangles. Keep working until all the triangles are filled and the prime numbers are on the bottom row. Use CHECKER to check your answers.

Hints:

1. PRIME numbers are divisible only by one and themselves.
2. COMPOSITE numbers are divisible by numbers other than one and themselves.



## ADVENTURE FURTHER INTO THE MARVELOUS WORLD OF MATH!



Play the GRAND MARCH using all operations (+, -, × or ÷) and two-digit numbers. All other rules still apply.



Double or triple any of your favorite recipes. (Only if you have an adult's permission, of course.) Try halving them to make a smaller amount.



Write secret messages using the upside down number code used in CROSS NUMBER PUZZLE. What problem or problems will give you the numbers you need for your secret message?



Find the prime factors for your age, the date, your weight or any other number.

**MATH CAN BE MARVELOUS!**



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