

PRIME

Senior!

math magazine

Supreme Court

The U.S. Supreme Court was established on September _____, _____.

There are currently _____ slots for Justices on the court. They are appointed by the President of the U.S. The only U.S. President who served on the Supreme Court is William Howard Taft. Taft was President from _____ to _____. He served as Supreme Court Chief Justice from _____ to _____.



Clues

Use the clues to fill in the blanks.

A: $4 \times$ perfect number.

B: 18th century year. The tens and ones digits form the greatest 2-digit prime number less than 90.

C: $2^3 + 1^3$

D: 20th century year. The product of the digits is zero. The ones and hundreds digits are the same.

E: $D + 2^2$

F: 20th century year. The tens digit is twice the ones digit. The sum of the digit is 13.

G: $F + 3^2$

MATHgazine Editors

Carole Greenes Ed. D.
carole.greenes@asu.edu

Jason Luc
jason.luc@asu.edu

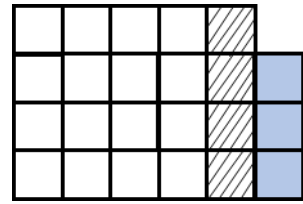
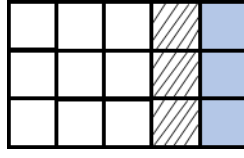
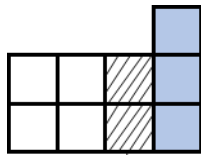
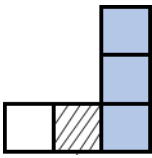
Yifan Tian
yifan.tian@asu.edu

Larry Yong
Pyong1@asu.edu

PRIME
CENTER

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PRIME Center, Arizona State University

The function is?



Figure

1

2

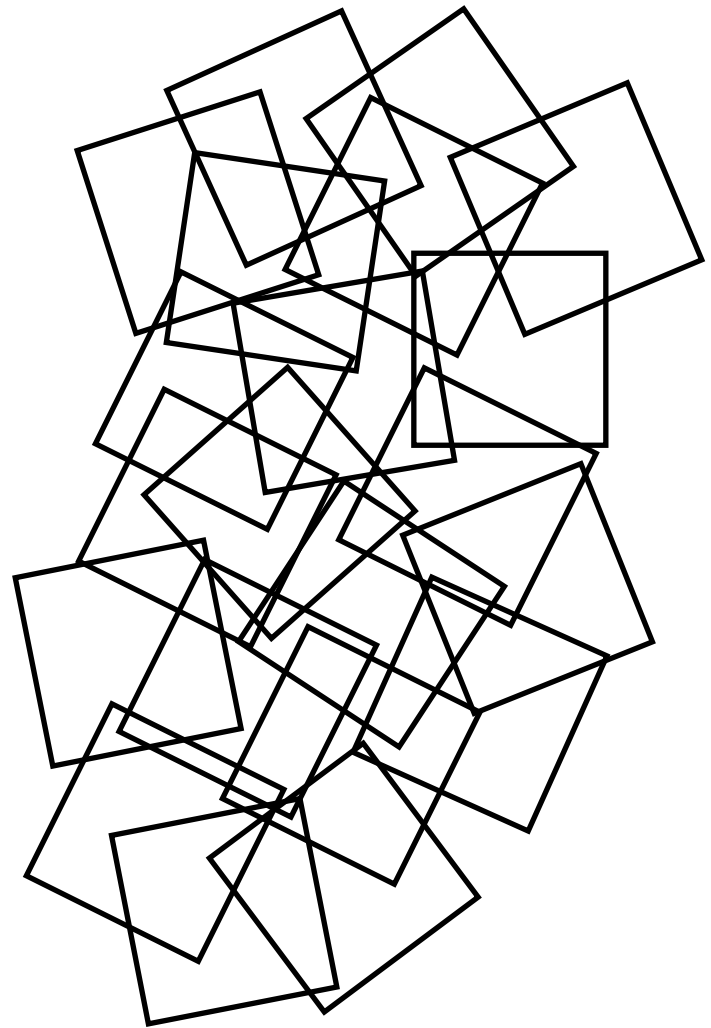
3

4

.....

1. Complete the table.

Figure Number n	Total number of small squares T
1	5
2	
3	
4	
5	
6	
7	
8	
9	



2. Write the rule for figuring out how the total number of small squares T is related to the figure number (n).

Pattern Puzzler

Row

1 1 2 1
 2 1 2 4 2 1
 3 1 2 4 6 4 2 1
 4 1 2 4 6 8 6 4 2 1
 5 1 2 4 6 8 10 8 6 4 2 1
 6 1 2 4 6 8 10 12 10 8 6 4 2 1

•
•

The pattern continues...

1. Complete the table.

Row number <i>n</i>	Sum of numbers S
1	4
2	
3	
4	
5	
6	

2. The middle number in:

a. Row 10 is? _____

b. Row 39 is? _____

3. What is the number next to and to the right of the middle number in:

a. Row 15? _____

b. Row 52? _____

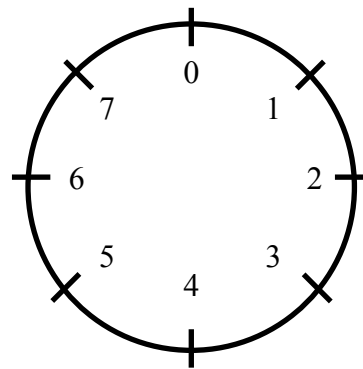
4. The sum of the numbers in:

a. Row 10 is? _____

b. Row 12 is? _____

5. The sum of the numbers in a row *r* is:

Modular MATH



Mod 8 Clock

In Mod 8,
 $2 + 4 = 6$
 $3 + 5 = 0$
 $5 + 4 = 1$
 $2 \times 9 = 2$
 $5 \times 4 = 4$

Complete these Mod 8 problems.

1. $5 + 6 =$ _____

2. $4 + 9 =$ _____

3. $7 + 8 =$ _____

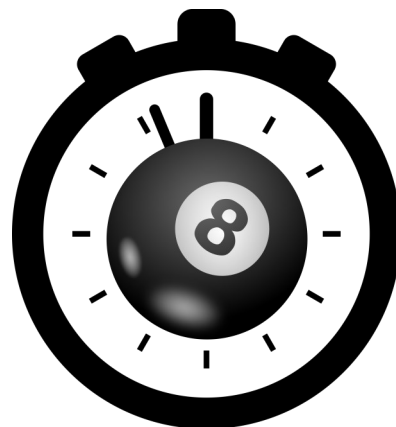
4. $2 + 20 =$ _____

5. $3 \times 6 =$ _____

6. $4 \times 11 =$ _____

7. $7 \times 20 =$ _____

8. $6 \times 48 =$ _____



βαλζανός

Balzano is a puzzle that will tap into your logical reasoning abilities. Read directions carefully, then try your hand at Balzano Shapes.

Directions:

Your job is to figure out the Desired Arrangement (the solution) of three elements (shapes) from clues that provide information about the shapes and their locations. The possible shapes are **circle**, **hexagon**, **pentagon**, **trapezoid**, and **triangle**. No shape may be repeated.

The **Arrangement Column** shows sets of shapes in rows. In the Balzano puzzle below, the second row, arranged in order from left to right, is: circle, triangle, hexagon.

Correct Shape in the Correct Place identifies the number of elements that are the correct shape AND in the right place. The second row has one shape in the right place.

Correct Shape in the Wrong Place identifies the number of correct shapes BUT in the wrong place. The second row has one correct shape in the wrong place.

Incorrect Shape identifies the number of shapes that do not belong in the arrangement. There is one of these in the second row.

	Correct Shape/ Correct Place	Correct Shape/ Wrong Place	Wrong Shape/ Wrong Place
○ □ △	2	0	1
○ △ □	1	1	1
○ △ □	1	1	1
△ □ ○	1	2	0
□ □ □	0	1	2
	3	0	0