



SOLUTIONS

Math Without Numbers

This is a **Math Challenge without numbers**. Don't miss this challenge! This is our **last math challenge** of this school year. This challenge will exercise your logical thinking muscles and sharpen your problem-solving powers. All the information you need to solve the problem is given in the puzzle itself. The chart/grid that's provided can be used to help solve each complex logic puzzle. You may use the tables provided for each problem below if they help you solve the problem. You do not need to fill them in if you prefer to solve the problem another way. Make sure you place your answers in the space given. Try to solve as many problems as you can. Get your parents and siblings to help!

Kinder & First Grade: solve at least 3 problems.
Second & Third Grade: solve at least 5 problems.
Fourth Grade and above: solve at least 10 problems.

1. Anna, Mary and Tom are in the movie theater. If Tom wants to sit by the aisle, and Anna wants to be in the middle, what should be the order of their seating?
Answer:

Order	<i>Mary</i>	<i>Anna</i>	<i>Tom</i>	Aisle
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2. The evergreen tree is shorter than the maple tree. The oak tree is taller than the maple tree. Which tree is the shortest?
Answer:

<i>Evergreen</i>

3. Five girls took part in a race. Anna finished before Bella but behind Claire. Debbie finished before Emma but behind Bella. What was the finishing order?
Answer:

Order	First	Second	Third	Fourth	Fifth
	<i>Claire</i>	<i>Anna</i>	<i>Bella</i>	<i>Debbie</i>	<i>Emma</i>

You may use the tables provided for each logic problem below if they help you solve the problem. You do not need to fill them in if you prefer to solve the problem another way.

4. Four good friends have four different favorite drinks. Find out who prefers which drinks.

- Ava likes neither milk nor orange juice.
- Tim used to like orange juice and apple juice best, but he has changed his mind.
- Neither Tim nor Ron likes milk best.

	Apple Juice	Soda	Orange Juice	Milk
Names	<i>Ron</i>			
	<i>Ava</i>			
	<i>Tim</i>			
	<i>Anika</i>			

Answer:

	Ron	Ava	Tim	Anika
Drinks	<i>Orange Juice</i>	<i>Apple Juice</i>	<i>Soda</i>	<i>Milk</i>

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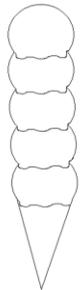
5. Four children have different last names. Benjamin’s last name does not have an “n” in it. Stuart’s last name does not end with an “n”. Lily’s last name has 5 letters in it. Stuart’s last name is not the shortest one here. Find out everyone’s full name.

		Last Names			
		Becker	James	Greenmun	Wu
First Names	Stuart				
	Lily				
	David				
	Benjamin				

Answer:

Their FULL Names	<i>Stuart Becker</i>	<i>Lily James</i>	<i>David Greenmun</i>	<i>Benjamin Wu</i>
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6. I have a five-scoop ice cream cone. Each scoop is a different flavor. The five flavors are blueberry, chocolate, strawberry, vanilla and bubblegum. Here are some clues which can help you to figure out the order of the flavors from top to bottom:



- The vanilla scoop touches both the chocolate and blueberry scoop
- Vanilla is below the chocolate scoop but above the bubblegum scoop
- Strawberry is not on the top
- Bubblegum is not on the bottom

What flavors are **from top to bottom**?

Answer:

<i>Chocolate</i>	<i>Vanilla</i>	<i>Blueberry</i>	<i>Bubblegum</i>	<i>Strawberry</i>
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7. Each of these children has a favorite candy that they can't live without. Find out each child’s favorite candy and their ages. Their names are Adam, Alexis, and Andrew. Their ages range from 3 to 5 years old. Their favorite candy is either Skittles, Kitkat, or Starburst.

- Adam does not like Starburst.
- Andrew is the oldest.
- Alexis is younger than Andrew but older than Adam, and she doesn’t like chocolate.
- Andrew likes Starburst.

		Candy			Age		
		Skittles	Kitkat	Starburst	3	4	5
Name	Adam						
	Alexis						
	Andrew						
Age	3						
	4						
	5						

Answer:

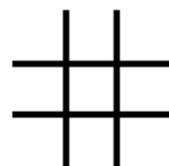
Adam		Alexis		Andrew	
Candy	Age	Candy	Age	Candy	Age
<i>Kitkat</i>	<i>3</i>	<i>Skittles</i>	<i>4</i>	<i>Starburst</i>	<i>5</i>

8. Place six X's on a Tic Tac Toe board without making three-in-a-row in any direction.

Answer:



or flipped answer



9. Mr. Li's garden is out of control! He planted it and went for a spring break to Hawaii. When he got back, he found the rows of his plants jumbled all over the place. Plus, the rabbits have gotten in and some of the plants are missing!

Mr. Li had made a map, so he would remember how many rows he planted where, but the rabbits destroyed his map too. **All the veggies had different number of rows planted.**

Can you help him reconstruct the garden's map?

- The most number of rows are neither spinach nor cabbages
- There are two more rows of carrots than turnips and two more rows of spinach than carrots.
- There are 4 more rows of spinach than turnips
- There aren't as many rows of beans as cucumbers.
- There is one less cabbage row than spinach
- Mr. Li doesn't like turnips so much, so he planted just one row (mostly to sacrifice to the rabbits, but they don't care all that much about turnips either!)

	Rows					
	1	2	3	4	5	6
Beans						
Cabbages						
Carrots						
Cucumbers						
Spinach						
Turnips						

Answer:

	Rows					
	1	2	3	4	5	6
Beans	X	✓	X	X	X	X
Cabbages	X	X	X	✓	X	X
Carrots	X	X	✓	X	X	X
Cucumbers	X	X	X	X	X	✓
Spinach	X	X	X	X	✓	X
Turnips	✓	X	X	X	X	X

Answer:

Plants	Beans	Cabbages	Carrots	Cucumbers	Spinach	Turnips
Number of Rows	2	4	3	6	5	1

10. 'BELOW' is related to 'OBWEL' in a certain way. Which of the following pairs has the same relationship?

DRAFT : FDTRA

REPLY: LRYPE

YOUNG : UYGON

YEARS : RESYA

Answer:

DRAFT (12345) : FDTRA (41523)

11. Four friends, Maria, Daisha, Sai Vasuma, and Patricia, were sitting on a bench. First Maria changed places with Daisha. Then Daisha changed places with Patricia. At the end, the girls sat on the bench in the following order facing the observer from left to right: Maria, Sai Vasuma, Daisha, Patricia. In what order were they sitting in the beginning from left to right? Hint: start working backward.

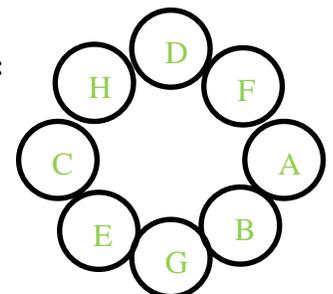
Answer:

Daisha	Sai Vasuma	Patricia	Maria
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12. Anna, Boyan, Callia, Daniil, Elly, Francis, Greta, Hannah are standing in a circle. Using the clues, find the order in which they are standing.

- Anna stands adjacent to Francis (clockwise)
- Boyan is between Anna and Greta
- Callia is the leftmost in this circle arrangement
- Callia is not standing next to Daniil and Greta
- Daniil is directly across from Greta, on the top of this circle arrangement
- Elly is not directly across from Boyan

Answer:



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13. Aidan and his friends are into mountain climbing this summer. They each climbed a different mountain. Using the clues, see if you can figure out who climbed which mountain, and the heights of the mountains.

Mountains sorted by elevation from shortest to highest: Desolation Peak, Glacier Peak, Baker, Adams, Rainier

- Aidan climbed higher than 6,100 feet and not on Adams
- John climbed higher than both Malcolm and the one who climbed mount Baker
- The shortest mountain was climbed by Ronan.
- Glacier Peak is shorter than the mountain climbed by Malcolm, who climbed Adams, but higher than the one climbed by Ronan
- Aidan climbed higher than Daniil

	Elevation (in feet)					Mountains				
	6,100	14,400	10,500	10,700	12,000	Rainier	Glacier Pk	Desolation Pk	Baker	Adams
Aidan										
Daniil										
Malcolm										
Ronan										
John									x	
Rainier										
Glacier Pk										
Desolation Pk										
Baker										
Adams										

Answer:

	Elevation (in feet)					Mountains				
	6,100	14,400	10,500	10,700	12,000	Rainier	Glacier Pk	Desolation Pk	Baker	Adams
Aidan	X	X	X	✓	X	X	X	X	✓	X
Daniil	X	X	✓	X	X	X	✓	X	X	X
Malcolm	X	X	X	X	✓	X	X	X	X	✓
Ronan	✓	X	X	X	X	X	X	✓	X	X
John	X	✓	X	X	X	✓	X	X	X	X
Rainier		✓								
Glacier Pk			✓							
Desolation Pk	✓									
Baker				✓						
Adams					✓					

	Mountain and its elevation	
Aidan	Mt. Bakers	10,700 ft.
Daniil	Glacier Peak	10,500 ft.
Malcolm	Mt. Adams	12,000 ft.
Ronan	Desolation Peak	6,100 ft.
John	Mt. Rainier	14,400 ft.