First Name: _____	**Last Name:** _____	**Grade:** _____
Teacher: _____	**Parent's email:** _____	

Organized List

Kinder & First Grade: solve <u>at least</u> 3 problems.
Second & Third Grade: solve <u>at least</u> 7 problems.
Fourth Grade and above: solve <u>at least</u> 12 problems.

		Answer
1.	How many different ways can you arrange the following three stuffed animals in a straight line?  Way 1: bear, turtle, monkey Way 2: turtle, monkey, bear Way 3: monkey, bear turtle Way 4: bear, monkey, turtle Way 5: monkey, turtle, bear Way 6: turtle, bear, monkey	*6 [wyas]*
2.	Lauren has two dogs and they are similar in size. She buys a blue and a red collar for her dogs. How many individual photos can she take of her dogs with these two different collars? Dog A with a blue collar Dog B with a blue collar Dog A with a red collar Dog B with a red collar	*4*
3.	How many two-digit numbers can you create using the following number cards? 4 5 6 We can list the possibilities: 45, 46, 54, 56, 64, 65.	*6 [numbers]*
4.	Five friends are buying pizza together and they are planning to split the check equally. After the pizza was ordered, one of the friends had to leave suddenly, before the pizza arrived. Everyone who stayed for the pizza had to pay $1 extra as a result. How much was the total bill? We can make a list or a table of possible amount of the total bill: If the bill was 10, each person paid $2; when one person left, they are only $2 short. If the bill was $15, each person paid $3; when one person left, they are only $3 short. If the bill was $20, each person paid $4; when one person left, then they need $4. Since 4 persons who stayed had to pay $1 extra, then this is the correct total bill for the pizza. We can also work backward. Those who stayed behind will gathered an extra $4 total. This $4 is the amount that was supposed to be paid by the friend who left. If they split the check equally, then the cost of the pizza must be $4 × 5 = **$20**	*$20*
5.	There are 36 children participating at a chess tournament. The tournament consist of 3 rounds (Preliminary, Semifinal, and Final). In each round, half of the participants are eliminated. After the Simifinal round, how many participants are left to compete in the Final round? Semifinal round: 36 ÷ 2 = 18 children compete in the Semifinal round. Final round: 18 ÷ 2 = **9** children compete in the Final round.	*9*

6.	We can list: {9×2, 11×2, 13×2, … 21×2, 23×2} or {18, 22, 26, 30, 34, 38, 42, 46}. There are **8** numbers.	*8 [numbers]*
7.	1×12, 2×6, 3×4, 4×3, 6×2, 12×1	*6 [unique rectangular regions]*
8.	180 × 3 pencils = 540 pencils 180 × 2 erasers = 360 erasers 180 notebooks	*540 [pencils],* *360 [erasers],* *180 [notebooks]*
9.	Mariah: 1/6 of 54 = 9 votes Joanne: 1/18 of 54 = 3 votes Paul = 3 votes Suzanne: 4×3 = 12 votes Bane: 1/9 of 54 + 1 = 7 votes Zach: 54 – (9+3+3+12+7) = 20 votes.	*Zach, Suzanne, Mariah*
10.	Make a table or an organized list. Another way to think about the problem: to get to the eight runner there would be 7×25 less meters, so the eight runner will do 360 – 7×25= **185 meters.**	*185 [meters]*
11.	Make a table or an organized list. Week 1, she jogs for 15 min/day for 6 days, which equals to 90 min/week. Week 2, she jogs for 20 min/day for 6 days, which equals to 120 min/week. Week 3, she jogs for 25 min/day for 6 days, which equals to 150 min/week. She continues this pattern, so in week 6, she jogs for 40 min/day for 6 days, which equals to **240 min/week or 4 hours/week.**	*240 [minutes] or 4 [hours]*
12.	We can list some possibilities: 5 cards ($15) and 2 shirts ($16) – he spent $1 more than $30. 4 cards ($12) and 2 shirts ($16) – he spent less than $30. **2 cards ($6)** and **3 shirts ($24)** – he spent exactly $30.	*2 [cards] and 3 [t-shirts)*
13.	We can approach this problem by making a list of possibilities: Start with 13 and 12, then shift the cubes until the height of the shorter tower is a prime number and the difference between them is 3 times the height of the smaller tower. Another way is to draw the model. If the average of two towers is 12.5, then the sum of all the cubes is 25. Tower 1  Tower 2  5 units = 25 cubes, 1 unit is 5 cubes. Shorter tower is 5 cubes tall, taller tower is 20 cubes in total.	*20 and 5* *or* *5 and 20*
14.	7, 17, 37, 47, 67, 97,107. There are **7** of them.	*7*
15.	2002, 2112, 2222, 2332, 2442, 2552, 2662, 2772, 2882, 2992. There are **10** palindrome years.	*10*

Runner	1	2	3	4	5	6	7	8
Distance	360	335	310	285	260	235	210	185

16.	• The first member can play against the remaining 15 members. • The second member can play against the remaining 14 members (excluding the first member, as they already played). • The third member can play against the remaining 13 members (excluding the first and second members, as they already played). • This pattern continues until the 15th member plays against the last remaining member. Now, if we add up these matches, it becomes evident that each member is playing against every other member exactly once. However, notice that each match has been counted twice (for example, when the first member plays against the second member and when the second member plays against the first member). So, to find the total number of unique matches, we need to divide the total number of matches by 2: Total Matches = (16 × 15)/2 = **120.**	*120*
17.	GO, GR, Bl, R → 4 categories. Look at the worst case scenario, GO GR Bl R she picks 4, each different (no pairs at the moment). If she'll have the same situation next, she'll get 8 poms, which will make 4 pairs. If Trisha is unlucky, the next four draws will not create a pair, but with the next pick she'll get 5^{th} pair. Thus, the fewest number Trisha must remove is 4×3 + 1 = **13 poms.**	*13 [poms]*
18.	There are 24 arrangements of the letters in the word ANGLE with A as the first letter (the number of ways of arranging the other 4 letters is 4×3×2×1). In alphabetical order AEGLN is first and ANLGE is last. ANLEG is the 23rd and hence ANGLE is in the **22nd position** on the list.	*22^{nd}*

Solution is available on April 12, 2024
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