2019 Southern Nevada Girls Math Tournament

Grade 6 Contest
General Round

Name: _____

RULES

1. The General Round consists of 25 problems.
2. The General Round must be completed individually.
3. You will have 40 minutes to complete the General Round.
4. You will receive 1 point for each correct answer.
5. There is no penalty for incorrect answers.
6. You may NOT use a calculator on this round.
7. Answers are to be written on the provided lines. Units are not required.

Score: ____/25 pts

1. _____ Doeen Theswag's back is sloping down from carrying her team all the time. If Doeen Theswag's back slopes down at 5 degrees a minute, and the max it is humanly possible to slope down is 54 degrees, how many minutes can Doeentheswag carry her team? Assume that she starts with her back straight up.

2. _____ Yetzel and Pretzel and deciding where to eat. There are different pretzel stands every one unit up down left and right. Yetzel and Pretzel are in the center of this 21 by 21 coordinate grid of pretzel stands. If Yetzel wants to go north to eat, and Pretzel wants to go east to eat, how many pretzel stands can they eat at for both to be satisfied?

3. _____ Anna, Alex, Andy, Adrian, Alejandro, Allison, and Jamiroquai are choosing a president, vice president, and treasurer for anime club after school. If Jamiroquai will only run for president, but everyone else runs for every position, and no person can have more than one position, how many possible combinations are there?

4. _____ The value of Jahcoin can be expressed in terms of t years by $F(t) = 2^{(1.25t)}$. How many dollars will Jahcoin be worth after 8 years?

5. _____ Swagary Rose chooses a three-digit positive integer, subtracts it from 3000, and triples the result. What is the largest integer Swagary can get?

6. _____ My Fortnite horror movie video is blowing up right now. After n days on YouTube, it will have n^3 views. How many views did my masterpiece gain on day 5? (Note: The movie will have n^3 views after n days, it will not GAIN x^3 views on the nth day)

7. _____ A box contains 20 red balls, 20 blue balls, and 20 green balls. Markel decides to pick random balls from the box without putting them back in until he gets a red ball. What is the smallest amount of balls he must take out to guarantee that he gets at least 1 red ball?

8. _____ There are seven businessmen at a party. If each businessman shakes hand with each other, how many handshakes take place?

9. _____ Two numbers F and 16 have an LCM of 48 and GCF of 8. Find F.

10. _____ Two fair six-sided dice are rolled. 5 faces can be seen, as one face must be on the ground. What is the probability that the sum on the five faces showing on each die is less than 30?

11. _____ Six less than six times a number is equal to three plus the square of that number. What is the number?

12. _____ A group of 5 people attend a red carpet ceremony, if they pose for the camera separately how many different orders can the have their picture taken?

13. _____ In a grade of 300 students, 123 like english, 72 like science, and 225 like math. 20 like both english and science, 15 like both english and math, and 40 like both science and math. 25 like all three. How many students don't like english, science, and math?

14. _____ Zebulon is the star child of the universe, and creates stars in his free time. He has enough stardust to make twelve big stars. One big star requires three times as much stardust as a small star. One medium star requires twice as much stardust as a small star. If Zebulon has leftovers when only making medium stars, and also has leftovers when only making big stars, what is the least amount of small stars can Zebulon make if he uses all of his stardust?

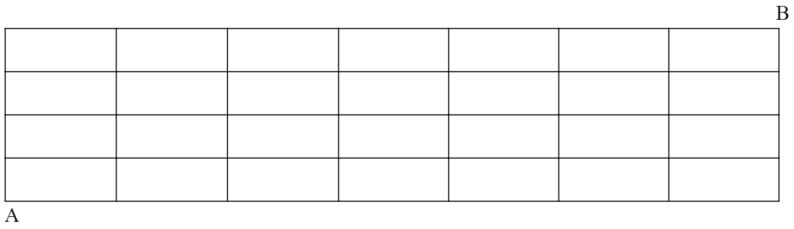
15. _____ Find the value of $1/(1*3) + 1/(3*5) + 1/(5*7) + ... + 1/(101*103)$

16. _____ The band Red Velvet is preparing for their "Bad Boy" comeback. Irene takes i^{1000} seconds to put on her dress. Selugi takes i^{100000} seconds to put on her dress. Joy takes i seconds to put on her dress. Wendy takes i^3 seconds. Yeri takes i^{100} seconds to put on her dress. What is the sum of the time it takes all members to put on their dress if everyone puts on their dresses one after the other? Where i is the square root of -1

17. _____ A box contains 4 fidget spinners and 1 fidget cube. Mateo and Hikmet take turns drawing a fidget toy out of the box without replacing it. Whoever draws the fidget cube wins. Mateo draws first. What is the probability that Hikmet wins?

18. _____ A 5x5 square with in the first quadrant with one vertex on the origin is cut by the line $y = x$, how many ways are there to go from point a to b without going over the line? (Note: Touching the line does not count as crossing.)

19. _____ How many ways are there to go to point A to point B(you can go only up and right)?



20. _____ Spencer is following a trail of sushi. Once he reaches the first piece, the second piece is twice as far from that point than the first piece of sushi was from Spencer's starting point. Once he reaches the second piece, the third piece is twice as far from that point as the second piece of sushi was from the first piece of sushi, and so on. If the first piece was 1 foot from Spencer's starting point, how far does Spencer have to walk to eat 7 pieces of sushi?

21. _____ Lydia shoots 2-point shots and 3-point shots everyday after school. Her ratio of 3-point shots to 2-point shots is 24:96. What percent of her shots are 2-point shots?

22. _____ How many ways can 5 different gifts be given to Zach, Jared, Spencer, and Elijah so that each person gets at least one gift assuming no gifts can be shared?

23. _____ Rommel walks to a Wendy's 20 miles away from his house at a speed of 4mph. 2 hours later Calista leaves her house biking to the same Wendy's but it's 30 miles from her house. Both Rommel and Calista arrive at the same time. How fast in miles per hour was Calista biking?

24. _____ Jare-Bear eats twice as many berries as he does the previous day. On January 21 Jare-Bear is born and eats 1 berry. On January 22 he eats 2 berries for a total of 3. How many total berries will have Jare-Bear have eaten by the end of February 1?

25. _____ Beil Bemka's travel path from his house to Target is 9 miles east. 20 miles north of that store is his school C.A.S.H. 16 miles west of the school is the fortnite headquarters. 8 miles north of this is their long time rivals the Apex Legends' headquarters. 9 miles east

of that is a Walmart. 12 miles north of the Walmart is Jare-Bear's house. 7 miles East of Jare-Bear's house is the tall man's house. What is the direct distance from the tall man's house to Beil Bemka's house?

2019 Southern Nevada Girls Math Tournament

Grade 6 Contest
Target Round

Name: _____

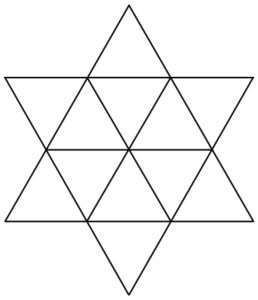
RULES

1. The Target Round consists of 8 problems.
2. The Target Round must be completed individually.
3. You will have 6 minutes to complete each pair of questions.
4. The Target Round consists of 4 pairs, or 8 questions.
5. You will receive 2 points for each correct answer.
6. There is no penalty for incorrect answers.
7. You may use a calculator on this round.
8. Answers are to be written on the provided lines. Units are not required.

Score: ____/16 pts

1. _____ There is a 6x6x6 cube made of unit cubes. This unit cube is dipped in a bucket of paint and taken out. It then breaks apart into 216 unit cubes. Assuming no paint has dripped onto another cube, what's the probability that you blindly take a cube from the pile that has no paint on it?

2. _____ How many equilateral triangles are in the figure?



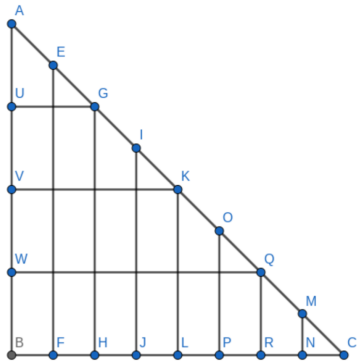
3. _____ The distance between Miguel and Victor is 2500 feet. They start running towards each other, Miguel at 20 feet per second and Victor at 30 feet per second. In how many seconds will they meet?

4. _____ Travis Scott is on a flight, he takes half a Xanax. If 2 Xanax makes someone sleep for 40 hours, and Travis Scott has 13 hours till he lands, to the nearest whole percent, how much of the flight will Travis be awake?

5. _____ Hose A and B are used to fill up a pool, hose A can fill up the pool twice as fast as hose B. If both hoses are used at the same time then it is filled 5 five minutes faster than if just hose A was used. How many minutes would it take for just hose B to fill up the pool?

6. _____ Sid slowly slips across steps as she senselessly sips on soda. For each sip, Sid slips six steps south. Sid sips six sips per second, so she stops every sixty slips for six sips so she slips slower. If she should slip six hundred and six steps, for how many seconds did she sip?

7. _____ In the figure below, an ant starts on point A and walks to point C. If it only walks left or down, how many ways are there for it to go?



8. _____ If 738 consecutive integers are added together, where the 178th number in the sequence is 1,000,000, what is the remainder when this sum is divided by 6?

2019 Southern Nevada Girls Math Tournament

Grade 6 Contest
Team Round

Team Name: _____

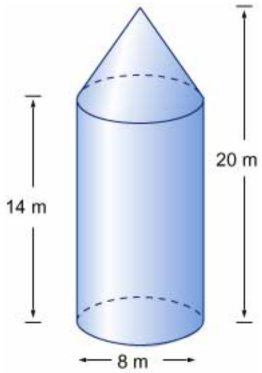
RULES

1. The Team Round consists of 10 problems.
2. The Team Round must be completed in teams of up to 4.
3. Your team will have 20 minutes to complete the Team Round.
4. Your team will receive 1 point for each correct answer.
5. There is no penalty for incorrect answers.
6. You may use a calculator on this round.
7. Answers are to be written on the provided lines. Units are not required.

Score: ____/10 pts

1. _____ If n! Is equal to $(n)(n-1)(n-2)(n-3)...(2)(1)$, what is the greatest possible value of x if 2x is a factor of 19! ?

2. _____ Find the volume of this figure.



3. _____ Lilliam Pumpernickel III is the smartest man alive. His IQ is equal to the square of the largest two-digit prime number. What is his IQ?

4. _____ Brommel and Swachary have decided to make circles where their heights are the diameters. If Brommel's circle's area is 63 larger than Swachary's circle and Brommel is 24 inches tall, how tall is Swachary?

5. _____ In Damascus, the only currency is 7-sicko bucks and and 11-sicko bucks. Some prices, like 18 and 22 can be made with exact change, while others, like 5 or 20 sicko bucks, cannot. What is the largest amount of sicko bucks that cannot be made?

6. _____ Tyler, Bryler, Xyler, and Jahseh are making an album. If Tyler can make one song every four days, Bryler can make one song every three days, Xyler can make one song every two days, and Jahseh pumps out a song a day (like a champ), how many days would it take them to make an album that contains 50 songs, assuming that they are working at the same time?

7. _____ Famed singer/songwriter T-Pain is having a friend over for pie. However, T-Pain only baked one circular, two-dimensional pie, so, instead of just cutting the pie in half like a normal person, T-Pain cuts 2 smaller circular pies out of the first pie, where the diameter of the smaller pies are the radius of the larger pie. After cutting the 2 pies out, T-Pain uses his math genius to see that he has exactly 32pi in^2 of the original pie left over. What is the radius of one of the smaller pies?

8. _____ Anna, Branna, Channa, Danna, Elanna, Franna, Gianna, and Hanna are seated around an octagonal table. How many distinct ways can the girls sit around the table, assuming any seating arrangement is the same when rotated?

9. _____ John Fast walks really fast. His speed in miles per hour is equal to the number of three digit numbers with three distinct digits. How many miles does John Fast walk in 20 minutes?

10. _____ Delilah lives on a farm, and interacts with lots of horse food. Cubes of hay can be stacked on top of each other forming one giant tetrahedron, having horizontal layers (cross sections) in the shape of equilateral triangles. Each layer had a whole number of hay cubes, and the first three layers have 1, 3, and 6 cubes respectively. As Delilah is stacking 10 layers of hay, her friend asks her, "What's the amount of hay there, Delilah?" How many cubes of hay does Delilah have stacked?