MOSCROP MATH 8 ENRICHED ENTRANCE EXAM

APRIL 17, 2024

FULL NAME: ______________________________

ELEMENTARY SCHOOL: ______________________________

Teacher: ______________________________

Email: ______________________________

Time: 1 hour 45 minutes

Part A is a NON-CALCULATOR section. Students are to complete part A, then submit it to the invigilator before moving on to Part B. Students have up to 45 minutes to complete Part A.

In Parts B and C, CALCULATORS ARE ALLOWED. Students will need to show all their work and justify their calculations to earn full marks. All answers must be exact or rounded to 3 decimal places unless specified otherwise.

The entire exam consists of 10 questions in Part A, 5 questions in Part B, and 2 questions in Part C. Each question in Part A is worth 3 marks, Part B is 4 marks, and Part C is 5 marks. You can earn full marks for each question in Part A by entering the correct answer in the indicated space. If your answer is incorrect, work must be shown to be given any partial marks.

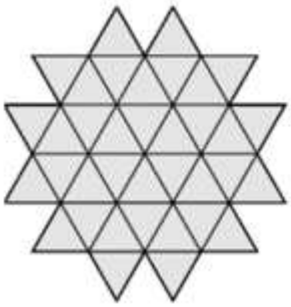
Section	Questions	Value	Total	Score
Part A	10	3	30	
Part B	5	4	20	
Part C	2	5	10	
Total			60 marks	

Part A: Non-Calculator Section: Please show all your work and steps: (3 marks each)

Q1: Eva has 30 dollars. Each of her five sisters has \$12 dollars. How many dollars can Eva give to each of her sisters so that all six girls will have exactly the same amount of money?

ANSWER:______________________________________

Q2: If each little triangle in the shape below has an area of 5 cm^2, what is the area of the entire shape?



ANSWER:______________________________________

Q3: Tim has to move 1,600 liters of dirt from the street to his backyard using his wheelbarrow. The wheelbarrow can only hold 50 liters, and each round trip require 4 minutes to complete. How many minutes will take it Tim to move all the dirt to his backyard?

ANSWER:______________________________________

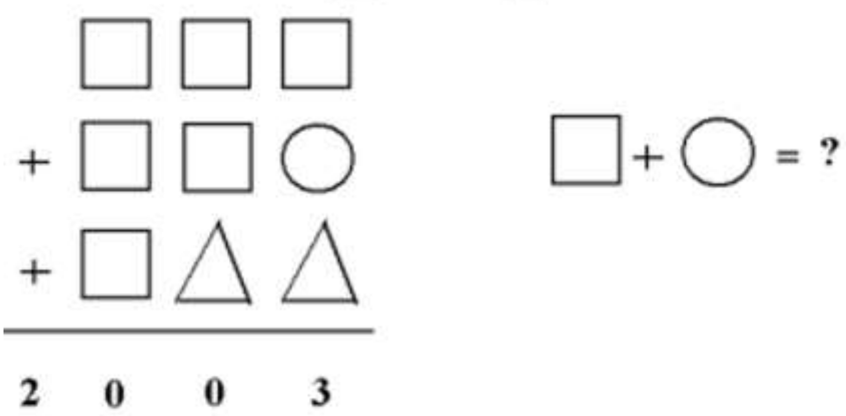
Q4: The “star” operation is given by the formula $a*b=a\times b+b^2$, where “a” and “b” are integers. For example, $2*4=2\times 4+4^2$ and $4*2=4\times 2+2^2$. Determine the value of $(3*2)*5=?$

ANSWER:____

Q5: Betty likes calculating the sum of the digits she sees on her digital clock. For example, if the clock shows 21:17, then Betty gets a sum of “11”. What is the largest sum Betty can get if the clock is in a 24-hour format?

ANSWER:____

Q6: Below is an addition operation, where each shape represents a digit. Each unique shapes will represent a unique digit. However, duplicate shapes will represent the same duplicate digit. Determine the sum of the square and the circle.

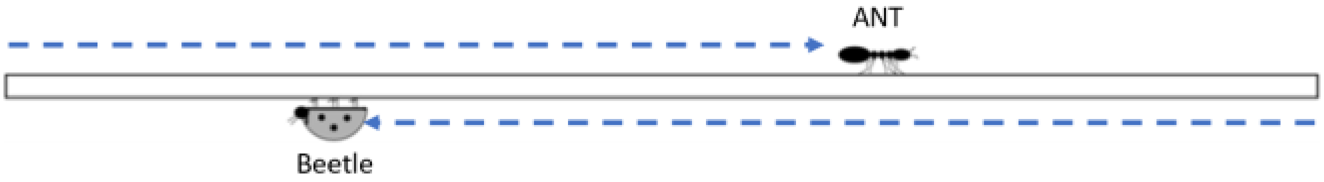


ANSWER:____

Q7: There are 4 teams in a soccer tournament where each team plays every other team exactly once. In each game, the winner will earn 3 points and the loser will earn 0 points. In there is a tie, both teams will earn 1 point. After all the games have been played, Team A earned 9 points, Team “B” earned 6 points, and Team “C” beat Team “D”. How many points did Team “C” earn?

ANSWER:_______________________________________

Q8: An ant started on the left side of a stick and crawled 2/3 of the length to the right side. A beetle started on the right side of the same stick and crawled ¾ of the length to the left side. How far apart is the ant and beetle if the stick is 60cm long?



ANSWER:_______________________________________

Q9: The average score of all the students who took a math test was 6. Exactly 60% of the students who wrote the test actually passed. The average score of the students who passed the test was 8. Determine the average score of the students who failed the test. [Example of average: The average of the numbers 7, 8, and 12 is $\frac{7+8+12}{3}=9$

ANSWER:_______________________________________

Q10: Shirley's part-time job pays her $1 on the first day, $2 on the second day, $5 on the third day, $10 on the fourth day, then back to $1 on the fifth day, $2 on the sixth day, $5 on the seventh day, and $10 on the eighth day. This process repeats itself over a four day cycle of $1, $2, $5, and $10. Determine the number of days Shirley needs to work to make over $2000.

ANSWER:_______________________________________

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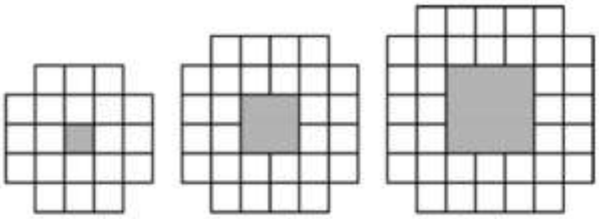
PART B: Written Response Problem: Please show all your work and steps (4 marks each)

Q1: An elevator can support either 12 adults OR 20 children safely (assume that each adult is equally weighted and each child is also equally weighted). If an elevator has 3 adults inside, determine the maximum number of children the elevator can safely support.

ANSWER:_______________________________________

Q2: The following patterns are created using white square tiles that surround a square garden. The first three patterns are shown below. If this pattern continues, determine the number of tiles needed for the tenth pattern.



ANSWER:____

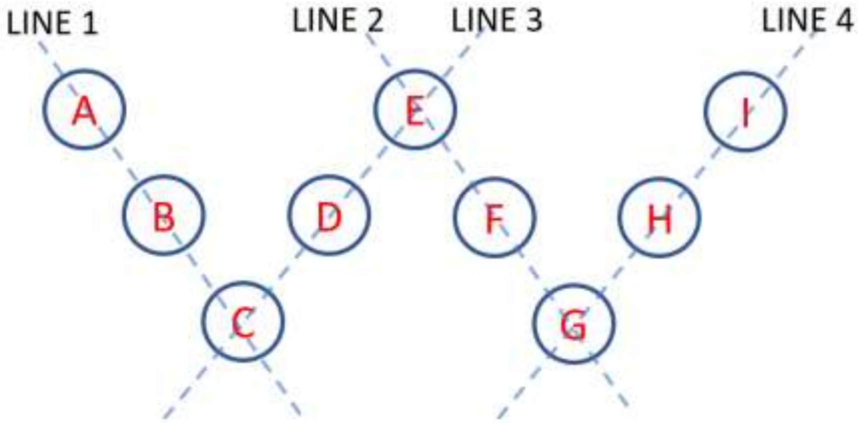
Q3: A dance company has a crew that is made up of 39 boys and 23 girls. Each week, 6 extra boys and 8 extra girls joins the crew. After a number of weeks, the dance company noticed that there was an equal number of boys and girls on the crew. Determine the number of boys and girls at that time.

ANSWER:____

Q4: Each room in a hotel are numbered with three digit numbers. The first digit indicates what floor the room is located, and the last two digits represents the room number on that floor. For example, “Room 125” is on the first floor, and the room number is 25. This hotel has five floors (from 1 to 5) and each floor has 35 rooms, ie, the first floor will have room numbers from 101 to 135. Determine the number of times the digit “2” will appear, given all the room numbers in the hotel.

ANSWER:______________________________________

Q5: Each number from 1 to 9 are to be placed into each circle shown below. The value of each line is determined by the sum of the three numbers the line crosses. For example, the value of LINE 1 is equal to the sum of the numbers in circles A + B + C. The value of LINE 3 is equal to sum of the numbers in circles C + D + E. If the values in LINE1 = LINE 2 = LINE 3 = LINE 4, determine which numbers are in circles "B", "E", and "G".



ANSWER:____

Name:______________________________ **Elementary School:____________________**

PART C: each of the following questions is worth 5 marks. Show all your work and steps with the space provided.

Q1: The entire floor of a rectangular room measuring 70 ft x 60 ft needs to be covered by rugs . The rugs come in three sizes: small measures 3ft x 4ft, medium measures 5ft x 7ft, and large measures 6ft x 8ft. If the overlapping of rugs is allowed, determine the least number of rugs that is needed to completely cover the entire floor of the room and indicate how many of each size rug you will need.

ANSWER:____

Q2: $\frac{m}{n}$ in the inequality, $\frac{7}{12} < \frac{m}{n} < \frac{3}{5}$, is a fraction that is written in lowest terms satisfying this inequality. If the denominator “n” is an integer less than 60, determine the number of all the possible fractions that will satisfy this inequality and list them.

ANSWER:____