

MOSCROP MATH 8 Honors ENTRANCE EXAM

APRIL 20, 2022

NAME: _____

ELEMENTARY SCHOOL: _____

Teacher: _____

Time: 1 hour 45 minutes

Part A is a NON-CALCULATOR section. Students are to complete part A without a calculator and then submit it before moving on to Part B. Students have up to 45 minutes to complete Part A and a total of 1 hour and 45minutes for the entire exam.

In Part B and C, calculators are allowed. Students will need to show all their work and justification to earn full marks. All answers must be exact or accurately rounded to 3 decimal places unless specified otherwise.

The exam consists of 9 questions in Part A, 3 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 of 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	Values	Total	Score
Part A	9	3	27	
Part B	3	4	12	
Part C	2	5	10	
Total			49 marks	

Name: _____ School Name: _____ Time Completed: _____

Grade 8 Honors Entrance Exam 2022:

Part A: Short Response Questions (NO Calculators) (3marks each Question)

Q1. Johnny receives \$1 from his dad on Monday, \$2 on Tuesday, \$3 on Wednesdays, \$4 on Thursday, \$5 on Fridays, \$6 on Saturdays, and \$7 on Sundays. How much money in total will he receive in 20 weeks?

ANSWER: _____

Q2: Evaluate the expression.

$$2 \times 3 \times 5 \times 7 \times 10 \times 11 - 100$$

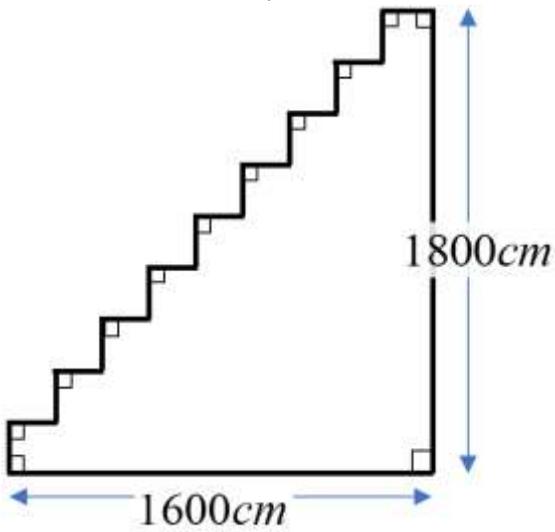
ANSWER: _____

Q3: Given that the sum of the numbers in each the row, column, and the two main diagonals are the same, what is the value of "x"?

17	3	
7		15
9		x

ANSWER: _____

Q4: The perimeter of an object is the sum of the lengths of all its sides. Given the dimensions of the shape below, determine the perimeter?



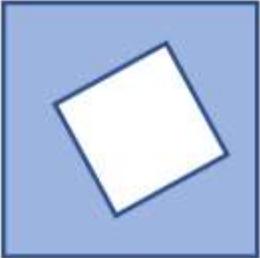
ANSWER: _____

Q5: Determine the value of both expressions. Then indicate which one is bigger by circling the expression and justify your answer:

$$0.0100 \times 0.01000 \div 0.00100 \quad \text{vs} \quad \frac{100 \times 0.1000 \times 10}{100}$$

ANSWER: _____

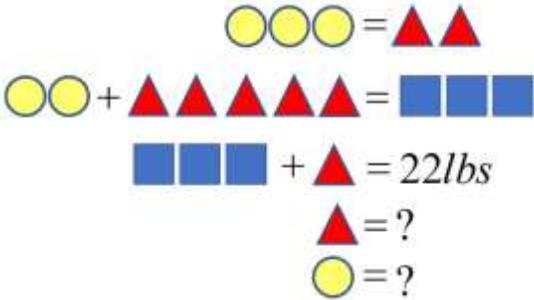
Q6: Given the perimeters of the two squares in the diagram, what is the area of the shaded region between the two squares?



BIG Square
Perimeter = 88cm
Small Square
Perimeter = 60cm

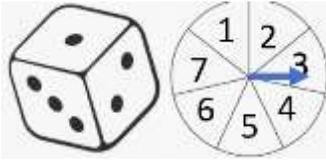
ANSWER: _____

Q7. Determine the weight of one triangle and the weight of one circle:



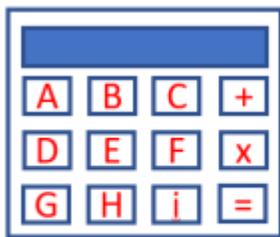
ANSWER: _____

Q8: Jack is given a spinner that is divided into seven equal spaces, numbered from 1 to 7. Susan is given a fair die numbered from 1 to 6. Jack spins the spinner and Susan rolls the die. What is the probability that they will get the same number?



ANSWER: _____

Q9: A programmer took a calculator shown below and programmed each of the values: "A", "B", "C", "D", "E", "F", "G", "H", and "i" to equal the numbers from 1 to 9. Each letter is equal to a different number. A student uses the calculator and gets the following answers. What is the value of button "B"?



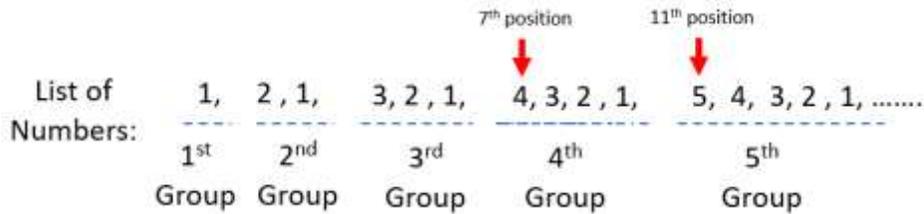
$$\begin{aligned}
 & C \times C \times G = 12 \\
 & D \times F = 20 \\
 & i \times F = 45 \\
 & A \times G = 24 \\
 & E \times H = 7 \\
 & B = ?
 \end{aligned}$$

ANSWER: _____

Name: _____ School Name: _____ Time Completed: _____

Part B: Written Response Questions: Full work is required. Calculators are allowed (4 marks each Question)

Q1: The following list of numbers is generated by adding numbers in groups at descending order, with the number of terms in each group increasing by one. The number “5” first occurs in position 11th position and the number “4” first appears in the 7th position. If the list of numbers continues using this pattern, what position will the number “17” first occur? Show all your work and steps.

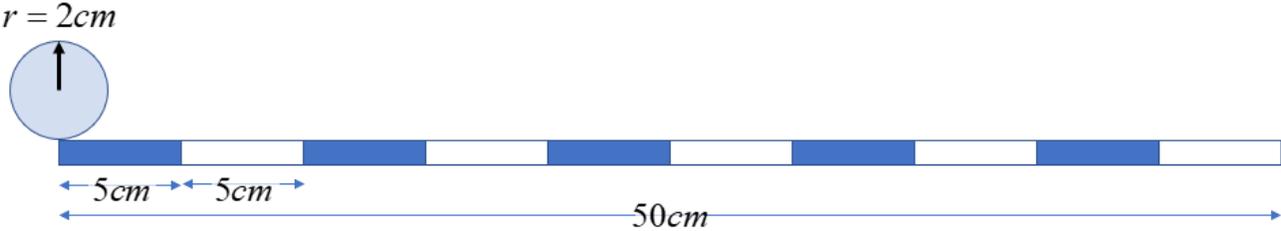


Answer: _____

Q2: A prime number is a number with only two factors, “one” and itself. For instance, 13 is a prime number because it only has two factors, 1 and 13. The first few prime numbers are 2, 3, 5, 7, and 11. **Note:** 1 is not a prime number. Find all the numbers less than 200 that is equal to the “**product**” of two distinct prime numbers. [“Product” means multiply] Show all your work and steps:

Answer: _____

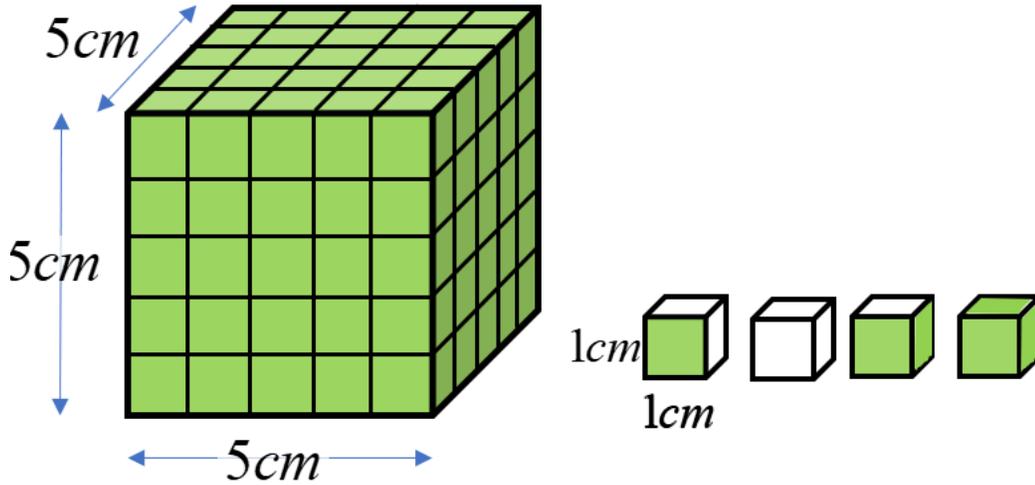
Q3. A circle of radius 2 cm is rolled along the floor in a straight line that is 50cm long. The floor is covered with black and white tiles as shown below that are 5 cm wide. As the circle is being rolled along the floor, at which points will the arrow in the circle touch the floor? Clearly mark the points where the arrow touches the floor.
 [Note: The circumference of a circle is : $C = 2 \times \pi \times r$]. Show all your work in the spaces provided:



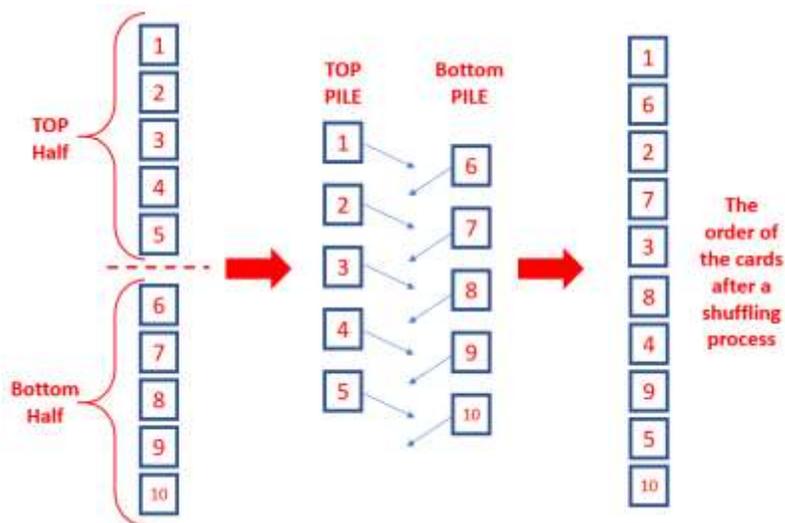
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Part "C": Long Written Response Questions: Please Show all your work and steps (5 marks each Question)

Q1 . A large 5 x 5 x 5 centimeter cube is created using little 1 x 1 x 1 centimeter cubes shown below. The large cube is painted on the exterior only and then split into tiny individual blocks. For each unit block, if no sides are painted, you get \$1 per block. You get \$2 per block if one side is painted. You get \$3 per block if two sides are painted. You get \$4 per block if three sides are painted. How much money will you receive in total?



Q2: You are given 10 cards numbered from 1 to 10 and asked to shuffle them. The shuffling process will split the cards into two equal piles (a top half and a bottom half). These two piles will then be placed back together alternatively between the piles starting with the top pile. The image below shows an example of how cards from 1 to 10 will look after shuffling it once only.



If you started with 10 cards numbered from 1 to 10 in order and shuffled it 5 times, what will the list of the cards look like? Show all your work and steps.