

MOSCROP MATH 8 ENRICHED ENTRANCE EXAM

APRIL 19, 2023

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 to the teacher before moving on to Part B. Students have up to 45 minutes to complete Part A and a total of 1 hour and 45 minutes 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 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 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	10	2	20	
Part B	5	3	15	
Part C	2	5	10	
Total			45 marks	

Part A: Non-Calculator Section: Please show all your work and steps: (2marks each)

1. Given the equation, what is the value of "A"?

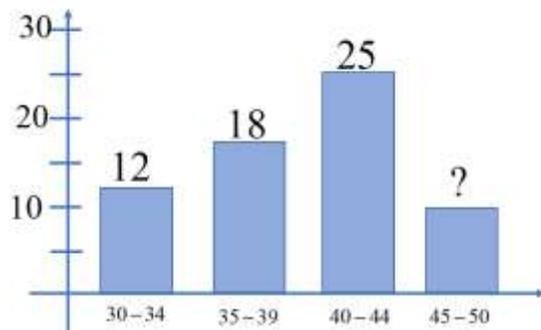
$$\frac{3}{4} \times \frac{8}{9} \times \frac{A}{20} \times \frac{25}{77} = \frac{10}{33}$$

ANSWER: _____

2. If today is Wednesday, then what day of the week will it be 167 days from today?

ANSWER: _____

3. Mr. Zee's class has 70 students and the chart below show the distribution of scores in the class. Given the chart below, what fraction of the students in MR. Zee's class scored 40 points or more? Write your answer as a fraction in lowest terms.

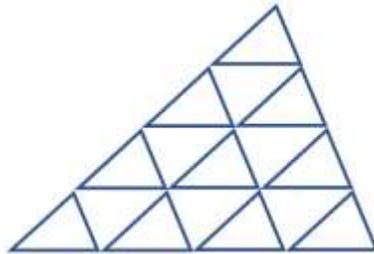


ANSWER: _____

4. Given $1+2+3+\dots+99+100=5050$, find the value of $1+2+3+\dots+97-98-99-100$.

ANSWER: _____

5. Given the shape below, please use your pencil and shade in 12.5% of the shape?



6. Bobby is practicing addition with a game. He starts by writing three numbers on a piece of paper. Each turn, he crosses out one number and adds the other two, writing the sum somewhere on his paper. After four turns, Bobby's paper looks like the image below. What three numbers did Bobby start with?

~~21~~

~~6~~ 60 ~~26~~

33 ~~15~~ 27

ANSWER: _____

7. The average of x , y and z is 6. What is the average of $3x + y$, $3y + z$ and $3z + x$?

ANSWER: _____

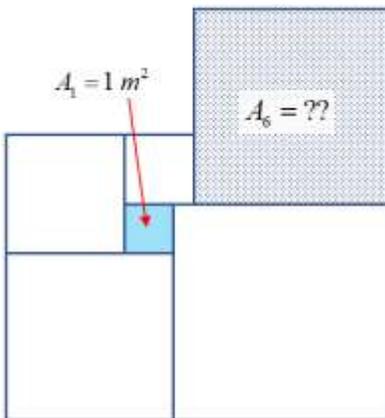
8. Amy gives $\frac{2}{5}$ of her pennies to Ben, and then gives $\frac{3}{4}$ of her remaining pennies to Chandra. Amy then uses her 12 remaining pennies to make wishes in a fountain. How many pennies did Amy have before she gave some to Ben?

ANSWER: _____

9. A composite number is a number with more than two factors. 4, 6, 8, 10, and 12 are examples of composite numbers. 1, 2, 5, 7, 11 are not composite numbers. The fraction of numbers that are less than or equal to "n" and are composite numbers is $\frac{8}{13}$. Determine the smallest value of n?

ANSWER: _____

10. The following diagram contains 6 squares, with the area of the little square in the middle equal to 1m^2 . What is area of the shaded square on the top right?



ANSWER: _____

Name: _____

Elementary School: _____

PART B: Written Response Problem: Please show all your work and steps (3marks each)

11. In lowest term, what fraction of all two-digit whole numbers have their digit sum larger than 10? The digit sum of a number is the sum of its digits. For example, the digit sum of 23 is $2 + 3 = 5$.

Answer: _____

12. The following table of values shows the relationship between “x” and “y”. What is the value of “y” when “x” is equal to 99?

x	y
2	3
5	18
6	23
9	38
99	?

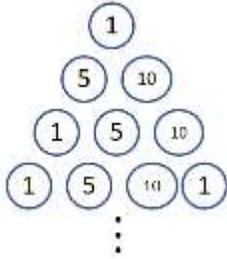
Answer: _____

13. The *mean* is the average of a set of numbers. The *mode* is the number that appears the most. The *median* is the middle number when all the values are arranged from smallest to the largest. Find the value of "X" in the list below if the mean, median, and mode are consecutive integers in any order?

14, 10, X, 16, 10, 26

Answer: _____

14. Pennies (1 cent), nickels (5 cents), and dimes (10 cents) are arranged in the pyramid as shown. There is one coin in the first row, two coins in the second row, and increasing by one coin in each following row. A penny is placed first, then a nickel, then a dime, and repeating the pattern of pennies, nickels and then dimes. How much money will there be altogether if there are 10 rows? Given your answer in cents.



ANSWER: _____

15. Increasing the edge length of a cube by 1 meter will increase its surface area by $150m^2$. What is the edge length in metre of the original cube?

ANSWER: _____

Name: _____

Elementary School: _____

PART C:

1. Tom is chasing Jerry. The time for Tom to take three steps is equal to the time for Jerry to take five steps. The distance that Tom covers in one step is equal to the distance that Jerry covers in 3 steps. At the beginning of the chase, Jerry was 36 of its steps ahead of Tom. How many steps will Jerry take before Tom catches it?

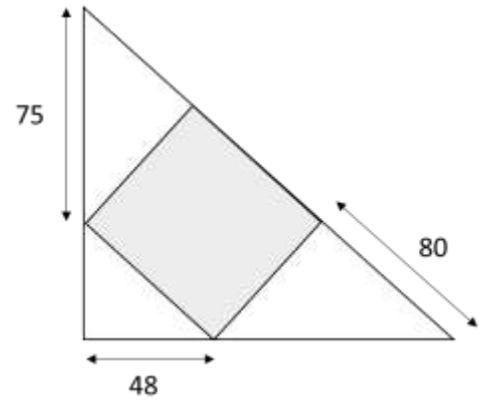
Answer: _____

2. What is the remainder when $(1+2+3+\dots+47)^{49}$ is divided by 100?

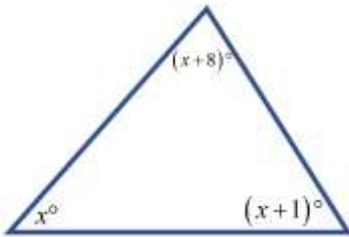
Answer: _____

Answer: _____

16. Mr. Young's combination lock has 4 digits. When he changes the digit in the ones place to the first digit of the combination lock, he notices that the new 4-digit number is greater than the original number by 5877. What is the original combination lock number?
3. What is the remainder when $(1+2+3+\dots+48)^{49}$ is divided by 50?
17. A large bag has a large number of white, blue, and yellow marbles. The total number of white and blue marbles combined is 160. The total number of blue and yellow marbles combined is 180. The total number of white and yellow marbles combined is 170. How many of each color marbles are there?
18. The square in the figure below has perimeter 240. What is the perimeter of the right triangle that surrounds it?



Given the triangle, with the measure of each angle given in terms of “x”, find the degrees of the largest angle.



Answer: _____