Team: _____

Question 1:

Call an integer "happy", if the sum of its digits is 10. How many "happy" integers are there between 100 and 1000?

Ans: _____

Question 2:

Compute the sum of *a, b* and *c* given that $\frac{a}{2} = \frac{b}{3} = \frac{c}{5}$ and the product of *a, b* and *c* is 1920.

Ans: _____

Question 3:

Replace the letters *a, b, c* and *d* in the following expression with the numbers 1, 2, 3 and 4, without repetition:

$$a + \cfrac{1}{b + \cfrac{1}{c + \cfrac{1}{d}}}$$

Find the difference between the maximum value and the minimum value of the expression.

Ans: _____

Question 4:

Buses from town A to town B leave every hour on the hour

(for example: 6:00, 7:00, …).

Buses from town B to town A leave every hour on the half hour

(for example: 6:30, 7:30, …).

The trip between town A and town B takes 5 hours. Assume the buses travel on the same road.

If you get on a bus from town A, how many buses from town B do you pass on the road (not including those at the stations)?

Ans: _____

Question 5:

Mr. Wong has a 7-digit phone number ABCDEFG. The sum of the number formed by the first 4 digits ABCD and the number formed by the last 3 digits EFG is 9063. The sum of the number formed by the first 3 digits ABC and the number formed by the last 4 digits DEFG is 2529. What is Mr. Wong's phone number?

Ans: _____

Question 6:

$$1 + 2 = 3$$
$$4 + 5 + 6 = 7 + 8$$
$$9 + 10 + 11 + 12 = 13 + 14 + 15$$
$$\vdots$$

If this pattern is continued, find the last number in the 80th row

(e.g. the last number of the third row is 15).

Ans: _____

Question 7:

Skipper's doghouse has a regular hexagonal base that measures one metre on each side. Skipper is tethered to a 2-metre rope which is fixed to a vertex. What is the area of the region outside the doghouse that Skipper can reach? Calculate an approximate answer by using $\pi = 3.14$ or $22/7$.
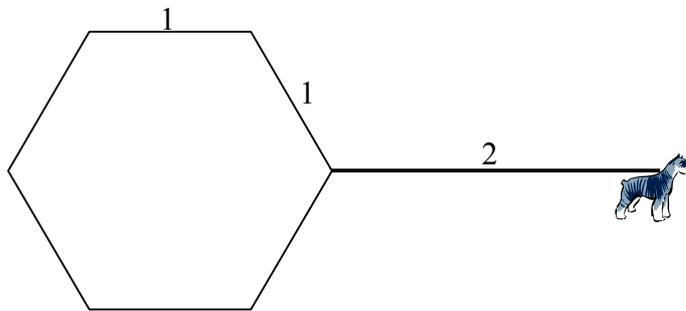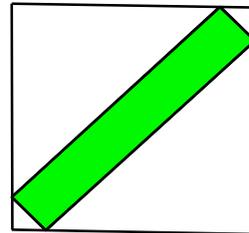

Ans: _____ m^2

Question 8:

An isosceles right triangle is removed from each corner of a square piece of paper so that a rectangle of unequal sides remains. If the sum of the areas of the cut-off pieces is 200 cm^2 and the lengths of the legs of the triangles cut off are integers, find the area of the rectangle.

Ans: _____ cm^2

Question 9:

Select 8 of the 9 given numbers: 2, 3, 4, 7, 10, 11, 12, 13, 15 and place them in the vacant squares so that the average of the numbers in each row and column is the same. Complete the following table.

1			
	9		5
		14	

Ans: _____

Question 10:

Find the largest 12-digit number for which every two consecutive

digits form a distinct 2-digit prime number.

Ans: _____