



Preparatory Program – AMTI - NMTC Final

Primary Level (Std V-VI)

Year 2010 Test Paper

EXCLUSIVE ★

Success begins with you ...-

Note -

Elegant and novel solution will get extra Credits
Diagrams and explanation should be given wherever necessary.
Rough work should be shown in the answer copy itself.

1. Given two numbers say 1 and 2, the addition problem is $1 + 2$ (or $2 + 1$). Thus there is just one addition problem. (Considering $1+2$ and $2+1$ as the same). Given three numbers 1, 2, and 3, the number of addition problems are $1 + 2 + 3 - 6$; $12 + 3$; $21 + 3$; $31 + 2$; $13 + 2$; $32 + 1$ and $23 + 1$. Thus there are 7 addition problems. Using all the four numbers 1,2,3,4 list all the two digit-two addend addition problems. Find the sum in each case.

What is the maximum sum and minimum sum?

2. A four digit number of the form $abab$, $a \neq b$, $a, b \neq 0$ (and a, b are the digits of the 4 digit number) is called a rectangular number,

(a) How many 4-digit rectangular numbers are there?

(b) What is the g. c. d of all these rectangular numbers?

(c) If these 4-digit numbers represent the area of rectangles, find the sides of the rectangle with minimum area. Find also the maximum perimeter of this rectangle.

(d) Find the sides of the rectangle with the biggest area and also find the least perimeter of this rectangle.

3. The odd numbers are arranged in groups as follows $\{1\}$, $(3, 5)$, $(7, 9, 11)$, $\{13, 15, 17, 19\}$,

what is the average of the numbers appearing in the 20th group.

4. ABC is an equilateral triangle of side length BC, CA and AB are trisected (divided into three equal parts) at the points (P, Q), (R, S) and (T, U) respectively.

(a) Calculate the sides and angles of the hexagon (six sided figure) PQRSTU.

(b) If the six points P,Q,R,S,T and U are taken on the sides BC, CA and AB of the same equilateral triangle such that $BP = QC = CR = SA = AT = UB = 2\text{cm}$ then find the measure of the sides and angles of this hexagon PQRSTU.

(c) In the same equilateral triangle if the six points P, Q, R, S, T and U taken as mentioned above such that $BP = CR = AT = 1\text{cm}$ and $QC = SA = UB = 2\text{cm}$ find the measure of the sides and angles of the hexagon PQRSTU.

Note; Angles formed at the vertices P, Q, R, S, T, U are called the angles of the hexagon.

5. a, b, c are three natural numbers in ascending order lying between 30 and 40. Given $(a + b)$, $(b + c)$ and $(c + a)$ are not divisible by 3, find all such triples (a, b, c) , Find the sums in each case. Which of the sums are divisible by 3?

6. Six seats are vacant on a straight bench. Find the number of ways three students Amala, Bhanu and Ghander occupy three seats so that Amala and Bhanu do not sit together.

7. In the sequence 6, 14, 8, -6,.... every term after the second is the difference of the preceding terms in the reverse order. Find the sum of the first 2010 terms.

8. An ascending integer is one in which each digit is greater than any other digit which precedes it (Example. 359). How many ascending integers are there between 200 and 300.
