



(TEAM Contest)

Name.....Team.....Country.....

1. On quadrilateral ABCD, points M, N, P and Q are located on AB, BC, CD and DA, respectively. The ratios of distance are as follows:

$$AM : MB = 3 : 5$$

$$BN : NC = 1 : 3$$

$$CP : PD = 4 : 5$$

$$DQ : QA = 1 : 8$$

What is ratio of the area of MBNPDQ to the area of ABCD?

2. Peter had 144 books and donated them to four schools. When Peter checked the number of books given to each school, he found out that the difference of the number of books between School A and School B was 4; between School B and School C was 3; between School C and School D was 2.

School A had the most number of books, but received less than 40 books.

- (a) In how many ways could Peter allot the books to School B and School D, according to all conditions?
- (b) How many books will School B and School D each get?
3. The area of quadrilateral ABCD is 6174 cm^2 . Points E and F are the midpoints of AB and CD, while G and H are the points on BC and AD respectively, such that $CG = 2GB$ and $AH = 2HD$. What is the area of EGFH?
4. How many trailing zeros are there in the product of $1 \times 2 \times 3 \times 4 \times 5 \times \dots \times 2003$? (Example: *10200000 has 5 trailing zeros*)
5. Alloy M is composed of 95% bronze, 4% tin and 1% zinc. Alloy N is composed of bronze and tin only. If alloy M is mixed with alloy N in equal proportion, a new alloy is formed, which has 86% bronze, 13.6% tin and 0.4% zinc.

What is the percentage of bronze in alloy N?

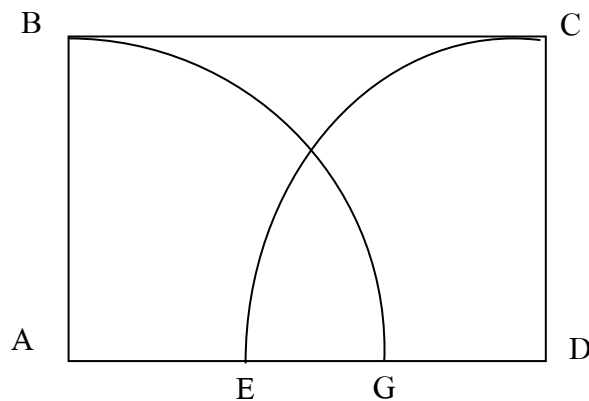
(Note: *alloy is a mixture of metals*)



6. An uncovered tank of water has the capacity 43.12 m^3 . The inner diameter of the tank is 2.8 meters. The walls and the base of the tank have a uniform thickness of 10 cm. If it costs 80 baht per square meter to paint the tank, calculate the cost of painting the total surface area. (Note: Baht is the Thai currency) (Given $\pi = \frac{22}{7}$ and answer to 2 decimals places.)

(Hint: Remember to include all surfaces)

7. There are three numbers: 3945, 4686 and 5598. When they are divided by X, the remainder is the same for each. What is the sum of the X and the common remainder?
8. ABCD is a rectangle, with $AB = 4 \text{ cm}$. The area of rectangle ABCD is equal to the area of the semicircle with radius AB. Find the length EG. ($\pi = 3.14$)



9. In a box of 12 different colored crayons, one of them is black. In how many different ways can the teacher give these crayons to a student so that the student receives at least one black?
- (Note: A student may receive from 1 – 12 crayons)
10. How many seven-digit numbers contain the digit '7' at least once?