**PROBLEMS**

**Problem 1.** The ratio of length to width of a rectangular room is and the width is 8. What is the length ?

(A) (B) (C) (D) (E)

**Problem 2.** Machine A can fill I box of nails in6 minutes.Machine B can fill 1box of nails in 9 minutes.They started to work at the same time and they stopped also at the same time.Total they filled 100 boxes.How many were filled by machine A?

(A) 20 (B) 40 (C) 60 (D) 80 (E) 120

**Problem 3.** Two identical jars are filled with alcohol solutions,the ratio of the volume of alcohol to the volume of water being m : 2 in one jar and n:2 in the other jar.If the entire contents of the two jars are mixed together,the ratio of the volume of alcohol to the volume of water in the mixture is

(A) (B) (C) (D) (E)

**Problem 4.** A triangle with side lengths in the ratio 5:12:13 is inscribed in a circle of diameter 91. What is the area of the triangle?

(A) 30 (B) 780 (C) 468π (D) 1470 (E) 1780

**Problem 5.** Three numbers a, b, and c in the ratios of a : b = 3 : 4 and b : c = 5 : 6 have a sum of 118. What are the values of a , b, and c?

(A) 20,24,56 (B) 30,45,48 (C) 40,48,50 (D)12,22,45 (E) 30,40,48

**Problem 6.** A bag initially contains red marbles and blue marbles only, with more blue than red. Red marbles are added to the bag until only 1/4 of the marbles in the bag are blue. Then yellow marbles are added to the bag until only 1/7 of the marbles in the bag are blue. Finally, the number of yellow marbles in the bag is doubled. What fraction of the marbles now in the bag are yellow?

(A) 1/5 (B) 1/4 (C) 1/3 (D) 3/5 (E) 1/2

**Problem 7.** If the ratio of 2x - 3y to x - y is 3/4, what is the ratio of x to y?

(A) (B) (C) (D) (E)

**Problem 8.** When x is added to both the numerator and the denominator of the faction a/b, a≠b, b≠0, the value of the fraction is changed to 3/5. Then x equals:

(A) (B) (C) (D) (E)

**Problem 9.** Given that 0 < x < y < z < w, which of the following is the smallest?

(A) (B) (C) (D) (E)

**Problem 10.** Find x if = = .

(A) 13 (B) 11 (C) 9 (D) 6 (E) 3

**Problem 11.** If = = , find the value of .

(A) 0 (B) -2 (C) -1 (D) -3 (E) 3

**Problem 12.** If m, n, p are non-zero real numbers such that == = k, find the value of k.

(A) -1 or 1/2 (B) -2 (C) -1 (D) 2 (E) 1/2 or 1

**Problem 13.** Suppose that -6 ≤ x ≤ -4 and 4 ≤ y ≤ 6. What is the smallest possible value of ?

(A) (B) (C) 0 (D) -1 (E) -

**Problem 14.** If x cows give x - 1 cans of milk in x - 2 days, how many days will it take x - 3 cows to give x - 5 cans of milk?

(A) (B) (C)

(D) (E)

**Problem 15.** If 10 men take 6 days to lay 1000 bricks,then how many days will it take 20 men working at the same rate to lay 5000 bricks?

(A) 30 (B) 20 (C) 15 (D) 10 (E) 7

**Problem 16.** One night two cylindrical wax candles of different heights and different diameters were lit. One of the candles was 20 cm taller than the other.They were both lit at the same time and each burned at a steady rate.Five hours after they were lit they were both the same height.The taller one burned all of its wax six hours after it was lit,and the shorter one burned all of its wax 10 hours after it was lit.What was the ratio of the original height of the shorter candle to the original height of the taller candle? Express your answer as a common fraction.

**Problem 17.** (AMC) Points P and Q are on line segment AB, and both points are on the same side of the midpoint of AB. Point P divides AB in the ratio 2 : 3, and Q divides AB in the ratio 3 : 4. If PQ = 2, then the length of segment AB is

(A) 12 (B) 28 (C) 70 (D) 75 (E) 105