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Individual Test Problems

Bali, May 26-31, 2006

Instructions:

* Write down your name on the answer sheet.
* Write your answer on the answer sheet.
* Answer all 15 questions.
* You have 90 minutes to work on this test.

1. When Anura was 8 years old his father was 31 years old. Now his father is twice as old as Anura is. How old is Anura now?

2. Nelly correctly measures three sides of a rectangle and gets a total of 88 cm. Her brother Raffy correctly measures three sides of the same rectangle and gets a total of 80 cm. What is the perimeter of the rectangle, in cm?

3. Which number should be removed from: $1, 2, 3, 4, 5, 6, 7, 8, 9, 10$ and 11 so that the average of the remaining numbers is 6.1?

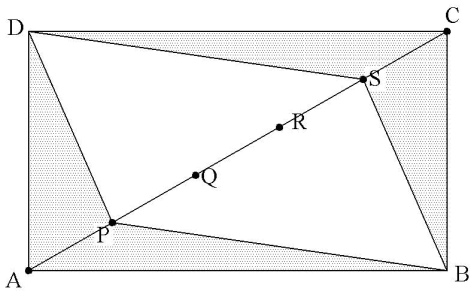
4. The houses in a street are located in such a way that each house is directly opposite another house. The houses are numbered $1, 2, 3, ...$ up one side, continuing down the other side of the street. If number 37 is opposite number 64, how many houses are there in the street altogether?

5. There are 6 basketball players and 14 cheerleaders. The total weight of the 6 basketball players is 540 kg. The average weight of the 14 cheerleaders is 40 kg. What is the average weight of all 20 people?

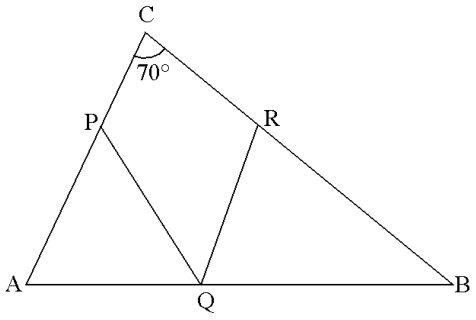
6. How many natural numbers less than 1000 are there, so that the sum of its first digit and last digit is 13?

7. Two bikers A and B were 370 km apart traveling towards each other at a constant speed. They started at the same time, meeting after 4 hours. If biker B started $\frac{1}{2}$ hour later than biker A, they would be 20 km apart 4 hours after A started. At what speed was biker A traveling?

8. In rectangle $ABCD$, $AB = 12$ and $AD = 5$. Points P, Q, R and S are all on diagonal AC, so that $AP = PQ = QR = RS = SC$. What is the total area of the shaded region?



9. In triangle ABC, $AP = AQ$ and $BQ = BR$. Determine angle PQR, in degrees.



10. In the equation below, N is a positive whole number.

$$N = \square + \square - \square$$

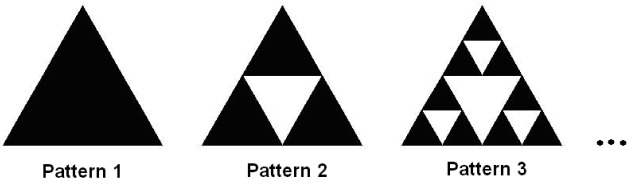
A numbered card is placed in each box. If three cards numbered $1, 2, 3$ are used, we get 2 different answers for N, that is 2 and 4. How many different answers for N can we get if four cards numbered $1, 2, 3,$ and 5 are used?

11. A mathematics exam consists of 20 problems. A student gets 5 points for a correct answer, a deduction of 1 point for an incorrect answer and no points for a blank answer. Jolie gets 31 points in the exam. What is the most number of problems she could have answered (including correct and incorrect answers)?

12. Joni and Dini work at the same factory. After every nine days of work, Joni gets one day off. After every six days of work, Dini gets one day off. Today is Joni's day off and tomorrow will be Dini's day off. At least how many days from today they will have the same day off?

13. In a bank, Bava, Juan and Suren hold a distinct position of director (D), manager (M) and teller (T). The teller, who is the only child in his family, earns the least. Suren, who is married to Bava's sister, earns more than the manager. What position does Juan hold? Give your answer in terms of D, M or T.

14. The following figures show a sequence of equilateral triangles of 1 square unit. The unshaded triangle in Pattern 2 has its vertices at the midpoint of each side of the larger triangle. If the pattern is continued as indicated by Pattern 3, what is the total area of the shaded triangles in Pattern 5, in square units?



15. There are five circles with 3 different diameters. Some of the circles touch each other as shown in the figure below. If the total area of the unshaded parts is 20 cm^2, find the total area of the shaded parts, in cm^2.

