

International
Mathematics and Science Olympiad
(IMSO) for Primary School 2006

Jakarta, November 12-18, 2006

INSTRUCTIONS:

- * Write down your name and country on every page.
- * Answer all 13 questions in English.
- * You have 90 minutes to work on this test.
- * Write down your answer and the explanation in English in the space below the question.
- * Use pen to write your answer.
- * Use pencil only to draw figures.

Name :
Country :

1. Let a, b and c represent one-digit numbers. If

$$\begin{array}{r} 85a \\ - 2b7 \\ \hline c64 \end{array}$$

find the value of $a + b + c$.

answer:

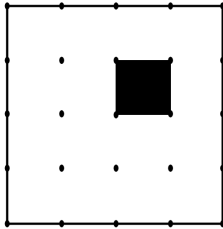
2. The length of a rectangle is increased by 25%. To preserve its area, how many percent of its width must be decreased?

answer:

Name :
Country :

3. A 4×4 square paper has a 1×1 square hole in it, as shown in the figure below. Illustrate how the paper can be cut into 5 congruent parts.

answer:



4. The total number of trees in forest P and Q is 560. After $\frac{3}{7}$ of the trees in forest P and 100 trees in forest Q are cut, the ratio of the number of trees in P to Q becomes 1 : 4. Find the number of trees in forest Q before the cutting.

answer:

Name :
Country :

5. In a box there are some marbles, $\frac{5}{8}$ of which are yellow. Of the remainder, $\frac{1}{4}$ are blue and the rest are red. The difference between the number of yellow and red marbles is 220. How many marbles are there in the box?

answer:

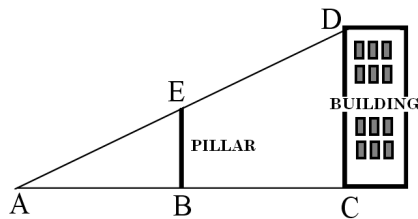
6. Adi and Budi make a trip from town X to town Y. Adi travels at the speed of 100km/h and Budi at 90km/h. They start travelling at the same time and Adi arrives 12 minutes earlier than Budi. What is the distance between X and Y?

answer:

Name :
Country :

7. A kind of drink contains 5% pure chocolate. If 5 liters of milk are added to 20 liters of this drink, find the percentage of chocolate in the mixture.
answer:

8. The length of the shadow of a building is 33 meters. A 2-meter pillar stands between the building and the end of the shadow of the building. The distance between the pillar and the end of the shadow of the building is 3 meters. The shadow of the building covers the whole shadow of the pillar. What is the least possible height of the building?



answer:

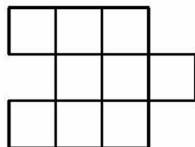
Name :
Country :

9. There are more than 30 students in a class. The number of boys is more than 4 but less than 12. The number of girls is more than 17 but less than 26. How many different combinations of the numbers of boys and girls would satisfy these conditions?

answer:

10. Put each of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and 9 into a different box in the following diagram so that two numbers may *not* occupy boxes which share at least one common corner if

- i. they are consecutive, or
- ii. both are greater than 1 and one of them is a multiple of the other.



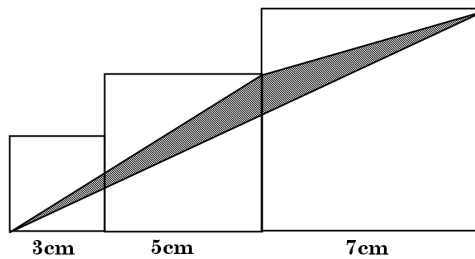
answer:

Name :
Country :

11. Two boys, Dudi and Gani, run back and forth between two points A and B at a constant speed without stopping. Dudi's speed is $1\frac{1}{2}$ times Gani's speed. Dudi runs from A to B while Gani from B to A. They both start at the same time. The two boys meet for the first time at 800 meters away from B. How far are the boys from A when they meet for the second time?

answer:

12. The figure as shown below is made up of three squares of sides 3cm, 5cm and 7cm respectively. Find the area of the shaded triangle.

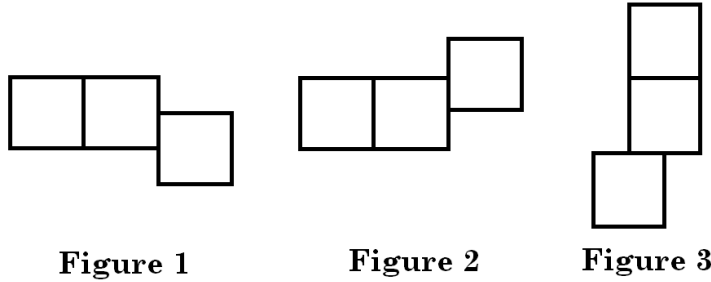


answer:

Name :
Country :

13. Three squares are to be connected in a certain way. Two squares are connected when there is an edge in each square that coincides fully or at exactly half of their lengths.

For example, see the figures below



We consider that Figure 1 and Figure 2 are different, while Figure 1 and Figure 3 are the same.

Draw all the possible different figures.

answer:

Name :
Country :

Name :
Country :

Name :
Country :

Name :
Country :

Name :
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Name :
Country :

Name :
Country :
