

NUMBERS

Problem 1 (10 points)

A movie theatre has eleven rows of seats. The rows are numbered from 1 to 11. Odd-numbered rows have 15 seats and even-numbered rows have 16 seats. How many seats are there in the theatre?

Problem 2 (20 points)

How many three-digit integers are exactly 17 more than a two-digit integer?

Problem 3 (30 points)

The sum of three different positive integers is 7. What is the product of these three integers?

Problem 4 (40 points)

In the addition of two 2-digit numbers, each blank space, including those in the answer, is to be filled with one of the digits 0, 1, 2, 3, 4, 5, 6, each used exactly once. The units digit of the sum is...

$$\begin{array}{r} \square \square \\ + \square \square \\ \hline \square \square ? \end{array}$$

Problem 5 (50 points)

How many different seven-digit numbers are there from which you can get the number 122333 by crossing out one digit?

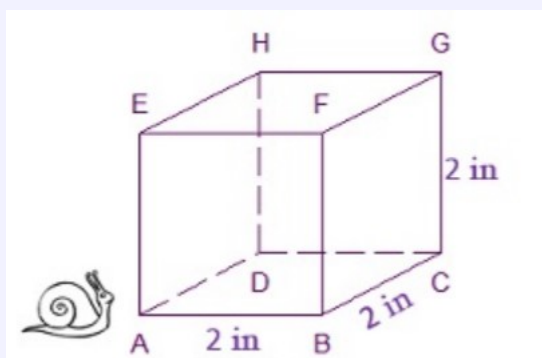
Problem 6 (60 points)

The multiplication $abc \times de = 7632$ uses each of the digits 1 to 9 exactly once. What is the value of b ?

GEOMETRY

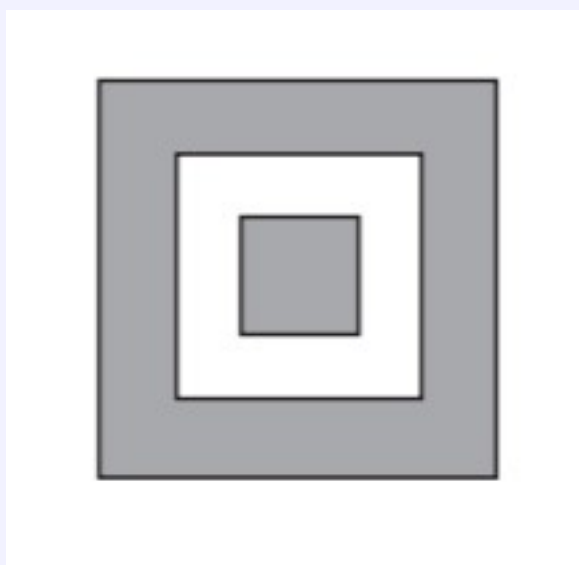
Problem 1 (10 points)

A snail crawls along the edges of $2 \times 2 \times 2$ cube. The snail starts at point A and wants to visit each of the other vertices at least once. It cannot crawl across the faces of the cube. What is the shortest distance it can crawl?



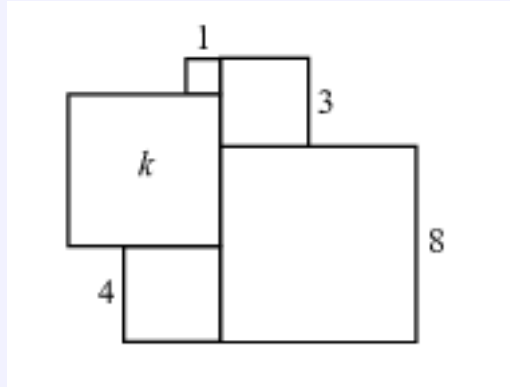
Problem 2 (20 points)

In the diagram, the large square has area 49, the medium square has area 25, and the small square has area 9. The region inside the small square is shaded. The region between the large and medium squares is shaded. What is the total area of the shaded regions?



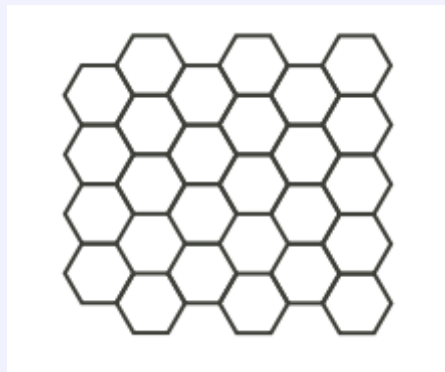
Problem 3 (30 points)

In the diagram, the side lengths of four squares are shown. The area of the fifth square is k . What is the value of k ?



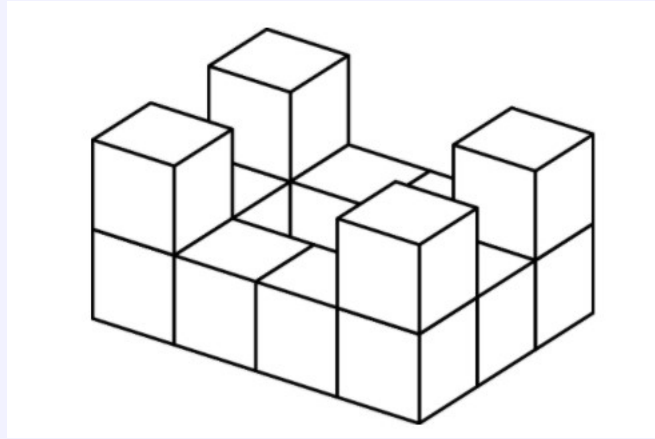
Problem 4 (40 points)

Serena colours the hexagons on the tiling shown. If two hexagons share a side, she colours them with different colours. What is the least number of colours that she can use to colour all of the hexagons?



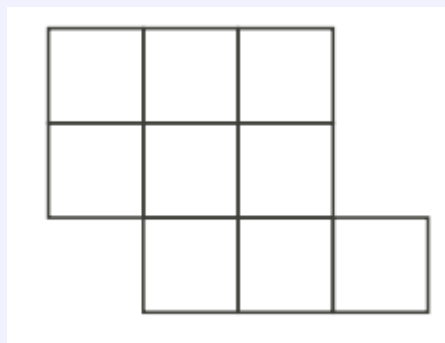
Problem 5 (50 points)

Fourteen white cubes are put together to form the figure below. The complete surface of the figure, including the bottom, is painted red. The figure is then separated into individual cubes. How many of the individual cubes have exactly four red faces?



Problem 6 (60 points)

From the figure shown, three of the nine squares are to be selected. Each of the three selected squares must share a side with at least one of the other two selected squares. In how many ways can this be done?



WORD PROBLEMS

Problem 1 (10 points)

Five children had dinner. Chris ate more than Max. Brandon ate less than Kayla. Kayla ate less than Max but more than Tanya. Which child ate the second most?

Problem 2 (20 points)

Five students ran a race. Ryan was faster than Henry and Faiz. Henry was slower than Faiz. Toma was faster than Ryan but slower than Omar. Which student finished fourth?

Problem 3 (30 points)

Two kangaroos Bo and Ing start to jump at the same time, from the same point, in the same direction. After that, they each make one jump per second. Each of Bo's jumps is 6 m in length. Ing's first jump is 1 m in length, his second is 2 m, his third is 3 m, and so on. After how many jumps does Ing catch Bo?

Problem 4 (40 points)

Julie and her daughters Megan and Zoey have the same birthday. Today, Julie is 32, Megan is 4 and Zoey is 1. How old will Julie be when her age is the sum of the ages of Megan and Zoey?

Problem 5 (50 points)

In the youth summer village there are 150 people, 75 of them are not working, 50 of them have families and 100 of them like to sing in the shower. What is the largest possible number of people in the village, which are working, that doesn't have families and that are singing in the shower?

Problem 6 (60 points)

Cleo played 40 games of chess and scored 25 points. (A win counts as one point, a draw counts as half a point, and a loss counts as zero points.) How many more games did she win than lose?