

KANGAROO PROBLEM SOLVING II

JUNIOR CIRCLE 03/06/2011

- (1) What is the greatest 4–digit number that has all of the following characteristics?
- It is an odd number
 - The sum of the digits is 6
 - Each digit is different
- (2) A bell rings every 4 minutes, a second bell rings every 6 minutes, and a third bell rings every 10 minutes. If all three bells ring together at 3 : 00pm, in how many minutes will they ring together again?

- (3) In the following addition problems, each letter represents one digit. If the same letter represent the same digits and different letters represent different digits. Answer the following questions.

$$\begin{array}{r} \text{EGG} \\ + \text{EGG} \\ \hline \text{PAGE} \end{array}$$

(a)

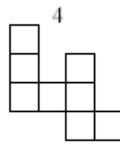
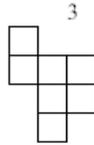
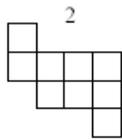
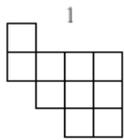
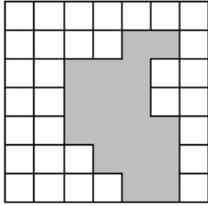
What numbers are represented by EGG and PAGE?

$$\begin{array}{r} \text{ABC} \\ + \text{CDC} \\ \hline \text{DCEE} \end{array}$$

(b)

What numbers are represented by ABC, CDC, and DCEE?

- (4) From a square puzzle two pieces are cut out. These two pieces made the shaded region in the figure below. Among the four figures, circle the two pieces that will correctly fill the shaded region.



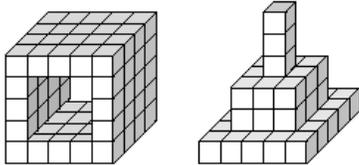
- (5) Camille's cafe has exactly 15 tables. Some of those tables are larger tables that can seat 6 people, and others are smaller tables that can seat just 4 people. If a maximum of 76 people can be seated at Camille's cafe, how many large tables does the cafe have?

- (6) Six teachers can grade all final tests in 4 hours. If each teacher works at the same rate, how many hours would it have taken for 8 teachers to grade the tests?

- (7) One medal can be cut out from a golden square plate. If four medals are made from four plates, the remaining parts of those four plates can be used to make one more plate. What is the largest number of medals that could be formed when 16 plates are used?

- (8) A conductor wanted to make a trio consisting of a fiddler, a pianist, and a drummer. He had to choose one of two fiddlers, one of two pianists, and one of two drummers. He decided to try each of the possible trios. How many attempts did he have to make?

- (9) Robert had a certain number of identical cubes. He glued a tunnel using half of his blocks (see Picture 1). With some of the remaining cubes he formed a pyramid (see Picture 2). How many blocks were not used to build those structures?



- (10) There are 29 students in the class. 12 of the students have a sister and 18 of the students have a brother. In this class, only Tania, Barbara, and Anna do not have any siblings. How many students from this class have both a brother and a sister?