MATH KANGAROO PROBLEM SOLVING

JUNIOR CIRCLE 02/27/2011

(1) Sam and Jake work at a pet farm. There are 6 sheep, 5 chickens, 3 fish and 9 cows. What is the total number number of feet on the pet farm while Sam and Jake are working?

(2) If today is Thursday, what day of the week would it be 120 days from now?

(3) Eva is 52 days older than her friend Anita. Eva had her birthday on Tuesday in March this year. On which day of the week will Anita celebrate her birthday this year?

(4) Peter, who is 1 year and 1 day older than Paul, was born January 1st, 2002. When was Paul born?

(5) A white and a black pig weigh 320 kg althogether. The black pig weighs 32 kgs more than the white pig. How much does the white pig weigh? (*Hint:* First, find how much each pig would weigh if they would have the same weight. Then, think how each of the weights should be changed so that the conditions of the problem are satisfied).

(6) Ivan played darts. He had 10 arrows. For each throw at the center he gained two additional arrows. Ivan made 20 throws and ran out of arrows. How many times did he hit the center?

(7) A farmer has 30 cow, some chickens, but no other animals. The total number of legs of the chickens is equal to the total number of legs of the cows. How many animals altogether does the farmer have?

(8) A ferry can transport either 10 cars or 6 trucks. Today the ferry crossed the river 5 times and transferred 42 vehicles. (The ferry was full each time). How many of them were cars and how many of them were trucks?

(9) A wire is bent so that a rectangle is made. The wire has a length of 12 cm. How many different rectangles can be made so that their side lengths are whole number in centimeters?

(10) Can you put all of the following weights onto the balace scale (some on the left pan and some on the right pan) so that the balance scale is in balance? The weights are 1 kg, 4 kg, 16 kg, 25 kg, 49 kg, 64 kg. If yes, show how. If not, explain why not.

(11) A basket full of apples weighs 19 kg. A basket which is half full weighs 10 kg. How much does an empty basket weigh? How many kilograms of apples fits into the basket?

(12) There are two horses, one duck, one fish, an eagle, and a boy in a private garden. Outside the garden there is one dog, 1 parrot and some cats. If the number of legs is the same in both places, how many cats are there?

(13) One hen lays one egg a day. In how many days will two hens lay 6 eggs?

(14) At the toy store, among other things, you can buy dogs, bears, and kangaroos. Three dogs and two bears together cost as much as four kangaroos. For the same amount of money you can buy one dog and three bears. How is the price of a dog is related to the price of a bear?

(15) The day before yesterday, John was 11 years old. Next year he will be 14 years old. Explain how this can happen.

(16) Peter bought 3 kinds of cookies: large, medium, and small. The large cookies cost 4 dollars each, the medium ones cost 2 dollars each, and the small ones cost 1 dollar each. Altogether, Peter bought 10 cookies and paid 16 dollars. How many large cookies did he buy?

(17) Mary is 3 years old, and her mother is 28 years older than Mary. How many years later will Mary's mother be three times older than her daughter?

(18) An odometer in a car shows the number 7569 of passed kilometers. This number consists of all different digits. After passing how many kilometers will the odometer show a number consisting of all different digits again?

(19) Twenty eight students from the fourth grade competed in a math competition. Each student earned a different number of points. The number of students who received more points than Thomas is two times smaller than the number of students who had fewer points than Thomas. In which position did Thomas finish that competition?

(20) Mark has 42 cubes with side length of 1 cm. He used all of them to construct a prism (rectangular box), the base of which has a perimeter of 18 cm. What is the height of that prism?

(21) One corner of the cube was cut off. Which of the figure below represents the pattern of the cube after unfolding it?

A)   B)   C)   D)   E)
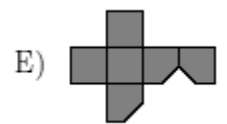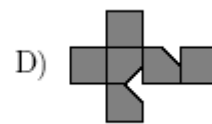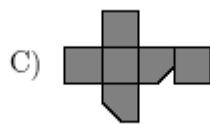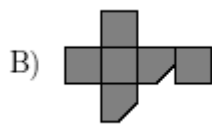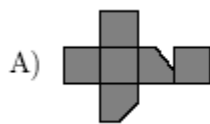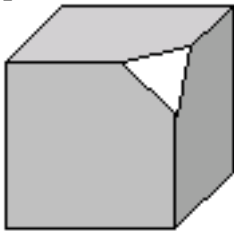
(22) During a competition in the Kangaroo Summer Camp in Zakopane students were given 10 problems to solve. For each correct answer a student was given 5 points and for each incorrect one the student was loosing 3 points. Everybody solved all the problems.

   (a) Mathew got 34 points. How many problems did he solve correctly?

   (b) Philip got 10 points. How many problems did he solve correctly?

   (c) John got 2 points. How many problems did he solve correctly?

(23) Paula's birthday was on a Wednesday in 2010. What day will it be in 2011?