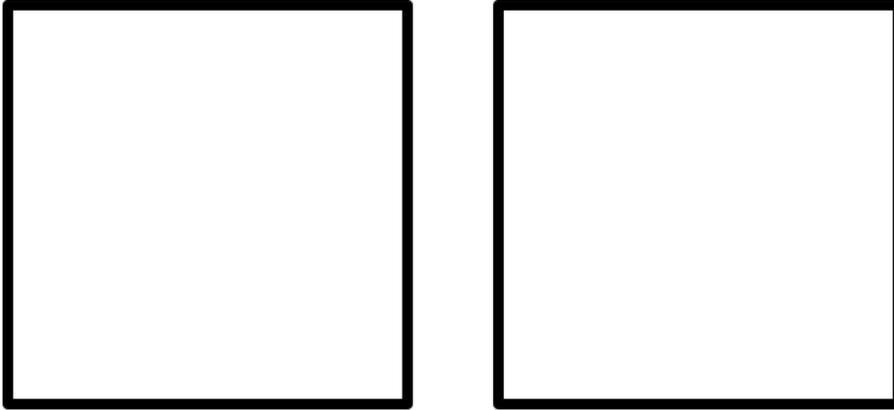


PROBLEM SOLVING

- (1) Given two equal squares, cut each of them into two parts so that you can make a bigger square out of four parts that you got that way.



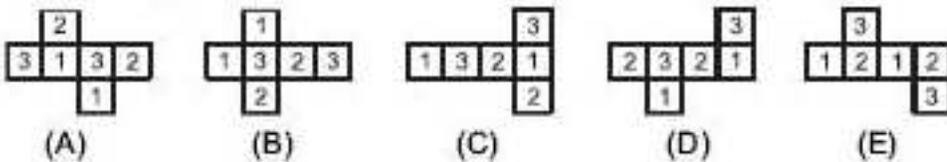
- (2) Cross out one digit in the number 1829 so that you get the smallest possible number.

- (3)
- (a) There are 20 students sitting around 4 tables in a math circle. Is it true that there is a table where 5 or more students are sitting?

 - (b) There are a total of 114 students in 5 classrooms in an elementary school. Is it true that there is a classroom with over 20 students in this school?

- (4) Jack gets paid \$48 for each day that he works. He has to pay \$12 for each day that he misses work. After 30 days, Jack was told that he does not owe anything and will not be paid anything. How many days did he work?

- (5) Alyssa wrote a number on each of the sides of a cube so that the same number is written on the opposite sides of the cube. Which of the following pictures can you get if you cut this cube along some of the edges and unwrap it?



- (6) For a field trip each student packed a snack consisting of either an apple, or crackers, or an apple and crackers. There were a total of 57 apples and 36 bags of crackers. 12 students packed both an apple and a bag of crackers. How many students went on the field trip?

- (7) There are 40 students in the two groups of the Early Elementary circle. 30 students can swim. 27 students can play chess. 5 students can't swim and can't play chess. How many students can both swim and play chess?

(13) Can you find how old Kate and her son are if:

- 5 years ago Kate was 5 times as old as her Son;
- 5 years from now Kate's age will be 8 years less than three times the corresponding age of her Son.

(14) The sum of two numbers is 3 more than one of the numbers and 4 more than the other number. What is the sum of the two numbers?

(15) You know that:

- When it rains, the cat is in the house or in the shed.
- When the cat is in the house, the mouse is in its hole and the cheese is in the refrigerator.
- If the cheese is on the table and the cat is in the shed, the mouse is in the house.

Right now it is raining and the cheese is on the table. What can you conclude?

- (a) the cat is in the house
- (b) the mouse is in the hole
- (c) the cat is in the house and the mouse is in the hole
- (d) the cat is in the shed and the mouse is in the house

- (16) You need to boil eggs for exactly 9 minutes, or else the visiting Duchess will complain, and you will lose your job as head chef. But you have only 2 Hour-glasses, one measures 7-minutes, and the other measures 4-minutes. How can you correctly measure 9 minutes?
- (17) You have a balance scale with four weights. With these four weights you must balance any whole number load (in ounces) from 1 all the way up to 40. How much should each of the four weights weigh? (You may place weights on both sides of the scale at the same time.)
- (18) Use the digit 8 exactly eight times make a 1000. You can use any mathematical symbols (+, -, \times , \div).