

Problems

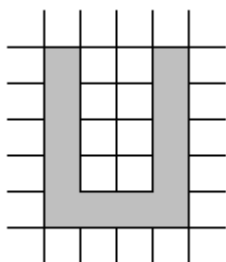
Math Kangaroo 2003

I--

A) 12 B) 24 C) 36 D) 40 E) 48

Questions—3points each

1. The picture below shows the letter U drawn on grid paper.
How many squares does the letter U cover?

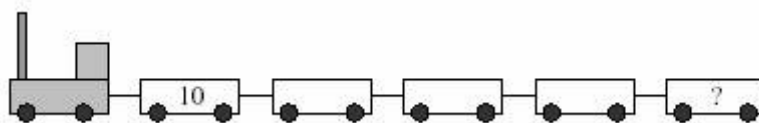


A) 10 B) 8 C) 11 D) 13 E) 12

2. What is the sum of $0 + 1 + 2 + 3 + 4 - 3 - 2 - 1 - 0$?

A) 0 B) 2 C) 4 D) 10 E) 16

3.



The first train car, right behind the engine, contains 10 boxes. In each of the other cars there are twice as many boxes as in the car in front of it. How many boxes are there in the fifth car?

A) 100 B) 120 C) 140 D) 160 E) 180

4. Zosia is drawing kangaroos. The first one is blue, the next one green, followed by red, and finally yellow, and then again blue, green, red, yellow, and so on, in the same order. What color will the seventeenth kangaroo be?

A) Blue B) Green C) Red D) Black E) Yellow

5. In the teachers' lounge there are 6 tables with 4 chairs by each one, 4 tables with 2 chairs by each, and 3 tables with 6 chairs by each. How many chairs are there in the lounge?

A) 40 B) 25 C) 50 D) 36 E) 44

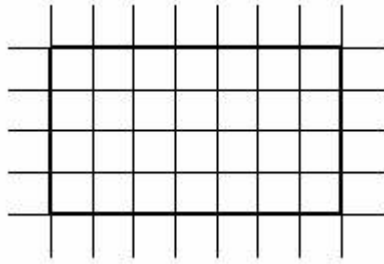
6. In one of these pictures, there are three times as many hearts as other shapes. Which picture is it?



A) B) C) D) E)

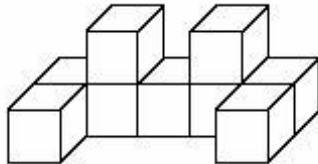
7. A rectangle with dimensions 7×4 was outlined on grid paper. How many squares will a diagonal of this rectangle

intersect?



- A) 8 B) 9 C) 10 D) 11 E) 12

-
8. _____



The figure presented in the picture, made with identical cubes, weighs 189 grams. How much does one cube weigh?

- A) 29 g B) 25 g C) 21 g D) 19 g E) 17 g

Questions—4 points each

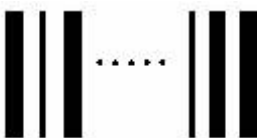
9. Peter wrote out consecutive natural numbers starting with 3 until he had written 35 digits. What was the greatest number that Peter wrote?

- A) 12 B) 22 C) 23 D) 28 E) 35

10. Anna fell asleep at 9:30 PM and woke up at 6:45 AM the next day. Her little brother Peter slept 1 hour and 50 minutes longer. How long did Peter sleep?

- A) 30 hr 5 min B) 11 hr 35 min C) 11 hr 5 min D) 9 hr 5 min E) 8 hr 35 min

11. A pattern, the beginning and the end of which is shown in the picture, is made up of alternating black and white bars. There are 17 bars altogether. The bars on both ends are black. How many white bars are there in the pattern?



- A) 9 B) 16 C) 7 D) 8 E) 15

12. Jumping Kangaroo is practicing for the animal Olympics. His longest jump during the training was 55 dm 50 mm long, but in the finals of the Olympics he won with a jump that was 123 cm longer. How long was Jumping Kangaroo's longest jump during the Olympics?

- A) 6 m 78 cm B) 5 m 73 cm C) 5 m 55 cm D) 11 m 28 cm E) 7 m 23 cm

13. Peter chose a certain number, then he subtracted 203 from it, then he added 2003 to that difference. His final result was 20003. What number did Peter choose at the beginning?

- A) 23 B) 17797 C) 18203 D) 21803 E) 22209

14. Barbara likes to add the digits showing the current time on her electronic watch (for example, when the watch shows 21:17, she gets the number 11 as the result). What is the greatest sum she can get? (Hint: in some countries and sometimes in USA, instead of telling it is 1P.M., people say it is 13:00. When it is

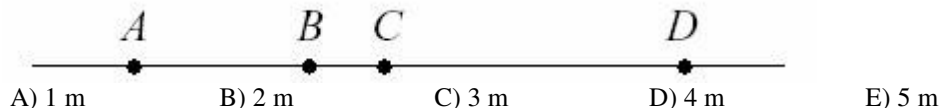
2P.M. they say it is 14:00, and when it is 12A.M., they say it is 24:00. In this problem 21:17 means 9:17P.M. Time expressed with this method is called *military time* sometimes.)

- A) 24 B) 36 C) 19 D) 25 E) 23

15. Mark said to his friends, "If I had picked twice as many apples as I picked, I would have 24 more apples than I have now." How many apples did Mark pick?

- A) 48 B) 24 C) 42 D) 12 E) 36

16. Points A, B, C, D all of which lie on a straight line, are marked in the figure below. The distance between points A and C is 10 m, between B and D is 15 m, and between A and D is 22 m. What is the distance between points B and C?



17. 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?

- A) None B) 1 C) 3 D) 4 E) 6

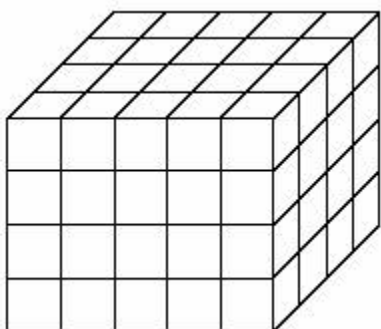
18. Peter has 11 pieces of paper. He cut some of them into three parts and now he has 29 pieces of paper. How many pieces of paper did he cut?

- A) 3 B) 2 C) 8 D) 11 E) 9

19. Peter bought 3 kinds of cookies: large, medium, and small. The large cookies cost 4 zlotys each, the medium: 2 zlotys each, and the small: 1 zloty each. (A zloty is the Polish unit of money.) Altogether, Peter bought 10 cookies and paid 16 zlotys. How many large cookies did he buy?

- A) 5 B) 4 C) 3 D) 2 E) 1

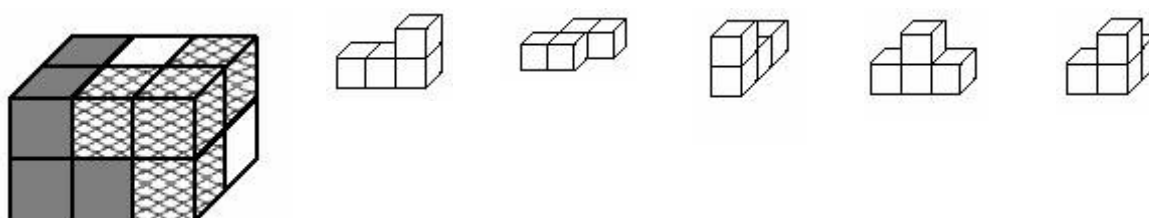
20. Christopher built a rectangular prism using red and blue cubes of identical size. The outer walls of this prism are red but all the inner cubes are blue. How many blue cubes did Christopher use in this construction?



21. Jurek is planning to buy some basketballs. If he were to buy 5 balls, he would have 10 zlotys left over, and if he were to buy 7 balls, he would have to borrow 22 zlotys. (A zloty is the Polish unit of money.) How much does one basketball cost?

- A) 11 B) 16 C) 22 D) 26 E) 32

22.

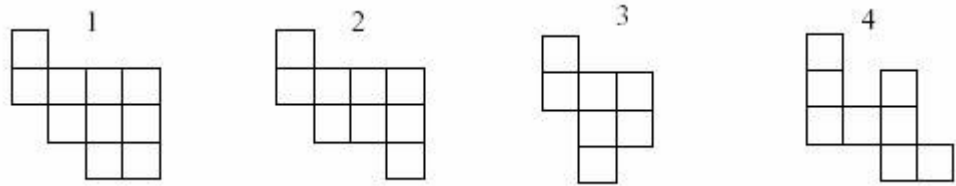


Mark built a rectangular prism using 3 blocks, each of which is made up of 4 small cubes connected in various ways. Two

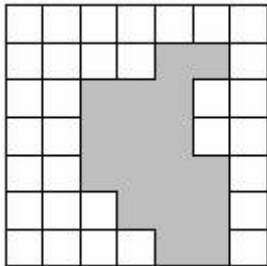
of the blocks are shown in the picture. Which is the third, white block, of which only two sides are visible?

- A) B) C) D) E)

23.



From a square puzzle, two pieces, which made up the shaded region, were cut out (see the figure). Which two of the pieces below are these?



- A) 1 and 3 B) 2 and 4 C) 2 and 3 D) 1 and 4 E) 3 and 4

24. 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. Then:

- A) A dog is twice as expensive as a bear.
 B) A bear is twice as expensive as a dog.
 C) The prices of a dog and of a bear are identical.
 D) A bear is three times as expensive as a dog.
 E) A dog is three times as expensive as a bear.

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