3 points

 # 1. We put 2, 0, 1, 3 into an adding machine, as shown.

| 2 | 0 | 1 | 3 |

What is the result in the box with the question mark?

(**A**) 2   (**B**) 3   (**C**) 4   (**D**) 5   (**E**) 6

 # 2. Nathalie wanted to build the same cube as Diana had (picture 1). However, Nathalie ran out of small cubes and built only the part of the cube, as you can see in the picture 2. How many small cubes must be added to fig. 2 to form fig. 1?

(**A**) 5   (**B**) 6   (**C**) 7   (**D**) 8   (**E**) 9

 # 3. Find the distance which Mara covers to get to her friend Bunica.

100 m

Mara $\frac{1}{8}$ $\frac{1}{4}$ $\frac{1}{2}$ *Bunica*

(**A**) 300 m   (**B**) 400 m   (**C**) 800 m   (**D**) 1 km   (**E**) 700 m

 # 4. Nick is learning to drive. He knows how to turn right but cannot turn left. What is the smallest number of turns he must make in order to get from A to B, starting in the direction of the arrow?

(**A**) 3   (**B**) 4   (**C**) 6   (**D**) 8   (**E**) 10

 # 5. The sum of the ages of Ann, Bob and Chris is 31 years. What will the sum of their ages be in three years time?

(**A**) 32   (**B**) 34   (**C**) 35   (**D**) 37   (**E**) 40
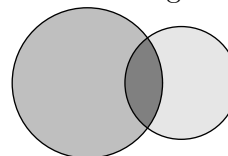
1

 # 6. What digit must be placed in all three boxes
$\square\square \cdot \square = 176$, in order to make the multiplication work?

(**A**) 6   (**B**) 4   (**C**) 7   (**D**) 9   (**E**) 8

 # 7. Michael has to take a pill every 15 minutes. He took the first pill at 11:05. What time did he take the fourth pill?

(**A**) 11:40   (**B**) 11:50   (**C**) 11:55   (**D**) 12:00   (**E**) 12:05

 # 8. By drawing two circles, Mike obtained a figure, which consists of three regions (see picture).

At most how many regions could he obtain by drawing two squares?

(**A**) 3   (**B**) 5   (**C**) 6   (**D**) 8   (**E**) 9

 # 9. The number 36 has the property that it is divisible by the digit in the unit position, because 36 is divisible by 6. The number 38 does not have this property. How many numbers between 20 and 30 have this property?

(**A**) 2   (**B**) 3   (**C**) 4   (**D**) 5   (**E**) 6
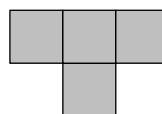
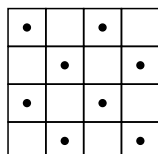**# 10.** Ann has a lot of pieces like the one in the picture. She tries to put as many as possible in the 4 by 5 rectangle. The pieces may not overlap each other. What is the largest possible number of pieces Ann can put in the rectangle?
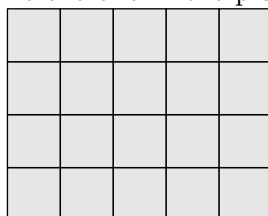
(**A**) 2   (**B**) 3   (**C**) 4   (**D**) 5   (**E**) 6
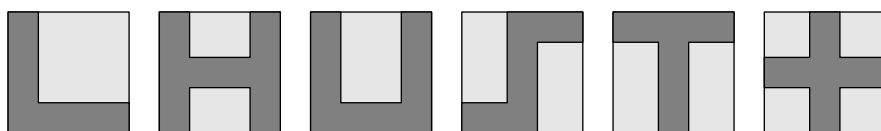
4 points

 # 11. Which of the following pieces covers the largest number of dots in the table?
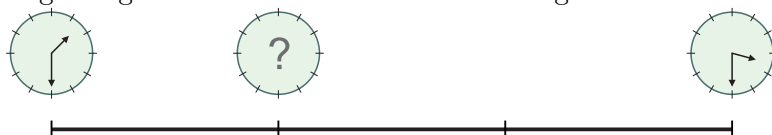

(A)   (B)   (C)   (D)   (E)

 # 12. Mary shades various shapes on square sheets of paper, as shown.

2

How many of these shapes have the same perimeter as the sheet of paper itself?

(**A**) 2   (**B**) 3   (**C**) 4   (**D**) 5   (**E**) 6

13. Ann rides her bicycle throughout the afternoon with constant speed. She sees her watch at the beginning and at the end with the following result:

Which picture shows the position of the minutes hand when Ann finishes one third of the ride?

(**A**)   (**B**)   (**C**)   (**D**)   (**E**)

14. Matthew is catching fish. If he had caught three times as many as he actually did, he would have 12 more. How many fish did he catch?

(**A**) 7   (**B**) 6   (**C**) 5   (**D**) 4   (**E**) 3

BACK

| 4	2	3	2
3	3	1	2
2	1	3	1
1	2	1	2

15. FRONT   John has made a building of cubes. In the picture you see this building from above. In each cell you see the number of cubes in that particular tower. When you look from the front, what do you see?

(**A**)   (**B**)   (**C**)

(**D**)   (**E**)
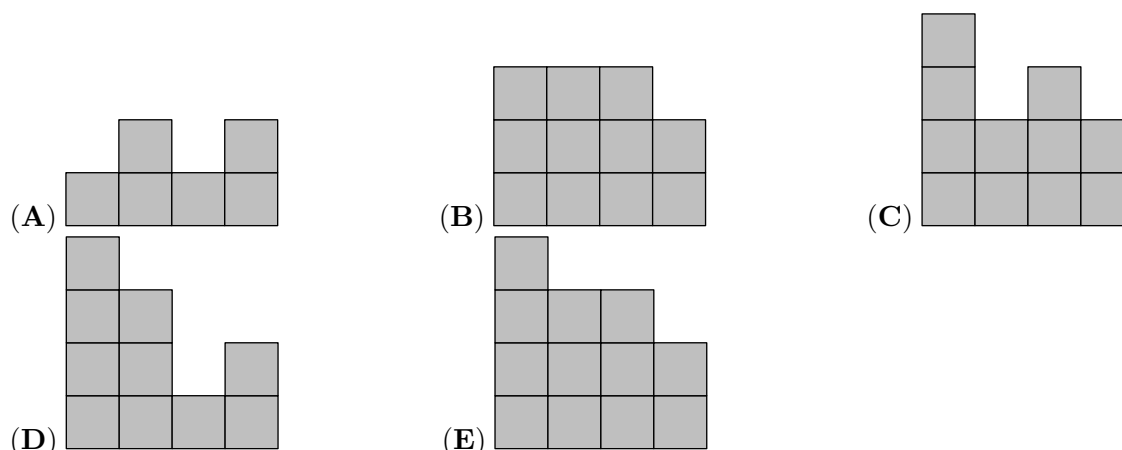
16. In an election each of the five candidates got a different number of votes. The candidates received 36 votes in total. The winner got 12 votes. The candidate in last place got 4 votes. How many votes did the candidate in second place get?

(**A**) 8   (**B**) 8 or 9   (**C**) 9   (**D**) 9 or 10   (**E**) 10

 # 17. From a wooden cube with side 3cm we cut out at the corner a little cube with side 1cm (see picture). What is the number of faces of the solid after cutting out such a small cube at *each* corner of the big cube?
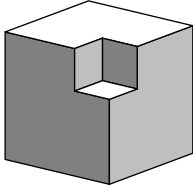
(**A**) 16   (**B**) 20   (**C**) 24   (**D**) 30   (**E**) 36

 # 18. Find the number of pairs of two-digit natural numbers whose difference is equal to 50.

(**A**) 40   (**B**) 30   (**C**) 50   (**D**) 60   (**E**) 10

 # 19. The final of the local hockey championship was a match full of goals. There were 6 goals in the first half and the guest team was leading after the first half. After the home team scored 3 goals in the second half, they won the game. How many goals did the home team score altogether?

(**A**) 3   (**B**) 4   (**C**) 5   (**D**) 6   (**E**) 7

 # 20. In the squares of the 4×4 board numbers are written such that the numbers in adjacent squares differ by 1. Numbers 3 and 9 appear in the table. Number 3 is in the top left corner as shown.

How many different numbers appear in the table?

(**A**) 4   (**B**) 5   (**C**) 6   (**D**) 7   (**E**) 8

5 points

 # 21. Aron, Bern and Carl always lie. Each of them owns one stone, either a red stone or a green stone. Aron says: "My stone is the same color as Bern's stone", Bern says: "My stone is the same color as Carl's stone". Carl says: "Exactly two of us own red stones". Which of the following statements is true?

(**A**) Aron's stone is green.

(**B**) Bern's stone is green.

(**C**) Carl's stone is red.

(**D**) Aron's stone and Carl's stone have different colors

(**E**) None of the above is true.

 # 22. 66 cats signed up for the contest MISS CAT 2013. After the first round 21 were eliminated because they failed to catch mice. 27 cats out of those that remained in the contest had stripes and 32 of them had one black ear. All striped cats with one black ear got to the final. What is the minimum number of finalists?

(**A**) 5   (**B**) 7   (**C**) 13   (**D**) 14   (**E**) 27

 # 23. There are four buttons in a row as shown below. Two of them show happy faces, and two of them show sad faces. If we press on a face, its expression turns to the opposite (e.g. a funny face turns into a sad face after the touch). In addition to this, the adjacent buttons also change their expressions. What is the least number of times you need to press the buttons in order to get all happy faces?

(**A**) 2 (**B**) 3 (**C**) 4 (**D**) 5 (**E**) 6

 # 24. 40 boys and 28 girls stand in a circle, hand in hand, all facing inwards. Exactly 18 boys give their right hand to a girl. How many boys give their left hand to a girl?

(**A**) 18 (**B**) 9 (**C**) 28 (**D**) 14 (**E**) 20

 # 25. A $2 \times 2 \times 2$ cube is to be constructed using 4 white and 4 black unit cubes. How many different cubes can be constructed in this way? (Two cubes are not different if one can be obtained by rotating the other.)

(**A**) 16 (**B**) 9 (**C**) 8 (**D**) 7 (**E**) 6

 # 26. How many 3-digits numbers possess the following property: after subtracting 297 from such a number, we get a 3-digit number consisting of the same digits in the reverse order?

(**A**) 6 (**B**) 7 (**C**) 10 (**D**) 60 (**E**) 70

 # 27. When Matthew and Marten found their old model railway, Matthew quickly made a perfect circle from 8 identical track parts, Marten starts to make another track with two of these pieces as shown in the picture. He wants to use as few pieces as possible to make a closed track. How many pieces does his track consist of?
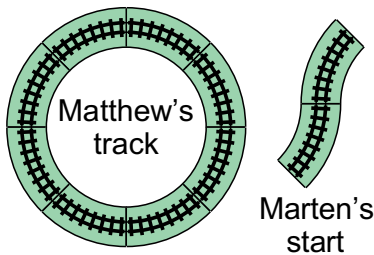
(**A**) 11 (**B**) 12 (**C**) 14 (**D**) 15 (**E**) 16

 # 28. There were 2013 inhabitants on an island. Some of them were knights and the others were liars. The knights always tell the truth and the liars always lie. Every day, one of the inhabitants said: "After my departure the number of knights on the island will equal the number of liars" and then left the island. After 2013 days there was nobody on the island. How many liars were there initially?
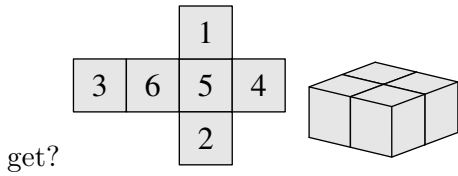
(**A**) 0 (**B**) 1006 (**C**) 1007 (**D**) 2013

(**E**) It is impossible to determine.

 # 29. Starting with a list of three numbers, the "changesum" procedure creates a new list by replacing each number by the sum of the other two. For example, from $\{3, 4, 6\}$ "changesum" gives $\{10, 9, 7\}$ and a new "changesum" leads to $\{16, 17, 19\}$. If we begin with the list $\{20, 1, 3\}$, what is the maximum

difference between two numbers of the list after 2013 consecutive "changesums"?

(**A**) 1   (**B**) 2   (**C**) 17   (**D**) 19   (**E**) 2013

 # 30. Alice forms 4 identical numbered cubes using the net shown. She then glues them together to form a $2 \times 2 \times 1$ block, as shown. Only faces with identical numbers are glued together. Alice then finds the total of all the numbers on the surface of the block. What is the largest total that Alice can get?

(**A**) 66   (**B**) 68   (**C**) 72   (**D**) 74   (**E**) 76