



3 points

1. Which of these is the result of 20102010 being divided by 2010?

- A) 11 B) 101 C) 1001 D) 10001 E) the result is not an integer number

2. In a given test, Ivan scored 85 % of the points. In the same test Tibor scored 90 % of the points. Tibor had only one point more than Ivan. What was the maximum number of points in this test?

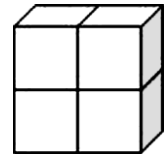
- A) 5 B) 17 C) 18 D) 20 E) 25

3. Given that both rows have the same sum, what is the value of *?

1	2	3	4	5	6	7	8	9	10	2010
11	12	13	14	15	16	17	18	19	20	*

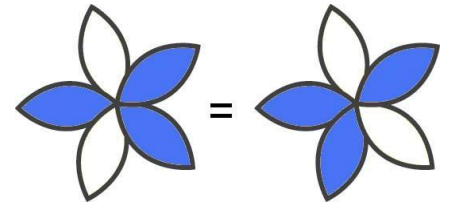
- A) 1010 B) 1020 C) 1910 D) 1990 E) 2020

4. The solid in the picture is formed of four identical cubes. The total surface area of each of the cubes is 24 cm^2 . What is the total surface area of the large solid?



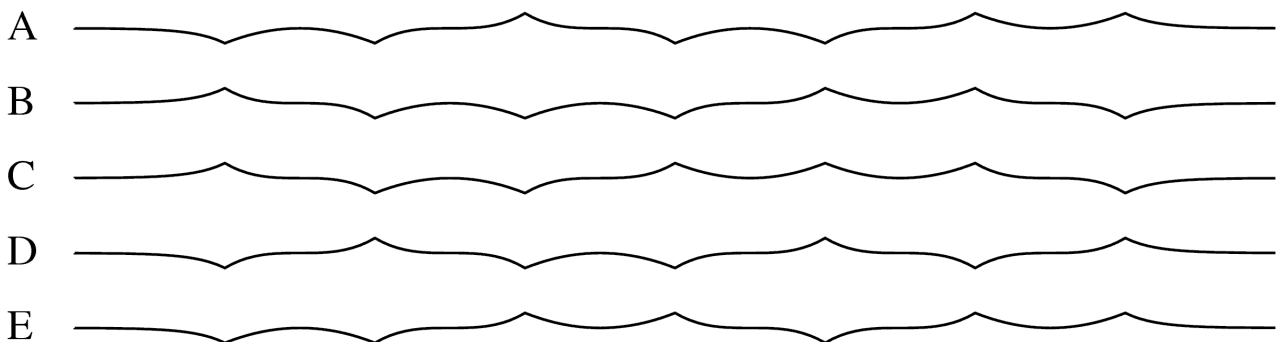
- A) 80 cm^2 B) 64 cm^2 C) 40 cm^2 D) 32 cm^2 E) 24 cm^2

5. Ivona has drawn a flower with five petals. She wants to color the flower, but she has only two different colors – blue and white. How many different flowers can Ivona get if she has to color each petal using one of these two colors? If you rotate the flower you still have the same flower (picture).



- A) 6 B) 7 C) 8 D) 9 E) 10

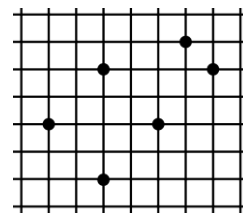
6. A paper strip was folded three times in half and then completely unfolded so that you can still see the 7 folds going up or down. Which of the following side views can not be obtained in this way?





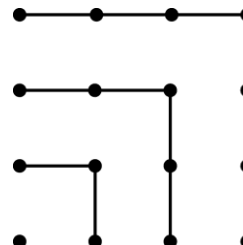
7. Six points are marked at the intersections of lines on a squared sheet of paper. Which geometrical figure can not have all its vertices among these points?

- A) a square
- B) a parallelogram but not a rhombus
- C) a trapezoid
- D) an obtuse triangle
- E) all the figures A – D can have



8. In the picture we can see that $1 + 3 + 5 + 7 = 4 \times 4$. What is the value of $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17$?

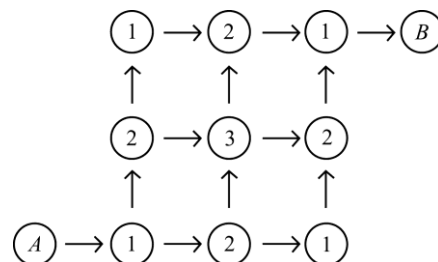
- A) 14×14
- B) 9×9
- C) $4 \times 4 \times 4$
- D) 16×16
- E) 4×9



9. Brigitte goes to Verona on vacation, and plans to cross all the five old bridges over the river Adige at least once. She starts walking from her hotel on the river bank, and when she returns there, she has crossed all of these bridges and no other. She saw no islands in the river during her walk. During her walk she crossed the river n times. Which is a possible value for n ?

- A) 3
- B) 4
- C) 5
- D) 6
- E) 7

10. You walk from circle A to circle B following the arrows. On each walk compute the sum of all numbers you pass through. How many different sums are there?



- A) 1
- B) 2
- C) 3
- D) 4
- E) 6

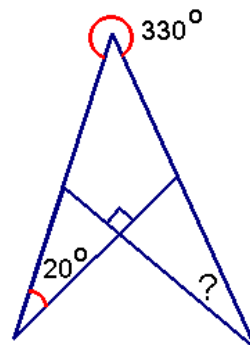
4 points

11. A teacher monitoring this kangaroo competition said today that the product of his age and his father's age is 2010. In which of the suggested years could the teacher be born?

- A) 1943
- B) 1953
- C) 1980
- D) 1995
- E) 2005

12. Find the value of the angle where the question mark is.

- A) 10°
- B) 20°
- C) 30°
- D) 40°
- E) 50°



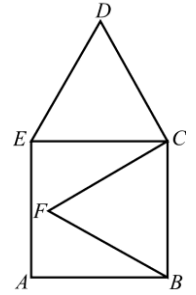


13. Find the number of Natural numbers where the sum of their digits is 2010 and the product of their digits is 2?

- A) 2010 B) 2009 C) 2008 D) 1005 E) 1004

14. $ABCE$ is a square and BCF and CDE are equilateral triangles. If $AB = 1$, what is the length of FD ?

- A) $\sqrt{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\sqrt{3}$ D) $\sqrt{5} - 1$ E) $\sqrt{6} - 1$

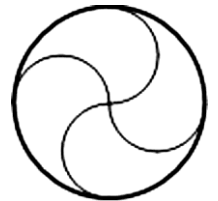


15. Three Tuesdays of the month coincided with even dates. Which weekday was the 21st day of this month?

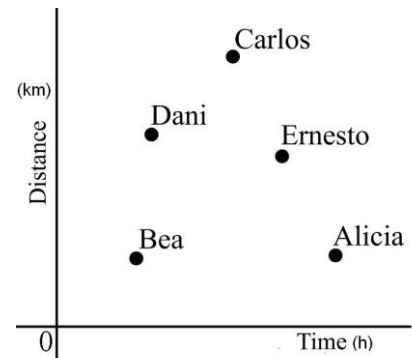
- A) Wednesday B) Thursday C) Friday D) Saturday E) Sunday

16. As shown on the right a circle with a radius of four is divided into four congruent parts by arcs of radius of two. What is the perimeter of one of the resulting parts?

- A) 2π B) 4π C) 6π D) 8π E) 12π

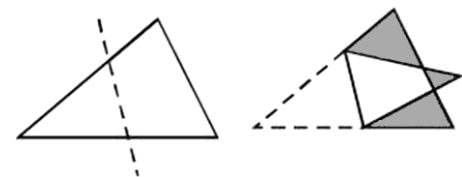


17. The scatter graph shows time-trials run by five students. The graph shows both distance (km) and the time taken (h). Who was the fastest?



- A) Alicia B) Bea C) Carlos D) Dani E) Ernesto

18. A triangle is folded along the dotted line to obtain a heptagon as shown in the picture. The area of the triangle is 1,5 times that of the resulting heptagon. The heptagon consists of the three shaded triangles and the white quadrangle. The total area of the three shaded triangles is 1. Find the area of the original triangle.



- A) 2 B) 3 C) 4 D) 5 E) It is not possible to determine the answer.

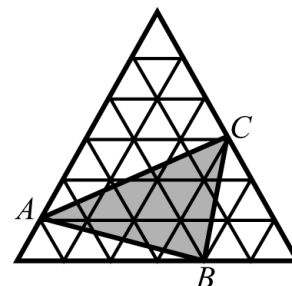


19. In a supermarket, there are two lines of tightly-packed shopping carts. The first line has ten shopping carts and is 2,9 m long. The second line has twenty shopping carts and is 4,9 m long. What is the length of one shopping cart?



- A) 0,8 m B) 1 m C) 1,1 m D) 1,2 m E) 1,4 m

20. The big equilateral triangle consists of 36 smaller equilateral triangles with an area 1 cm^2 each. Find the area of $\triangle ABC$.

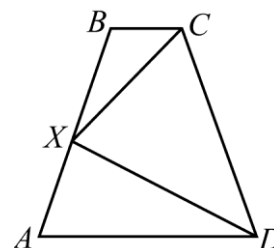


- A) 11 cm^2 B) 12 cm^2 C) 13 cm^2 D) 14 cm^2 E) 15 cm^2

5 points

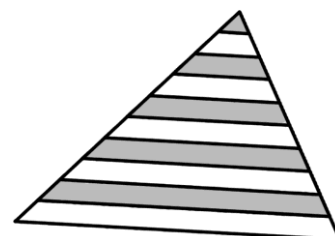
21. In an isosceles trapezoid $ABCD$, X is the midpoint of the lateral side AB , $BX = 1$, and $\angle CXD = 90^\circ$. Find the perimeter of the trapezoid $ABCD$.

- A) 5 B) 6 C) 7 D) 8 E) It is not possible to determine the answer.



22. In the triangle shown on the right, lines parallel to the base divide each of the other two sides of the triangle into 10 equal segments. Which percentage of the area of the triangle is grey?

- A) 42,5% B) 45% C) 46% D) 47,5% E) 50%



23. For how many integers n ($1 \leq n \leq 100$) is the number n^n a perfect square?

- A) 5 B) 50 C) 55 D) 54 E) 15

24. Six-, seven- and eight-legged octopi are servants of the underwater king. Those who have seven legs always lie, but those with six or eight legs, always tell the truth. One day four octopi met.

The blue one said: "Altogether we've got 28 legs".

The green one said: "Altogether we've got 27 legs".

The yellow one said: "Altogether we've got 26 legs".

The red one said: "Altogether we've got 25 legs".

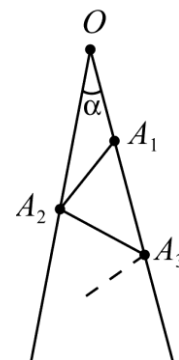
What color is the octopus who is telling the truth?

- A) red B) blue C) green D) yellow E) none of the above



25. In the figure, $\angle \alpha = 7^\circ$ and the segments $OA_1, A_1A_2, A_2A_3, \dots$ are all equal. Point A_n is farthest point from point O . What is the index n of the point A_n ?

- A) 10 B) 11 C) 12 D) 13 E) You can draw infinitely many segments



26. In a number sequence the first three terms are 1, 2 and 3. Beginning from the fourth term the next term is calculated from the previous three terms, the third of them is subtracted from the sum of the first and the second. The beginning of the sequence looks like this 1, 2, 3, 0, 5, -2, 7, ... What is the 2010th term of the sequence?

- A) -2006 B) 2008 C) -2002 D) -2004 E) some other number

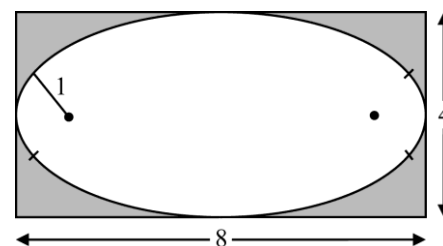
27. On each side of a pentagon there is a Natural number such that the adjacent numbers never have a common divisor greater than 1 and non-adjacent numbers always have a common divisor greater than 1. There are several possibilities, but one of the following numbers will never occur on any of the sides of the pentagon. Which one is it?

- A) 16 B) 18 C) 20 D) 22 E) 24

28. Find the number of 3-digit integers where the central digit is the average of the other two.

- A) 9 B) 12 C) 16 D) 25 E) 45

29. An oval is built of four arcs of circles which have a common tangent in each point of connection. The arcs on the left and right are the same. The arcs on the top and the bottom are the same. The oval has a vertical and a horizontal line of symmetry. The oval fits exactly in a rectangle whose measurements are 4 x 8. The radius of the little arcs is 1. What is the radius of the big arcs?



- A) 6 B) 6,5 C) 7 D) 7,5 E) 8

30. A bar-code of the type shown is composed of alternate strips of black and white, always beginning and ending with a black strip. Each strip (of either color) has the width of one or two. The total width of the bar code is 12. Always reading from left to right, how many different codes are possible?



- A) 24 B) 132 C) 66 D) 12 E) 116