

MATHEMATICS

LEVEL 7 – 8
(Α' - Β' Γυμνασίου)

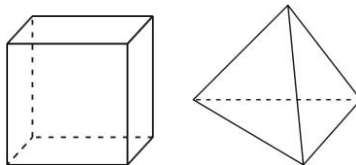
19 March 2011
10:00-11:15

3 points

1) Which of the following has the largest value?

- (A) 2011^1 (B) 1^{2011} (C) 1×2011 (D) $1 + 2011$ (E) $1 \div 2011$

2) Elsa plays with cubes and tetrahedrons. She has 5 cubes and 3 tetrahedrons. How many faces are there in total?



- (A) 42 (B) 48 (C) 50 (D) 52 (E) 56

3) A zebra crossing has alternating white and black stripes, each of width 50 cm. On a road the crossing starts and ends with a white stripe. The crossing has 8 white stripes. What is the total width of the crossing?

- (A) 7 m (B) 7,5 m (C) 8 m (D) 8,5 m (E) 9 m

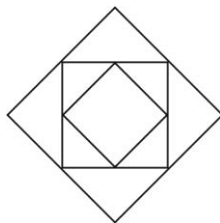
4) My calculator divides instead of multiplying and subtracts instead of adding. I type $(12 \times 3) + (4 \times 2)$. What does the calculator show?

- (A) 2 (B) 6 (C) 12 (D) 28 (E) 38

5) My digital watch has just changed to show the time 20:11. How many minutes later will it next show a time with the digits 0, 1, 1, 2 in some order?

- (A) 40 (B) 45 (C) 50 (D) 55 (E) 60

6) The diagram shows three squares. The medium square joins the midpoints of the large square. The small square joins the midpoints of the medium square. The area of the small square in the figure is 6 cm^2 . What is the difference between the area of the medium square and the area of the large square, in cm^2 ?

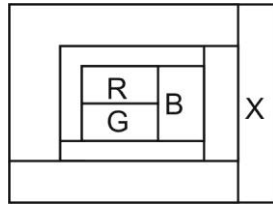


- (A) 6 (B) 9 (C) 12 (D) 15 (E) 18

7) In my street there are 17 houses. I live in the last house on the even side, it is number 12. My cousin lives in the last house on the odd side; what number is his home?

- (A) 5 (B) 7 (C) 13 (D) 17 (E) 21

14) Each region in the diagram has to be coloured with one of four colours: red (R), green (G), blue (B), yellow (Y). Any two regions that touch must have different colours. Then the colour of the region X is

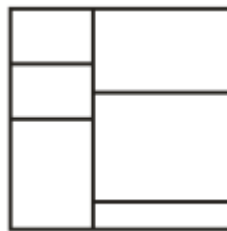


- (A) red (B) blue (C) green (D) yellow (E) not possible to determine

15) Here is a list of marks: 17, 13, 5, 10, 14, 9, 12, 16. Which two marks can be removed without changing the average?

- (A) 12 and 17 (B) 5 and 17 (C) 9 and 16 (D) 10 and 12 (E) 14 and 10

16) A square piece of paper is cut into six rectangular pieces. The total length of the perimeters of the six rectangular pieces is 120 cm. Find the area of the square piece of paper.



- (A) 48 cm^2 (B) 64 cm^2 (C) $110,25 \text{ cm}^2$ (D) 144 cm^2 (E) 256 cm^2

17) In three games “Barcelona” scored 3 goals and let 1 goal in. In these three games, “Barcelona” won one game, drew one game and lost one game. What was the result of the won game?

- (A) 2:0 (B) 3:0 (C) 1:0 (D) 2:1 (E) 0:1

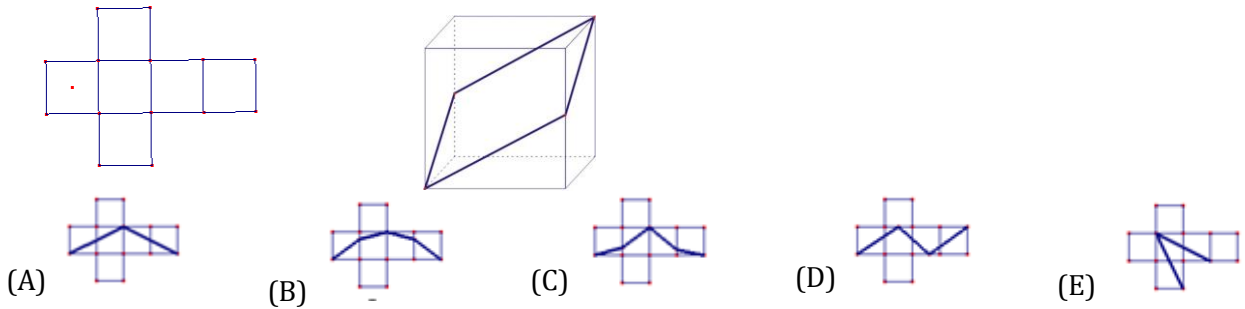
18) Lali draws a line segment DE of length 2 on a piece of paper. How many different points F can she draw on the paper so that the triangle DEF is right-angled and has area 1?

- (A) 2 (B) 4 (C) 6 (D) 8 (E) 10

19) The positive number a is less than 1, and the number b is greater than 1. Which of the following numbers has the largest value?

- (A) $a \cdot b$ (B) $a + b$ (C) $a : b$ (D) b (E) The answer depends on a and b .

20) A cube is folded from the paper below. A dark line is then drawn so that it divides the surface of the cube into two identical parts. What does the paper look like after the cube is unfolded?

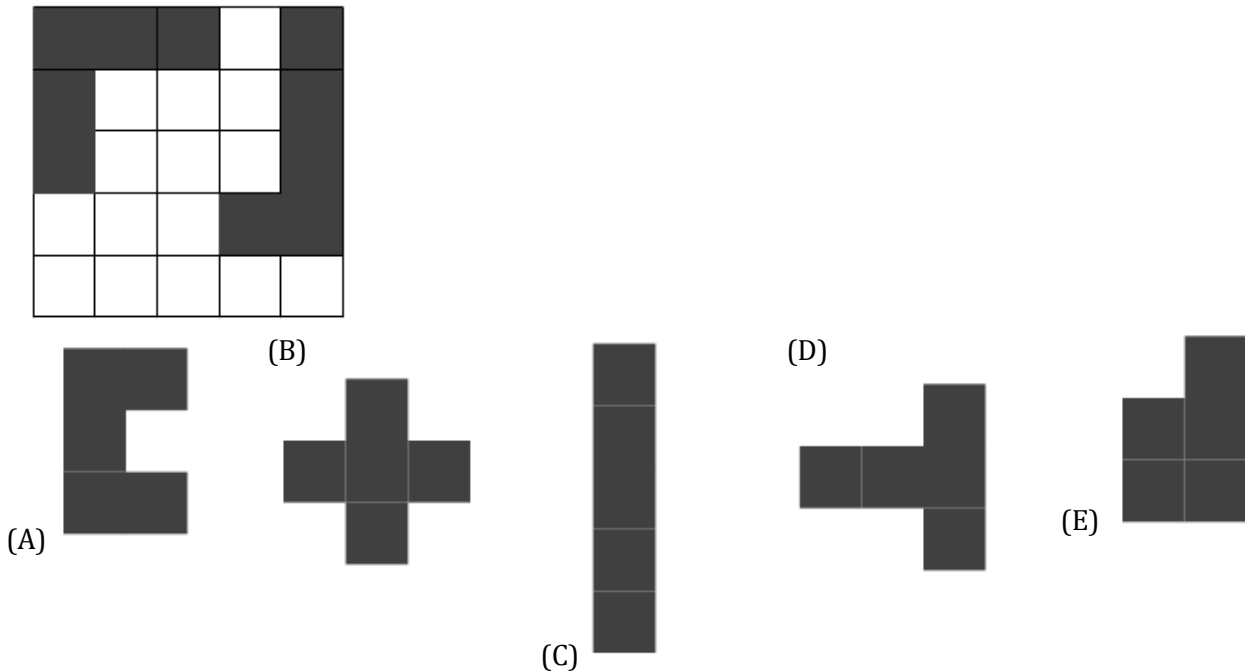


5 points

21) The five-digit number $24X8Y$ is divisible by 4, 5 and 9. What is the sum of the digits X and Y?

- (A) 13 (B) 10 (C) 9 (D) 5 (E) 4

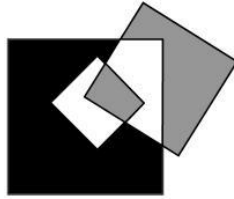
22) Lina placed two tiles consisting of five small squares on a square board. Which of the following five tiles could she place on the empty part of the board in such a way that none of the remaining four tiles fit anymore?



23) Each of the three blackbirds, Isaac, Max and Oscar, found a nest of their own. Isaac says: "I'm more than twice as far away from Max as I am from Oscar". Max says: "I'm more than twice as far away from Oscar as I am from Isaac". Oscar says: "I'm more than twice as far away from Max as I am from Isaac". At least two of them are telling the truth. Which one is lying?

- (A) Isaac (B) Max (C) Oscar (D) None of them (E) Impossible to tell

24) I draw a square with side 3 cm inside a square with side 7 cm. Then I draw another square with side 5 cm which intersects the first two squares. What is the difference between the areas of the black part and the grey parts?



- (A) 0 cm^2 (B) 10 cm^2 (C) 11 cm^2 (D) 15 cm^2 (E) impossible to determine

25) Myshko shoots at a target. He only hits 5, 8 and 10. Myshko hits 8 and 10 the same number of times. He scores 99 points in total, and 25% of his shots missed the target. How many times did Myshko shoot at the target?

- (A) 10 (B) 12 (C) 16 (D) 20 (E) 24

26) In a convex quadrilateral $ABCD$ with $AB = AC$, the following angles are known: $\angle BAD = 80^\circ$, $\angle ABC = 75^\circ$, $\angle ADC = 65^\circ$. What is the size of $\angle BDC$?

- (A) 10° (B) 15° (C) 20° (D) 30° (E) 45°

27) Seven years ago, Evie's age was a multiple of 8, and in eight years' time it will be a multiple of 7. Eight years ago, Raph's age was a multiple of 7, and in seven years' time it will be a multiple of 8. Which of the following statements can be true?

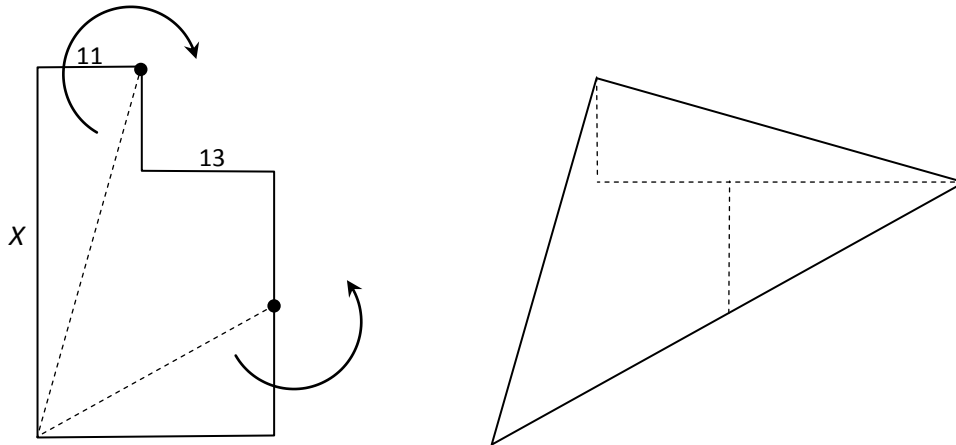
- (A) Raph is two years older than Evie (B) Raph is one year older than Evie (C) Raph and Evie are the same age (D) Raph is one year younger than Evie (E) Raph is two years younger than Evie

28)

In the expression $\frac{K \cdot A \cdot N \cdot G \cdot A \cdot R \cdot O \cdot O}{G \cdot A \cdot M \cdot E}$ each letter stands for a different non-zero digit. Equal letters stand for equal digits. What is the smallest positive integer value of this expression?

- (A) 1 (B) 2 (C) 3 (D) 5 (E) 7

29) The figure below consists of two rectangles. The lengths of two sides are marked: 11 and 13. The figure is cut into three parts and the parts are rearranged into a triangle. What is the length of the side x ?



- (A) 36 (B) 37 (C) 38 (D) 39 (E) 40

30) Mark plays a computer game on a 4x4 grid. When he clicks a cell it turns to red or blue. Only two blue cells can be found and they always have a common side. What is the least number of clicks Mark needs to take in order to be sure that he always has both blue squares on the screen?

- (A) 9 (B) 10 (C) 11 (D) 12 (E) 13