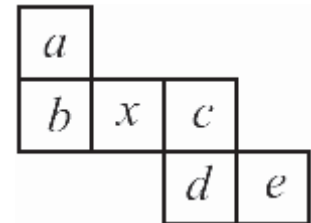


6) A bottle and a glass together hold the same as a jug. A bottle holds the same as a glass and a tankard. Three tankards hold the same as two jugs. What does one tankard hold?

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

7) The net shown at the figure on the right is cut out and folded to form a cube. Which face is then opposite the face marked x?

- A) a B) b C) c D) d E) e



8) In a natural number consisting of at least 2 digits, the last digit has been crossed, so that the number has been decreased n times. What is the maximum value of n ?

- A) 9 B) 10 C) 11 D) 19 E) 20





9) Four line segments can not have exactly

- A) 2 B) 3 C) 5 D) 6 E) 7
intersection points.

10) Which of the following numbers gives, multiplied by 768, the product ending with the highest number of zeroes?

- A) 7500 B) 5000 C) 3125 D) 2500 E) 10000

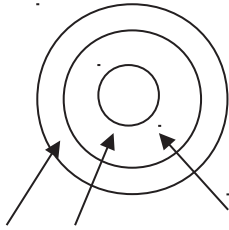
11) A transparent square sheet of film lies on a table. The letter **Y** is drawn on this sheet. We turn the sheet clockwise by 90° , then turn it over the left side of the sheet, and then turn it counter-clock wise by 180° . What picture shall we see?

- A)  B)  C)  D)  E) **Y**

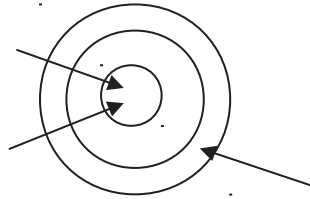
12) Mike has 42 identical cubes, each with the edge 1 cm long. He used all cubes to construct a cuboid. The perimeter of the base of that cuboid is 18 cm. What is its height?

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

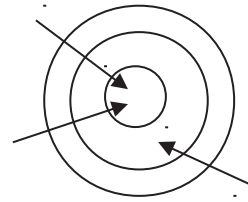
13) Jeffrey fires three arrows at each of four targets. He scores 29 points on the first target, 43 on the second and 47 on the third. How many points does Jeffrey score on the last target?



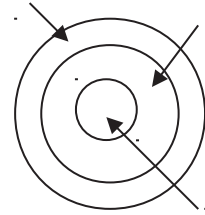
A) 31



B) 33



C) 36



D) 38

E) 39

14) The weight of a truck without load is 2000 kg. Today the load represents initially 80% of the total weight. At the first stop, they discharge a quarter of the load. What percentage of the total weight represent then the load?

A) 20%

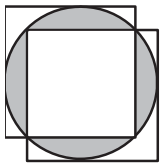
B) 25%

C) 55%

D) 60%

E) 75%

15) Two quadrates with the same size cover a circle, radius of which is 3 cm. Find the total area of the colored figure.



A) $8(\pi - 1) \text{ cm}^2$

B) $6(2\pi - 1) \text{ cm}^2$

C) $9\pi - 25 \text{ cm}^2$

D) $9(\pi - 2) \text{ cm}^2$

E) $\frac{6\pi}{5} \text{ cm}^2$

16) You have six sticks of lengths 1 cm, 2 cm, 3 cm, 2001 cm, 2002 cm and 2003 cm. You have to choose three of these sticks and form a triangle. How many different choices of three sticks are there which work?

A) 1

B) 3

C) 5

D) 6

E) more than 50

17) How many positive integers n possess the following property: among the positive divisors of n different from 1 and n itself, the largest is 15 times the smallest.

A) 0

B) 1

C) 2

D) infinitely many

E) another answer

18) Six points A, B, C, D, E, F are marked on a line from left to right, in the same order as listed. It is known that $AD = CF$ and $BD = DF$. Then, necessarily,

- A) $AB = BC$ B) $BC = DE$ C) $BD = EF$ D) $AB = CD$ E) $CD = EF$

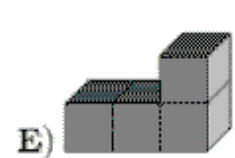
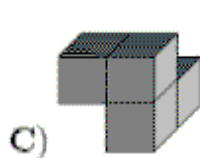
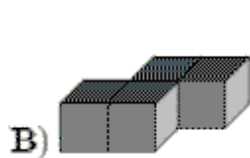
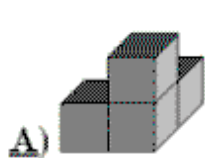
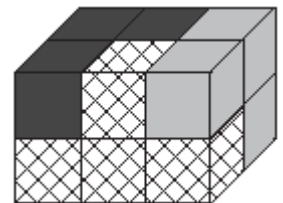
19) Mary has 6 cards with natural numbers written on them (one number on each card). She chooses 3 cards arbitrarily and calculates the sum of the corresponding numbers. Having done this for all 20 possible combinations of 3 cards, she discovered that 10 sums are equal to 16, and the other 10 sums are equal to 18. Then the smallest number on the cards is

- A) 2 B) 3 C) 4 D) 5 E) 6

20) Paul, Bill, John, Nick and Tim stand in a circle, pair wise distances between any two neighbors being different. The teacher asked anyone to tell the name of the boy standing most closely to him. The names Paul and Bill have sounded two times each, and the name John has sounded once. Then

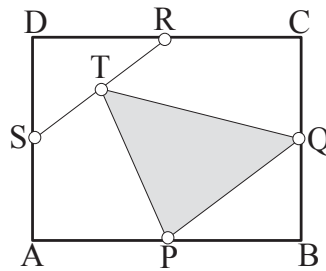
- A) Paul and Bill are not the neighbors
 B) Nick and Tim are not the neighbors
C) Nick and Tim are the neighbors
 D) the situation described is impossible
 E) none of A) – D) is correct

21) Using 3 bricks each consisting of 4 little cubes a rectangular parallelepiped has been build (see picture). The crosshatched brick is completely to be seen, both the others partly. Which brick is the dark?

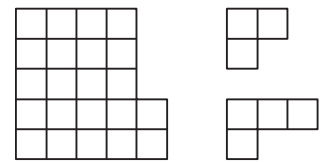


22) In a rectangle ABCD, let P, Q, R and S be the midpoints of sides AB, BC, CD and AD, respectively, and let T be the midpoint of segment RS. Which fraction of the area of ABCD does triangle ΔPQT cover?

- A) $\frac{5}{16}$ B) $\frac{1}{4}$ C) $\frac{1}{5}$
D) $\frac{1}{6}$ E) $\frac{3}{8}$

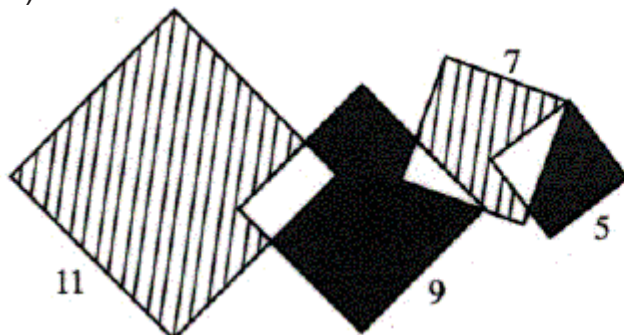


23) Carl tries to divide the figure on the left side of the drawing into smaller three- or four-quadrate figures shown on the right side of the drawing. He can use only the grid of a squared paper for doing that. What is the smallest number of three quadrate figures that he can achieve?



- A) 1 B) 2 C) 3
D) 4 E) Carl can't succeed

24)



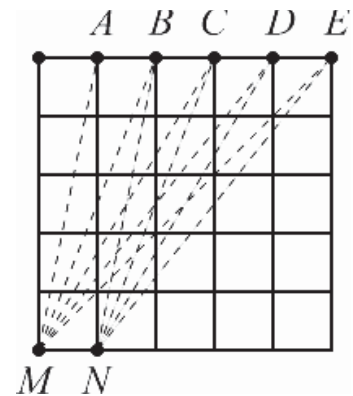
$$A_{\text{hatched}} - A_{\text{black}} = ?$$

- A) 25 B) 36 C) 49 D) 64 E) 0

25) On a bookshelf there are 50 math and physics books. No two physics books stand side by side, but every math book has a math neighbour. Which of the following statements may turn to be false?

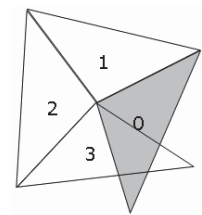
- A) the number of math books is at least 32
B) the number of physics books is at most 17
C) there are 3 math books standing in succession
D) if the number of physics books is 17, then one of them is the first or the last on the bookshelf
E) among any 9 successive books, at least 6 are math books

26) Some square is divided into 25 small squares (see the picture). Find the measure of the angle which is a sum of the angles MAN, MBN, MCN, MDN, MEN.



- A) 30° B) 45° C) 60° D) 75° E) 90°

27) We are going to make a spiral of isosceles triangles. The top angle of the triangles is 100° . We'll start with the grey triangle which will have number 0. The next triangles (with number 1, 2, 3, ...) will join with exactly one edge to the previous, see the picture. As you can see triangle nr. 3 covers triangle nr. 0 partly. What will be the number of the first triangle which will cover triangle nr. 0 precisely?



- A) 10 B) 12 C) 14 D) 16 E) 18

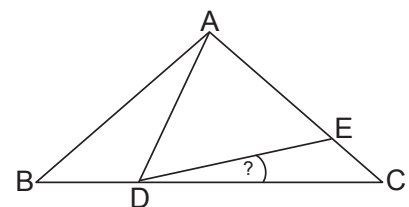
28) How many positive integer numbers n are there for which 2003 divided by n leaves a remainder of 23?

- A) 22 B) 19 C) 13 D) 12 E) 87

29) There are some 10 points on the area, and there are no three points on the same line. Every two points are connected by a segment. What is the largest possible number of these segments, which can be crossed by another line, that doesn't do through any of these points?

- A) 20 B) 25 C) 30 D) 35 E) 45

30) In triangle ABC, $AB = AC$, $AE = AD$ and $\angle BAD = 30^\circ$. What is the measure of angle CDE?



- A) 10° B) 15° C) 20°
D) 25° E) 30°