



calculator not allowed



you may use 75 minutes



scrap paper is allowed



results and awards at school mid-May



24th March the answers will be on the website

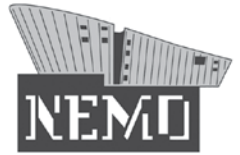


24th March the explanations will be on the website



Zwijzen

[www.zwijzen.nl](http://www.zwijzen.nl)



[www.e-nemo.nl](http://www.e-nemo.nl)



[www.getalenuimte.epn.nl](http://www.getalenuimte.epn.nl)



[www.education.ti.com](http://www.education.ti.com)



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- Which of the following numbers is even?  
 A.  $2 + 0 + 0 + 9$     B.  $200 - 9$     C.  $200 + 9$     D.  $200 \times 9$     E.  $2000 + 9$

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- A party has been attended by 4 boys and 4 girls. After the party it turned out that one boy had danced with 3 girls, one boy with 1 girl, one boy with 2 girls and another boy had also danced with 2 girls. Three of the girls had each danced with 2 boys. With how many boys had the fourth girl danced?  
 A. 0    B. 1    C. 2    D. 3    E. 4

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- Harry delivers newspapers in Kangaroo Road. He should deliver a paper at every odd numbered house, from number 15 through to 53, inclusive. At how many houses does Harry have to deliver newspapers?  
 A. 19    B. 20    C. 27    D. 38    E. 53

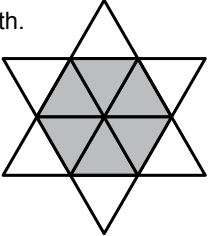
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- There are dogs and cats in the room. There are twice as many cat's paws as dog's noses. How many cats are in the room?  
 A. one sixth of the number of dogs    B. one quarter of the number of dogs  
 C. half as many as there are dogs    D. just as many as the number of dogs  
 E. twice the number of dogs

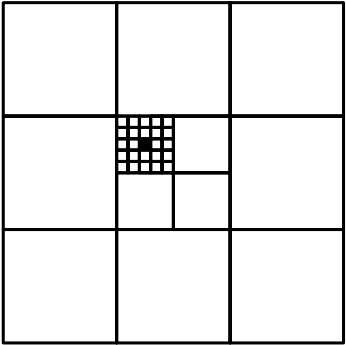
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- Lynda multiplies four different positive whole numbers. The result is 100. What will be the result when you add these four numbers?  
 A. 10    B. 12    C. 15    D. 17    E. 18

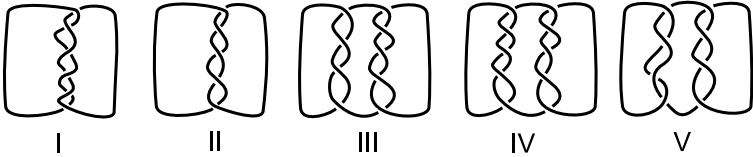
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- The star is made out of twelve equilateral triangles, that is, triangles with all sides of equal length. The perimeter of the star is 36 cm. How many cm is the perimeter of the grey hexagon?  
 A. 6    B. 12    C. 18    D. 24    E. 30
 

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- The large square has area 1. What is the area of the small black square?  
 A.  $\frac{1}{1000}$     B.  $\frac{1}{900}$     C.  $\frac{1}{600}$     D.  $\frac{1}{300}$     E.  $\frac{1}{100}$ 


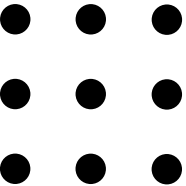
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- Which of the tangles shown consist of more than one piece of string?  
 A. I, III and V  
 B. I, III, IV and V  
 C. III, IV and V  
 D. all of them  
 E. none of them
 

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- An elevator has room for 12 adults or 20 children. There are 9 adults in the elevator right now. How many children would fit in with them?  
 A. 3    B. 4    C. 5    D. 6    E. 8

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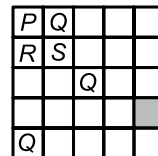
- Ian wants to remove some of the 9 dots shown. Of the remaining dots, no 3 are allowed to lie on one straight line. How many dots should Ian remove at least?  
 A. 1    B. 2    C. 3    D. 4    E. 7
 



11. There are positive whole numbers of which the square and the cube have the same number of digits. How many of such numbers are there?

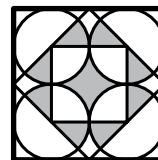
- A. 0                      B. 1                      C. 2                      D. 3                      E. infinitely many

12. Put one of the letters *P*, *Q*, *R* or *S* in each of the squares. Squares that have a common vertex must have different letters. A start has been made in the diagram. Which letter can go in the grey square?



- A. only *P*                      B. only *Q*                      C. only *R*                      D. only *S*                      E. *R* or *S*

13. What part of the whole figure (the large square) is grey?

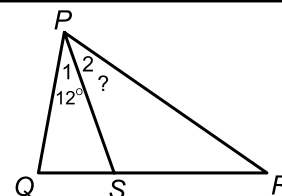


- A.  $\frac{1}{8}$                       B.  $\frac{1}{4}$                       C.  $\frac{1}{3}$                       D.  $\frac{1}{2}$                       E.  $\frac{\pi}{4}$

14. In a line of 25 boys everyone except the one in front says that the boy in front of him is lying. The boy in front says every boy behind him is lying. How many boys in the line are lying?

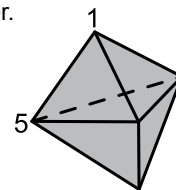
- A. 0                      B. 1                      C. 12                      D. 13                      E. 24

15. *S* lies on side *QR* of triangle *PQR*. *PQ*, *PS* and *RS* have the same length, and angle  $\angle P_1 = 12^\circ$ . How big is angle  $\angle P_2$ ?



- A.  $36^\circ$                       B.  $42^\circ$                       C.  $48^\circ$   
D.  $54^\circ$                       E.  $60^\circ$

16. A 3-dimensional object has six triangular faces and five vertices. With every vertex goes a number. You can see two of these numbers. If we add the numbers at the three vertices of each face, we will get six times the same result. We add up all five numbers associated to the vertices. What is the outcome?

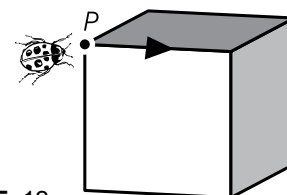


- A. 9                      B. 12                      C. 17                      D. 18                      E. 24

17. Someone had measured the angles in two triangles. One of the triangles is acute angled, the other is obtuse angled. Four of the measured angles are 120, 80, 55 and 10 degrees. How big is the smallest angle of the acute angled triangle?

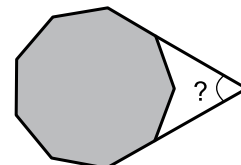
- A.  $5^\circ$                       B.  $10^\circ$                       C.  $45^\circ$                       D.  $55^\circ$                       E. you cannot tell

18. A little lady-bird starts walking along the edges of the cube. At the end of the edge the bug must choose: make a left turn or make a right turn. At the end of the second edge the little animal will have to make a choice again, etc. The lady-bird chooses to turn left and right alternately. After how many edges does the bug return to point *P* for the first time?



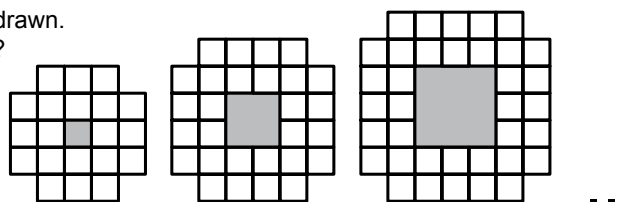
- A. 4                      B. 6                      C. 8                      D. 9                      E. 12

19. Two sides of a regular 9-gon (all sides are the same, and all angles are the same) two sides are extended up to their intersection point. How many degrees is the angle with the question mark?



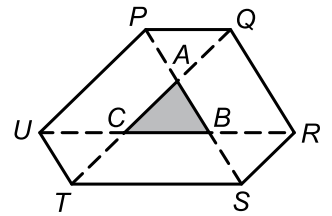
- A. 40                      B. 45                      C. 50                      D. 55                      E. 60

20. Consider a series of figures. The first three have been drawn. How many white squares does the tenth figure contain?



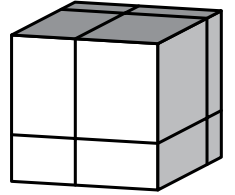
- A. 76                      B. 80                      C. 84                      D. 92                      E. 100

21. The sides of triangle  $ABC$  are extended at both ends:  
 $PA = AB = BS$ ,  $TC = CA = AQ$  en  $UC = CB = BR$ . The area of triangle  $ABC$  is 1.  
 What is the area of hexagon  $PQRSTU$ ?



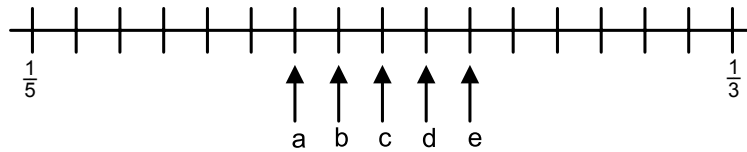
- A. 9                      B. 10                      C. 11                      D. 12                      E. 13

22. Susan makes eight smaller cuboids out of a cube by making three cuts.  
 After that, she divides the total area of the eighth cuboids by the total area of the cube.  
 What will the result be?



- A. 1                      B.  $\frac{4}{3}$                       C.  $\frac{3}{2}$                       D. 2                      E. 4

23. The fractions  $\frac{1}{3}$  and  $\frac{1}{5}$  have been put on the number line.  
 Where is the fraction  $\frac{1}{4}$  on this number line?

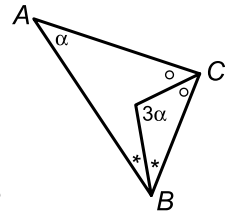


- A. at arrow a                      B. at arrow b                      C. at arrow c                      D. at arrow d                      E. at arrow e

24. Pete writes down ten-digit numbers that consist only of digits 1, 2, and 3.  
 He also wants neighbouring digits to differ by exactly 1.  
 How many numbers could Pete write down at most?

- A. 16                      B. 32                      C. 64                      D. 80                      E. 100

25. Angle  $A$  of triangle  $ABC$  is  $\alpha$  degrees.  
 The angles  $B$  and  $C$  are bisected; the bisectors meet at an angle of  $3\alpha$ .  
 How big is  $\alpha$ ?



- A.  $36^\circ$                       B.  $37^\circ$                       C.  $38^\circ$                       D.  $39^\circ$                       E.  $40^\circ$

26. All divisors of a positive whole number are listed in increasing order.  
 We remove the divisors 1 and the number itself from the list. Now the largest number is 45 times the smallest.  
 For how many positive whole numbers is this the case?

- A. 0                      B. 1                      C. 2                      D. 3                      E. more than 3

27. Peter put a square of area 36 on top of a triangle.  
 The square can cover 60% of the triangle and not more than 60%.  
 Then Peter puts the triangle on top of the square. The triangle can cover  $\frac{2}{3}$  of the square and not more than  $\frac{2}{3}$ .  
 What is the area of the triangle?

- A.  $22\frac{4}{5}$                       B. 24                      C. 36                      D. 40                      E. you cannot know

28. Fatima has written down a sequence of different positive whole numbers smaller than 11. She has done this in such a way that for every pair of neighbouring numbers one of the two numbers is divisible by the other.  
 How many whole numbers could Fatima have written down at most?

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

29. Skippy jumped along the three sides of an equilateral triangle.  
 Along the first side his speed was 30 m/s, along the second side his speed was 15 m/s.  
 Along all three sides together his average speed was also 15 m/s.  
 What was his speed in m/s along the third side?

- A. 5                      B. 10                      C. 12                      D. 14                      E. 15

30. A square is cut up into 2009 small squares. The lengths of all sides of these small squares are whole numbers.  
 What is the smallest possible length of the side of the large square?

- A. 44                      B. 45                      C. 46                      D. 503                      E. this is not possible