ΚΥΠΡΙΑΚΗ ΜΑΘΗΜΑΤΙΚΗ ΕΤΑΙΡΕΙΑ
11η Κυπριακή Μαθηματική Ολυμπιάδα

Απρίλιος 2010 **Χρόνος: 60 λεπτά**

Δ΄ ΔΗΜΟΤΙΚΟΥ

QUESTION 1

Which of the following expressions has the same result as (15 - 5) + 6 ?

A) (15 - 6) + 5
B) 15 – (5 + 6)
Γ) 6 + (15 - 5)
Δ) 6 – (15 + 5)
E) 15 + (5 + 6)

QUESTION 2

Peter bought a computer worth € 600 and sold it for € 700. He changed his mind and he decided to buy it back for € 800.After one month he sold it for € 900. How much did he earn from these transactions?

A) €100
B) He lost €100
Γ) €300
Δ) €200
E) None of these.

QUESTION 3

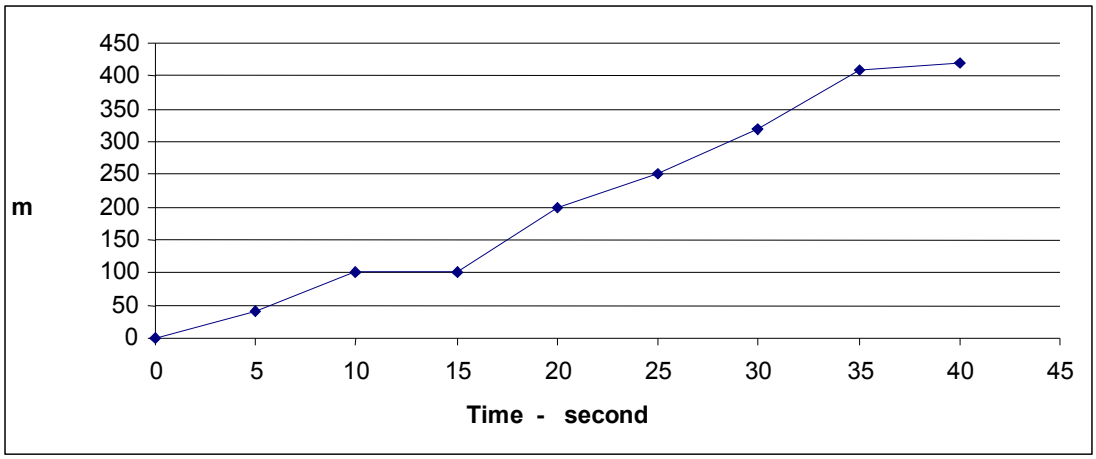
What is the digit of the units of the result of the following product?

$$19\times18\times17\times16\times15\times14\times13\times12\times11$$

A) 1 B) 2 Γ) 8 Δ) 6 E) 0

QUESTION 4

The following graph shows the distance traveled by a car in 40 seconds. During which of the following intervals the car remains at rest ?



A) 0′-5′ B) 15′-20′ Γ) 10′-15′ Δ) 25′-30′ E) 30′-35′

QUESTION 5

Alekos was born 3 years before Zoe. Kyriakos was born after Alekos. Considering only these data, which of the following statements is always correct?

A) Kyriakos is older than Zoe.
B) Alekos is older than Kyriakos.
Γ) Zoe has the same age with Kyriakos.
Δ) Kyriakos is older than Alekos.
E) None of these.

QUESTION 6

Christopher and Nefeli will share equally $1\frac{1}{2}$ chocolates. What part of a whole chocolate will every child get?

A) $1\frac{1}{4}$ B) $\frac{1}{4}$ Γ) $\frac{1}{2}$ Δ) $\frac{3}{4}$ E) $\frac{5}{8}$

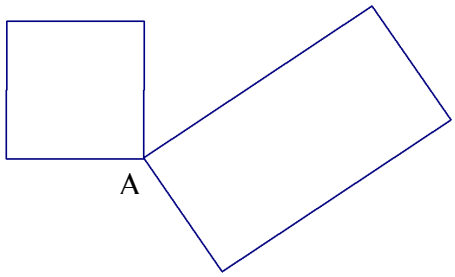
QUESTION 7

The number 16 is called a square number because $16 = 4 \times 4$. How many square numbers are there between 2 and 101?

A) 8 B) 9 Γ) 10 Δ) 11 E) 12

QUESTION 8

Two ants start to walk from point A at the same rate as can be seen in the following figure. One of them is walking around a square, with side 3cm, and the other is walking around a rectangle with dimensions 6cm × 3cm. The shortest distance to be traveled by each ant to meet again is:



A) 18 cm B) 72 cm Γ) 216 cm Δ) 108 cm E) 36 cm

QUESTION 9

What number is missing to complete the pattern?

150, 150, 300, 450, ☐ , 1200

A) 450 B) 750 Γ) 600 Δ) 150 E) None of these

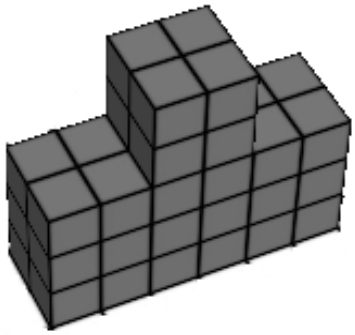
QUESTION 10

What is the $\frac{1}{2}$ of $\frac{1}{2}$ of 50?

A) 0,125 B) 0,5 Γ) 1,25 Δ) 12,5 E) 5,0

QUESTION 11

How many cubes are needed to build the solid figure below?



A) 44 B) 34 Γ) 48 Δ) 38 E. None of these

QUESTION 12

Which of the following statements are always correct?

(α) A rhombus is a rectangle.
(β) A square is a rhombus.
(γ) A rectangle is a square.
(δ) A rhombus is not a parallelogram.
(ε) A triangle is not a quadrilateral.

A) (α) and (β) B) Only (β) Γ) (β) and (ε) Δ) Only (α) E) (γ) and (δ)

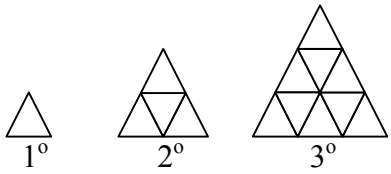
QUESTION 13

Odysseus thought of an integer number and multiplied it by 3. Which of the following numbers may be **NOT** the result of this multiplication?

A) 1047 B) 555 Γ) 7581 Δ) 1033 E) 13671

QUESTION 14

How many small triangles will be needed to build the 20th triangle in the following sequence?



A) 16 B) 400 Γ) 200 Δ) 4000 E) None of these

QUESTION 15

At a party 15 people ate kebabs and 12 people ate pizza. Ten of these people ate from both. Three people did not eat anything. The number of people taking part in the party were:

A) 20 B) 40 Γ) 35 Δ) 30 E) 18

QUESTION 16

A rectangle has dimensions of 15 m and 9 m. We will cover it with squares (not necessarily equal to each other). What is the minimum number of squares that will be needed?

A) 15 B) 135 Γ) 4 Δ) 3 E) None of these

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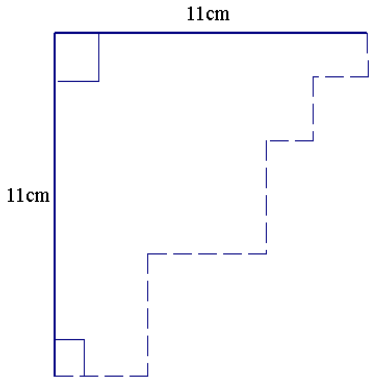
QUESTION 17

What is the length of the broken line?



A) 11 cm B) 14 cm Γ) 20 cm Δ) 22 cm E) I cannot figure it out.

QUESTION 18

Which of the following propositions is **wrong**?

A. $28 \div 7 > 3 \times 1$

B. $48 \div 6 < 36 \div 9$

Γ. $9 \times 6 < 7 \times 8$

Δ. $63 \div 7 > 64 \div 8$

E. $8 \times 0 < 7 \div 7$

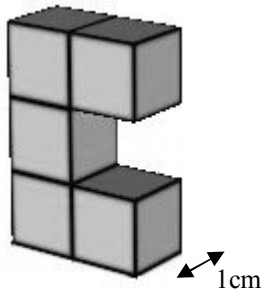
QUESTION 19

The smallest integer number which when divided by 4 gives remainder 1, when divided by 5 gives remainder 2 and when divided by 6 gives remainder 3 is:

A) 21 B) 32 Γ) 42 Δ) 57 E) 67

QUESTION 20

How many square centimeters of paper, do we need to cover the surface of the solid, in the following figure, which is constructed by 5 cubes?



A) 11 cm^2 B) 14 cm^2 Γ) 20 cm^2 Δ) 22 cm^2 E) 30 cm^2

QUESTION 21

If $\frac{6}{5} = 1{,}2$, then $\frac{0.006}{0{,}5}$ is equal to:

A) 1,2 B) 0,12 Γ) 0,012 Δ) 0,0012 E) 0,00012

QUESTION 22

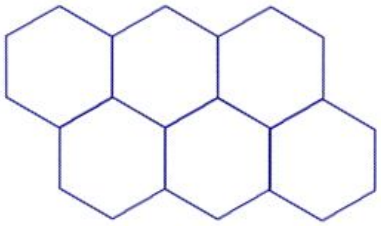
In the subtraction below, M and N are one-digit numbers. The sum of M + N is :

$$\begin{array}{rcc} & M & 4 \\ - & 3 & N \\ \hline & 1 & 6 \end{array}$$

A) 11 B) 12 Γ) 13 Δ) 14 E) 15

QUESTION 23

How many lines of symmetry does the following shape have?



A) 0 B) 1 Γ) 2 Δ) 3 E) 4

QUESTION 24

Find the fourth vertex M of the Parallelogram KLMN with other vertices K(0,0), L(5,0), N(3,3)?

A) (3,5) B) (5,3) Γ) (8,3) Δ) (8,5) E) None of these

QUESTION 25

Three rulers and a pencil cost as two erasers. A ruler, two pencils and three erasers cost € 25. If the cost of the three items is an integer number, how much is the cost of an eraser?

A) €2 B) €3 Γ) €4 Δ) €5 E) It is impossible to calculate.

QUESTION 26

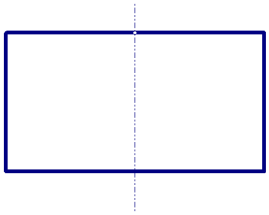
The product of the ages of three students is 1001. The age of the middle one is:

A) 7 B) 11 Γ) 13 Δ) 17 E) 19

QUESTION 27

Alexis and Irene have the same rectangular piece of paper. Alexis splits his own with a horizontal cut into two smaller equal rectangular pieces (see Figure). The perimeter of each smaller piece of Alexis is 50 cm. Irene splits her own in half with a vertical cut, and the perimeter of each of her smaller pieces is 40 cm. The perimeter of each of the original rectangles is :

Alexis



Irene

A) 40 cm B) 50 cm Γ) 60 cm Δ) 80 cm E) 90 cm

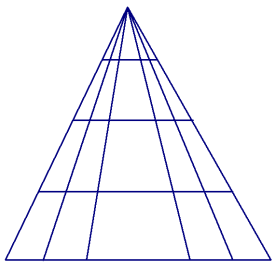
QUESTION 28

To paint a wall with a surface 6 m^2 we need 2 liters of paint. If 3 liters of paint cost € 27,50, how much is the cost to paint a wall with a surface 36 m^2 ?

A) €110 B) €90 Γ) €82,50 Δ) €55 E) €127,50

QUESTION 29

What is the total number of triangles in the figure below?



A) 54 B) 60 Γ) 66 Δ) 72 E) 78

QUESTION 30

The letters Σ and T represent numbers. If $\boldsymbol{\Sigma - T = T + 100}$, which of the following statements is correct?

(α) $\boldsymbol{\Sigma = T}$ (β) $\boldsymbol{\Sigma > T}$ (γ) $\boldsymbol{\Sigma = T + 100}$ (δ) $\boldsymbol{\Sigma > T + 100}$ (ε) $\boldsymbol{T < \Sigma - 100}$

A) (β) and (ε) B) Only (β) Γ) (β), (δ) and (ε) Δ) (α) and (δ) E) (β) and (γ)

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