DAAN ACADEMY

TEST IN LAIB

Test di allenamento Ingegneria
Test di allenamento Architettura

Ministero dell'Istruzione, dell'Università e della Ricerca
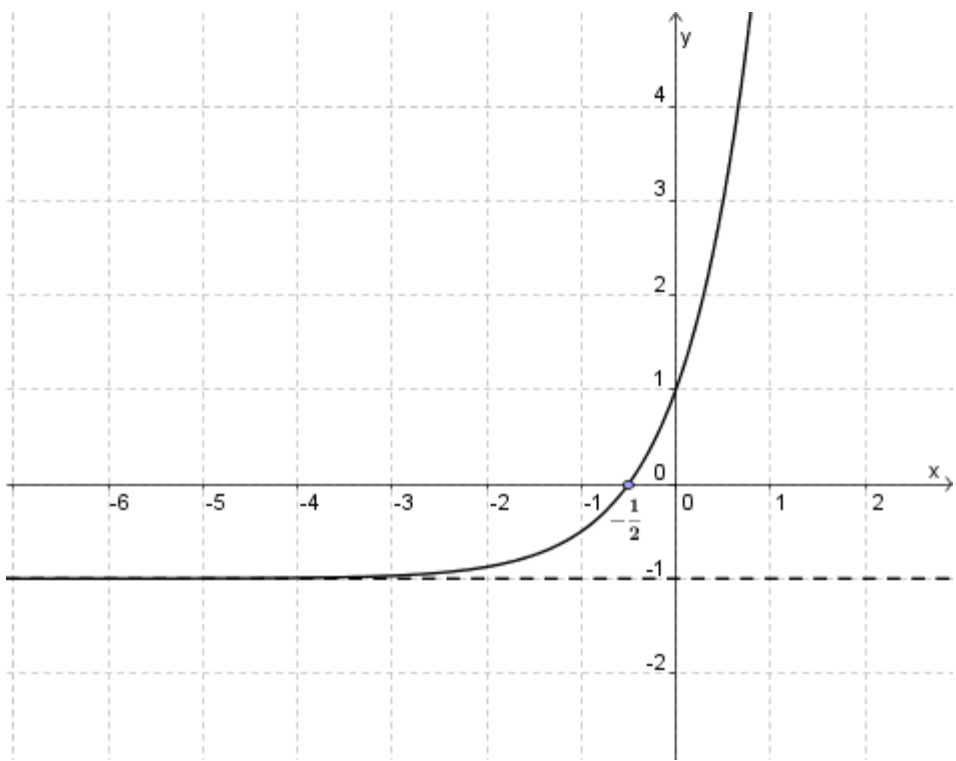
Started on   Sunday, 7 August 2022, 3:49 PM

State   Finished

Completed on   Sunday, 7 August 2022, 3:49 PM

Time taken   14 secs

Marks   0.00/1600.00

Grade   **0.00** out of 16.00 (**0%**)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

In the figure, it is shown the graph of the function:

(a) $y = 4 \cdot 2^x - 1$
(b) $y = 2 \cdot 4^x - 1$
(c) $y = 2^x - 1$
(d) $y = 4^x - 1$
(e) $y = 4 \cdot 4^x - 1$

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

The prime factorization of the number $(2^5 - 2^3)^4 3^2$ is:

(a) $2^{32} 3^{12}$
(b) $2^8 3^2$
(c) $2^4 3^4$
(d) $2^{12} 3^6$
(e) $2^4 3^2$

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

The expression $\dfrac{3^{x+y}}{6^{x-y}}$ equals:

(a) $9^y 2^{y-x}$

○ (b) 18^y
○ (c) 18^x
○ (d) $\dfrac{1}{2^y}$
○ (e) $\dfrac{1}{2^x}$

Question 4
Not answered
Marked out of 100.00

Flag question

Question text

Two figures are congruent if they have the same shape and size. Only one of these statements is correct, which one?

○ (a) If two right-angled triangles have corresponding legs (catheti) of the same length, then they are congruent

○ (b) If two triangles have corresponding angles of the same measure, then they are congruent

○ (c) Two equilateral triangles are congruent

○ (d) Two scalene triangles with the same area are congruent

○ (e) If two isosceles triangles have the vertex angles of the same measure, then they are congruent

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

The equation $x^6 - 7x^3 = 8$

○ (a) has six real distinct solutions

○ (b) can not be solved, since its degree is six

○ (c) has two (and only two) real distinct solutions

○ (d) has two distinct solutions and both are positive

○ (e) has one (and only one) real solution

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

Let b be a real parameter different from zero; the set of the solutions of the inequality $bx + 3 < 0$ is

○ (a) the empty set

○ (b) the half-line $x < -3/b$

○ (c) the real line

○ (d) the half-line $x > -3/b$

○ (e) the half-line $x < -3/b$ or the half-line $x > -3/b$

Question 7
Not answered
Marked out of 100.00

Flag question

Question text

Arriving in the USA, an Italian tourist changes 5.000 euros (EUR) into dollars (USD); the exchange rate is 1 EUR = 1,4 USD. During the vacation, he spends 6.400 USD. Back in Italy, he changes the remaining USD back to EUR; the exchange rate is now 10 USD = 7,5 EUR. How much money has the tourist left?

○ (a) 450 EUR
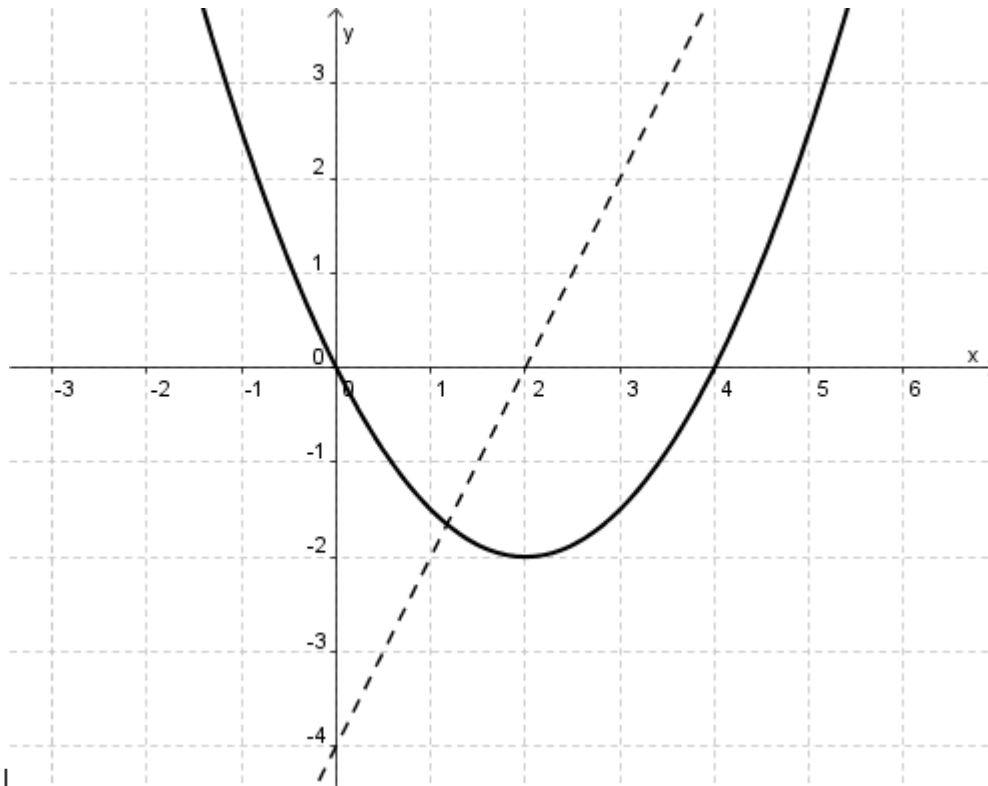○ (b) 900 EUR
○ (c) 425 EUR
○ (d) 475 EUR
○ (e) 600 EUR

Question 8
Not answered
Marked out of 100.00

Flag question

Question text

I

In the figure, a line and a parabola are shown.

They are the graphs of the functions:

(a) $f(x) = 2x - 2$, $g(x) = \frac{1}{2}x(x - 4)$

(b) $f(x) = 2x - 4$, $g(x) = \frac{1}{2}x(x - 4)$

(c) $f(x) = x - 2$, $g(x) = x^2 - 4x$

(d) $f(x) = 2x - 4$, $g(x) = \frac{1}{2}x^2 - 2x - 1$

(e) $f(x) = 2x - 4$, $g(x) = x^2 - 4x$

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

The sum of the ages of two sisters is now 45 years. In ten years' time the elder sister's age will be equal to triple her current age minus double the current age of the younger sister. How old are the two sisters?

(a) 26 and 19 years old

(b) 24 and 21 years old

(c) 23 and 22 years old

(d) 25 and 20 years old

(e) they are twins

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

Claudia does not know the correct quantity of sugar she has to add to the cake she is preparing. First she weigths 200 grams; she reads again the recipe and increases the quantity by 50%. She feels that it is too much and then decreases the quantity by 50%. How much sugar will Claudia put in her cake?

○ (a) 175 grams

○ (b) 100 grams

○ (c) 200 grams

○ (d) 300 grams

○ (e) 150 grams

Question 11
Not answered
Marked out of 100.00

Flag question

Question text

Given the two circles
$$x^2 + y^2 - 2x - 4y - 4 = 0, \qquad x^2 + y^2 - 4x - 2y + 4 = 0,$$
we can say that

○ (a) they intersect at two distinct points

○ (b) they do not intersect and the first is internal to the second

○ (c) they intersect at four distinct points

○ (d) they do not intersect and the second is internal to the first

○ (e) they are tangent (one point of intersection)

Question 12
Not answered
Marked out of 100.00

Flag question

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Question text

The least common multiple of the monomials a^3x, $5b^2x^2y$, $20a^2bx^3y^2$ is:

○ (a) $20a^2x^2yb^2$
○ (b) $20a^3xb^2y$
○ (c) $20a^3x^3y^2b^2$
○ (d) a^3x^3
○ (e) $abxy$

Question 13
Not answered
Marked out of 100.00

Flag question

Question text

Which of the following equations is the equation of the line that passes through the point $(-2, 3)$ and is perpendicular to the line $y = x$?

○ (a) $2x + 2y - 2 = 0$
○ (b) $x + y + 1 = 0$
○ (c) $4x + 5y = 0$
○ (d) $x - 2y + 8 = 0$
○ (e) $x - 8y - 6 = 0$

Question 14
Not answered
Marked out of 100.00

Flag question

Question text

Let a and b be two real numbers different from each other. Simplifying the expression $\left(1 - \dfrac{b}{a+b}\right)\left(1 + \dfrac{b}{a-b}\right)\left(1 - \dfrac{b^2}{a^2}\right)$, we get:

- (a) 1
- (b) $a(a - b)$
- (c) $\dfrac{a-b}{a+b}$
- (d) $a - b$
- (e) $\dfrac{1}{a}$

Question 15
Not answered
Marked out of 100.00

Flag question

Question text

The equation $\log_5 (x + 3)^2 = 2$

- (a) has two solutions: $x = 2$ and $x = -8$
- (b) has one (and only one) solution: $x = 2$
- (c) has one (and only one) solution: $x = -2$
- (d) has no real solutions
- (e) has one (and only one) solution: $x = 1 - \log_5 3$

Question 16
Not answered
Marked out of 100.00

Flag question

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Question text

In the three-dimensional space, consider a point Q and a plane α, whose distance from Q equals 4. The intersection of the plane α and the sphere centred at Q and having radius 3 is:

○ (a) a circle

○ (b) a point

○ (c) a parabola

○ (d) an ellipse with different axes

○ (e) the empty set

Feedback

The correct answer is: the empty set

Started on	Sunday, 7 August 2022, 3:51 PM
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Time taken	22 secs
Marks	0.00/1600.00
Grade	**0.00** out of 16.00 (**0%**)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

The expression $\dfrac{2^{x-y}}{6^{x+y}}$ equals:

○ (a) 12^{-x}

○ (b) $\dfrac{1}{3^x}$

○ (c) 12^{-y}

○ (d) $3^{-x-y}4^{-y}$

○ (e) $\dfrac{1}{3^{2x}}$

Feedback

The correct answer is: $3^{-x-y}4^{-y}$

Question 2
Not answered
Marked out of 100.00

DAAN international academy

Question text

The prime factorization of the number $(5^4 - 5^2)^2 3^2$ is:

- ○ (a) $2^4 3^2 5^4$
- ○ (b) $2^6 3^4 5^2$
- ○ (c) $2^3 3^3 5^4$
- ○ (d) $2^6 3^2 5^4$
- ○ (e) $2^6 3^4 5^4$

Question 3
Not answered
Marked out of 100.00

Question text

Consider the inequalities

$$A)\ P(x) > 0, \quad B)\ \frac{P(x)}{x^2 + 1} > 0, \quad C)\ \frac{P(x)}{x^2 - 1} > 0,$$

where $P(x)$ is a second degree polynomial. Which of the following statements is true?

- ○ (a) nothing can be said, since we do not know the polynomial $P(x)$
- ○ (b) the inequalities B) and C) have the same set of solutions
- ○ (c) the inequalities A) and C) have the same set of solutions
- ○ (d) the three inequalities have the same set of solutions
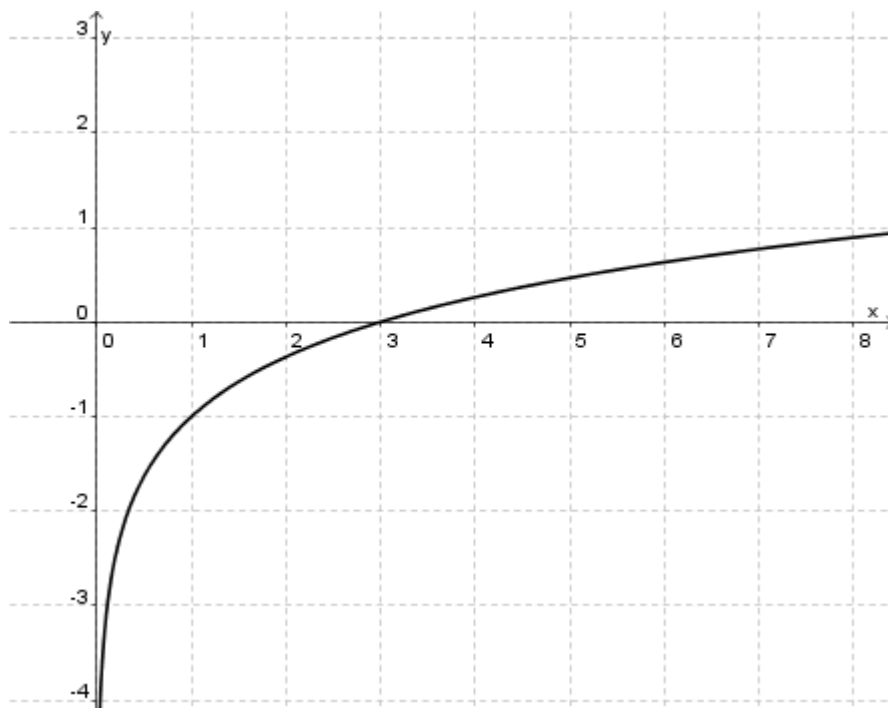- ○ (e) the inequalities A) and B) have the same set of solutions

Question 4
Not answered

Question text

In the figure, it is shown the graph of the function:

○ (a) $y = -1 - \log_3 x$
○ (b) $y = -\log_3 x$
○ (c) $y = 1 - \log_3 x$
○ (d) $y = -1 + \log_9 x$
○ (e) $y = -1 + \log_3 x$

Feedback

The correct answer is: $y = -1 + \log_3 x$

Question 5
Not answered
Marked out of 100.00

Question text

The real number $\sqrt{75} + 3\sqrt{18} - 2\sqrt{12} - 2\sqrt{50}$ equals

- (a) $\sqrt{3} + \sqrt{2}$
- (b) $\sqrt{2} - \sqrt{3}$
- (c) $9\sqrt{3} + 19\sqrt{2}$
- (d) $2\sqrt{6}$
- (e) $\sqrt{3} - \sqrt{2}$

Feedback

The correct answer is: $\sqrt{3} - \sqrt{2}$

Question 6
Not answered
Marked out of 100.00

Question text

Given the two circles
$$x^2 + y^2 + 2x - 2y + 1 = 0, \qquad x^2 + y^2 + 6x - 2y + 9 = 0,$$
we can say that

- (a) they intersect at four distinct points
- (b) they do not intersect and the second is internal to the first
- (c) they do not intersect and the first is internal to the second
- (d) they intersect at two distinct points
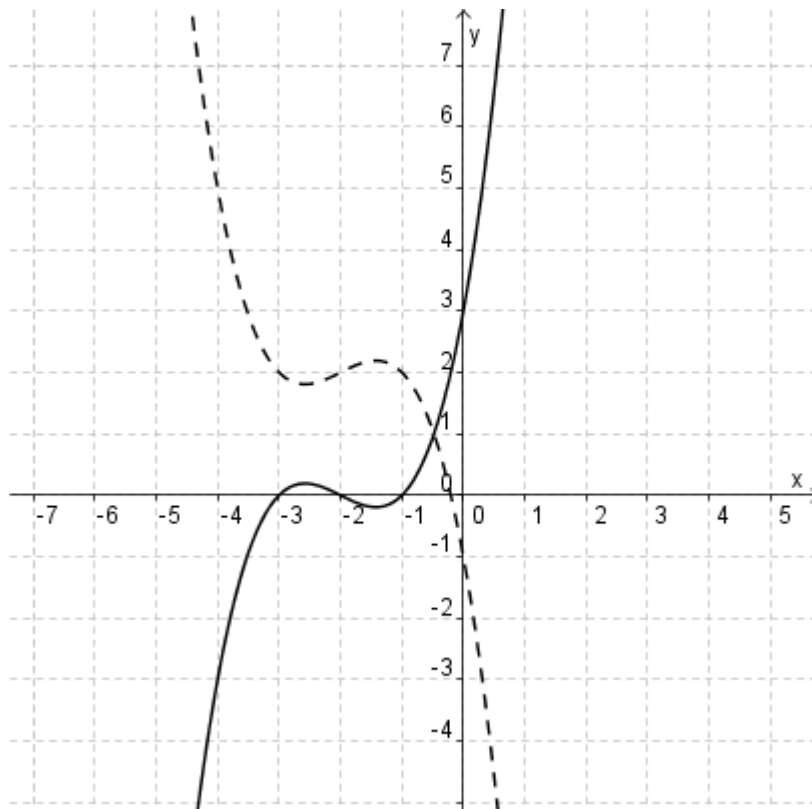- (e) they are tangent (one point of intersection)

Feedback

The correct answer is: they are tangent (one point of intersection)

Question 7
Not answered
Marked out of 100.00

Question text

In the figure, the continuous curve is the graph of the function $y = f(x)$.

The dashed curve is the graph of the function $y = g(x)$, where:

○ (a) $g(x) = 2 - f(x)$
○ (b) $g(x) = -f(x)$
○ (c) $g(x) = -2 - f(x)$
○ (d) $g(x) = -f(x + 2)$
○ (e) $g(x) = -2f(x)$

Feedback

The correct answer is: $g(x) = 2 - f(x)$

Question 8
Not answered
Marked out of 100.00

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Question text

Only one of these statements is correct, which one?

○ (a) Two parallelograms with the same area are similar

○ (b) Two right-angled triangles with proportional legs (catheti) are similar

○ (c) Two isosceles triangles with the same height are similar

○ (d) Two rectangles with the same perimeter are similar

○ (e) Two scalene triangles with the same area are similar

Feedback

The correct answer is: Two right-angled triangles with proportional legs (catheti) are similar

Question 9
Not answered
Marked out of 100.00

Question text

The equation $(x^4 - 2x^2 + 7)(x^2 - 13) = 0$

○ (a) has, at least, two solutions of the same sign

○ (b) has only negative solutions

○ (c) has no real solutions

○ (d) has two (and only two) real solutions

○ (e) has six real solutions

Feedback

The correct answer is: has two (and only two) real solutions

Question 10
Not answered
Marked out of 100.00

Question text

The least common multiple of the monomials $8x^3y^6$, $6x^2y^6z^2$, x^4y^3 is:

- (a) x^2z^2
- (b) $24x^4y^6z^2$
- (c) $24x^4y^3$
- (d) $24x^2y^3z$
- (e) x^3y^3

Question 11
Not answered
Marked out of 100.00

Question text

The quantity $\cos^2\dfrac{9\pi}{8} - \sin^2\dfrac{9\pi}{8}$ equals:

- (a) $\left(\dfrac{\sqrt{2}}{2}\right)^2$
- (b) 1
- (c) $\dfrac{\sqrt{3}}{2}$
- (d) $\cos\dfrac{9\pi}{16}$
- (e) $\dfrac{\sqrt{2}}{2}$

Question 12
Not answered
Marked out of 100.00

Flag question

Question text

Which of the following equations represents a line parallel to the line passing through the points $(0, 1)$ and $(3, 2)$?

- (a) $x - 4y - 2 = 0$
- (b) $3x - 6y + 3 = 0$
- (c) $2x - 6y + 3 = 0$
- (d) $x + 2y - 4 = 0$
- (e) $4x + 6y = 0$

Question 13
Not answered
Marked out of 100.00

Flag question

Question text

In the three-dimensional space, consider two spheres of radius 1 and centred, respectively, at the points P_1 and P_2. If the distance between P_1 and P_2 is 3, then the intersection of the two spheres is:

- (a) a circle
- (b) a point
- (c) the empty set
- (d) a hyperbola

○ (e) an ellipse with different axes

Question 14
Not answered
Marked out of 100.00

Flag question

Question text

Let x and y be two real numbers different from zero. Simplifying the expression $2xy\left(-\frac{1}{4}x^2y\right) + (2x^2y)^3 : (8x^3y)$, we get:

○ (a) $\frac{3}{2}x^2y^3$

○ (b) $\frac{1}{2}x^2y^3$

○ (c) $\frac{1}{2}x^3y^2$

○ (d) $2xy$

○ (e) $-\frac{3}{2}x^3y^2$

Question 15
Not answered
Marked out of 100.00

Flag question

Question text

A man has two children, Aldo and Maria. The sum of the ages of the man and Aldo is 80 years more than Maria's age. The sum of the ages of the man and Maria is 90 years more than Aldo's age. How old is the man?

(a) 68 years old

(b) 45 years old

(c) 85 years old

(d) 54

(e) 70 years old

Question 16
Not answered
Marked out of 100.00

Flag question

Question text

Arriving in the USA, an Italian tourist changes 10.000 euros (EUR) into dollars (USD); the exchange rate is 1 EUR = 1,4 USD. During the vacation, he spends 12.800 USD. Back in Italy, he changes the remaining USD back to EUR; the exchange rate is now 10 USD = 7,5 EUR. How much money has the tourist left?

(a) 850 EUR

(b) 950 EUR

(c) 1.200 EUR

(d) 900 EUR

(e) 1.800 EUR

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Marks	0.00/1600.00
Grade	**0.00** out of 16.00 (**0%**)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

Let x be a positive real number. The real number $\dfrac{\sqrt{\sqrt{(2x+3)^3}}}{\sqrt[6]{(2x+3)}}$ equals

- (a) $\sqrt[6]{(2x+3)^2}$
- (b) $\sqrt[12]{(2x+3)^7}$
- (c) $\sqrt{(2x+3)}$
- (d) $\sqrt[7]{(2x+3)^{12}}$
- (e) $\sqrt[24]{(2x+3)^3}$

Feedback

The correct answer is: $\sqrt[12]{(2x+3)^7}$

Question 2
Not answered

Flag question

Question text

Which of the following equations is the equation of the line that passes through the point $(1, -2)$ and is perpendicular to the line $y = x$?

- (a) $3x + 3y + 3 = 0$
- (b) $x - y - 3 = 0$
- (c) $x + y - 1 = 0$
- (d) $4x + 3y = 0$
- (e) $x - 7y - 15 = 0$

Feedback

The correct answer is: $3x + 3y + 3 = 0$

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

In a restaurant there are 24 square tables with 4 seats each. They can be used separately, or they can be joined in order to have a 6 seat table. If the waiter prepares the same number of 4 seat tables and 6 seat tables, how many customers he can seat?
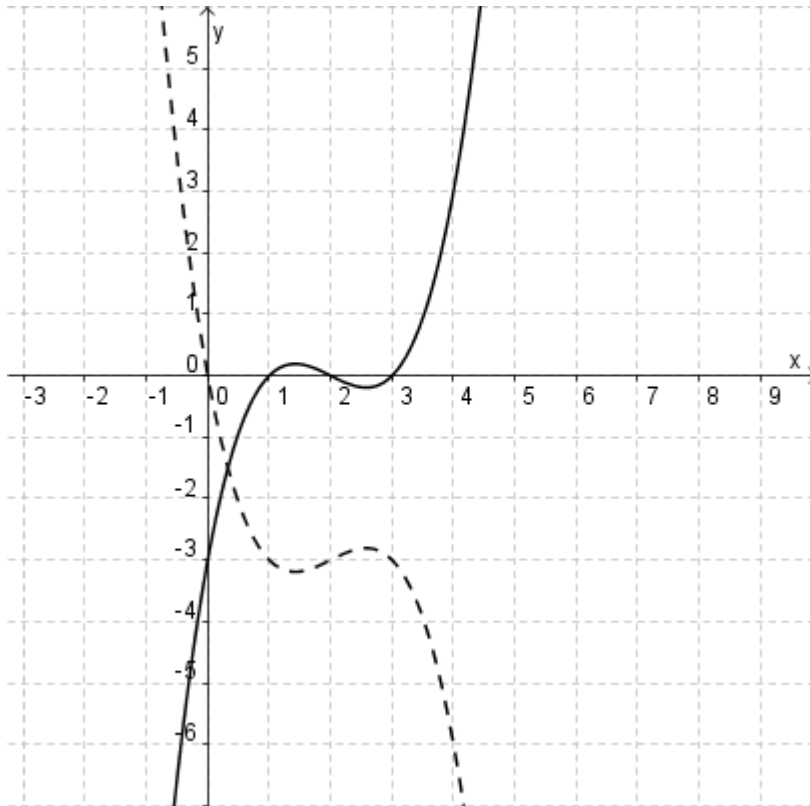
- (a) 92
- (b) 72
- (c) 76
- (d) 80
- (e) 84

Feedback

The correct answer is: 80

Question 4
Not answered
Marked out of 100.00

DAAN international academy

Question text

In the figure, the continuous curve is the graph of the function $y = f(x)$.

The dashed curve is the graph of the function $y = g(x)$, where:

- (a) $g(x) = 3 - f(x)$
- (b) $g(x) = -f(x)$
- (c) $g(x) = -f(x - 3)$
- (d) $g(x) = -3f(x)$
- (e) $g(x) = -f(x) - 3$

Feedback

The correct answer is: $g(x) = -f(x) - 3$

Question 5
Not answered

DAAN international academy

Marked out of 100.00

Flag question

Question text

The prime factorization of the number $(5^4 - 5^2)^2 3^2$ is:

- (a) $2^3 3^3 5^4$
- (b) $2^6 3^4 5^2$
- (c) $2^6 3^4 5^4$
- (d) $2^4 3^2 5^4$
- (e) $2^6 3^2 5^4$

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

Which of the following numbers is a solution of the equation $\log_3(2 + x)^2 = 6$?

- (a) $x = \log_3 2$
- (b) $x = 1$
- (c) $x = 3^{3 - \log_3 2}$
- (d) $x = -29$
- (e) $x = \log_2 3$

Question 7
Not answered
Marked out of 100.00

Question text

Let x be a real number, different from zero. Simplifying the expression $(1 - 3x)(4x^3 + 12x^4) - 4x^3$, we get:

- ○ (a) $-12x^2$
- ○ (b) $12x^2$
- ○ (c) $-36x^5$
- ○ (d) $36x^5$
- ○ (e) x^5

Feedback

The correct answer is: $-36x^5$

Question 8
Not answered
Marked out of 100.00

Question text

The equation $x^6 + 4x^3 = 12$

- ○ (a) ha two distinct solutions and both are negative
- ○ (b) has one (and only one) real solution
- ○ (c) has six real distinct solutions
- ○ (d) has two (and only two) real distinct solutions
- ○ (e) can not be solved, since its degree is six

Feedback

The correct answer is: has two (and only two) real distinct solutions

Question 9
Not answered
Marked out of 100.00

Question text

The age of a boy is now a quarter of the age of his father. In 20 years' time the sum of their ages will be 100 years. How old is the boy now?

○ (a) 12 years old

○ (b) 16 years old

○ (c) 14 years old

○ (d) 13 years old

○ (e) 15 years old

Feedback

The correct answer is: 12 years old

Question 10
Not answered
Marked out of 100.00

Question text

Consider the inequalities

$$A) \ Q(x) > 0, \quad B) \ \frac{Q(x)}{x^2 - 3} > 0, \quad C) \ \frac{Q(x)}{x^2 + 3} > 0,$$

where $Q(x)$ is a second degree polynomial. Which of the following statements is true?

○ (a) the inequalities A) and C) have the same set of solutions

○ (b) the three inequalities have the same set of solutions

○ (c) the inequalities A) and B) have the same set of solutions

○ (d) nothing can be said, since we do not know the polynomial $Q(x)$

○ (e) the inequalities B) and C) have the same set of solutions

Feedback

The correct answer is: the inequalities A) and C) have the same set of solutions
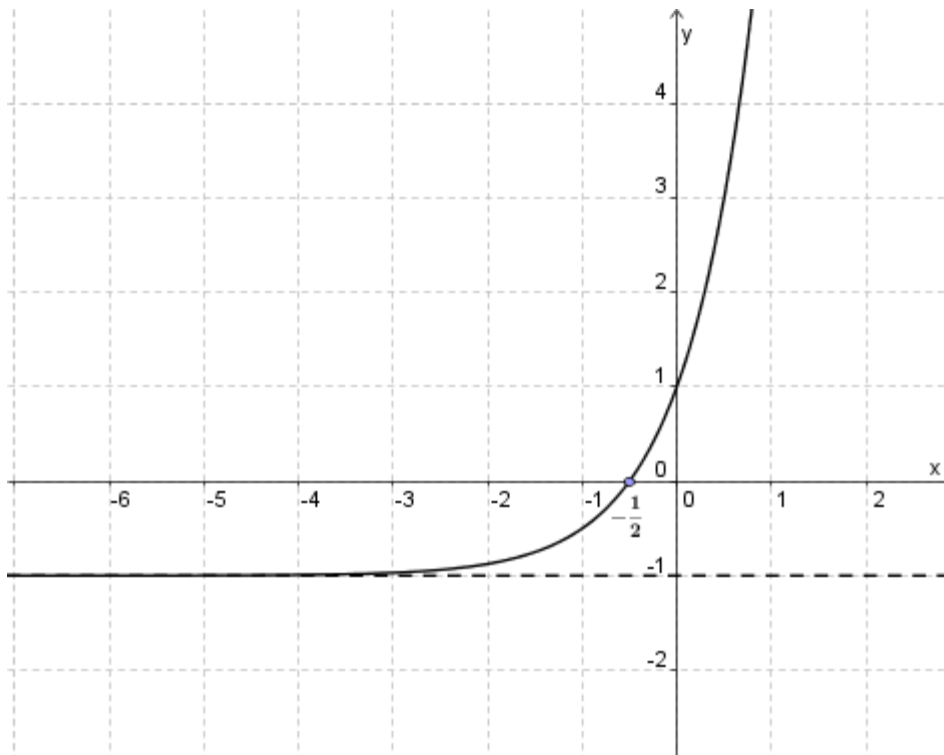
Question 11
Not answered

DAAN international academy

Flag question

Question text

In the figure, it is shown the graph of the function:

(a) $y = 4^x - 1$
(b) $y = 2^x - 1$
(c) $y = 2 \cdot 4^x - 1$
(d) $y = 4 \cdot 2^x - 1$
(e) $y = 4 \cdot 4^x - 1$

Feedback

The correct answer is: $y = 2 \cdot 4^x - 1$

Question 12
Not answered
Marked out of 100.00

DAAN international academy

Question text

The expression $\log_7 2^{(x^3)}$ equals:

(a) $x^3 \log_7 2$ only for $x > 0$

(b) $x^3 \log_2 7$ for all real x

(c) $x^3 \log_7 2$ for all real x

(d) $(\log_7 2^x)^3$ for all real x

(e) $3 \log_7 2^x$ for all real x

Feedback

The correct answer is: $x^3 \log_7 2$ for all real x

Question 13
Not answered
Marked out of 100.00

Question text

Two figures are congruent if they have the same shape and size. Only one of these statements is correct, which one?

(a) Two isosceles triangles with the same perimeter are congruent

(b) Two rectangles with the same perimeter are congruent

(c) Two parallelograms with the same area are congruent

(d) If in two triangles the corresponding angles have the same measure, then the two triangles are congruent

(e) Two right-angled triangles have the hypotenuse of the same length; if, in addition, the corresponding acute angles are equal then the triangles are congruent

Feedback

The correct answer is: Two right-angled triangles have the hypotenuse of the same length; if, in addition, the corresponding acute angles are equal then the triangles are congruent

Question 14

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Question text

In the three-dimensional space, consider a cube Q and a plane P passing through 4 vertices of the cube that do not belong to the same face. If the measure of the edge of the cube is 4, then the intersection between the cube and the plane is:

- (a) a square whose sides have length 4
- (b) a rectangle whose perimeter is $8(1 + \sqrt{2})$
- (c) a square whose sides have length $\sqrt{32}$
- (d) a rhombus (not a square)
- (e) a segment that has length 4

Feedback

The correct answer is: a rectangle whose perimeter is $8(1 + \sqrt{2})$

Question 15

Question text

The quantity $2 \sin \dfrac{\pi}{12} \cos \dfrac{\pi}{12}$ equals:

- (a) $\sin \dfrac{\pi}{24}$
- (b) $1/2$
- (c) $\sqrt{3}/2$
- (d) 2
- (e) $-1/2$

Feedback

The correct answer is: $1/2$

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Flag question

Question text

Given the two circles
$$x^2 + y^2 + 2x - 2y + 1 = 0, \qquad x^2 + y^2 + 6x - 2y + 9 = 0,$$
we can say that

○ (a) they intersect at two distinct points

○ (b) they intersect at four distinct points

○ (c) they are tangent (one point of intersection)

○ (d) they do not intersect and the first is internal to the second

○ (e) they do not intersect and the second is internal to the first

Feedback

The correct answer is: they are tangent (one point of intersection)

Advantages of public transport

A new study conducted for the World Bank by Murdoch University's Institute for Science and Technology Policy (ISTP) has demonstrated that public transport is more efficient than cars. The study compared the proportion of money poured into transport by thirty-seven cities around the world. This included both the public and private costs of building, maintaining and using a transport system.

The study found that the Western Australian city of Perth is a good example of a city with minimal public transport. As a result, 17% of its wealth went into transport costs. Some European and Asian cities, on the other hand, spent as little as 5%. As a consequence, these more efficient cities were able to put the money saved into attracting industry and jobs or creating a better place to live.

Professor Newman, ISTP Director describes Melbourne as two cities: "A European city surrounded by a car-dependent one". Melbourne's large tram network has greatly reduced car use in the inner city, but the outer suburbs have the same car-based structure as most other Australian cities. The increasing demand for accommodation in the inner suburbs of Melbourne suggests that people now prefer to live there.

Newman believes there is a new, more general way of considering public transport issues. In the past, environmental and social justice were considered before economics. Newman, however, thinks the study demonstrates that "the auto-dependent city model is inefficient and very inadequate in both economic and environmental terms".

Supporters of the road networks often reject the models of cities with good public transport by saying that these systems would not work in their particular city. One objection is climate. Some people say their city could not make more use of public transport because it is either too hot or too cold. Newman rejects this, pointing out that public transport has been successful in both Toronto and Singapore and, in fact, checks have demonstrated no correlation between the use of cars and the climate.

When it comes to other physical characteristics, road lobbies are in a stronger position. For example, Newman accepts it would be hard for a city with a lot of hills like Auckland to develop a really good rail network. However, he points out that both Hong Kong and Zurich have managed to make a success of their rail systems, even if they have more hills than most cities in the world.

In fact, Newman believes the main reason for choosing one sort of transport instead of another is politics: "the more democratic the process, the more public transport is favored". He considers Portland, Oregon, a perfect example of this. Some years ago, the central government decided to finance the construction of a new road. However, local pressure groups called for a referendum and the money was spent on a railway instead, which worked extremely well. In the years that have followed, more and more rail systems have been put in, dramatically changing the nature of the city.

In the UK, travel times to work had been stable for at least six centuries, and people generally avoided spending more than half an hour travelling to work. Trains and cars initially allowed people to live at greater distances without taking longer to reach their destination. However, public infrastructure did not grow with the increase in urban areas, and this caused enormous congestion problems and much longer commuting times.
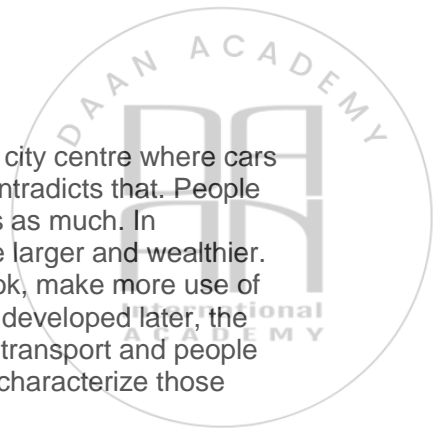
Many think that if people have more money they want to live further from the city centre where cars are the only practical means of transport. The example of European cities contradicts that. People are often wealthier than their American counterparts but do not use their cars as much. In Stockholm, car use has actually fallen in recent years as the city has become larger and wealthier. New studies show that developing cities in Asia, such as Jakarta and Bangkok, make more use of the car than wealthy Asian cities such as Tokyo and Singapore. In cities that developed later, the World bank and Asian Development Bank discouraged the building of public transport and people have been forced to depend on cars -- creating the massive traffic jams that characterize those cities.

An alternative proposal is to convert cities that have been built for cars to rail use, by creating urban villages at hundreds of sites, mostly around railway stations.

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

The use of private transport

○ (A) has increased recently in Stockholm

○ (B) has caused enormous traffic problems in Singapore

○ (C) has created hundreds of urban villages

○ (D) was supported in some Asian cities by banks

○ (E) is more common among rich Europeans

Feedback

The correct answer is: was supported in some Asian cities by banks

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

In the study Melbourne emerges as

○ (A) a city where people use two opposing modes of transport

○ (B) a city with a growing demand for car parks

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(C) a city with an efficient outer suburban tram system

(D) a European city

(E) a place where people prefer to live

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

The ISTP report showed that cities with well-developed public transport

(A) were a good example to other cities

(B) offered people better jobs

(C) spent less money on transport

(D) spent more money on transport

(E) were less well-organized

Question 4
Not answered
Marked out of 100.00

Flag question

Question text

Some people who prefer travelling by car do not agree with an increase in public transport because

(A) it is bad for the environment

(B) it didn't work in Toronto and Singapore

(C) it didn't work in Hong Kong and Zurich

(D) it is not compatible with typical weather conditions

(E) there aren't enough hills in their cities

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

In the case of Portland, the most significant aspect governing the choice of trains was

○ (A) the demands of the inhabitants
○ (B) financial issues
○ (C) the building of more roads
○ (D) dramatic changes in the city
○ (E) government decisions

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

How can you insert the + (plus) or the - (minus) sign in the following sequence of numbers :

$$10 \quad 11 \quad 12 \quad 13 \quad 14$$

in order to have $+10$ as a result?

(Example: if I insert $+ \; -$ in the sequence $5 \quad 6 \quad 7$ the result is $5 + 6 - 7 = +4$, if I insert $- \; +$ the result is $5 - 6 + 7 = +6$)

○ (a) $- \quad - \quad + \quad +$
○ (b) $- \quad - \quad - \quad +$
○ (c) $+ \quad + \quad - \quad -$

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○ (d) − + + −
○ (e) − + − +

Question 7
Not answered
Marked out of 100.00

Flag question

Question text

Anna, Bruno, Carlo and Daniela are considering whether to go to Cortina next weekend.
We know that:
- if Carlo goes, Daniela will also go
- if Anna doesn't go, Daniela won't go either
- if Anna goes, Bruno will also go
Which of the following statements can be deduced?

○ (a) They'll all go

○ (b) If Anna goes, Carlo will also go

○ (c) If Bruno doesn't go, Carlo won't go either

○ (d) Nobody will go

○ (e) Anna and Bruno will go

Question 8
Not answered
Marked out of 100.00

Flag question

Question text

At a tango competition the 200 dancers wear a waistcoat and/or a rhinestone jacket. 114 dancers wear a waistcoat, 156 wear a rhinestone jacket. How many dancers only wear a waistcoat?

○ (a) 114

○ (b) 44

○ (c) 72
○ (d) 86
○ (e) 42

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

Discussing their personal finances, four friends (Alisher, Bahodir, Elmurod e Rashid) state that:

- Alisher has less money than Elmurod
- Bahodir has less money than Elmurod
- Elmurod has more money than Rashid
- Bahodir has more money than Alisher

Then, which of the following statements is NOT NECESSARILY correct?

○ (a) Bahodir is not the poorest

○ (b) Alisher is the poorest among the friends

○ (c) the richest among the friends is Elmurod

○ (d) the alphabetical order of the names is not the same as the (increasing order) of the money owned

○ (e) Rashid has less money than Elmurod

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

As it is true that:
- all sparrows are birds

- all sparrows are small
- all birds are animals
- some animals don't eat leaves
it can be deduced that:

○ (a) At least one species of bird doesn't eat leaves

○ (b) All sparrows are small animals

○ (c) All small animals are sparrows

○ (d) Some small birds eat leaves

○ (e) Some sparrows don't eat leaves

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

The integer numbers a, b, c, d and e satisfy the relations:

$$b = a - 1$$

$$c = b + 2$$

$$c = d + 4$$

$$d = e - 2$$

One of the following statements is true; which one?

○ (a) the order of the numbers is the same as the alphabetical order ($a < b < c < d < e$)

○ (b) $a < c < b$

○ (c) $e = b$

○ (d) $e > b$

○ (e) $d > a$

Flag question

Question text

The product of 20 integer numbers is positive. From this information we can deduce that it is necessarily true that:

○ (a) all factors are positive

○ (b) at least two factors are negative

○ (c) the number of positive factors is either zero or an even number

○ (d) 2 factors are positive and 18 factors are negative

○ (e) 10 factors are positive and 10 factors are negative

Feedback

The correct answer is: the number of positive factors is either zero or an even number

Flag question

Question text

Five books, identified by the abbreviations An-Bo-Ch-Di-El, are in a pile in descending alphabetical order (so book An is at the top and book El is at the bottom).
The last three books from the bottom are simultaneously removed and put at the top, maintaining their vertical order.
If this procedure is repeated two more times, which book will end up precisely at the bottom of the pile?

○ (a) Book Di

○ (b) Book Bo

○ (c) Book El

○ (d) Book An

○ (e) Book Ch

Feedback

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

If it is true that:
- some cars are fast
- some cars are red
- there are fast cars that aren't red
then it is certain that:

○ (a) fast cars are red

○ (b) some fast cars are a different colour from red

○ (c) there can't be a car that isn't red and isn't fast

○ (d) if every red car is fast, then every fast car is red

○ (e) all fast cars aren't red

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

Which of these diagrams illustrates the relationship between:
EVEN NUMBERS - INTEGERS - PRIME NUMBERS?
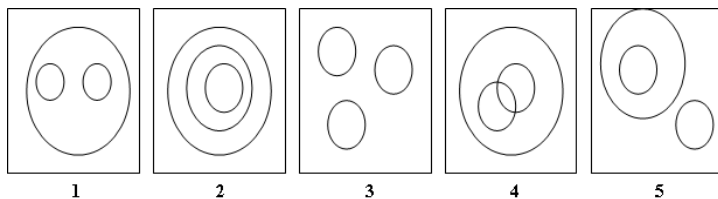
○ (a) Figure 3
○ (b) Figure 4
○ (c) Figure 1
○ (d) Figure 5
○ (e) Figure 2

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

On an object two forces $\vec{F_1}$ and $\vec{F_2}$ are applied, with moduli $F_1 = 5N$ and $F_2 = 2N$, forming an angle $\theta = 60°$. What is the modulus of the resultant force F_T ?

○ (A) There is not enough data to give an answer
○ (B) Approximately 5.5 N
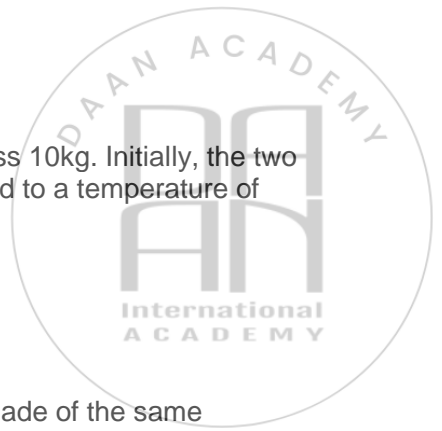○ (C) 7 N
○ (D) Little more than 6 N
○ (E) 30 N

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

Consider two blocks of the same material, one of mass 5kg, the other of mass 10kg. Initially, the two blocks have equal temperature 300K. Suppose that they are then both heated to a temperature of 500K. One can assert that

○ (A) The heat absorbed depends on the geometrical shape of the two blocks

○ (B) The 10kg block has absorbed more heat

○ (C) Both blocks have absorbed the same amount of heat because they are made of the same material

○ (D) Both blocks have absorbed the same quantity of heat because the increase in temperature has been the same

○ (E) The 5kg block has absorbed more heat

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

In the electric field, which one of the following relations concernig "volt" unit of measure is correct?

○ (a) 1 volt = 1 farad/coulomb

○ (b) 1 volt = 1 coulomb·farad

○ (c) 1 volt = 1 οημ·ampere

○ (d) 1 volt = 1 ampere/οημ

○ (e) 1 volt = 1 οημ/ampere

Question 4
Not answered
Marked out of 100.00

Question text

Consider two distinct equipotential surfaces in an electrostatic field (meaning that points of the same surface have the same potential, but that the two values of the potential are different). The two surfaces

○ (A) always intersect at 90°
○ (B) are always parallel
○ (C) are parallel to the lines of force of the field
○ (D) have the same centres of curvature
○ (E) never intersect each other

Feedback

The correct answer is: never intersect each other

Question 5
Not answered
Marked out of 100.00

Question text

A current of 10A passes through a resistor, across which the voltage is 220V. The power dissipated is

○ (A) 0,045 A/V
○ (B) 22 V/A
○ (C) 2,2 kWh
○ (D) 2,2 kJ
○ (E) 2,2 kW

Feedback

The correct answer is: 2,2 kW

Question 6
Not answered
Marked out of 100.00

Question text

An object, initially at rest, falls vertically under gravity from a height of 5 m. The time it takes to fall (ignoring air resistance) is roughly:

- ○ (A) 1/5 second
- ○ (B) two seconds
- ○ (C) one second
- ○ (D) 5 seconds
- ○ (E) half a second

Feedback

The correct answer is: one second

Question 7
Not answered
Marked out of 100.00

Question text

A car, initially at rest, moves along a line with constant acceleration equal to 10m/s². What will be the velocity of the car after 45m?

- ○ (a) 30m/s
- ○ (b) 20m/s
- ○ (c) 5m/s
- ○ (d) 50m/s
- ○ (e) 40m/s

Feedback

Risposta errata.

The correct answer is: 30m/s

Question 8
Not answered
Marked out of 100.00

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Question text

In a science fiction film, there is a scene on the Lunar surface in which an astronaut becomes aware of the arrival of a spaceship by hearing the noise of its engines. This scene is physically inconsistent because:

○ (A) the temperature of the Moon is so high that the sound cannot propagate

○ (B) The astronaut's space-suit, like all clothing, completely absorbs sound

○ (C) the acceleration due to gravity is smaller on the Moon compared to the Earth

○ (D) the laws of physics do not hold on the Moon

○ (E) The moon has no atmosphere and the sound cannot propagate in the absence of a suitable medium

Feedback

The correct answer is: The moon has no atmosphere and the sound cannot propagate in the absence of a suitable medium

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

Two capacitors have capacitances C_1, C_2 (with $C_1 > C_2$) and charges whose respective absolute values are Q_1, Q_2. One can deduce that

○ (A) $Q_1 > Q_2$ if the capacitors are connected in series

○ (B) $Q_1 > Q_2$ if the capacitors are connected in parallel

○ (C) $Q_1 = Q_2$ if the capacitors are connected in parallel

○ (D) Q_1 is always greater than Q_2

○ (E) Q_1 depends on the form of the plates

Feedback

The correct answer is: $Q_1 > Q_2$ if the capacitors are connected in parallel

Question 10

Question text

Two canisters hold equals volumes of gas held at the same temperature and pressure. One contains H_2 (molecular mass equal to 2) and the other N_2 (molecular mass equal to 28).

○ (A) The molecules of N_2 and those of H_2 have the same speed v

○ (B) The quantity in grams of the two gases is equal

○ (C) The molecules of N_2 and those of H_2 have the same kinetic energy

○ (D) The number of N_2 molecules is 14 times that of the H_2

○ (E) The number of moles of N_2 is 14 times that of the H_2

Feedback

The correct answer is: The molecules of N_2 and those of H_2 have the same kinetic energy

Started on	Sunday, 7 August 2022, 4:10 PM
State	Finished
Completed on	Sunday, 7 August 2022, 4:10 PM
Time taken	11 secs
Grade	**0.00** out of 600.00 (**0%**)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

Given the two orthogonal projections of the object (top view and front view), identify the third corresponding view (side view)

○ (a) 5
○ (b) 3
○ (c) 1
○ (d) 4
○ (e) 2

Question 2
Not answered
Marked out of 100.00

Question text

What kind of representation is used in the figure?

○ (a) Accidental perspective

○ (b) Isometric orthogonal axonometry

○ (c) Central perspective

○ (d) Front elevation

○ (e) Blueprint

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

Which is the command to make a new directory in the terminal?

○ (a) mkdir

○ (b) cd

○ (c) del

○ (d) rm

○ (e) ren

Question 4
Not answered
Marked out of 100.00

Flag question

Question text

Given the figure, which will be the value of a at the end of the program?

○ (a) 120
○ (b) 12
○ (c) 30
○ (d) 20
○ (e) 15

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

A programming language is called interpreted when...

○ (a) never, interpreted languages does not exist
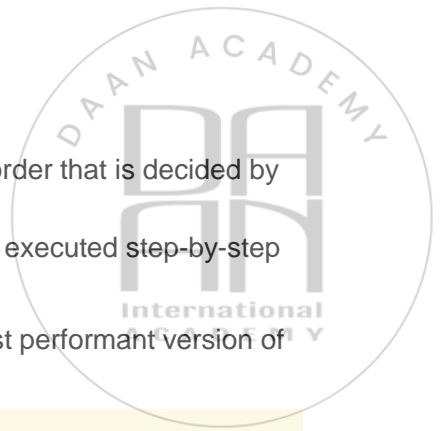
○ (b) the source code is interpreted on-the-flight but the code is executed in a order that is decided by the compiler

○ (c) the source code is interpreted on-the-flight and, consequently, the code is executed step-by-step

○ (d) the source code is executed after being compiled, only

○ (e) a dedicated software reads the source code and decides which is the most performant version of the instructions to execute

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

At what scale is it preferable to represent a complex object with an approximate size of 100x100x100 mm?

○ (a) scale 1:1000

○ (b) scale 1:1 or 1:2

○ (c) scale 10:1 or 20:1

○ (d) scale 1:20 or 1:30

○ (e) scale 1:50 or 1:100

PROVA DI AMMISSIONE AI CORSI DI LAUREA E DI LAUREA MAGISTRALE A CICLO UNICO DIRETTAMENTE FINALIZZATI ALLA FORMAZIONE DI ARCHITETTO IN INGLESE

Test di allenamento Architettura

_____

Test di Logica e Cultura Generale

1. **The United Nations' General Assembly:**
    A) is a representative organ of member States
    B) is where the Prime Ministers of Member States meet
    C) is elected democratically
    D) substituted the Security Council from 1996
    E) meets once a month in ordinary session

2. **What does the term "palimpsest" denote?**
    A) An ancient manuscript on parchment, from which an older text has been scraped off and can be re-used
    B) In a theatre show, a short musical intermezzo subtending manifest, or hidden, commercial aims
    C) A texture of sounds played together, by voices and instruments, each with a specific melodic line
    D) A notepad, equipped with pencil holder
    E) A rather wide arch, typical of late ancient architecture

3. **Who supports the Theory of Evolution in his famous book *"The Origin of Species"*?**
    A) Charles Robert Darwin
    B) Isaac Newton
    C) Dmitrij Ivanovič Mendeleev
    D) Johann Gregor Mendel
    E) Epicurus

4. **Cast iron is:**
    A) an alloy of iron and carbon
    B) an alloy of iron and tin
    C) an iron alloy containing lead
    D) tempered soft iron
    E) an iron alloy containing copper

5. **Which movie, in a famous sequence, uses Richard Wagner's *"Ride of the Walkyries"* soundtrack?**
    A) Apocalypse Now
    B) Full Metal Jacket
    C) The Deer Hunter
    D) Good Morning, Vietnam
    E) Platoon
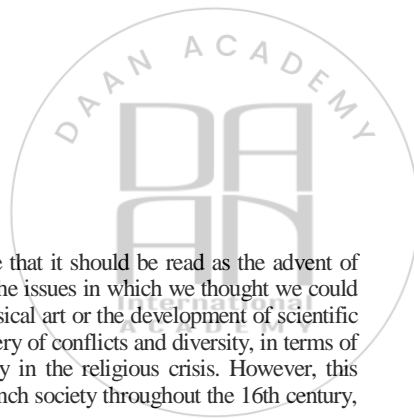
Text 1

Architecture and culture in Renaissance France

It is no simple matter to describe, evaluate or interpret the French Renaissance. We no longer believe that it should be read as the advent of modernity in all fields. The final assessment is far more contradictory than previously believed for all the issues in which we thought we could recognize the promise of the future, political autonomy, a spirit of observation, the rediscovery of Classical art or the development of scientific research. A reasonable conclusion might be, then, that the actual novelty of the period lay in the discovery of conflicts and diversity, in terms of contrasts that frighten or amuse, or in internal lacerations which manifested themselves most cruelly in the religious crisis. However, this interpretation does not take sufficient account of the extraordinary vitality that infused the whole of French society throughout the 16th century, with unforgettable reverberations in literature and art.

Hence historians' great discomfort, conscious of the impossibility of finding an efficient definition for this vast development. The problem presents too many facets: culture, of which France, as usual, considers itself a harbinger, is both too ambitious ("good manners", "courtesy") and closely bound to the medieval past. The complexities of the symbolic thought that is characteristic of the period have been neglected for too long. Obviously, the events in France cannot be isolated from the European context. However, in art history there has been frequent misuse of sources and influences. In fact, to put it bluntly, the whole picture needs reviewing and completing.

For over a century there have been two alternating lines of interpretation: the dynamism of the Italian models, discovered through the conquests, and on the other hand, the effect of the Flemish and Rheinian models, that spread thanks to the exceptional success of the graphic arts. These relationships, which in any case remain fundamental, have been proficuously studied; however, some sort of more or less passive submission to the foreign models is always suggested. The consequence of this has been the neglect of a factor that seems increasingly essential.

The French were used to being the initiators of all fashion in the western world. During the 15th century, the difficulties posed by wars abroad and at home had seriously undermined this supremacy. They did not, however, take away the idea of a national superiority from the minds of the powerful and the elite, and this was to manifest itself again. Interaction with Italy and with the northern European workshops was always complicated by this instinctive reaction. One often has the impression, for instance, that sculptors' and glaziers' recourse to models engraved by Dürer or Marcantonio confirmed the conviction that those imprints were nothing but a foreign contribution to the progress of French art. After all, enamellers and caisson makers created new works of art from the original compositions.

French art has always adopted "selective assimilation" (to use the phrase coined by Erwin Panofsky), an attitude that requires a solid sense of autonomy and that justifies the ease, or perhaps the ingratitude with which it treated its sources. The path to follow is never completely clear.

Some of the ideas regarding the salient features of the French Renaissance have developed around these manifestations, which today seem surprising. Foremost there is the concept of a new sort of teaching, far more complex and chaotic than is usually believed, which aimed at an ambitious cultural revolution initially in line with the ideas of Erasmus.

The decisions that made King Francis the First famous required an analysis of society. In the critical view of contemporary Italians, traditional French aristocracy was as brilliant as it was ignorant if compared with the new class of officials that included the "noblesse de robe". It is interesting to confirm whether and how this sharp criticism of nobility had consequences on taste, architecture and art collections. Even though this issue barely appears in the studies that follow, it has allowed us to identify a fundamental topic that has generally been neglected by historians of culture and literature. The topic is the chivalrous ideal, and it would be naïve to think that it had disappeared with the arrival of the new era.

6. **Historians usually interpret French Renaissance as:** *(see text 1)*
   A) always dependent on foreign models
   B) influenced only by Italian models
   C) debtor only to the Flemish and Rhenanian models
   D) a local product of the idea of national superiority
   E) an island in the European context

7. **The idea of a French primacy in the arts:** *(see text 1)*
   A) wasn't dented by the involvement of foreign craftmen
   B) was justified by the primacy of French masterartists in Europe
   C) depended on military successes
   D) was the consequence of a war-driven aristocracy
   E) did not agree with the old "chivalry" idea

8. **French Renaissance:** *(see text 1)*
   A) aimed at a "cultural revolution"
   B) contains no contradictions
   C) is too attached to the medieval past
   D) was a product of the crippling religious crisis
   E) was a phenomenon of the 15th century

9. **Certain medieval ideas, like "good manners" and "courtesy":** *(see text 1)*
   A) survived the birth of "modernity"
   B) were seriously undermined by the consequences of war
   C) manifested themselves especially with the spread of graphical models
   D) agreed with the views of Erasmus of Rotterdam
   E) were completely redefined and completed thanks to "selective assimilation"

10. **Which of these aspects was less relevant on the French Renaissance culture?** *(see text 1)*
    A) The end of the Ancient Regime
    B) The tight relationship with the medieval past
    C) The recovery of the old
    D) The dynamism of Italian models
    E) The effect of Flemish and Rhenanian models

Text 2

Literary genres

The notion of genre immediately raises several questions : fortunately, some of these vanish once we have formulated them explicitly. The first question is: are we entitled to discuss a genre without having studied (or at least read) all the works which constitute it? But one of the fist characteristics of scientific method is that it does not require us to observe every instance of a phenomenon in order to describe it; scientific method proceeds rather by deduction. We actually deal with a relatively limited number of cases, from them we deduce a general hypothesis, and we verify this hypothesis by other cases, correcting (or rejecting) it as need be. Whatever the number of phenomena (of literary works, in this case) studied, we are never justified in extrapolating universal laws from them; it is not the quantity of observations, but the logical coherence of a theory that finally matters.

The level of generality on which a genre is to be located raises a second question. Are there only a few genres (i.e., lyric, epic, dramatic), or many more? Are genres finite in number or infinite? A third problem is a matter of aesthetics. We are told that it is pointless to speak of genres (tragedy, comedy, etc.), for the work of art is essentially unique, valuable because of what is original about it that distinguishes it from all other works, and not because of whatever in it may resemble them. Such a position is not, strictly speaking, false; it is simply inappropriate. We may certainly like a work for one reason or another; this is not what defines it as an object of study. The motive of an intellectual activity need not dictate the form which that activity ultimately assumes. The concept of genre (or species) is borrowed from the natural sciences.

Now there is a qualitative difference as to the meanings of the terms "genre" and "specimen," depending on whether they are applied to natural beings or to works of the mind. In the former case, the appearance of a new example does not necessarily modify the characteristics of the species; consequently, the properties of the new example are for the most part entirely deducible from the pattern of the species. Being familiar with the species tiger, we can deduce from it the properties of each individual tiger; the birth of a new tiger does not modify the species in its definition. The impact of individual organisms on the evolution of the species is so slow that we can discount it in practice. Similarly in the case of linguistic utterances (though to a lesser degree): an individual sentence does not modify the grammar of the language, and the grammar must permit us to deduce the properties of the sentence.

The same is not the case of the realm of art or of science. Here evolution operates with an altogether different rhythm: every work modifies the sum of possible works, each new example alters the species. We might say that in art we are dealing with a language of which every utterance is agrammatical at the moment of its performance. More exactly, we grant a text the right to figure in the history of literature or of science only to the extent that it produces a change in our previous notion of the one activity or the other. Texts that do not fulfil this condition automatically pass into another category: that of so-called "popular" or "mass" literature in the one case; in the other, that of the academic exercise. To return to our subject, only "popular" literature (detective stories, serialized novels, science fiction etc.) would approach fulfilling the requirements of genre in the sense that would be inapplicable to strictly literary texts.

Such a position obliges us to make our own theoretical assumptions explicit. Dealing with any text belonging to "literature", we must take into account a double requirement. First, we must be aware that it manifests properties that it shares with all literary texts, or with texts belonging to one of the sub-groups of literature (which we call, precisely, genres). It is inconceivable, nowadays, to defend the thesis that everything in the work is individual, a brand-new product of personal inspiration, a creation with no relation to works of the past. Second, we must understand that a text is not only the product of a pre-existing combinatorial system (constituted by all that has virtual literary properties); it is also a transformation of that system.

We can already say, then, that every literary study must participate in a double movement: from the particular work to literature generally (or genre), and from literature generally (from genre) to the particular work. To grant a temporary privilege to one direction or the other – to difference or to resemblance – is a perfectly legitimate transaction.

Why then raise these outdated problems? Gérard Genette has answered perfectly: "Literary discourse is produced and developed according to structures it can transgress only because it finds them, even today, in the field of its language and style". For there to be a transgression, the norm must be apparent. Moreover, it is doubtful that contemporary literature is entirely exempt from generic distinctions; it is only that these distinctions no longer correspond to the notions handed down from the literary theories of the past. We are of course not obliged to keep to these notions now; indeed there is a growing necessity to elaborate abstract categories that could be applied to contemporary work. More generally, failing to recognise the existence of genres is equivalent to claiming that a literary work does not have any relationship to already existing works. Genres are precisely those intermediaries by which the work assumes a relation with the universe of literature.

11. **What does the author mean by "genre"?** *(see text 2)*
   A) One of the possible subcategories of artwork
   B) The collection of artistic features of a work
   C) The combinatorial system of the artistic techniques of a work
   D) The language and style specifics of a work
   E) The theoretical foundations of an artistic discipline

12. **The author is in favour of keeping the notion of literary genre?** *(see text 2)*
   A) Yes
   B) No, unless one adopts the categories to contemporary works
   C) No, except for ancient works
   D) Yes, but only for scientific works
   E) No

13. **The scientific method, used to defined the features of a genre:** *(see text 2)*
   A) implies a theory's logical coherence, based on successive corrections of the initial assumption
   B) implies a general theory's coherence, based on reading all the works of one genre
   C) implies the formulation of a general theory, based on the characteristic features of a writer's works
   D) is partial, because no general theory may be deduced from particular notions
   E) implies the formulation of a theory by an inductive process from the universal to the particular

14. **It is useful to try to define the characteristics of a genre to which a work belongs?** *(see text 2)*
   A) Yes, because due to the existence of genre characteristics a work can infringe the characteristics themselves
   B) Yes, because a work does not find structures defined in its own field
   C) No, because genres manifest themselves in various ways, which cannot be defined with precision
   D) No, a work is a work precisely because of its specific uniqueness
   E) Yes, because the features of a genre serve to clarify one author's style

15. **What's the relationship between a single work and its genre?** *(see text 2)*
   A) If it's a literary work, it introduces changes in the genre
   B) It belongs to mass literature, for it modifies the characteristics of the genre
   C) Doesn't belong to the history of literature because it modifies the characteristic of the genre
   D) The modifications to the genre are void
   E) Its characteristics can be entirely defined with its genre

Text 3

Other life-forms

The origin of life is one of the great unsolved problems of science. Nobody knows how, where or when life originated. About all that is known for certain is that microbial life had established itself on Earth by about three and a half billion years ago. In the absence of hard evidence of what came before, there is plenty of scope for disagreement. Thirty years ago the prevailing view among biologists was that life resulted from a chemical fluke so improbable it would be unlikely to have happened twice in the observable universe. That conservative position was exemplified by Nobel Prize–winning French biologist Jacques Monod, who wrote in 1970: "Man at last knows that he is alone in the unfeeling immensity of the universe, out of which he emerged only by chance." In recent years, however, the mood has shifted dramatically. In 1995 renowned Belgian biochemist Christian de Duve called life "a cosmic imperative" and declared "it is almost bound to arise" on any Earth-like planet. De Duve's statement reinforced the belief among astrobiologists that the universe is teeming with life. Dubbed biological determinism by Robert Shapiro of New York University, this theory is sometimes expressed by saying that "life is written into the laws of nature." How can scientists determine which view is correct? The most direct way is to seek evidence for life on another planet, such as Mars. If life originated from scratch on two planets in a single solar system, it would decisively confirm the hypothesis of biological determinism. Unfortunately, it may be a long time before missions to the Red Planet are sophisticated enough to hunt for Martian life-forms and, if they indeed exist, to study such extraterrestrial biota in detail.

An easier test of biological determinism may be possible, however. No planet is more Earthlike than Earth itself, so if life does emerge readily under terrestrial conditions, then perhaps it formed many times on our home planet. To pur sue this tantalizing possibility, scientists have begun searching deserts, lakes and caverns for evidence of "alien" life-forms—organisms that would differ fundamentally from all known living creatures because they arose independently. Scientists have yet to reach a consensus on a strict definition of life, but most would agree that two of its hallmarks are an ability to metabolize (to draw nutrients from the environment, convert those nutrients into energy and excrete waste products)
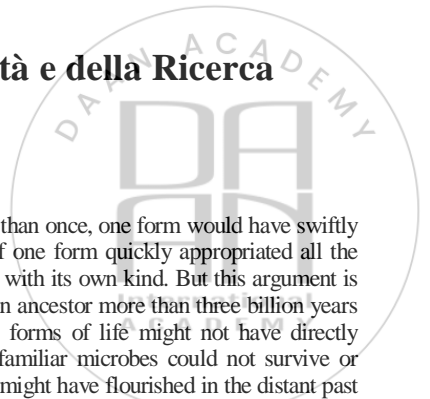
and an ability to reproduce. The orthodox view of biogenesis holds that if life on Earth originated more than once, one form would have swiftly predominated and eliminated all the others. This extermination might have happened, for example, if one form quickly appropriated all the available resources or "ganged up" on a weaker form of life by swapping successful genes exclusively with its own kind. But this argument is weak. Bacteria and archaea, two very different types of microorganisms that descended from a common ancestor more than three billion years ago, have peacefully coexisted ever since, without one eliminating the other. Moreover, alternative forms of life might not have directly competed with known organisms, either because the aliens occupied extreme environments where familiar microbes could not survive or because the two forms of life required different resources. Even if alternative life does not exist now, it might have flourished in the distant past before dying out for some reason. In that case, scientists might still be able to find markers of their extinct biology in the geologic record. If alternative life had a distinctively different metabolism, say, it might have altered rocks or created mineral deposits in a way that cannot be explained by the activities of known organisms. Biomarkers in the form of distinctive organic molecules that could not have been created by familiar life might even be hiding in ancient microfossils, such as those found in rocks dating from the Archean era (more than 2.5 billion years ago). A more exciting but also more speculative possibility is that alternative life-forms have survived and are still present in the environment, constituting a kind of shadow biosphere. At first this idea might seem preposterous; if alien organisms thrived right under our noses (or even in our noses), would not scientists have discovered them already? It turns out that the answer is no. The vast majority of organisms are microbes, and it is almost impossible to tell what they are simply by looking at them through a microscope. Microbiologists must analyze the genetic sequences of an organism to determine its location on the tree of life—the phylogenetic grouping of all known creatures—and researchers have classified only a tiny fraction of all observed microbes.

16. **We speak of life:** *(see text 3)*
    A) in presence of metabolism and reproduction
    B) when there is a minimum sensibility
    C) if the brain is sufficiently developed
    D) in presence of a growth process
    E) when water is used

17. **An alien life-form is:** *(see text 3)*
    A) a life-form originating by a different evolution
    B) an organism coming from other planets
    C) any unknown microorganism
    D) an organism that lives in an atmosphere with no oxygen
    E) an anaerobic form of life

18. **The studies on the most ancient geological strata:** *(see text 3)*
    A) might contain different metabolic traces
    B) have already provided secure evidence
    C) can never be considered decisive
    D) do not distinguish alternative forms of life
    E) highlight only known bio-markers

19. **According to biological determinism, life:** *(see text 3)*
    A) arises by a natural evolution
    B) follows from exceptional circumstances
    C) requires an Earth-like environment
    D) is only present in the solar system
    E) has extra-galactic origins

20. **Alien life-forms might exist:** *(see text 3)*
    A) in environments that are not suitable to known forms
    B) in the urban environment
    C) in the rainforest
    D) in colonies of unknown microorganisms
    E) in temperate zones

21. **Amilcare, Basilio and Concetto work in a school, as a janitor, teacher and secretary (not necessarily in this order). Amilcare is Concetto's son, and is shorter than the teacher. The janitor is the tallest of the three, and has no children.**
    Which of the following statements is compatible with the above?
    A) Amilcare is the secretary, Basilio is the janitor, Concetto the teacher
    B) No matching is possible
    C) Concetto is the secretary, Basilio is the janitor, Amilcare the teacher
    D) Amilcare is the secretary, Basilio is the teacher
    E) Basilio is the secretary, Amilcare is the janitor, Concetto the teacher

22. **Aldo, Bruno, Carlo, Donato and Eugenio during an excursion spend the night in a hotel where they booked three singles and one double room.**
    Nobody wants to share the room with Eugenio because he snores heavily. Aldo is willing to share the double only with Carlo or Bruno. Bruno says he could share the double only with Donato.
    Then, necessarily:
    A) in the double will stay Aldo or Donato
    B) Aldo and Bruno will share the double
    C) Eugenio, Carlo and Donato will occupy the three singles
    D) Eugenio, Aldo and Bruno will occupy the three singles
    E) one between Aldo and Bruno, will definitely stay in the double room

23. **The three squares below have the same side. The thick points on the edges of the squares represent the midpoints. For each square consider the overall area of the black parts. What can we say about the black areas in the three squares?**
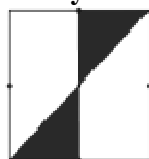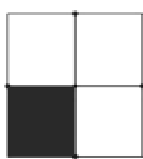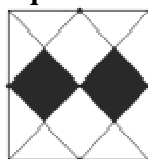
    Square 1   Square 2   Square 3

    A) The three areas are equal
    B) The black area of square 1 is bigger than the other two
    C) The black area of square 3 is bigger than the other two
    D) The black area of square 1 is equal to the black area of square 2, and either is bigger than the one of square 3
    E) The black area of square 2 is bigger than the other two

24. **My wardrobe contains 5 different pairs of shoes. Without looking, I get out some shoes (without putting them back). Which is the minimum number of shoes I have to get out to be sure of having a matching pair?**
    A) 6 shoes
    B) 5 shoes
    C) 4 shoes
    D) 9 shoes
    E) 3 shoes

25. **This year Tancredi tried to learn French, English and German. We know that:**
    - **if he learnt German, then he also learnt French and English**
    - **if he learnt French, then he also learnt one between English and German**
    - **if he learnt English, then he also learnt German but not French**

    How many languages did Tancredi learn?
    - A) None
    - B) One
    - C) Two
    - D) Three
    - E) We cannot say

26. **The offer of a shop goes like this:**
    For every 200 euros spent, we give a voucher of 20 euros, to be spent with the next purchase
    Tancredi sees the offer and considers what the real discount is. Which is correct?
    - A) The maximum discount of the offer is less than 10%
    - B) The maximum discount of the offer is 20%
    - C) The maximum discount of the offer is 10%
    - D) The maximum discount of the offer is more than 10%
    - E) The maximum discount of the offer is less than 2%

27. **The cousins Tancredi and Nina are a bit awkward. Tancredi lies Mondays, Tuesdays, Wednesdays and tell the truth on the other days. Nina instead lies Thursdays, Fridays and Saturdays, but tells the truth on the remaining days. One day X, Tancredi says:**
    Yesterday was one of the days when Nina tells the truth
    Which day is X?
    - A) Thursday
    - B) Monday
    - C) Tuesday
    - D) Wednesday
    - E) Friday

28. **The new living room of the countess Viendalmare has a square floor, whose side is eleven meters long. The countess wants to tile with square black and white tiles of one meter of side. The pattern she commissioned to her architect has all white tiles except for those of the border and on the two diagonals, which are black. How many black tiles must the architect order?**
    - A) 57
    - B) 66
    - C) 62
    - D) 61
    - E) 58

29. **Someone stole grandma's pie and she knows at least one of her nephews, Pim, Pom and Pam, was involved. She knows that if Pim is guilty and Pom innocent, then Pam is guilty. What can we say?**
    - A) At least one of Pom and Pam is guilty
    - B) At least one of Pim and Pom is guilty
    - C) At least one of Pim and Pam is guilty
    - D) At least two nephew are guilty
    - E) Only one is guilty

30. **On planet Illogico there are only 1 cent coins, 7 cent coins and 8 cent coins. What is the minimum number of coins needed to pay precisely 60 cents?**
    A) 8 coins
    B) 7 coins
    C) 9 coins
    D) 11 coins
    E) 12 coins

31. **The owner of an earing factory wants to make a present to the his 100 women employees, to celebrate March 8. Since 10% of them wears only one earing and the remaining women are equally split between no earings and two earings, how many earings should he prepare?**
    A) 100
    B) 90
    C) 180
    D) 200
    E) 45

32. **I meet two people from the town of riders (who always tell the truth) and of robbers (who always lie).**
    The first one says: *We are both rich*
    The second says: *We are both robbers*
    Necessarily, then:
    A) the first one is a rider, the second is rich
    B) the second one is a robber, the first one isn't rich
    C) the first one is a robber, the second is rich
    D) the first one is a robber, the second is a rider
    E) the first one is a rider, the second isn't rich

Test di Storia

33. **Which statement about Pablo Picasso's painting *Guernica* reflects the truth?**
    A) It was at the MoMA at New York up to the beginning of the 80s
    B) It was painted following the bombings of World War I
    C) It should have been made for the Universal Exposition of 1942 in Rome
    D) It was commissioned by Francisco Franco
    E) It was painted by Pablo Picasso in the 70s

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34. The *Sleep of Reason Produces Monsters*, below, is a painting by:
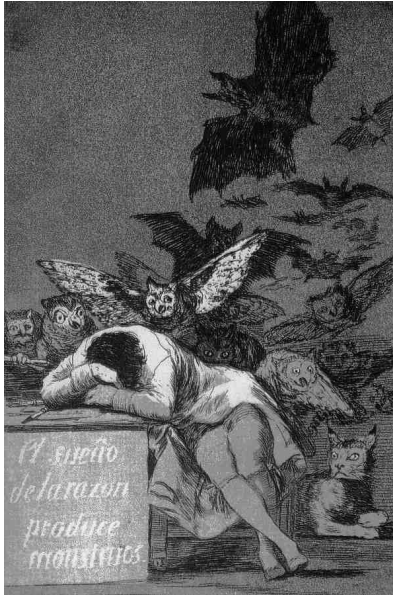
- A) Francisco Goya
- B) Salvador Dalì
- C) El Greco
- D) Joan Mirò
- E) Frida Kahlo

35. The term "grotesque decoration" comes from:
- A) the decorations of the Domus Aurea
- B) the decorations of the Etruscan tombs
- C) the decorations of the cave of Altamira
- D) the mosaic decorations with farsical subjects
- E) the decorations with water garden theme

36. Which work of art did Michelangelo begin last?
- A) Last Judgement
- B) The statue of David
- C) Doni Tondo
- D) Vault of the Sistin Chapel in Rome
- E) The Pietà in Rome

37. Which element is not part of the Roman temple?
- A) Opisthodomos
- B) Cornice
- C) Tympanum
- D) Podium
- E) Pronaos

38. What is meant by the architectonic term "clerestory" referred to places of worship?
   A) The windowed level that gives light to the major nave
   B) The element preceding the entrance
   C) The system of the radial chapels
   D) The system of the two frontal towers
   E) The system of the vaults

39. Which among the following works in Rome is not made by Donato Bramante?
   A) Villa Farnesina
   B) Belvedere yard
   C) Temple of San Pietro in Montorio
   D) Santa Maria della Pace cloister
   E) Saint Peter's Basilica

40. Put in chronological order the constructions shown in the photos:
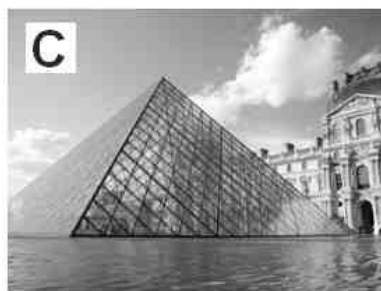
   A) b-a-e-c-d
   B) a-c-b-d-e
   C) b-c-a-e-d
   D) a-b-e-d-c
   E) b-a-c-e-d

41. The sculpture below is by:

    A) Alberto Giacometti
    B) Marino Marini
    C) Arturo Martini
    D) Francesco Messina
    E) Giacomo Manzù

42. Put in chronological order the following events:
    a) Cape Horn was reached for the first time by a European crew
    b) Vasco da Gama reaches the Indies sailing past the Cape of Good Hope
    c) Europeans ships for the first time cincumnavigate the earth
    d) James Cook discovers Australia
    e) The Danish explorer Vitus Bering sails through the strait that will bear his name
        A) b-c-a-e-d
        B) a-c-b-d-e
        C) c-b-a-d-e
        D) b-e-c-a-d
        E) c-e-a-b-d

43. Ignacio de Loyola was:
    A) the founder of the Society of Jesus (Jesuits)
    B) the victor of the battle of Cyprus
    C) Pope Adrian VI before his election
    D) a navigator who discovered new lands
    E) the inventor of the sextant

44. In 1982 the war of Falkland- Malvinas Islands saw against each other:
    A) The UK and Argentina
    B) Argentina and Chile
    C) Ecuador and Colombia
    D) Ecuador and Chile
    E) Argentina and Uruguay

45. The empire of Alexander the Great, at the time of his death:
    A) was divided into four parts
    B) dissolved into a myriad of small states
    C) was ruled by Harpalus, his treasurer
    D) was incorporated into Egypt
    E) was incorporated into the Persian empire

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46. **Which of the following events comes after the beginning of the modern age?**
    A) Cromwell's revolution
    B) Marco Polo's travel to China
    C) Constantinople's fall
    D) Granada's fall
    E) The discovery of America

47. **In which century did the Protestant Reform begin?**
    A) 16th century
    B) 15th century
    C) 17th century
    D) 18th century
    E) 14th century

48. **In history, what does the term "Luddites" refer to?**
    A) The opposition to the introduction of machines in factories
    B) The exclusion of Catholics from the English political life
    C) The slave trade on African coasts
    D) The spread of the plague by soldiers passing through a region
    E) The fencing of pastures for cattle and sheep

49. **How did one indicate the willingness of the United States not to tolerate any European intervention in America and at the same time not to interfere in disputes between the European powers?**
    A) Monroe Doctrine
    B) New Deal
    C) Declaratory Act
    D) Bill of Rights
    E) Tenth Amendment

50. **In 1979, who invaded Afghanistan to depose president Hafizullah Amin and replace him with Babrak Karmal?**
    A) The U.R.S.S.
    B) The U.S.A.
    C) Iraq
    D) N.A.T.O.
    E) Iran

51. **Which of the following artists is considered a champion of Surrealism?**
    A) Salvador Dalì
    B) Fernando Botero
    C) Lucio Fontana
    D) Mimmo Paladino
    E) Keith Haring

Test di Disegno e Rappresentazione

52. The portal depicted in the image is represented in:
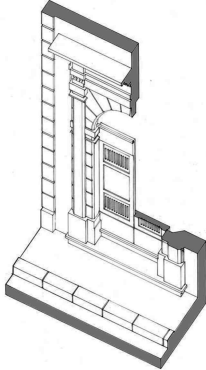
- A) axonometric sectional view
- B) orthographic projection
- C) oblique perspective
- D) exploded view
- E) perspective vertical plane

53. The image depicts schematically:
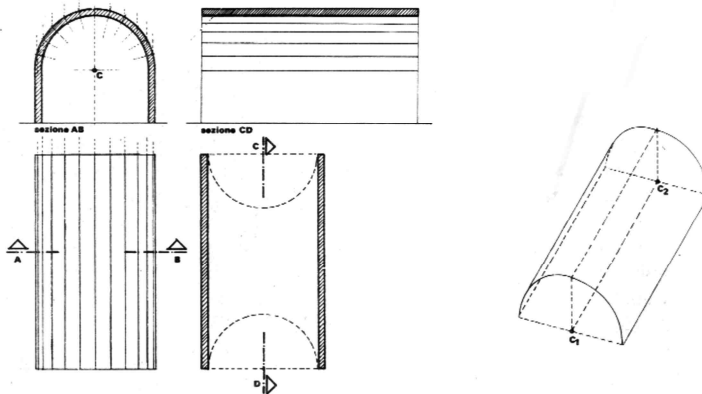
- A) Orthographic projection and axonometry of a barrel vault
- B) Orthographic projection and axonometry of a groin vault
- C) Orthographic projection and axonometry of a sail vault
- D) Perspective and assonometry of a barrel vault
- E) Orthographic projection and assonometry of a cloister vault

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54. Given the front and right views of a solid, what is its correct three-dimensional representation?

front view

right view
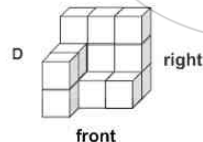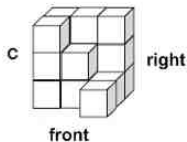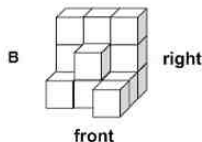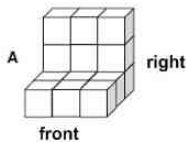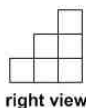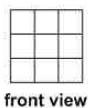
A) Representation B
B) Representation A
C) Representation C
D) Representation D
E) None of the other

55. What is the development of the object in the picture?
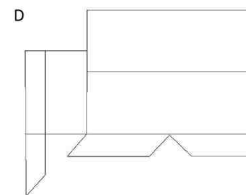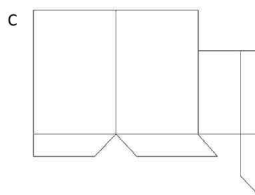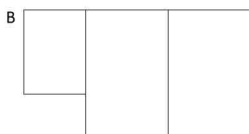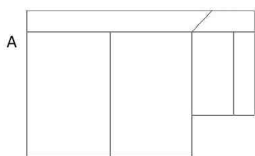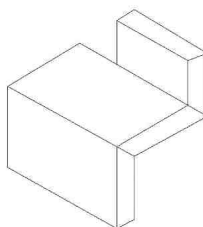
A) Development C
B) Development B
C) Development A
D) Development D
E) None of those proposed

56. Among the military assonometry plans view in figure, which one is coherent with the orthographic projections?

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

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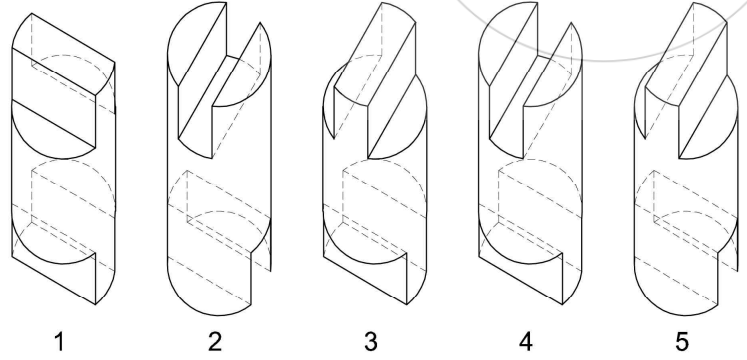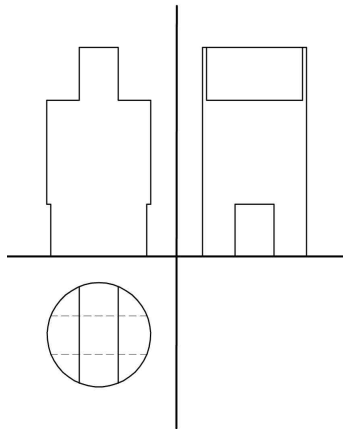
57. Among the sections obtained with the cutting planes indicated in plan view, identify the one represented in the image. (In the section the projections are taken along the direction and the orientation indicated by the arrows)
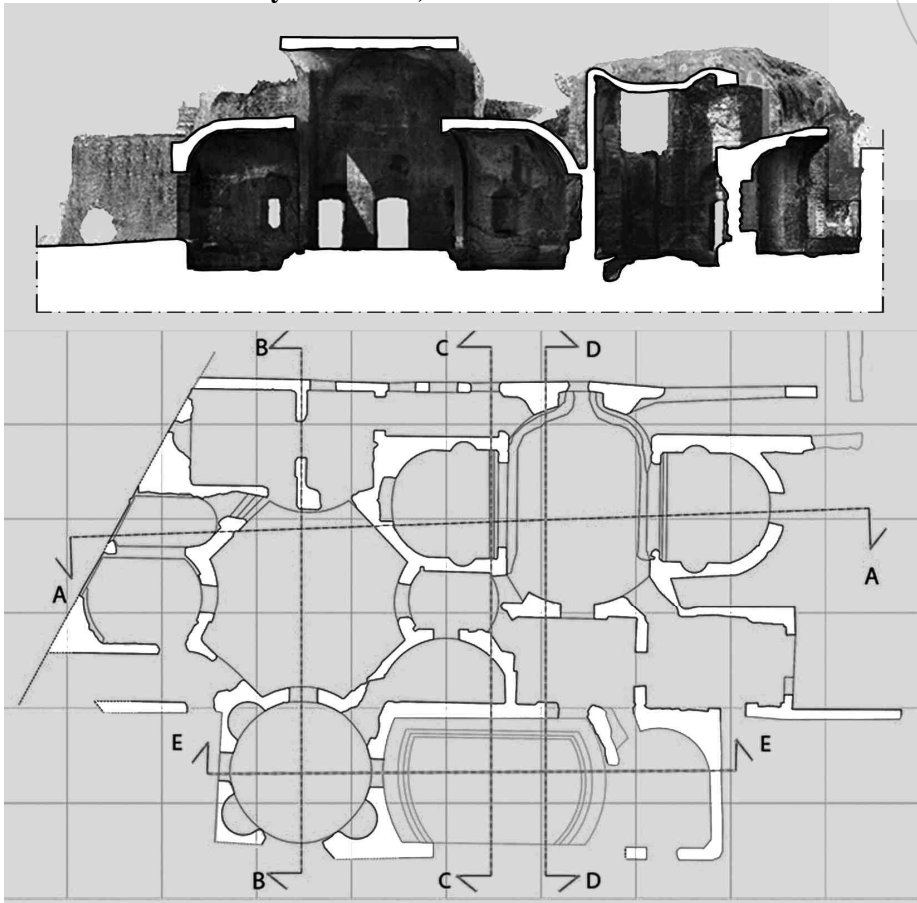
A) Section AA
B) Section BB
C) Section CC
D) Section DD
E) Section EE

58. The metric survey image below corresponds to a specific model. Which one?
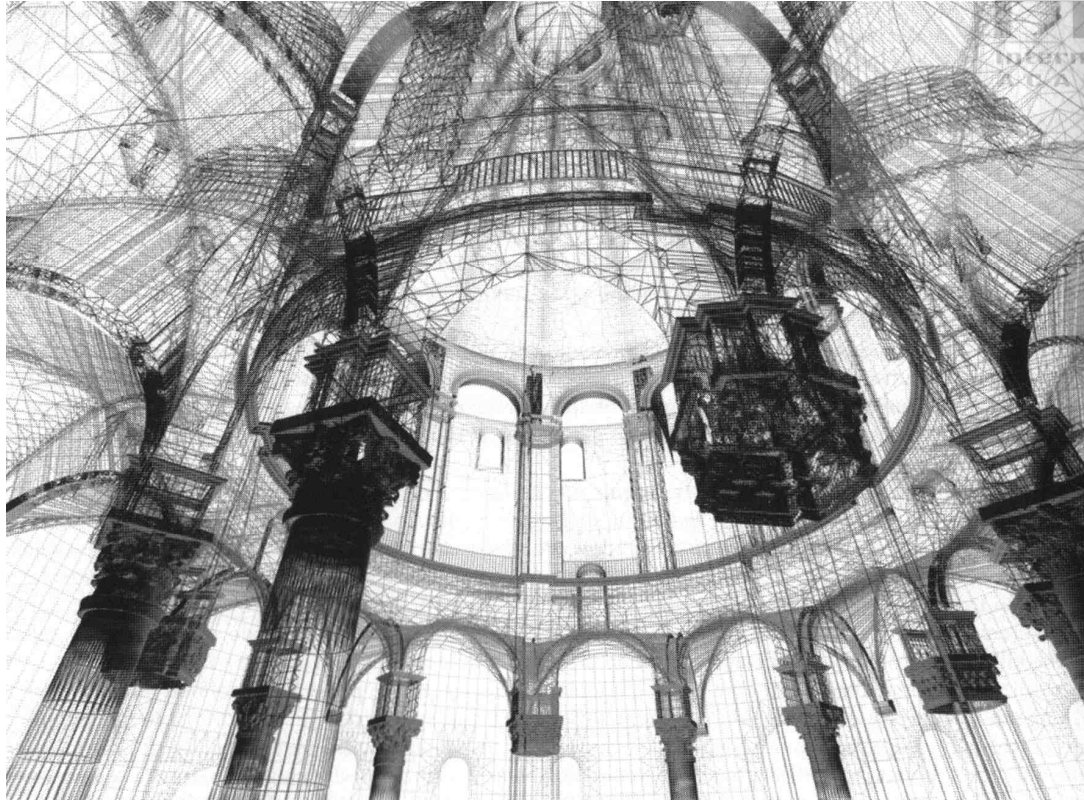
    A) A perspective wireframe digital model
    B) An axonometric digital model
    C) A plastic model
    D) A wooden model
    E) A point cloud digital model

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59. Match the plants in the figure with their use.
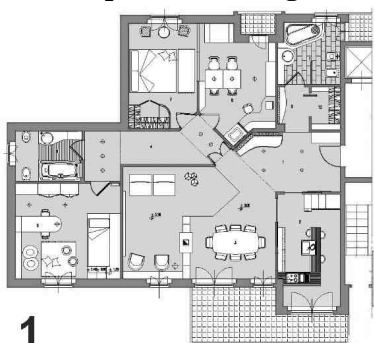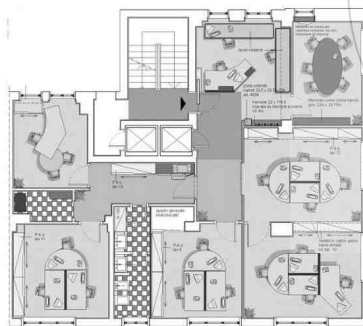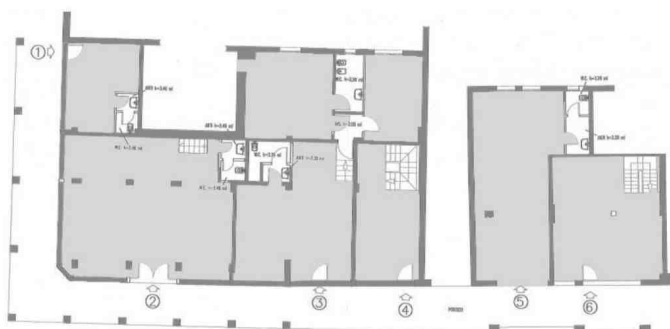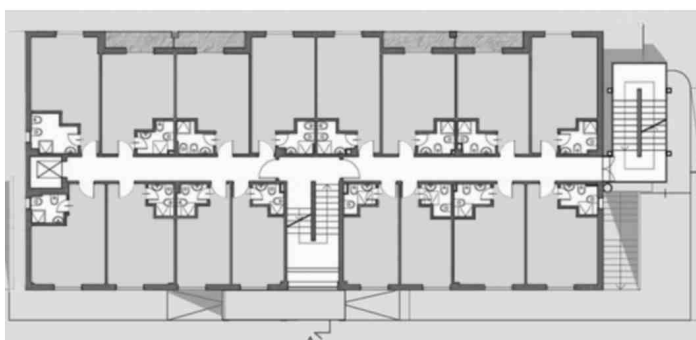
A) 1-Home, 2-Offices, 3-Commercial spaces, 4-Hotel
B) 1-Commercial spaces, 2-Offices, 3-Hotel, 4-Home
C) 1-Home, 2-Hotel, 3-Commercial spaces, 4-Offices
D) 1-Hotel, 2-Commercial spaces, 3-Offices, 4-Home
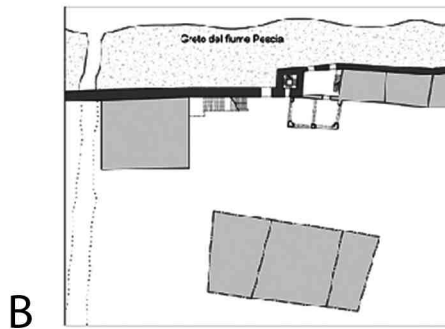E) 1-Home, 2-Commercial spaces, 3-Offices, 4-Hotel
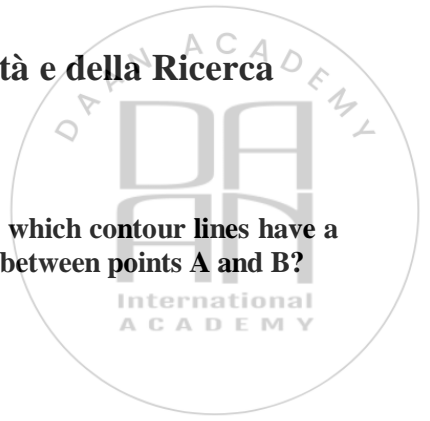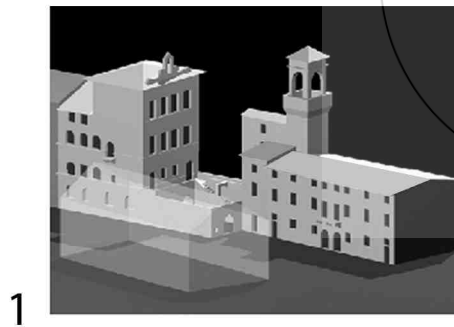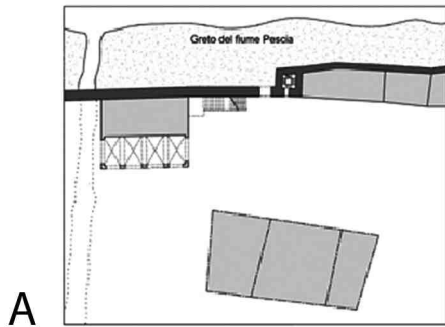
60. Consider the layout of the Territorial Regional Chart (scale 1:5000) in which contour lines have a distance of 5 meters from one another. What is the difference in height between points A and B?
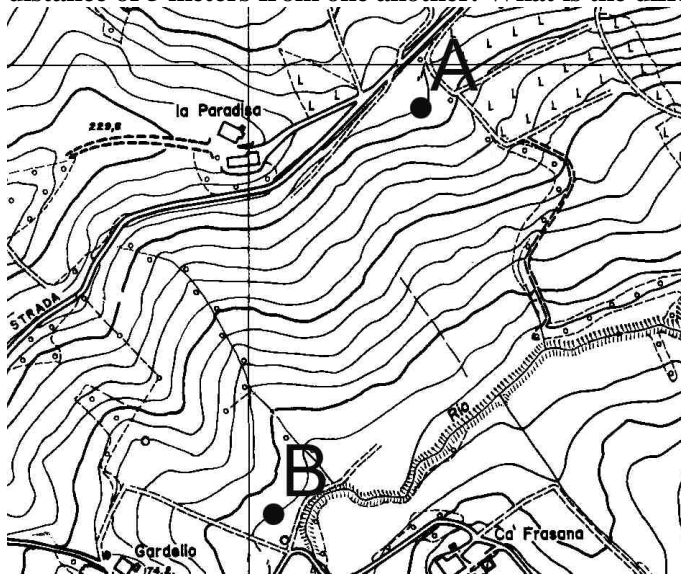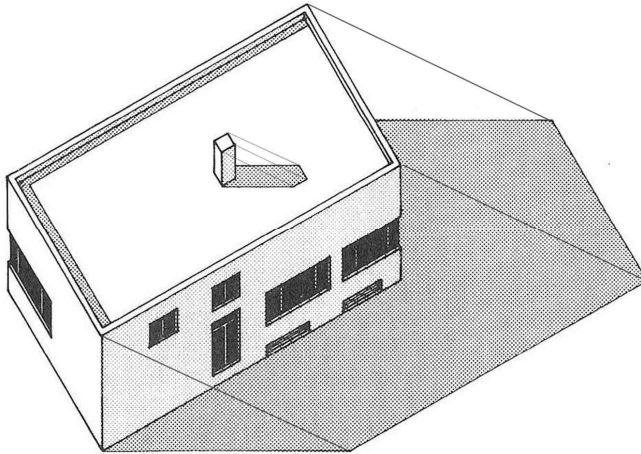

A)   60 m
B)   48 m
C)   50 m
D)   120 m
E)   24 m

61. Find the right match of plan and axonometric view.

A   1

B   2

C   3
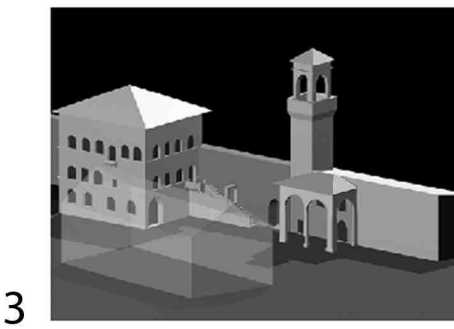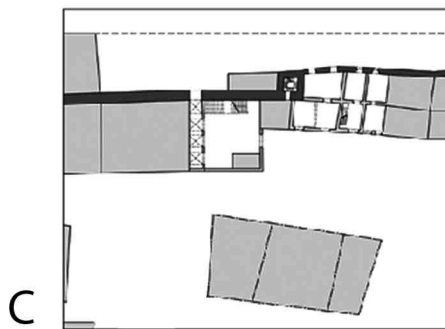
A) A-2, B-3, C-1
B) A-2, B-1, C-3
C) A-3, B-2, C-1
D) A-1, B-2, C-3
E) No matching possibile

62. **Consider the building represented in monometric axonometric. Which is the right direction of the light projecting the shadow in figure?**


- A) From left to right, with angle between light and ground $< 45°$
- B) From right to left, with angle between light and ground $> 45°$
- C) From left to right, with angle between light and ground $> 45°$
- D) From bottom to top, with angle between light and ground $< 45°$
- E) From bottom to top, with angle between light and ground $> 45°$

63. **Given a plane α and a line r perpendicular to α, we know that:**
- A) r is orthogonal to every line lying on α
- B) r is perpendicular only to two lines lying on α
- C) r is perpendicular only to one line lying on α
- D) r is not perpendicular to any line lying on α
- E) r intersects every line lying on α

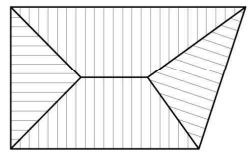64. **If these solid bodies have the same base area, which other feature do they have in common?**
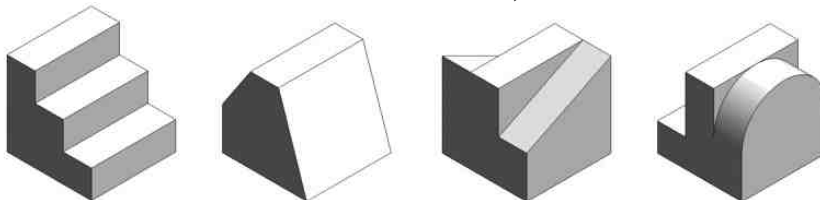
- A) Top view
- B) None
- C) Same frontal view
- D) Same profile view
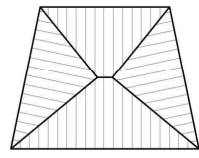- E) Three equal views

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65. Consider the following roof top views, characterized by horizontal eaves lines. Determine the only one where NOT EVERY roof pitch have the same slope.
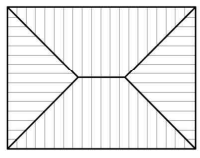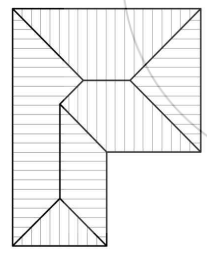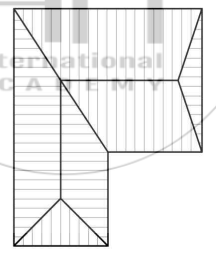

1   2   3   4   5

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

66. Consider the plants of a building and their orientation. Associate to each elevation view shown below the correct orientation with respect to the cardinal points.

GROUND FLOOR PLAN

FIRST FLOOR PLAN
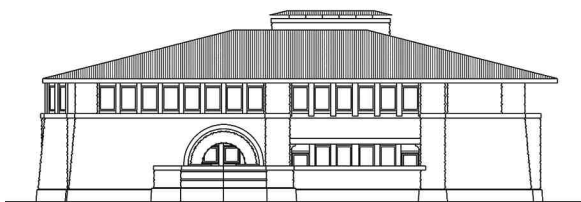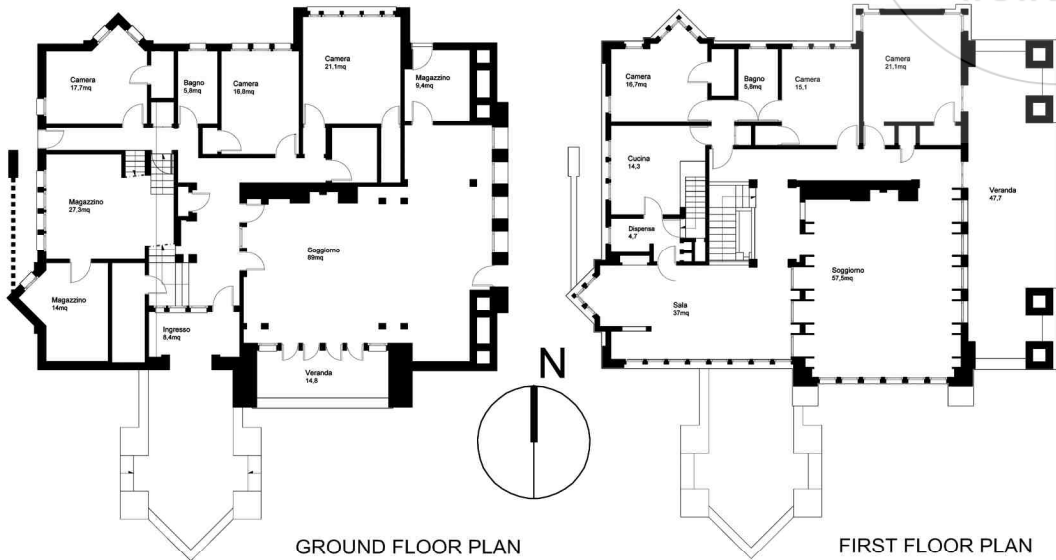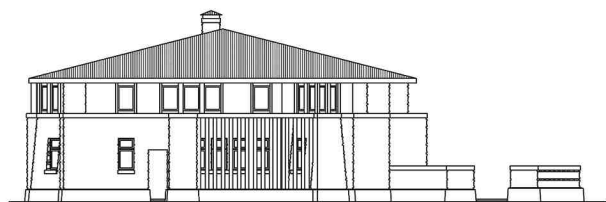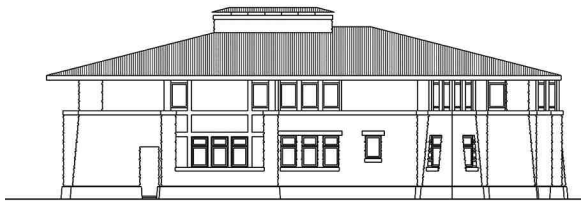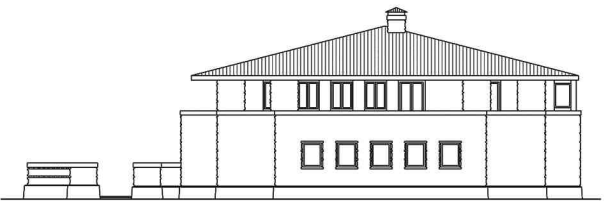
A) 1-South; 2-Ovest; 3-North; 4-East
B) 1-East; 2-South; 3-Ovest; 4-North
C) 1-North; 2-East; 3-South; 4-Ovest
D) 1-Ovest; 2-North; 3-East; 4-South
E) 1-South; 2-East; 3-North; 4-Ovest

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67. Of the perspective views shown below, which one is coherent with the orthographic projection?
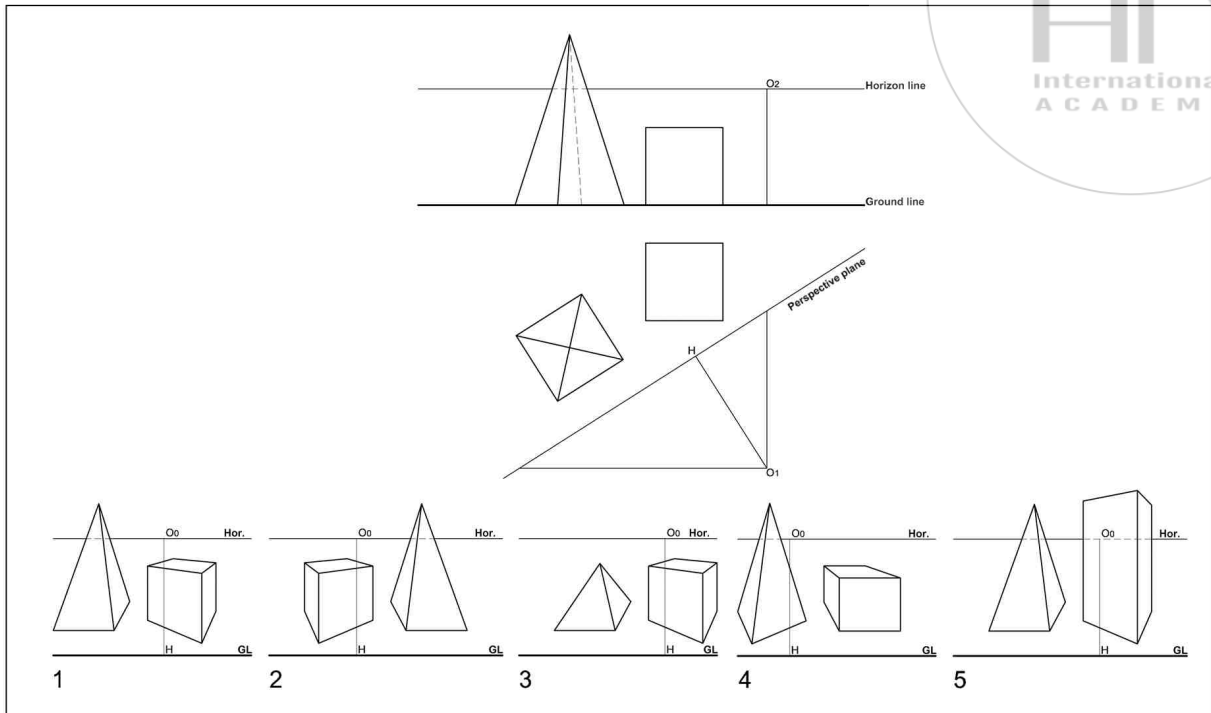
A) 1
B) 4
C) 2
D) 3
E) 5

Test di Fisica e Matematica

68. The hourly average pay of 60 workers is 8 euros. Some of them received 7,5 euros per hour while the others are paid 10 euros an hour. How many get 7,5 euros per hour?

A) 48
B) 50
C) 46
D) 42
E) 44

69. A shop owner divides 40 kg of coffee equally into s bags. If the number of bags is increased by 5 how many kilos less will there be in each bag?

A) $200/(s^2+5s)$
B) $100/(5s^2+s)$
C) $200/(s^2+10s)$
D) $400/(s^2+s)$
E) $250/(s^2-5s)$

70. **To water a field one third of a tank is necessary. If after finishing the tank contains 6000 liters of water, how many liters were used?**
    A) 3000
    B) 4000
    C) 3500
    D) 2000
    E) 2500

71. **The quantity $\sqrt{3-/2+x/}$ is defined only for real values x satisfying one of the following conditions. Which one?**
    A) $-5 \leq x \leq +1$
    B) $-2 \leq x \leq +2$
    C) for each x
    D) $-5 \leq x \leq +3$
    E) $x \neq 2$

72. **The square root of 0,4 equals:**
    A) $\sqrt{10}/5$
    B) 0,2
    C) 0,16
    D) 0,002
    E) $\sqrt{10}/4$

73. **The number $[(5002)^2 - (4998)^2]$ equals:**
    A) 40000
    B) 38600
    C) 40016
    D) 42000
    E) 42064

74. **On the Cartesian plane denote by H the orthogonal projection of the origin $O = (0,0)$ on the segment AB with endpoints $A = (2, 0)$ and $B = (0, 1)$. What is the distance between O and H?**
    A) $2\sqrt{5}/5$
    B) $\sqrt{5}/3$
    C) $5\sqrt{2}/3$
    D) $3\sqrt{5}/2$
    E) $\sqrt{5}/5$

75. **The number**

$$\sqrt{\left(\frac{3\sqrt{5}}{5}\right)^{-2} - \left(\frac{3}{2}\right)^{-2}}$$

equals one of the following. Which one?
- A) $1/3$
- B) $1/4$
- C) $\sqrt{5}/3$
- D) $\sqrt{5}/2$
- E) $1/2$

76. **If the slope of the line joining the point A of Cartesian coordinates $(a, 2)$, with the point B, of Cartesian coordinates $(4, b)$, equals 3, what is the relationship between a and b?**
- A) $b = 14 - 3a$
- B) $b = 12 + 3a$
- C) $b = 12 - 3a$
- D) $b = 14 - 2a$
- E) $b = 12 - 2a$

77. **The sum of the perimeters of a square and an equilateral triangle is 29 cm, and the lenght of the side of the square exceeds the triangle's one by 2 cm. How many square centimeters is the area of the triangle?**
- A) $9\sqrt{3}/4$
- B) $11\sqrt{3}/4$
- C) $13\sqrt{3}/4$
- D) $4\sqrt{3}$
- E) $\sqrt{5}/3$

78. **A solid of a given material has a uniform density of 2 g/cm3 and the volume V_0 at 20˚C. The volume V of the solid varies with the temperature T according to**
$$V - V_0 = V_0 \times 0{,}002 \times (T - 20˚)$$
If the mass is 10g, what is the volume at $T = 40˚C$?
- A) $5{,}2 \text{ cm}^3$
- B) $5{,}04 \text{ cm}^3$
- C) $5{,}02 \text{ cm}^3$
- D) $5{,}002 \text{ cm}^3$
- E) $5{,}5 \text{ cm}^3$

79. **Two forces of equal intensity F are applied at a point and form an angle of 30˚. How intense should a third force applied at the same point be to obtained an equilibrium condition?**
- A) $F\sqrt{3}$
- B) $F\sqrt{2}$
- C) $2F\sqrt{3}$
- D) $2F$
- E) $3F/2$

80. **A straight uniform bar with endpoints A and B is 6 meters long. It is placed vertically, and hinged at A to a fixed point. A horizontal force of 5N (Newton) is applied halfway. How intense**

should an opposite force be, if we apply it at a point **P 2 meters away from** *A* **in order to obtain an equilibrium condition?**

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

********** FINE DELLE DOMANDE **********

# In tutti i quesiti proposti la soluzione è la risposta alla lettera A)

PART 2

Logical Reasoning Test

1. To say that the phrase "all of them do not work" is FALSE means to say that: A) at least one of them works B) none of them works C) one of them does not work D) all of them, except one, work E) all they work

2. Which of the proposed terms correctly complete the following verbal proportion?
X: writer = film: Y

    A) X = book; Y = director
    B) X = editor; Y = cinema
    C) X = publisher; Y = screenwriter
    D) X = analog; Y = digital
    E) X = pages; Y = film

3. The statement "if I use my smartphone too much I get a migraine" implies that: A) if I don't get a migraine then I haven't used the smartphone too much B) if I have a migraine it means that I have used it too much smartphone C) sometimes it happens that I do not have a migraine despite having used the smartphone too much D) or I use the smartphone too much or I get a migraine E) I do not have a migraine despite having used the smartphone too much

4. Which of the following triples of sets is represented graphically by Diagram 1?

    A) {12, 2, 14, 7, 5, 8}; {1, 3, 4, 6, 2, 5}; {10, 11, 0, 9, 15, 13}
    B) {2, 6, 10, 0, 4, 3}; {8, 1, 9, 11, 5, 7}; {0, 6}
    C) {R, A, K, S, D, J}; {V, R, J, E, Q, B}; {C, L, T, Y, B, X}
    D) {R, M, X, B, K, D}; {S, V, T, B, K, D}; {S, E, T, M, K, D}
    E) {13, 17, 3, 8, 9, 5}; {7, 1, 2, 11, 12, 4}; {10, 18, 6, 14, 15, 16}

5. What part is missing to complete the solid, in order to obtain a cube?
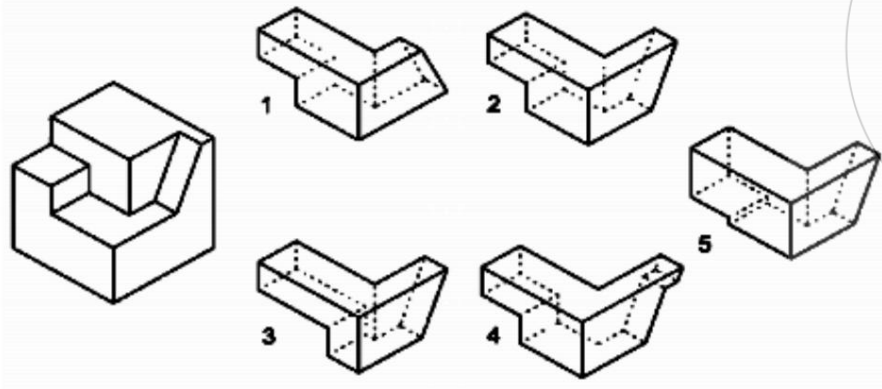
A) Figure 2
B) Figure 1
C) Figure 4
D) Figure 3
E) Figure 5

6. Identify, among the proposed pairs, the one that completes the given sequence.

G, E, ?, A, B, D, ??, H

? = P	? = C	? = L	? = F	? = C
?? = C	?? = F	?? = M	?? = C	?? = P
1	**2**	**3**	**4**	**5**

A) Figure 2
B) Figure 1
C) Figure 3
D) Figure 4
E) Figure 5

7. How many different ways can the dots in the figure be divided into three by three by one straight?

A) 3
B) 2
C) 1
D) 5
E) 4
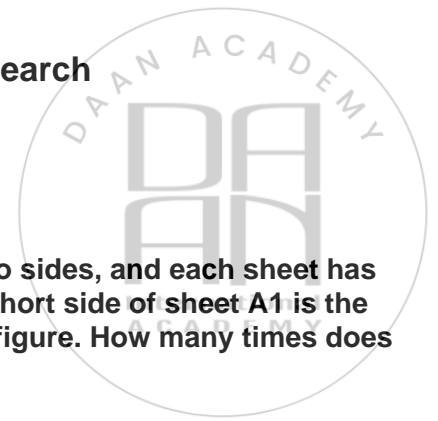
8. **A1, A2, etc. they all have the same relationship between the two sides, and each sheet has the shorter side of the previous one as its longer side. So the short side of sheet A1 is the same as the long side of sheet A2, and so on, as shown in the figure. How many times does sheet A7 enter sheet A1?**
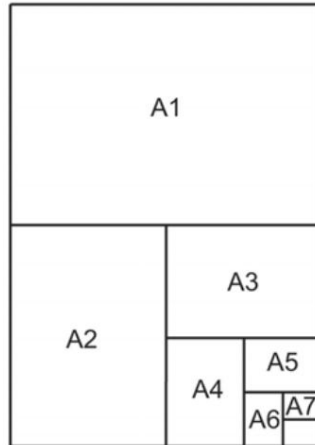
A) 64
B) 32
C) 48
D) 128
E) 63

9. Population of Bologna and Florence in all Italian censuses.
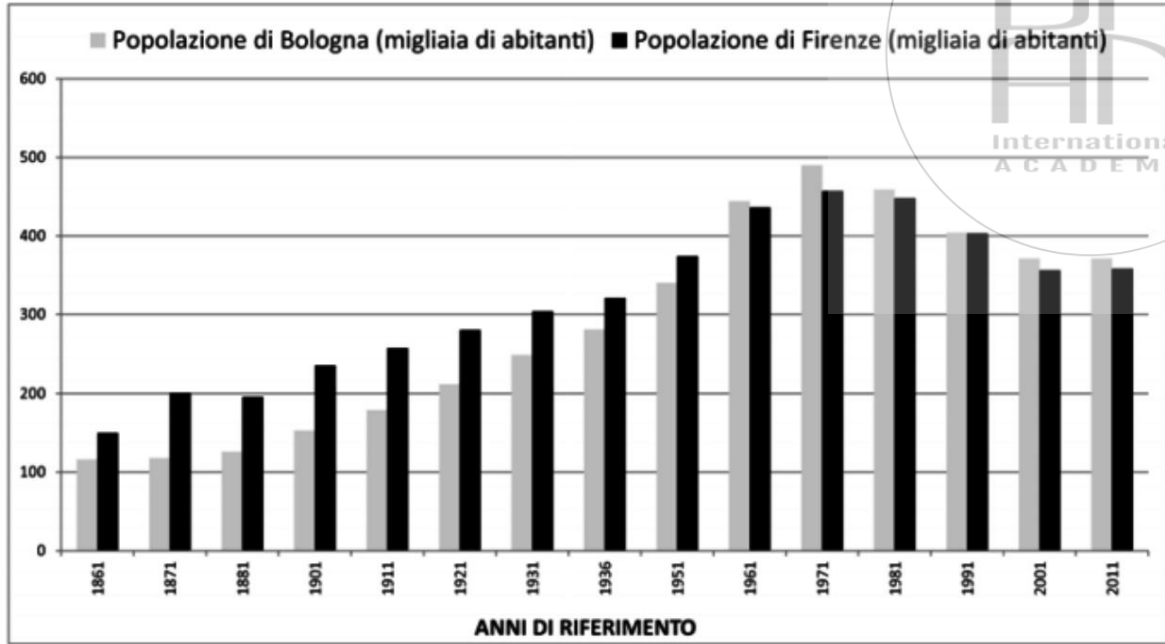
Which of the following statements is certainly true?

   A) At least once the total population of the two cities has exceeded 900,000
      inhabitants

   B) In 5 censuses the total population of the two cities exceeded 800,000
      inhabitants

   C) The censuses in which the population of Bologna is greater than that of Florence are more numerous than
      those in which the population of Florence is greater D) The population of Florence exceeds 400,000
inhabitants in a number of censuses greater than that of Bologna E) The overall population of the two cities has
      always exceeded 300,000 inhabitants

10. Find the missing number:

3	2	4	3
5	3	2	4
30	12	16	(?)

   A) 24
   B) 14
   C) 18
   D) 22
   E) 36

Track I

Read the passage and answer each question only on the basis of the information contained (explicitly or implicitly) in the passage and not on the basis of what the candidate possibly knows about the subject.
For Delacroix, recognized head of the "romantic school", history is not an example or guide of human action, it is a drama that began with humanity and lasts in the present. Contemporary history is a political struggle for freedom. "Freedom leads the people" is the first political picture in the history of modern painting: it exalts the insurrection which, in July 1830, put an end to the white terror of the restored Bourbon monarchy. In the picture that enhances the July days there is a sincere enthusiasm and an ambiguous political meaning. For Delacroix and for romantics in general, freedom is national independence. In the vast canvas of 1830, the woman waving the tricolor over the barricades is, at the same time, Liberty and France. And who is fighting for freedom? Commoners and bourgeois intellectuals: in the name of Liberty-Homeland the "union sacrée" of pinafore commoners and bourgeois in top hats is sealed. It is not a historical picture: it does not represent a fact or a situation. It is not an allegorical picture: the allegorical is only the figure of the Liberty-Homeland. It is a realistic picture, culminating in a rhetorical tirade. Even the allegorical figure is a mixture of realism and rhetoric: an "ideal" figure who, for the occasion, has dressed in the rags of the commoner and, instead of the symbolic sword, holds a rifle in order. In the realistic notes we go down to the social characterization of the figures to show that children, young people, adults, workers, peasants, intellectuals, legitimist soldiers and rebel soldiers, all are people and all are brothers and sisters. It is precisely with Delacroix's romanticism that art begins to propose itself to be, at all costs, of its own time.

(From: GC Argan, "Modern art 1770/1970", Sansoni)

11. Which of the following statements CANNOT be deduced from passage I?
A) Clergy, monarchy and bourgeoisie are linked by a "union sacrée"
B) Delacroix begins to ensure that art belongs to his own time C)
"Freedom guides the people" was painted in the second half of 1830 D) Delacroix
reinterprets the allegorical figure of freedom in a realistic key, depicting it
   with a rifle
E) "Freedom leads the people" does not have a univocal political meaning

12. According to the text, Delacroix's painting is considered the first political painting in the history of modern painting because: (see Piece I)
A) there is a reference to a specific political event B) it exalts
popular support for the establishment of the Bourbon monarchy C) no one before
Delacroix had dared to celebrate the fall of a royal dynasty D) while not faithfully representing
an event, it has a rhetorical tirade E) no one before Delacroix had placed commoners and
bourgeois on the same level

13. How is the Delacroix framework defined? (see Track I)
A) Realistic B)
Globally rhetorical C)
Allegorical D) Historical E)
Social

14. According to the content of passage I, what meaning does Delacroix attribute to the story?
A) That of being a constantly evolving drama B) That of
being an example for man C) That of being a guide for
the actions of man D) That of not representing facts or
situations E) That of being the fulfillment of a destiny of
national independence
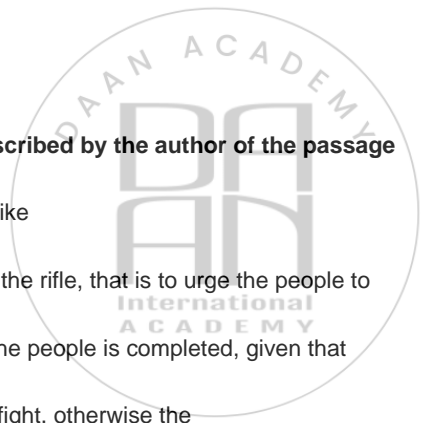
15. The allegorical figure of the woman waving the tricolor over the barricades is described by the author of the passage I as a mixture of realism and rhetoric because:

    A) the woman represents Liberty and France, but is depicted in a realistic way, like a commoner who fights for her country

    B) take a rifle and not a sword, and the real final message of the painting lies in the rifle, that is to urge the people to fight

    C) through this figure the identification between Liberty, France and woman of the people is completed, given that Delacroix wanted to celebrate France as a free and "popular" country

    D) it embodies the final message of the painting, which is to urge the French to fight, otherwise the commoners will regain power

    E) the warrior woman is a cliché typical of French art, which Delacroix takes up to give her nationalistic painting a character strongly rooted in French culture

Track II

Read the passage and answer each question only on the basis of the information contained (explicitly or implicitly) in the passage and not on the basis of what the candidate possibly knows about the subject.

The Roman urban conception derives from the Greek-Hellenistic Hippodaméa. The streets, mostly straight, are arranged in a checkerboard pattern, parallel to the two main road axes: the cardo maximus to the north and the decumanus maximus from east to west, one and the other in correspondence with the four access gates to the city. This structure is not located in Rome, which was born from the union of various settlements on the hills and in the contiguous valleys. It is found instead (and is often still recognizable) in the cities built by the Romans or Romanized and corresponds to that which they gave to the military camps, many of which were subsequently transformed into inhabited centers.

Some modern cities retain in their current name the origin from the Roman camp, the castrum, not only in Italy, but also outside (Chester, in England, for example).

The forum, the main square of the city, the political, religious, administrative center, where the most important public buildings stood, usually opened at the meeting point between cardo and decumanus. We will talk about some of these during the examination of the individual monuments, while it is interesting to see now the shape of the dwelling house.

We are particularly familiar with the type of houses in Pompeii and Herculaneum. The two cities, as is well known, disappeared during the terrible eruption of Vesuvius in 79 AD, the first under a blanket of ash and lapilli, the second under a large flow of mud. They can therefore give us back, more than any other inhabited nucleus, which has undergone, over the centuries, infinite transformations, the appearance of the ancient city, both in general structures and in individual buildings, from the noblest, the most beautiful. , to the humblest.

The simplest type of the Pompeian house, with no or few windows on the street, is articulated around a courtyard, the atrium, at the center of which the rainwater that flows down from the opening collects within a quadrangular basin (impluvium). above (valley). All around is a portico into which the rooms of the accommodation (cubicles) enter. At the end of the atrium, in front of the main entrance, is the tablinum, the most sacred environment, the place of family gathering and reception of guests. From here we pass to the hortus, the garden surrounded by columns (peristyle). Next to the tablinum there is generally the dining room, the triclinium, with three beds placed side by side on the three sides of the table.

(From: P. Adorno, "Italian art", G. D'Anna Publishing House)

16. The cities of Pompeii and Herculaneum can best restore the appearance of an ancient city because: (see Track II)

    A) the ash and mud have ensured that they retain the appearance they had at the time of the eruption

    B) the general structures have remained those of the ancient city, while the individual buildings have undergone transformations

    C) despite the transformations, which took place over the centuries, they have preserved both general structures and individual buildings from the Roman age

    D) the eruption of Vesuvius did not affect the general structures or individual buildings

    E) they are the only two Roman cities of which there is a trace

17. The typically Roman urban structure is often still found today: (see Section II)
A) in the cities built by the Romans B) in
the city of Rome C) in the Roman
settlements transformed into encampments D) in all the English cities
E) in all the historical centers

18. In the Roman city the forum was located: (see Brano II)
A) at the point of intersection between the thistle and the decumanus
B) at the meeting point of the parallel roads
C) near the political and religious center
D) away from the most important public buildings
E) at the point of intersection of the hills

19. In the Roman house, what is the collection point for rainwater? (see Track II)
A) The impluvium
B) The valley C)
The atrium D) The
courtyard E) The
hortus

20. Which of the following statements is consistent with the content of passage II?
A) Some cities still existing were born as Roman military camps
B) The typical Roman city had only two access gates: one in correspondence with the cardo
   maximus and one corresponding to the decumanus maximus
C) The simple Pompeian house never had windows on the street, but only on the
   courtyard
D) The Pompeian house, like the Roman city, was made in a checkerboard pattern
E) The dining room of the Roman house was triangular in shape, to accommodate a table a
   three sides and three beds

General Culture Test

21. What is the name of the literary movement born in France in the second half of the nineteenth century under the influence of Positivism, which provides for the application of the experimental method to the work of the writer?
A) Naturalism B)
Abstractionism C)
Classicism D)
Existentialism E)
Decadentism

22. In which city did the government of the Italian Social Republic establish its headquarters?
A) Salò
B) Milan
C) Turin
D) Salerno
E) Rome

23. What is a "rose window"?

    A) A large circular window, open in the center of the facade of many churches

    B) An architectural element placed in the center of the apse

    C) A decorative element of the shaft of the Byzantine columns

    D) The wind rose, which adorns many civil architectural works

    E) The mosaic depicting the miracle of St. Francis and the thornless rose garden

24. In the following list of famous museums, combined with their host cities, there is an error. Which?

    A) Hermitage - Moscow B)
    Capodimonte - Naples C)
    Metropolitan - New York D)
    Bargello - Florence E) Prado -
    Madrid

25. The following artistic movements should be placed in the right chronological order.

    A) Neoclassicism, Impressionism, Expressionism, Pop Art B) Impressionism,
    Pop Art, Expressionism, Neoclassicism C) Impressionism, Expressionism,
    Neoclassicism, Pop Art D) Pop Art, Expressionism, Impressionism,
    Neoclassicism E) Neoclassicism, Impressionism, Pop Art, Expressionism

26. Following which event did the "secession of the Aventine" occur?

    A) The Matteotti crime B)
    The very fascist laws C) The
    march on Rome D) The
    imprisonment of Antonio Gramsci E) The two-
    year red period

27. What did the so-called "River Question" consist of?

    A) In an international dispute, which arose at the end of the First World War, relating to the
        sovereignty over the city of Rijeka

    B) In the question that arose between Rijeka and the other Dalmatian cities, at the end of the first war
        worldwide, in relation to the dominance in the Adriatic

    C) In an international dispute concerning the sovereignty over the city of Rijeka, which arose at the end
        of the Second World War

    D) In a dispute between Napoleon III and the Austrian Empire following the stipulation
        of the armistice of Villafranca

    E) In the clash between the Italian State and Tito's Yugoslavia, concerning the persecution of
        Italians in Istria and Dalmatia

28. In what year did the Japanese attack on Pearl Harbor occur?

    A) In 1941 B)
    In 1940 C) In
    1939 D) In 1944
    E) In 1938

29. What is the style of the Siena cathedral?

    A) Gothic

    B) Renaissance

    C) Eclectic

    D) Romanesque

    E) Baroque

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30. The Domus Aurea was built as the residence of:

A) Nero B) Caligula C) Traiano D) Vespasiano
E) Adriano

31. The dome shown in the figure belongs to:

A) at the Chapel of the Holy Shroud, Turin, by Guarino Guarini
B) in San Lorenzo, Turin, by Guarino Guarini
C) at the Basilica of Superga, near Turin, by Filippo Juvarra
D) in Santa Chiara, Bra, Cuneo, by Bernardo Vittone
E) in San Gregorio, Messina, by Filippo Juvarra

32. The work represented in the figure was designed by:

A) Le Corbusier
B) Pier Luigi Nervi
C) Giovanni Michelucci
D) Frank O. Gehry E)
Charles Garnier

33. The vault represented in the figure is a vault at:
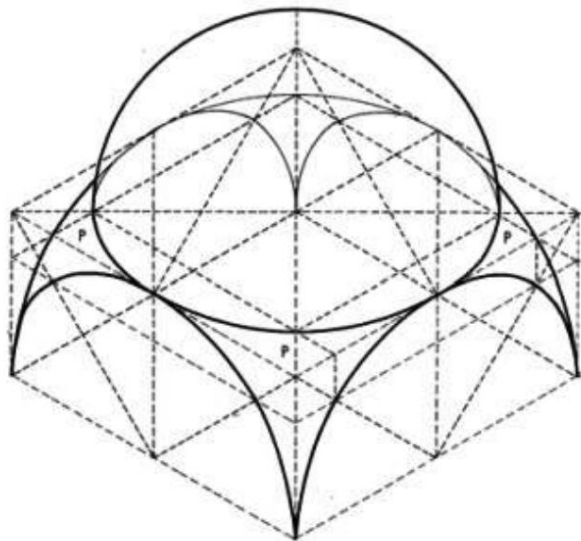
A) pelvis
B) barrel
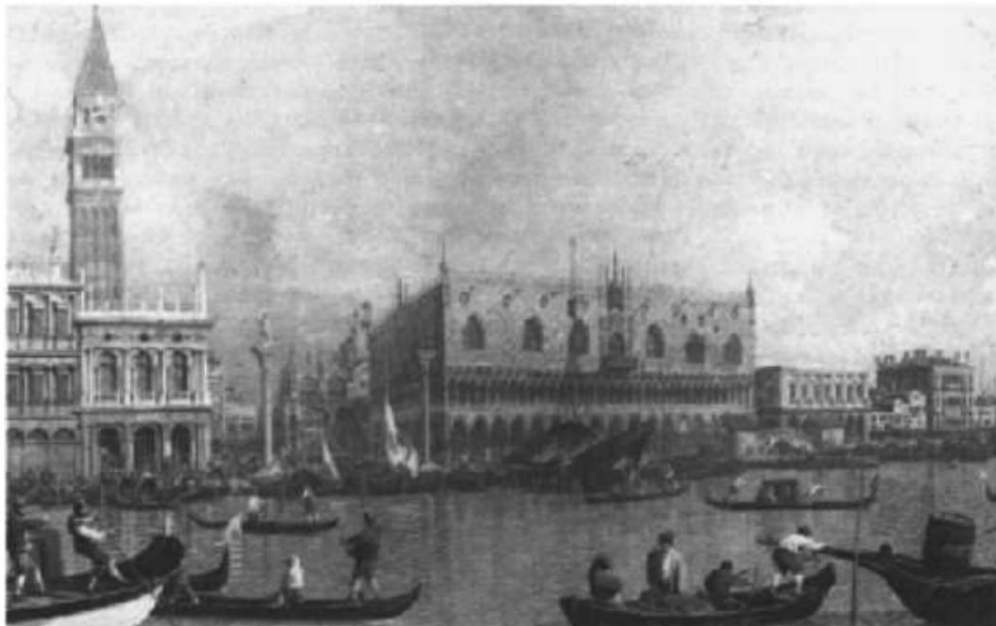C) pavilion
D) cruise
E) sail

34. Identify which work is depicted in the image.

       A) Oskar Kokoschka, "The bride of the wind", 1914
       B) John William Waterhouse, "Mermaid", 1900
       C) Jackson Pollock, "Autumn rhythm", 1950
       D) Marc Chagall, "The lovers", 1954-55
       E) Egon Schiele, "The lovers", 1917

35. The picture in the figure is the work of:

       A) Canaletto
       B) Giambattista Tiepolo
       C) Tintoretto
       D) Titian
       E) Bernardo Bellotto

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36. The painting shown in the figure is the work of:

    A) Paul Klee
    B) Vasily Kandinsky
    C) Pablo Picasso
    D) Georges Braque
    E) Fernand Léger

37. The "Discobolus", reproduced in the figure, is the work of the Greek sculptor:

    A) Mirone
    B) Phidias
    C) Sotades
    D) Polykleitos
    E) Daedalus

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38. Looking at the table, correctly associate the works with the architects who have them designed.

a	Robie House – Chicago
b	Scuola d'Arte – Glasgow
c	Palazzo della Secessione – Vienna
d	Fabbrica di Turbine AEG – Berlino
e	Villa Savoye – Poissy

1	Charles Rennie Mackintosh
2	Frank Lloyd Wright
3	Peter Behrens
4	Joseph Maria Olbrich
5	Le Corbusier

A) a-2; b-1; c-4; d-3; and-5
B) a-5; b-4; c-2; d-1; and-3
C) a-3; b-4; c-1; d-2; and-5
D) a-5; b-1; c-4; d-3; and-2
E) a-2; b-3; c-5; d-1; and-4

Drawing and Representation Test

39. Which of the following statements is NOT correct?

A) A sheet of size A0 is equal to four A3 B) A sheet of size A1 is equal to four A3 C) A sheet of size A2 is equal to four A4 D) A sheet of size A1 is equal to eight A4 E) A sheet of size A0 is equal to four A2s
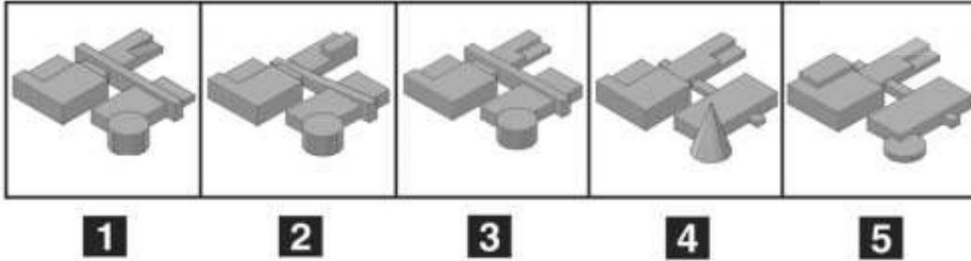
40. Associate the corresponding graphic representation to the type of perspective listed:
   1) Bird's eye perspective
   2) Perspective at eye level
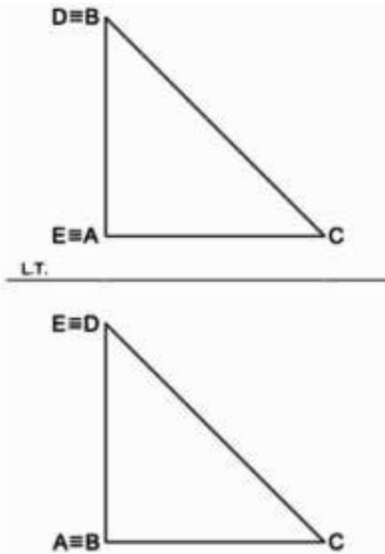   **3) Perspective from below**
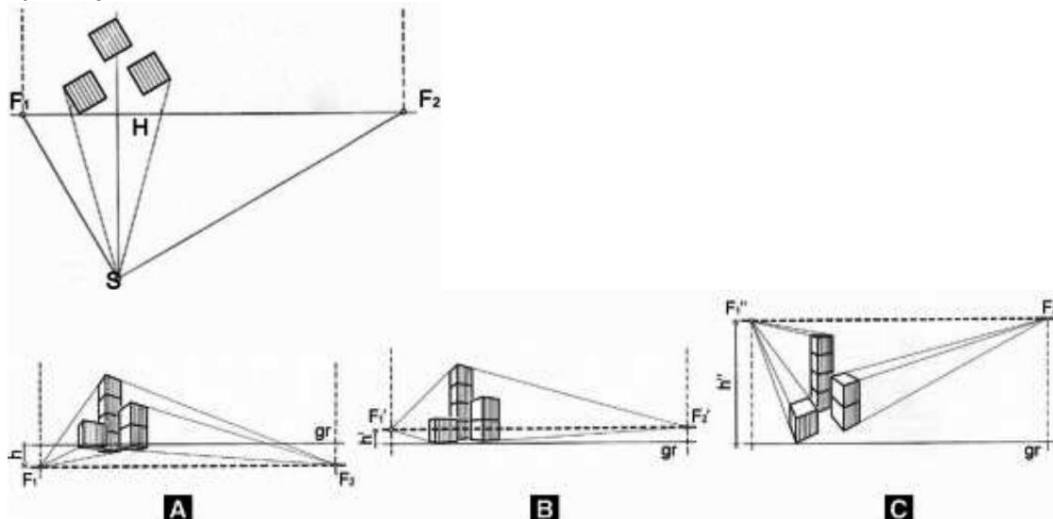
A) 1 – c; 2 – b; 3 – a
B) 1 – a; 2 – b; 3 – c
C) 1 – b; 2 – a; 3 – c
D) 1 – b; 2 – c; 3 – a
E) 1 – c; 2 – a; 3 – b

41. Identify the correct axonometry with respect to the solid shown in the figure.
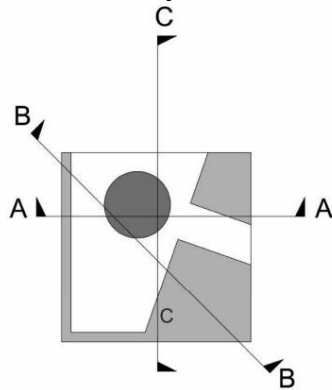

A) 3
B) 2
C) 4
D) 1
E) 5

42. Determine the number of faces of the solid represented in the figure.
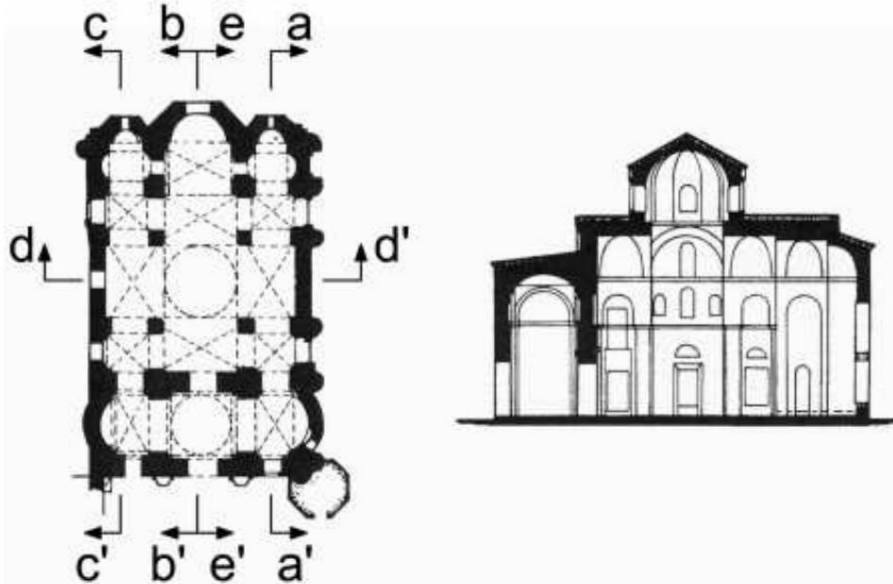

A) 5
B) 8
C) 6
D) 3
E) 7

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43. Establish the correct correspondence of the sections:

A) 1-CC; 2-AA; 3-BB
B) 1-BB; 2-CC; 3-AA
C) 1-CC, 2-BB; 3-AA;
D) 1-AA; 2-CC; 3-BB;
E) 1-AA; 2-BB; 3-CC;

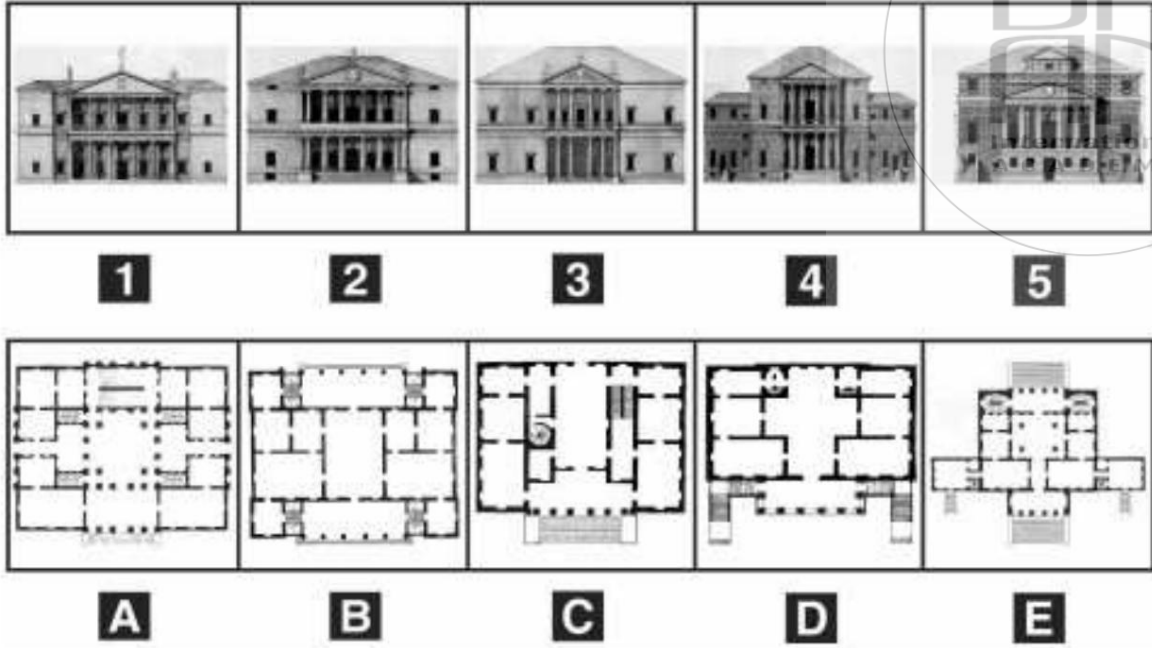**44. Given the plan in the figure, indicate the section line corresponding to the section alongside.**

A) bb '
B) dd '
C) aa '
D) cc '
E) ee '

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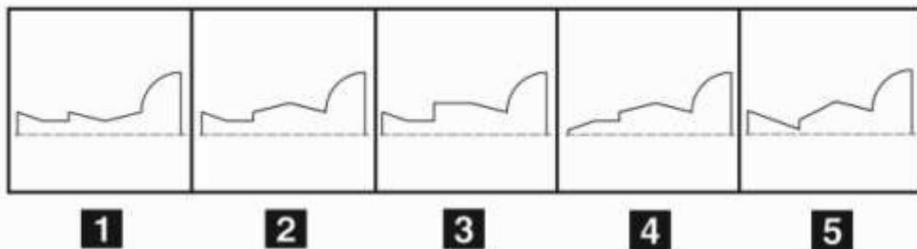**45. Given the plans of the AE series, couple them with the corresponding elevations.**

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

46. Identify the generatrix of the surface of revolution represented in the figure.

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

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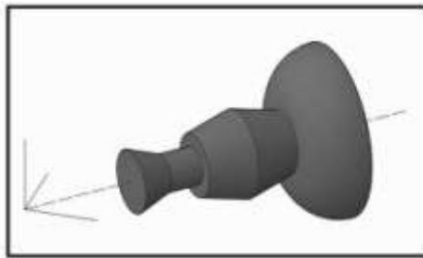
47. Determine the solid corresponding to the orthogonal projection in the figure.

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

48. Establish the correct correspondence between the plants depicted and their destination of use.
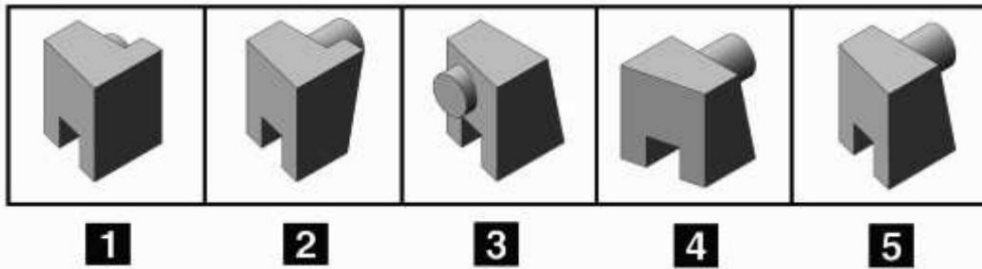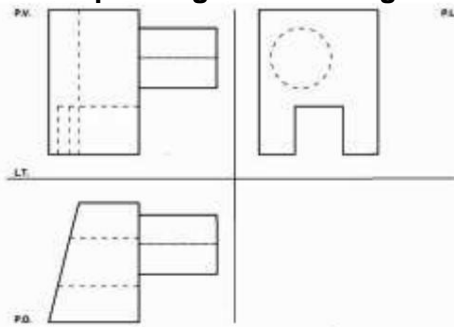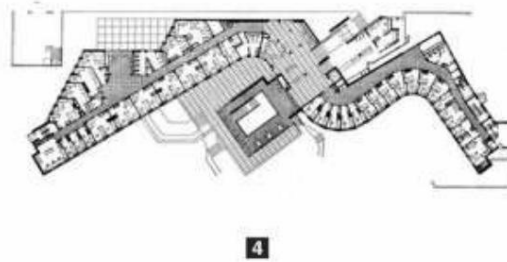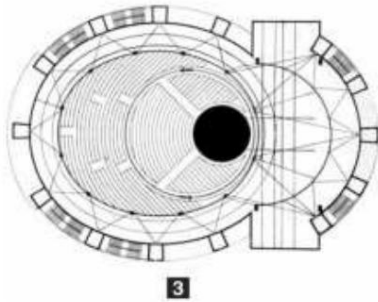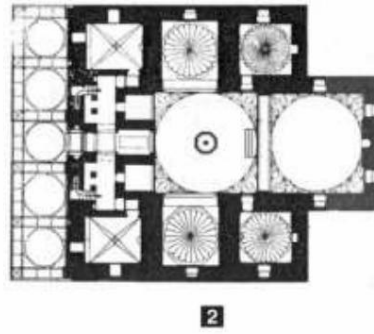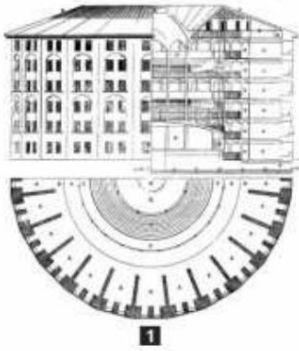

A) 1 - Prison; 2 - Building of worship; 3 - Theater; 4 - Residence
B) 1 - Theater; 2 - Residence; 3- Building of worship; 4 - Prison
C) 1 - Residence; 2 - Theater; 3 - Prison; 4 - Building of worship
D) 1 - Prison; 2 - Building of worship; 3 - Residence; 4 - Theater
E) 1 - Building of worship; 2 - Prison; 3 - Theater; 4 - Residence

Physics and Mathematics Test

49. Consider a capacitor with a capacity of 5 µF connected to a 1.5 V battery. What is the charge deposited on each of the capacitor plates?

A) 7.5 10-6 CB)
4 10-6 CC) 3.33
10-6 CD) 1.2 10-6
CE) 4.8 10-6 C

50. The force of 24 N applied to a mass of 3 kg produces an acceleration equal to:

A) 8 m / s2
B) 72 m / s2
C) 21 m / s2
D) 3 m / s2
E) 3.14 m / s2

51. What is approximately the work done by the force of gravity on a nut of 2 kg coconut falling from a 10 meter high palm tree?

A) 200
JB) 100
JC) 5 JD)
20 JE) 10
J

52. If the temperature of an ideal gas goes from 15 ° C to 30 ° C, the pressure product per volume (PV):

    A) increases, but does not double

    B) becomes 2 times bigger

    C) is reduced by 15%

    D) becomes zero

    E) is halved

53. At 15:30 the odometer of a car reads 22,715. If at 17:00 on odometer reads 22,865, what was your average speed?

    A) 100 km / h

    B) 150 km / h

    C) 50 km / h

    D) 10 km / h

    E) 200 km / h

54. A 1 meter long metal rod is suspended by its center. A 10 kg weight is attached 10 cm from the left end, while a 12 kg weight is attached to the opposite end. What is enough to do to balance the rod and keep it horizontal?

    A) Add an additional weight of 5 kg to the weight attached to the left

    B) Add an additional weight of 5 kg to the weight attached to the right

    C) Add an additional weight of 4 kg to the weight attached to the left

    D) Nothing, the auction is already in balance

    E) Add an additional weight of 4 kg to the weight attached to the right

55. The solutions of the inequality (2 - x) (x + 1) x <0 are: A) −1 <x <0 or x> 2 B) x <−1 or 0 <x <2 C) −1 < x <0 D) x> 2 E) 0 <x <1 or x> 2

56. From an urn containing 20 balls numbered from 1 to 20, a ball is extracted, blindfolded. Assuming that all balls have an equal chance of being drawn, what is the probability that a ball marked with a perfect square will come out?

    A) 1/5

    B) 1/10

    C) 3/20

    D) 1/4

    E) 2/5

4: 57. In the Cartesian plane Oxy the graph of the y function A) does not intersect the x axis B) passes through the origin O C) intersects the x axis at the abscissa point x = −2 D) does not intersect the y axis E) intersects the y axis at the ordinate point y = 2

58. Given the straight line r of equation y = mx + q.
The straight line r 'of equation = Mxy+A)**Q**M**will**= –**be**1 /**perpendicular** m B) M
= –2 / m**to**C)**r if:**M = –m D) Q = –1 / q E) Q = q

59. The average height of 5 friends is 180 cm. If a boy 1.65 m tall is added to the group,
the average height of the 6 friends becomes:

    A) 177.5 cm
    B) 167.5 cm
    C) 172.5 cm
    D) 174 cm
    E) 177 cm

60. In a clothing store Valeria buys a skirt on sale which has a list price of 40 euros. If the discount applied is 30% and if Valeria pays the shopkeeper with a 50 euro banknote, how much change will she receive?
    A) 22 euros
    B) 20 euros
    C) 28 euros
    D) 10 euros
    E) 15 euros

********** END OF APPLICATIONS **********

All correct answers are at position A)
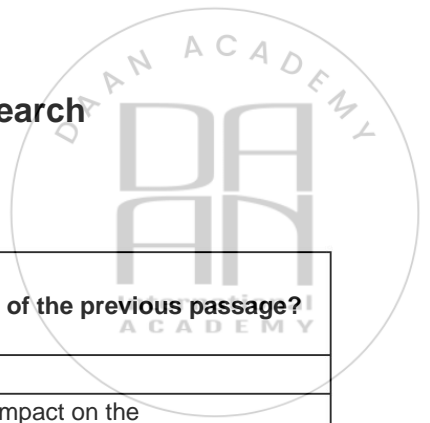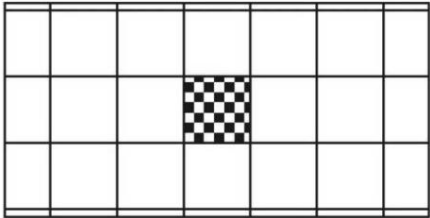
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Logic Test

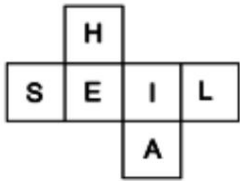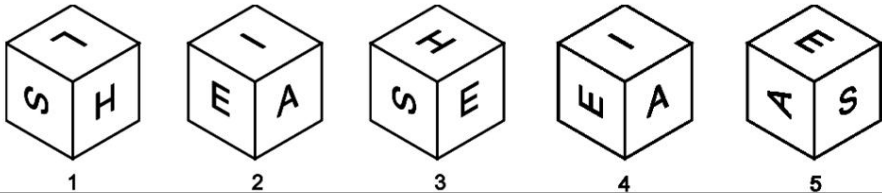| Question No. 1	The death rate in road accidents among young drivers with new drivers is much higher than among experienced drivers. Statistics conducted on motorists fined for speeding show that new drivers generally drive at a higher speed than other motorists. The government is expected to pass a law to calibrate new drivers' vehicles to a maximum of 80 km / h in the first two years of their driving license. This would lead to a significant reduction in fatalities among young drivers. **On what implicit assumption is the previous passage based?**
A)	A high percentage of fatal road accidents among young drivers are caused from speeding
B)	Young drivers have quicker reflexes than older drivers
C)	Older drivers have more driving experience than younger drivers
D)	In road speed checks, the police target new drivers
E)	Young drivers generally drive high-powered cars

Question No. 2	The price of oil affects the cost of food. Recently the cost of food has risen significantly, so the price of oil must also have risen significantly. **Which of the following statements has the same logical structure as the above reasoning?**
A)	Lack of physical activity leads to overweight. A number nowadays increasing numbers of people are overweight, so exercising must be less common than it used to be
B)	When cycling, wearing a helmet is essential to avoid trauma cranial. Giovanni never wears a helmet when he rides a bicycle, so he won't avoid a head injury
C)	You have to be good at math to be an accountant. Maria is good at math, so she must be an accountant
D)	Having a high IQ is essential to being admitted as a member of the CANTEEN, "the club of the brains". Pietro is a brainy person, so he must be a member of the MENSA
E)	Mr. De Rosa needs to use a wheelchair so he is unable to walk. If he didn't need to use a wheelchair, he would be able to walk

Question No. 3	The Italian government's request for the return of Leonardo's *Mona* Lisa (currently in the Louvre) could have undesirable consequences on the museum loan. In 2002 the directors of the 18 most important museums in the world declared that, in exchange for keeping the treasures already in their possession, they would undertake to make them available to all. This has given way to new collaborations between museums for training, restoration and loan. Every year thousands of intermuseal loans are made on all continents: for example, the Louvre will lend the statue of Ramses II to Egypt. Italy should therefore renounce its claims on the *Mona Lisa.* The Italian insistence on restitution of the

	***Gioconda* would put the museum loan system in crisis.** **Which of the following statements expresses the main message of the previous passage?**
A	Italy should renounce its request for the return of the *Mona Lisa*
B)	The Italian request for the return of the *Mona Lisa* will have no impact on the museum loan
C)	The *Mona Lisa* belongs to the Louvre
D)	The Louvre should not lend the statue of Ramses II to Egypt
E	Museum cooperation should be encouraged

Question No. 4	**Mario uses 6 cm x 6 cm square white tiles to completely cover a rectangular surface measuring 38 cm x 20 cm, but he wants to place a different tile from the others exactly in the center of the rectangle, as shown in the following figure:** **Mario knows how to perfectly cut the tiles in the number of pieces necessary to carry out the project, without any waste, so that the edges of the cut tiles match those of the whole tiles.** **What is the minimum number of tiles that Mario will have to cut to create the perimeter part of the rectangle made up of cut tiles?**
A)	7
B)	3
C)	9
D)	11
AND)	15

Question No. 5	**The figure below shows the development of a cube:** **The following figures show five perspectives of the cube. Only two of these are possible. Which ones are they?**
A)	1 and
B)	4 1 and 2
C)	2 and 3

D)	3 and 5
AND)	4 and 5

Question No. 6	The pupils of a class classified the letters of the alphabet according to the following criterion: the letters are equivalent if they have the same number of closed lines and branches. The angles are irrelevant. For example, the letters A and R of the alphabet below are equivalent since they both consist of a closed line with two branches. Similarly, for example, C, J, M, S, V and Z are all equivalent since they consist of a single line with no branches or no closed lines.
	ABCDEFGHIJKLMNOPQRSTUVWXYZ
	Which of the following letters is equivalent to Y according to the rules described above?
A)	And
B)	K.
C)	H.
D)	No.
E)	Q

Question No. 7	Last Saturday 40 children, 100 adults and 60 seniors went to the swimming pool. To establish how long each user remained in the water, a survey was carried out, the results of which are shown in the following graphs:
	Bambini — 1 ora o meno / più di 1 ora
	Adulti — più di 1 ora / 1 ora o meno
	Anziani — più di 1 ora / 1 ora o meno
	Which of the following pie charts illustrates the overall result calculated on all users?
A)	più di 1 ora / 1 ora o meno
B)	più di 1 ora / 1 ora o meno
C)	più di 1 ora / 1 ora o meno
D)	1 ora o meno / più di 1 ora

E)	
	più di 1 ora / 1 ora o meno

Question No. 8	The "Student of the Year" prize will be awarded according to the following criteria: the prize will not be awarded to those who have arrived more than 2 late times or to those who have not delivered more than 2 homework assignments by the scheduled date; the prize will be awarded to the pupil with the lowest number of marks lower than 9 in the homework assigned.

The finalists are as follows:

Studente	Classe	Assenze	Ritardi	Totale di compiti assegnati a casa	Compiti consegnati entro la data prevista	Compiti con un voto pari o superiore a 9
Andrea	IC	4	1	60	56	58
Carla	IIB	2	2	56	56	53
Enrico	IA	6	2	59	56	58
Greta	IIID	6	3	58	57	56
Ilaria	IVB	10	2	54	53	52

Based on the table above, who will be awarded the prize?

TO)	Ilaria
B)	Andrew
C)	Carla
D)	Enrico
E)	Greta

Question No. 9	Which of the pairs of terms proposed logically completes the following proportion verbal: **x: alpha = terminal: y** x =
A)	initial; y = omega x =
B)	principal; y = delta x =
C)	introductory; y = gamma x =
D)	preliminary; y = conclusive x =
E)	inductive; y = final

Question No. 10	Identify the term whose etymology does NOT follow the same "logic" as the others:
A)	Nemesis
B)	Biomimics
C)	Mimetic
D)	Mimesis
E	Pantomime

Question	From the information obtainable in *passage* I, what allows us to understand artificial structures intuitively?

No. 11	
A)	The visual experience of natural structures
B)	The perception of the difference between natural and artificial structures
C)	The absence of the link between form and function
D)	The lack of coincidence of form and function
E)	The exclusive empirical experience of artificial structures

Request No. 12	**According to the author of the *passage* I, because we accept the profile of the column as natural Doric?**
A)	Because the shaft of the column is shrinking upwards
B)	Because the base is missing and the shaft of the column rests directly on the floor
C)	Because the center of gravity is shifted upwards
D)	Because the column is wider at the top than at the base
E)	Because the capital is not like that of the Cretan columns

Question No. 13	**From the information that can be obtained in *passage* I, why are the shelves larger at the base than at the end?**
A)	To better withstand loads and own weight
B)	To be aesthetically surprising
C)	Because in this way the wider section at the end can withstand the loads
D)	Because it is an unnatural and counterintuitive type of structural behavior
E)	To emulate the Cretan columns

Request No. 14	**According to the author of the *passage* I, what is the reason why we have annoyed reactions in front of a modern building in the shape of an inverted pyramid?**
A)	Because it does not exactly reproduce the corresponding natural structures
B)	Because it generates a feeling of balance linked to an "honest" behavior structural
C)	Because it has a geometrically idealized shape similar to trunks and mountains
D)	Because it explains the reasons why it "stands up"
E)	Because it has a geometric shape similar to the pyramids

Request No. 15	**The *passage I* argues that:**
A)	our understanding of man-made structures is heavily based on intuition primitives
B)	the intuition of the forms of nature does not favor a good reading of architecture the visual perception
C)	is not useful for understanding the architecture the aesthetic reaction is independent of the primitive
D)	intuitions "naturalness" evokes in us a sense of surprised discomfort
AND)	

Request No. 16	**From the information obtained in *passage II,* what led the artists of the fifteenth century to believe that they possessed the dimensions of architecture?**
TO)	The discovery of perspective

B)		The collaboration between architects and painters
C)		The discovery of the fourth dimension
D)		The birth of new architectural styles
AND)		The renewed interest in art and humanistic culture of the time

Request No. 17	**From the information obtainable in *passage II,* the Cubist dimensional revolution has introduced:**
TO)	time, or the "fourth dimension" the portrait
B)	of an object in its three dimensions (height, depth and width) the representation of
C)	everyday objects such as boxes and tables the use of perspective in painting and
D)	sculpture a three-dimensional vocabulary that includes man
AND)	

Question No. 18	**According to the author of *passage II,* the physical participation of the observer is essential:**
TO)	only in architecture
B)	only in sculpture
C)	only in painting in
D)	sculpture and in painting in
AND)	sculpture and architecture

Request No. 19	**From the information obtainable in *passage II,* in architecture the fourth dimension is sufficient to define:**
TO)	the architectural volume that encloses the space a
B)	representative quality of an object the motion of a
C)	form that we have to relive psychologically and visually a technique that allows the
D)	perspective representation the total reality of an object
AND)	

Request No. 20	**According to the author of *passage II,* what is the essence of architecture?**
TO)	Space
B)	The weather
C)	The fourth dimension
D)	The perspective point of view
AND)	The coexistence of the four dimensions

General knowledge test

Question No. 21	**The term "protectionism" means:**
TO)	an economic policy as opposed to that of free trade, a tightening of the
B)	control of the people who circulate among the countries of the area Schengen

C)	a policy for the development of a state's law enforcement agencies an increase
D)	in military forces stationed at the borders a prohibition of the production, sale
AND)	and transport of alcohol

Question No. 22	**Which of the following combinations is NOT correct?**
TO)	Carlo Alberto dalla Chiesa - Magistrate
B)	Giovanni Falcone - Magistrate
C)	Aldo Moro - Politician
D)	Piersanti Mattarella - Politician
AND)	Luigi Calabresi - Police Commissioner

History test

Question No. 23	**Which of the following pairs of Greco-Roman mythology is the subject of the sculpture of Gian Lorenzo Bernini (pictured below)?**
TO)	Apollo and Daphne
B)	Perseus and Andromeda
C)	Love and Psyche
D)	Pluto and Proserpina
AND)	Orpheus and Eurydice

Question No. 24	**The painting *Canto d'amore* reproduced below is a work of:**

TO)	Giorgio de Chirico
B)	René Magritte
C)	Marc Chagall
D)	Carlo Carrà
AND)	Salvador Dalí

Question No. 25	**The "battle of the wheat" was:**
TO)	a fascist campaign aimed at making Italy less dependent on imports a revolt of German
B)	peasants led by Thomas Müntzer a popular uprising in Paris that resulted in the storming of
C)	the Bastille the apex of the Cossack revolt against the Russian army the war between Venice
D)	and the Ottoman Empire for control of the Mediterranean
AND)	

Question No. 26	**Who is depicted in the painting reproduced below?**
TO)	Jean-Paul Marat
B)	Jean-Jacques Rousseau
C)	Cesare Beccaria
D)	Voltaire
AND)	Maximilien Robespierre

Question No. 27	**Which event provided the Hitler government in 1933 with the pretext to unleash a campaign repressive against the Communists?**
TO)	The Reichstag fire The night
B)	of the long knives The burning
C)	of books in Berlin

D)	Failure to annex Austria to Nazi Germany
AND)	Stalin's rise to power in Russia

Question No. 28	**Which of these is one of the peace treaties that officially ended the First World War (signed on June 28, 1919)?**
TO)	Treaty of Versailles
B)	Peace of Augusta Peace
C)	of Westphalia
D)	Treaty of Vienna
AND)	Peace of Cateau-Cambrésis

Question No. 29	**Which of the following artists does NOT belong to the Art Nouveau movement?**
TO)	Paul Cézanne
B)	Victor Horta
C)	Gustav Klimt
D)	Henry van de Velde
AND)	Otto Wagner

Question No. 30	**In which century was this representation of an ideal city painted?**
TO)	XV
B)	XVI
C)	XVIII
D)	XIX
AND)	XX

Question No. 31	**To which artistic current does the painting reproduced below belong?**
TO)	Impressionism
B)	Pointillism
C)	Symbolism
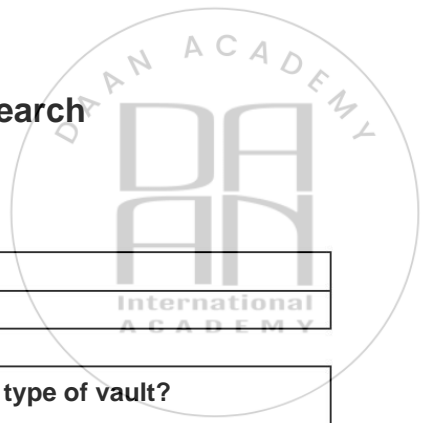
D)	Romance
AND)	Realism

Question No. 32	**Which of the following denominations does NOT correspond to a type of vault?**
TO)	Vaulted truss
B)	Time to suck
C)	Ogival vault
D)	Barrel vault
AND)	Pavilion vault

Question No. 33	**What is the correct chronological order of the buildings shown below?**
TO)	d - a - c - b - e
B)	c - d - e - a - b
C)	a - b - c - d -
D)	ed - b - a - c -
AND)	ea - d - b - c - e

Question No. 34	**Who conceived the *Modulor,* a scale of proportions based on the measurements of the man pictured below?**
TO)	Le Corbusier
B)	Ludwig Mies van der Rohe
C)	Alvar Aalto
D)	Frank Lloyd Wright
AND)	Frank Gehry

Question	**Which of the following images shows a three-light window?**

No. 35	
TO)	
B)	1 2
C)	3
D)	4
AND)	5
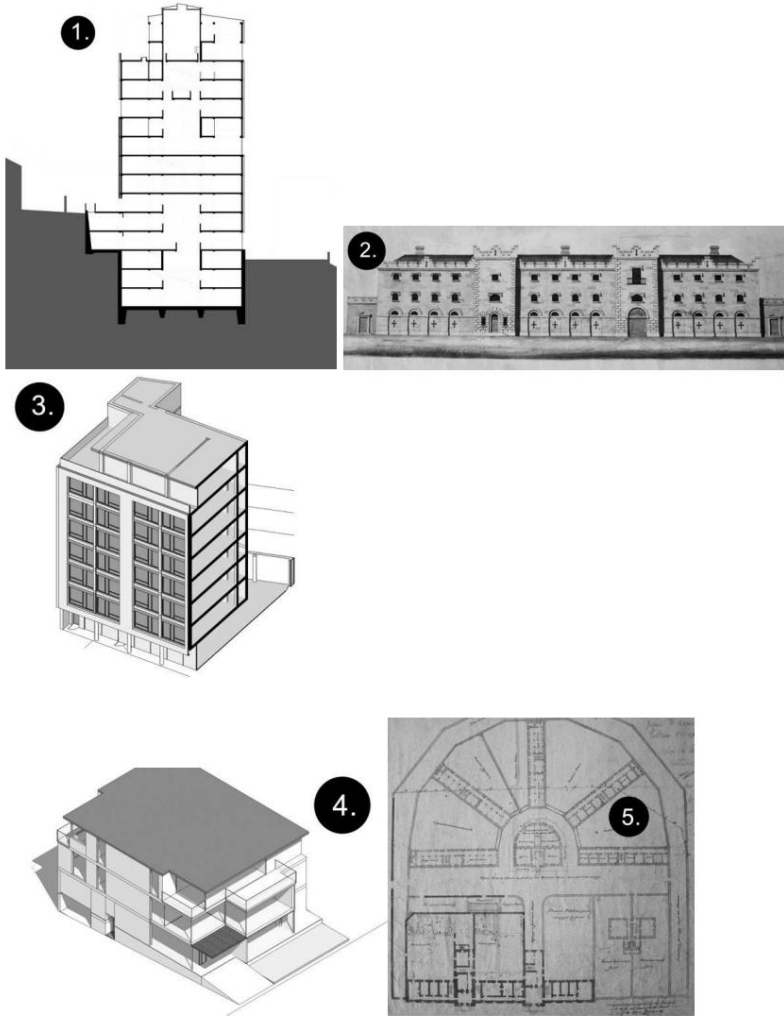
Question No. 36	**The *Veiled Christ* is a marble sculpture by:**
TO)	Giuseppe Sanmartino
B)	Gian Lorenzo Bernini
C)	Giovanni da Nola
D)	Michelangelo Buonarroti
AND)	Antonio Canova

Question No. 37	**Which artistic movement does this building belong to?**
TO)	De Stijl
B)	Cubism
C)	Dadaism
D)	Pop art
AND)	Surrealism
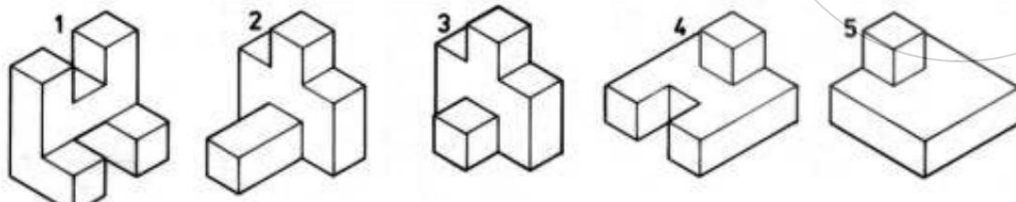
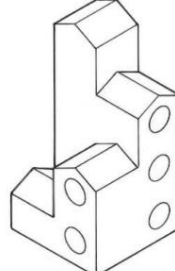| Question No. 38	**Which of the following elements is NOT commonly found in Greek architecture classical?**
TO)	Time
B)	Column
C)	Tympanum
D)	Moulding
AND)	Wayside Shrine
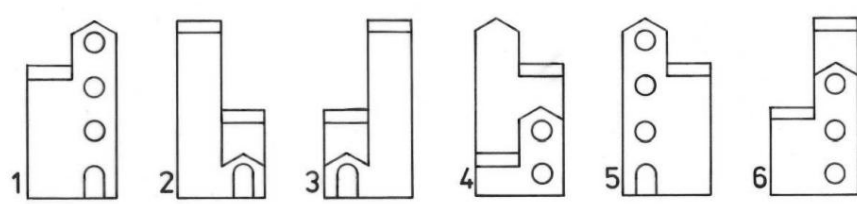
Drawing test

Question No. 39	**Classify the drawings below using the appropriate terminology to indicate the type of representation used.**
TO)	1- Section, 2- Elevation, 3- Axonometric section, 4- Orthogonal axonometry isometric, 5- Plan
B)	1- Elevation, 2- Planimetry, 3- Section, 4- Isometric orthogonal axonometry, 5- Axonometric section
C)	1- Plan, 2- Section, 3- Isometric orthogonal axonometry, 4- Axonometric section, 5- Prospectus
D)	1- Section, 2- Axonometric section, 3- Elevation, 4- Orthogonal axonometry isometric, 5- Plan
AND)	1- Axonometric section, 2- Elevation, 3- Section, 4- Plan, 5- Isometric orthogonal axonometry

Question No. 40	The five solids shown in the picture are part of a construction game. Some of the solids can be wedged into each other if rotated and positioned appropriately.
	What are the three solids among the five represented that could be wedged into each other to form a perfect cube? 1, 2 and 4 3, 4 and 5 2, 3 and 5 1, 2 and 5 1, 3
TO)	and 4
B)	
C)	
D)	
AND)	

Question No. 41	The image below illustrates the model of a house.
	Which two images among those shown below CANNOT be elevations of the house?
TO)	3 and 5
B)	4 and 5
C)	1 and 2
D)	4 and 6
AND)	2 and 6

Question No. 42	Below are the plans of four different buildings.
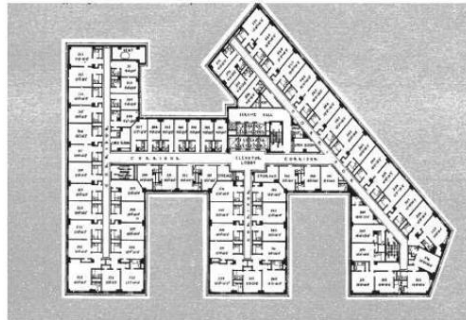
1
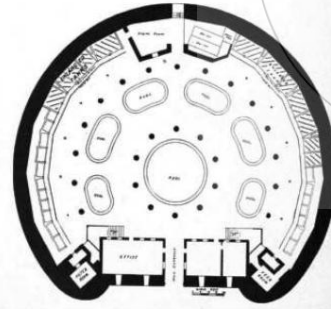
2
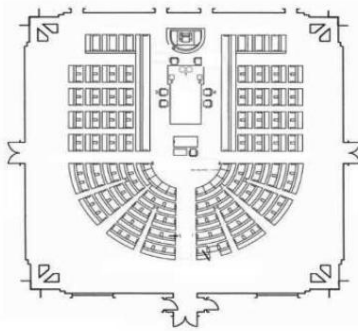
3

4

Which of the following combinations matches each floor plan correctly to the type of building represented? 1 - hotel; 2 - aquarium; 3 - council chamber; 4 - school 1 -

TO)	hotel; 2 - council chamber; 3 - aquarium; 4 - school 1 - school; 2 - aquarium; 3 -
B)	council chamber; 4 - hotel 1 - school; 2 - council chamber; 3 - aquarium; 4 - hotel 1
C)	- boardroom; 2 - aquarium; 3 - school; 4 - hotel
D)	
AND)	

Question No. 43	**Match the plans of the stairs (1-5) to the corresponding perspectives (ae).**

a.

b.
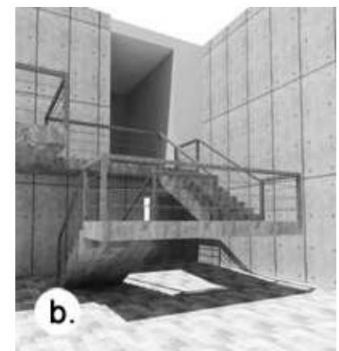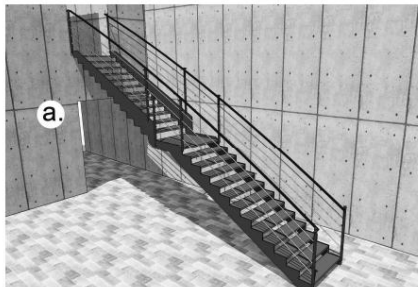
TO)	1-c, 2-d, 3-a, 4-e, 5-b
B)	1-c, 2-a, 3-d, 4-b, 5-e
C)	1-e, 2-d, 3-a, 4-c, 5-b
D)	1-e, 2-a, 3-d, 4-b, 5-c
AND)	1-e, 2-d, 3-a, 4-b, 5-c

Question No. 44	**Which of the perspective views shown in figures 1-5 corresponds to the group of Plexiglas objects whose plan and elevation are shown below?**

Plant

Prospectus

TO)	5
B)	1
C)	2
D)	
AND)	3 4

Question No. 45	**Two of the following forms are NOT identical to the other four. Which?**

TO)	3 and 5
B)	4 and 6
C)	1 and 3
D)	5 and 6
AND)	2 and 4

Question to No. 46	**The five solids below all have exactly the same volume.**

Which of the indicated sequences corresponds to the correct arrangement in increasing order of the solids, from the one with the smaller surface to the one with the larger surface?

TO)	2, 1, 3, 5, 4
B)	2, 1, 3, 4, 5
C)	1, 2, 3, 5, 4
D)	3, 1, 2, 4, 5
AND)	3, 1, 2, 5, 4

Question No. 47	**A cube is placed in front of two mirrors positioned perpendicular to each other with respect to the other, as shown in the figure.**

Which of the following cards, once folded, allows you to obtain the cube shown in the figure?

TO)	1
B)	2
C)	3
D)	4
AND)	5

Question No. 48	**We analyze the solid in the figure.**

Considering the solid lines inside the perimeter as cuts and the dashed lines as bends, which of the following developments does NOT correspond to the solid

in the picture?

TO)	1
B)	2
C)	
D)	3 4
AND)	5

Mathematics and physics test

Question No. 49	**Which of the following is the only result equivalent to** $\dfrac{\operatorname{sen} 20^\circ}{\operatorname{sen} 70^\circ}$ **?**
TO)	tan 20 °
B)	$\operatorname{sen}\left(\dfrac{2}{7}\right)$
C)	cos 20 °
D)	$\dfrac{2}{7}$
AND)	tan 70 °

Question No. 50	**A parallelogram consists of 4 congruent right-angled triangles, as shown in figure.** **The hypotenuse of each triangle measures 8 cm.**

Calculate the area of the parallelogram. 64

TO)	cm2
B)	32 cm2
C)	16 cm2
D)	128 cm2
AND)	256 cm2

Question No. 51	**A children's game consists of inserting objects of different shapes in the spaces corresponding to the shape of the object. Among the objects are a rectangle and a right triangle.**

- **The base of the rectangle is three times its height.**
- **The sides of the triangle a, b, *c* are in order of increasing length.**
- **Side *a* of the triangle is twice the height of the rectangle.**
- **The areas of the two figures are the same.**

(non in scala)

What is the ratio *a: b?* 2: 3

TO)	
B)	3: 4
C)	1: 3
D)	1: 2
AND)	1: 4

Question No. 52	**Solve the following inequality: (2** $x + 1)^2$ 9
TO)	*- 2 < x < 1*
B)	*- 1 < x < 2*
C)	$-\dfrac{1}{2} < x < 1$
D)	*x < ÿ2* or *x > 1*
AND)	*x < 1*

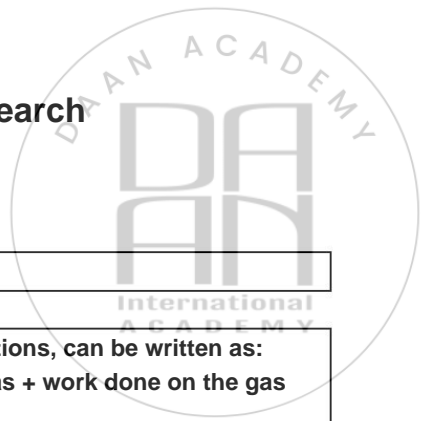| Question No. 53	**A line with equation 2x + y - 3 = 0 intersects the x axis at the point P and the y axis at the point Q.**

		What is the length of the PQ segment?
TO)	$\dfrac{3\sqrt{5}}{2}$	
B)	$\sqrt{\dfrac{21}{2}}$	
C)	$\dfrac{9}{2}$	
D)	$\dfrac{45}{4}$	
AND)	$\dfrac{3\sqrt{3}}{2}$	

Question No. 54	Which of the following quantities has kg **m2 s** as unit of measurement $^{-3}$ in the system **International?**
TO)	Power
B)	Momentum
C)	Power
D)	Force
AND)	Pressure

Question No. 55	**Two children, R and S, are seated on a swing in the positions shown in the diagram. The swing is 4.00 m long, is uniform and has the fulcrum placed in its center. R weighs 800 N while S weighs 1200 N. The swing is out of balance.**
	One of the two children moves so that the swing is balanced. Which of the following movements would bring the swing to be in balance? **In each of the movements only one child moves, remaining on the same side of the fulcrum.**
TO)	R moves at 1.50 m from the fulcrum
B)	S moves at 0.75 m from the fulcrum
C)	S moves at 2.00 m from the fulcrum
D)	R moves at 1.75 m from the fulcrum
AND)	S moves at 0.50 m from the fulcrum

Question No. 56	**The driver of a car turns the steering wheel by applying two opposing forces, each of module 12 N, with his hands. The hands are placed on the steering wheel in a mirror image and the outer radius of the steering wheel is 15 cm.** **What is the total torque that is produced by this pair of forces?**
TO)	3.60 Nm
B)	1.80 Nm
C)	0.90 Nm
D)	7.20 Nm

AND)	18 Nm

Question No. 57	**The first law of thermodynamics, when applied to ideal gas transformations, can be written as:** **increase in the internal energy of the gas = heat supplied to the gas + work done on the gas** **($\ddot{y}U$)** **(Q)** **(L)** **Which of the following statements is consistent with the type of transformation given?** **1) Adiabatic transformation: Condition L = 0** **2) Adiabatic transformation: Condition L = $\ddot{y}U$ 3)** **Isothermal transformation: Condition Q = 0 4) Isothermal** **transformation: Condition Q = $\ddot{y}U$ Only 2 Only 1**
TO)	
B)	
C)	None
D)	Only 3
AND)	Only 4

Question No. 58	**There is air in the space between the two parallel faces of a parallel-faced plane condenser. The capacitor is connected to a 100 V direct current generator. Next, a sheet of dielectric material is inserted between the two parallel faces of the capacitor. The values of which quantities change when the dielectric is inserted between the two parallel faces?**
TO)	Both the capacitance of the capacitor and the charge on the two parallel faces of the capacitor
B)	Only the potential difference between the parallel faces of the capacitor
C)	Both the capacitance of the capacitor and the potential difference between the parallel faces of the capacitor
D)	Only the capacitance of the capacitor
AND)	The capacitance of the capacitor, the potential difference between the parallel faces of the capacitor and the charge on the two faces of the capacitor

Question No. 59	**A piece of aluminum hangs on a spring balance, which indicates that the weight of the piece of aluminum in the air is 13.5 N.** **The scale is lowered until the piece of aluminum is completely immersed in an inert liquid with a density of 1.50 g / cm3 .** **What weight does the scale now indicate?** **[Consider the aluminum density equal to 2.70 g / cm3 and neglect the immersion of the spring balance]**
TO)	6.0 N
B)	8.5 N
C)	0 N
D)	7.5 N
AND)	13.5 N

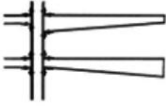| Question No. 60	A mass hanging from a spring moves by oscillating vertically around its stable equilibrium position. Here are 4 statements referring to the motion of the mass.
	1. Speed is maximum at the equilibrium position.
	2. Acceleration is maximum at the equilibrium position.
	3. Acceleration is directed towards the equilibrium position.
	4. The kinetic energy is maximum in the positions of maximum displacement from the equilibrium position.
	Which of these statements is / are correct?
TO)	Only 1 and 3
B)	Only 1, 3 and 4
C)	Only 2 and 4
D)	Only 4
AND)	None

In all the questions proposed, the solution is the answer to letter A)

Track I

The message of the structure

The visual perception of natural structures has played a fundamental role in extending our intuitive understanding of man-made structures. The branches of a tree (Fig. 1.1), stressed by their own weight and by that of the snow or wind, suggest the shape and behavior of the shelves, with their larger dimensions at the base and thinner at the ends. The shape of a trunk introduces us to the demands of gravity loads in skyscrapers, which accumulate from top to bottom. Thanks to these primordial experiences, we feel an instinctive perplexity at the sight of the Cretan columns (Fig. 1.2), wider at the top than at the base, but we accept the shape of the Doric column as natural (Fig. 1.2). Similarly, we would be inclined to consider a cantilever beam "ugly", the section of which was wider at the free end than at its attachment (Fig. 1.3), since it would be an insult to the kind of structural behavior of which we might not to be conscious, but to which nature has now accustomed us. Similar annoyance reactions occur whenever we are faced with a large overturned mass. The mountains, due to the action of gravity, have taken the shape of pyramids. The Egyptian pyramids have a geometrically idealized shape, but basically identical to that of all the mountains we know. But a modern building in the shape of an inverted pyramid (Fig. 1.4) does not "tell" us how and why it stands, but tells us that some "trick" was used to achieve this "unnatural" result. This non-naturalness evokes in us a sense of surprised discomfort, rather than a feeling of balance linked to an "honest" structural behavior. Natural arches have taught us that when using stone to cover a void, it is essential to bend it downwards. Just think of the natural caves, whose curved surfaces give us the sensation of an arc action in space. The shells (Fig. 1.5) are a symbol of protection, but they also have a strong aesthetic content, especially when they are reinforced with ribs. It seems, therefore, that the message of the structure reaches us through a series of primitive intuitions and that the accumulation of these intuitions results in a set of aesthetic reactions. This is the reason why we consider a correctly designed cantilever beam to be "beautiful" and a cantilever whose structural dimensions are incorrect "ugly".

Fig.1.1 LA STRUTTURA DI UN ALBERO

Fig.1.2. COLONNA CRETESE/COLONNA DORICA

Fig.1.3 TRAVE A SBALZO CORRETTA E "SCORRETTA"

Fig.1.4 EDIFICIO A PIRAMIDE CAPOVOLTA

Fig.1.5 CONCHIGLIA CON NERVATURE

Track II

Space, protagonist of architecture

The character by which architecture stands out from other artistic activities lies in its action with a three-dimensional vocabulary that includes man. Painting acts on two dimensions, although it can suggest three or four. Sculpture acts on three dimensions, but man remains on the outside, separate, looking at the three dimensions from the outside. Architecture, on the other hand, is like a large carved sculpture in which man penetrates and walks.

The discovery of perspective, that is, of the graphic representation of the three dimensions - height, depth and width - could have led the artists of the fifteenth century to believe that they finally possessed the dimensions of architecture and the method of representing them. However, in the last decade of the nineteenth century, the mind of man discovered that, beyond the three perspective dimensions, there was a fourth. And it was the Cubist dimensional revolution.

A painter in 1912 made this reasoning: I see and represent an object, for example a box or a table, I see it from a point of view. But if I turn the box in my hands, or go around the table, at every step I change my point of view and to represent the object from that point I have to make a new perspective. The reality of the object therefore does not end in the three perspective dimensions; to own it fully, I would have to make an infinite number of perspectives from infinite points of view. There is therefore another element in addition to the traditional three dimensions, and it is precisely the subsequent shift of the viewing angle. Time was thus baptized, "fourth dimension".

The fourth dimension seemed to fully answer the question of the dimensions of architecture. Every architectural work, to be understood and lived, requires the time of our journey, the fourth dimension.

Except that a dimension that is common to all the arts cannot obviously be characteristic of any one, and therefore the architectural space is not exhausted in the four dimensions. This new "time" factor then has two antithetical meanings in architecture and painting. In painting, the fourth dimension is a representative quality of an object, it is an element of the reality of the object that a painter can choose to project onto the plane, and which does not require any physical participation of the observer. The same thing happens in sculpture: the "motion" of a Boccioni form is a quality of the statue that we contemplate and that we must relive psychologically and visually. But in architecture the phenomenon is totally different and concrete: here it is the man who, moving through the building, studying it from successive points of view, creates, so to speak, the fourth dimension, giving the space its integral reality.

To be more precise, the fourth dimension is sufficient to define the architectural volume, that is, the wall box that encloses the space. But the space itself - the essence of architecture - transcends the limits of the fourth dimension.

So how many dimensions does this architectural "void" have, space? Five, ten. Infinite, perhaps. But, for our purposes, it suffices to establish that architectural space is not definable in terms of the dimensions of painting and sculpture. It is a phenomenon that is concretized only in architecture, and which therefore constitutes its specific character.