

TEST MATEMATICĂ ȘI LIMBA ENGLEZĂ

Matematică

1) Media aritmetică a numerelor $a = 2,5$ și $b = \frac{3}{2}$ este:

- a) 1,5 b) 1 c) 2 d) 1,75

2) Se consideră funcția $f : \mathbb{R} \rightarrow \mathbb{R}, f(x) = 2x + 1$. Mulțimea valorilor reale ale lui x pentru care $f(x) \geq 2f(1) + 1$ este:

- a) $x \in [3; +\infty)$ b) $x \in [1; +\infty)$ c) $x \in (-\infty; 1)$ d) $x \in (0; +\infty)$

3) Se consideră funcția $f : \mathbb{R} \rightarrow \mathbb{R}, f(x) = x^2 - 3x + 2$. Abscisele punctelor de intersecție ale graficului funcției f cu axa Ox sunt :

- a) $\{-1; 2\}$ b) $\{1; 2\}$ c) $\{-2; 0\}$ d) $\{0; 1\}$

4) Se dau mulțimile $A = \{2; 6; 9; 14\}$ și $B = \{3; 6; 9; 15\}$. Mulțimea $A \cap B$ este :

- a) $\{2; 14\}$ b) $\{6; 9\}$ c) \emptyset d) $\{3; 15\}$

5) Fie șirul de numere naturale 1, 5, 9, 13, Al 20-lea termen al acestui șir este:

- a) 57 b) 82 c) 45 d) 77

6) Se consideră progresia geometrică $(b_n)_{n \geq 1}$, în care $b_1 = 3$ și $b_4 = 24$. Rația acestei progresii este:

- a) 1 b) 2 c) 3 d) 4

7) Se dau numerele complexe $z_1 = 1 - 2i$ și $z_2 = 2 + i$. Partea reală a numărului complex $z_1 - z_2$ este:

- a) 0 b) 1 c) -1 d) 3

8) Soluția ecuației $\sqrt{2-7x} = 3$ este:

- a) 4 b) -3 c) 2 d) -1

9) Soluția ecuației $27^x = 3$ este:

- a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) -1 d) 3

10) Rezultatul calculului $\log_5 25 - \log_2 8$:

- a) -1 b) 1 c) -2 d) 2

11) Câte numere de 3 cifre distincte se pot forma cu elementele mulțimii $A = \{1; 2; 3; 4; 5\}$?

- a) 45 b) 50 c) 55 d) 60

12) Se consideră matricea $A(x) = \begin{pmatrix} x & x-1 \\ 1 & 2 \end{pmatrix}$. Matricea $A(1) + A(0)$ este:

- a) $\begin{pmatrix} 1 & 0 \\ 2 & 3 \end{pmatrix}$ b) $\begin{pmatrix} 0 & -1 \\ 1 & 4 \end{pmatrix}$ c) $\begin{pmatrix} 1 & -1 \\ 2 & 4 \end{pmatrix}$ d) $\begin{pmatrix} 1 & 1 \\ 1 & 2 \end{pmatrix}$

13) Soluția ecuației $\begin{vmatrix} 2 & -3 \\ x & 3 \end{vmatrix} = 9$ este:

- a) 1 b) 3 c) -3 d) -1

14) Valorile parametrului real m pentru care sistemul $\begin{cases} mx - y + 2z = 1 \\ 3x + my + z = -2 \\ x + my + z = 0 \end{cases}$ este

compatibil determinat sunt :

- a) $m = \frac{1}{2}$ b) $m \in \mathbb{R} \setminus \{1\}$ c) $m \in \emptyset$ d) $m \in \mathbb{R} \setminus \left\{ -\frac{1}{2} \right\}$

15) Pe \mathbb{R} se definește legea de compoziție $x * y = \frac{2xy - 3x}{2y + xy}$. Rezultatul calculului $1 * 2$

este:

- a) $\frac{2}{3}$ b) $\frac{1}{6}$ c) $\frac{1}{3}$ d) $\frac{5}{6}$

16) Rezultatul calculului $\sin 90^\circ \cdot \cos 45^\circ - \sin 45^\circ \cdot \cos 90^\circ$ este:

- a) 0 b) $\frac{\sqrt{2}}{2}$ c) $\frac{1}{2}$ d) 1

17) Fie $x \in \left[\frac{\pi}{2}; \pi \right]$, astfel încât $\sin x = \frac{1}{3}$, atunci $\cos x$ este:

- a) $\frac{\sqrt{2}}{3}$ b) $\frac{2\sqrt{2}}{3}$ c) $-\frac{2\sqrt{2}}{3}$ d) $-\frac{\sqrt{2}}{3}$

18) Fie $x \in [0; 2\pi]$. Numărul de soluții al ecuației $\sin^2 x - \sin x = 0$ este :

- a) 2 b) 3 c) 4 d) 5

Limba Engleză

Partea I: CITIT

Choose the correct answer A, B, C or D:

Cycling

Along with jogging and swimming, cycling is one of the best all-round forms of exercise. It can help to increase your strength and energy, giving you more efficient muscles and a stronger heart. But increasing your strength is not the only advantage of cycling. Because you're not carrying the weight of your body on your feet, it's a good form of exercise for people with painful feet or backs. However, with all forms of exercise it's important to start slowly and build up gently. Doing too much too quickly can damage muscles that aren't used to working. If you have any doubts about taking up cycling for health reasons, talk to your doctor and ask his/her advice.

Ideally you should be cycling at least two or three times a week. For the exercise to be doing you good, you should get a little out of breath. Don't worry that if you begin to lose your breath, it could be dangerous and there must be something wrong with your heart. This is simply not true; shortness of breath shows that the exercise is having the right effect. However, if you find you are in pain then you should stop and take a rest.

1. This piece of writing is for _____.

- a) children
- b) writers
- c) anyone
- d) pilots

2. Cycling is one of the best forms of _____.

- a) play tricks
- b) go to the gym
- c) drive in the country side
- d) exercise

3. People with back problems might go cycling because _____.

- a) it is cheap
- b) weight is taken off the feet
- c) it is fun
- d) you can buy a bike

4. What is the disadvantage of sudden exercise?

- a) It's bad for people with painful feet or backs.
- b) You need to do it along with jogging and swimming.
- c) Muscles that aren't used to working could be hurt.
- d) You could win a prize

5. Which of the following notices has the same ideas as the writer?

a) LATE FOR WORK?

Do you get held up in traffic on the way to work? Do they always cancel the train you were going to catch? If so, we have the answer for you. Buy a bike! You'll be in control, keep your boss happy and be healthier too.

b) A BIKE RIDE A DAY KEEPS THE DOCTOR AWAY

Cycling: one of the safest forms of exercise there is. A daily bike ride will help improve your breathing (especially if you smoke) and gently exercise your muscles. Hurry along to your local bike shop now and find out all you need to know.

c) ARE YOU ALWAYS TIRED?

What you need is a bicycle! Go cycling regularly and you'll soon be able to feel that extra energy. It may be difficult at first but keep it up and you'll get stronger and healthier too. If you have any medical problems, check with your doctor first.

d) CYCLING FOR PLEASURE

An excellent form of exercise, cycling allows you to see the country and, improve your health at the same time. Why not join your local cycle touring club today?

Partea a II-a:

ELEMENTE DE GRAMATICĂ, VOCABULAR ȘI STRUCTURI SCRISE

Choose the correct answer A,B,C or D:

6. Mr.Smith knows _____ that word means.

- a) who
- b) what
- c) why
- d) which

7. I _____ to the movies if I had some money.

- a) would have gone
- b) would go
- c) could gone
- d) can going

8. I'm tired _____ reading. Let's go for a walk.

- a) to
- b) for
- c) from
- d) of

9. We certainly enjoyed _____ the Cathedral.

- a) visiting
- b) visited
- c) visit
- d) have visited

10. We will stay in the house until the rain _____.

- a) will stop
- b) stops
- c) stopped
- d) stoppes

11. I have to study for my English test.

- a) may
- b) must
- c) ought to
- d) can

12. We asked the _____ to take us back to the hotel.

- a) drove
- b) drive
- c) driven
- d) driver

13. a) The work he finally completed.

- b) Finally the work he completed.
- c) He finally completed the work.
- d) He the work completed finally.

14. a) A few days ago I met downtown Harry.

- b) I met Harry downtown a few days ago.
- c) Downtown a few days ago I met Harry.
- d) I met a few days ago Harry downtown.

15. a) The general said, "I will set up headquarters here."
b) "The general said, "I will set up headquarters here."
c) The general said, I will set up headquarters here."
d) the General said, "i will set up headquarters here."
16. a) "Let's stay here till the storm has passed," I said.
b) Lets stay here till the storm has passed, i said.
c) "Let's stay here till the storme has pased," I said.
d) "Let's stay here till the storm has passed I said. "

17. Choose the right answer:

Did you see the moon last night?

- a) I went downtown last night.
b) Yes, I read that book quite fast and I really enjoyed the information about the dark side of the Moon.
c) Yes, they say there are alien bases on the Moon.
d) No, I didn't. It was cloudy last night.

18. How do you start a formal letter?

- a) Hello, people
b) Dear friend
c) Dear Sir/Madam
d) Hi, Jane