

Test Person 2023-04-14

36/36p

1.

If $F = \frac{G \cdot M \cdot m}{r^2}$, then

- $r = \frac{G \cdot M \cdot m}{F}$
- $r = \sqrt{\frac{F}{G \cdot M \cdot m}}$
- $r = \sqrt{\frac{G \cdot M \cdot m}{F}}$

Correct answer.

1/1p

2.

Let a be a real number. Find an expression for x in terms of a , if

$$y + 3x = 3a \text{ and } 2y - x = -a.$$

$x =$

Answer: a

Correct answer.

1/1p

3.

In February, Adam got a 15 % higher phone bill than in January. He paid 32.25 € in total for both months. How much was the bill in January?

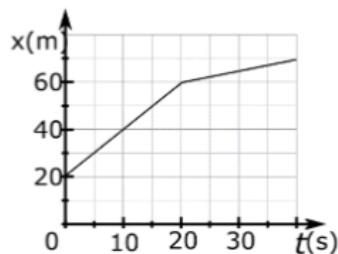
Answer: 15 EUR

Correct answer.

1/1p

4.

The time-position graph of a cyclist is given below.



Which statements about his motion are correct?

- The direction of his motion changes after 20 s.
- The total distance he has travelled is 70 m.
- His initial speed is greater than his speed 30 s later.
- After 20 s his acceleration is smaller than at the beginning of his motion.
- The total distance he has travelled is 50 m.

At least 1 correct, and max 0 wrong

1/1p

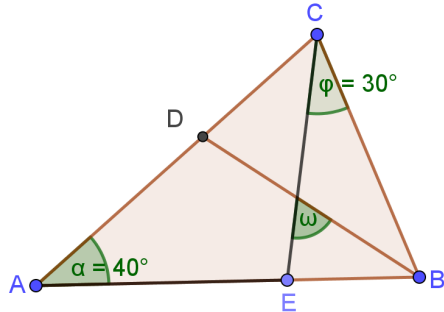
At least 2 correct, and max 1 wrong

1/1p

2/2p

5.

The line segment $[BD]$ lies on the bisector of the angle $\sphericalangle ABC$. Point E lies on the side $[AB]$ so that $|AE| = |CE|$. Additionally, $\sphericalangle BAC = 40^\circ$ and $\sphericalangle ECB = 30^\circ$. Find the size of ω .

Answer: 65°

Correct answer.

1/1p

6.

Line L passes through point $P(3, 1)$ and is parallel to the line given by the equation $y = -2x + 1$.

Which of the following equations are equations of the line L ? There may be more correct answers.

- $y = \frac{1}{2}x - \frac{1}{2}$
- $y = -2x + 7$
- $2x + y + 7 = 0$
- $4x + 2y - 14 = 0$
- $y = 3x - 8$

At least 1 correct, and max 0 wrong

1/1p

At least 2 correct, and max 1 wrong

1/1p

2/2p

7.

Let $n \in \mathbb{Z}$. For which values of n is $\frac{n+1}{n-2}$ an integer (whole number)?

- $n \in \{-1, 1, 3, 5\}$
- For all odd integers.
- For all multiples of 3.
- $n \in \{1, 3, 5, 7\}$
- $n \in \{2, -1\}$

At least 1 correct, and max 0 wrong

1/1p

8.

Which of the following objects is the closest star to the Earth?

- The Moon
- The Sun
- Alpha Centauri
- The Pole star

Correct answer.

1/1p

9.

Ann has covered a circle with a radius of 3 cm with 21 small beans of approximately the same shape and size. In the next trial, she plans to cover a circle with a radius of 9 cm. About how many beans of similar size does she need for her trial?

- 42
- 63
- 189
- 126
- 1701

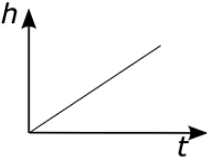
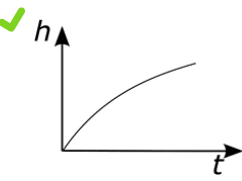
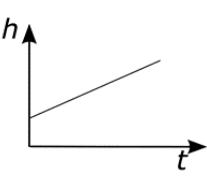
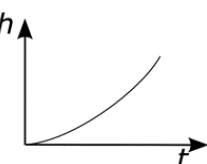
At least 1 correct, and max 0 wrong

1/1p

10.

A glass presented in the sketch below is filled with water with constant flow. Which of the graphs best represent how the height of water changes with time?



- 
- 
- 
- 

Correct answer.

1/1p

11.

Are the genes of pancreatic cells and skeletal muscle cells of the same healthy person different?

- Yes
- No
- Slightly
- Sometimes

Correct answer.

1/1p

12.

If a tulip is put into a vase, which contains sea water, what would happen?

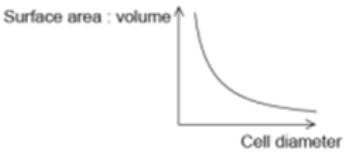
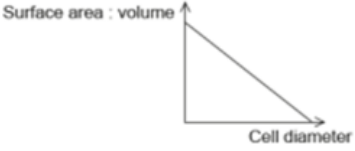
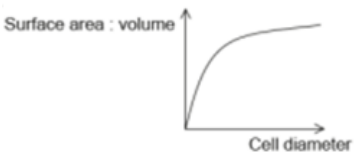
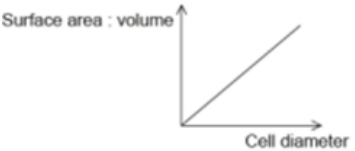
- More water will enter tulip cells than leave its cells.
- The same amount of water will enter and leave tulip cells.
- More water will leave tulip cells than enter its cells.
- Sodium chloride will leave the tulip cells.

Correct answer.

1/1p

13.

Which graph represents the change in cell surface area to volume ratio with increasing cell diameter?

- 
- 
- 
- 

Correct answer.

1/1p

14.

Students learn that, under many environmental conditions, the behaviour of gases can be approximated using the Ideal Gas Law. However, in practice, many gases deviate somewhat from ideal gas behaviour. Using your knowledge of intermolecular forces, determine which of the following gases should have the lowest pressure when all other variables remain constant.

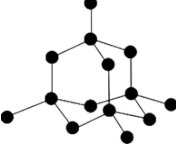
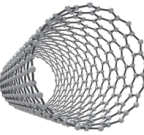
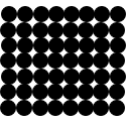
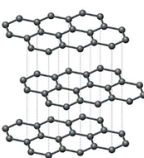
- Xe
- NH_3
- CH_4
- CO

Correct answer.

1/1p

15.

Which diagram shows the structure of a diamond?

- 
- 
- 
- 

At least 1 correct, and max 0 wrong

1/1p

16.

1.0L of 0.010M $NaOH$ is added to 0.50L of water. What is the pH of the solution?

- 2.00
- 11.82
- 7.18
- 5.18

At least 1 correct, and max 0 wrong

1/1p

17.

A sample of drinking water contains 1.5 mg of fluoride per dm^3 of water. A person drinks 1 dm^3 of this water. The recommended daily amount of fluoride is 4.0 mg. Which calculation gives the proportion of fluoride in percentages of the recommended daily amount of fluoride in 1 dm^3 of this water?

- $\frac{4.0}{1.5} \cdot 100\%$
- $\frac{1.5}{100} \cdot 4.0\%$
- $\frac{100}{1.5} \cdot 4.0\%$
- $\frac{1.5}{4.0} \cdot 100\%$

Correct answer.

1/1p

18.

Which of the following is not a characteristic of a good theory?

- It is able to be empirically tested.
- It predicts behaviour.
- Its concepts can be measured.
- It is reductionist - that is, it is focused on a single approach.

Correct answer.

1/1p

19.

Urry et al (2021) attempted to replicate the findings of Mueller and Oppenheimer's (2014) study.

142 undergraduate students participated in the experiment. Participants were randomly assigned to view one of five lectures in one of the following two conditions: taking notes by hand or with a laptop. The lectures were TED talks - each lasting about 15 minutes. They were the same talks that were used in the original study.

The researchers provided each participant either with a pen and paper or the researcher's laptop on which to take notes. The lecture was shown on a monitor. When available, participants wore headphones/earbuds to minimize distraction. Participants were asked to take notes as if they were in a class lecture.

When the video ended, participants completed a series of distractor tasks that lasted for about 30 minutes. Then they completed the quiz for the lecture they had viewed.

The researchers found that taking notes using a laptop led to a higher word count than taking notes longhand. In addition, the laptop group's notes were often word for word from the lecture. However, there was no significant difference in the number of correctly answered questions.

What is the correct conclusion of this study?

- It appears that distraction tasks are the main cause of forgetting important information.
- It appears that the mode of note-taking had no significant effect on recall.
- It appears that watching TED talks and taking notes is useless.
- It appears that taking notes word by word results in detailed knowledge.

Correct answer.

1/1p

20.

What is true about democracy? Mark all correct statements.

- ✓** People choose their leadership.
- A single party leads the country.
- Citizens own means of production.
- ✓** The primary goal is to govern through fair representation and prevent the abuse of power.

At least 1 correct, and max 0 wrong

1/1p

At least 2 correct, and max 1 wrong

1/1p

2/2p

21.

Which branch of philosophy is primarily concerned with the question of being?

- Humanism
- ✓** Existentialism
- Platonism
- Neo-positivism

Correct answer.

1/1p

22.

Epistemology is the theory of...

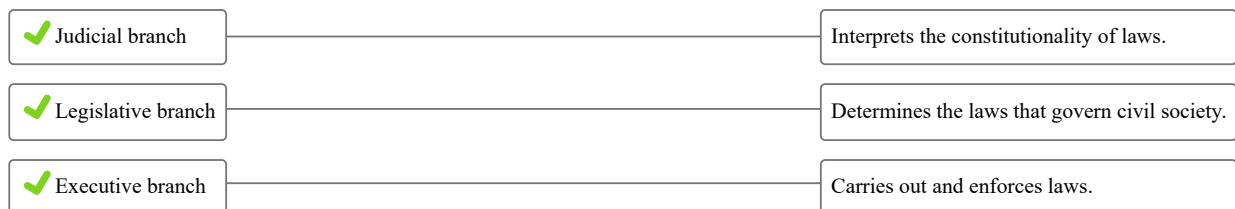
- ✓** Knowledge
- Metaphysics
- Morality
- Politics

Correct answer.

1/1p

23.

According to many Enlightenment political philosophies, the government should be divided into three branches. What are some attributes of each branch?



At least 1 correct, and max 2 wrong

1/1p

All correct.


1/1p

2/2p

24.

Complete the sentence by selecting one of the given options.

Many people regret _____ the opportunity to go to university.

- not have
-  not having
- not to have
- not to have had


Correct answer.

1/1p

25.

Complete the sentence by selecting one of the given options.

If you _____ at your boss that day, you'd probably still have the job now!

-  hadn't shouted
- don't shout
- didn't shout
- wouldn't shout

Correct answer.

1/1p

26.

Read the text below and find the answer that fits best.



- The text is a drawing depicting subject's constant search for meaning and the eventual realization of the futility of his own existence.
- The text is a how-to guide on how to find higher purpose in life and the eventual realization of the futility of his own existence.
- The text is a cartoon which provokes the reader to think about the quest for higher purpose and a desire to find life's true meaning.
- ✓** The text is a comic strip which communicates human's innate curiosity and insatiable desire to find meaning and purpose in life and the existential frustration that results from it.

Correct answer.

1/1p

27.

Read the poem.

Some say the world will end in fire,

Some say in ice.

From what I've tasted of desire

I hold with those who favour fire.

But if it had to perish twice,

I think I know enough of hate

To say that for destruction ice

Is also great

And would suffice.

(Fire and Ice by Robert Frost)

Identify the rhetorical device used in words "fire" and "ice", taking into consideration that these are also the main motifs in this poem.

- Contrast
- Simile
- Parallelism
- Antithesis

At least 1 correct, and max 0 wrong

1/1p

28.

What was the name of the agreement that ended World War I in 1919?

- The Treaty of Versailles
- The Treaty of Paris
- The Treaty of Brest-Litovsk
- The Treaty of Trianon

Correct answer.

1/1p

29.

Which of the following was not a key feature of fascism in the 20th century?

- The promotion of individual freedom and civil rights
- Extreme nationalism
- A belief in the superiority of one's own race or nation
- A focus on militarism and war

Correct answer.

1/1p

30.

Which country was not one of the Allied Powers during World War II?


- Japan
- The United States
- The Soviet Union
- The United Kingdom

Correct answer.

1/1p

31.

What was the main cause of the Cold War?

-  A lack of trust between the US and the Soviet Union
- The spread of communism
- The failure of the League of Nations
- Economic inequality between the superpowers

Correct answer.

1/1p

32.

Who was the leader of the Soviet Union during the Cuban Missile Crisis?

-  Nikita Khrushchev
- Joseph Stalin
- Vladimir Lenin
- Boris Yeltsin

Correct answer.

1/1p

