

01

21, 28, 35, ▲, ■, 56, ...

In the number pattern above, what is the sum of the numbers represented by the symbols ▲ and ■?

- A) 89
- B) 90
- C) 91
- D) 92

02

Each side of a square is doubled. What happens to its area?

- A) It remains the same
- B) It doubles
- C) It triples
- D) It quadruples

03

Which number should replace ★ in the equation

$$4 \cdot 21 \cdot 15 = 10 \cdot \star \cdot 9$$

to make it correct?

- A) 12
- B) 14
- C) 16
- D) 18

04

Emma wants to know the weight of a coin to within 0.2 g. Her weighing scale is only accurate to within 5 g.

What is the smallest number of identical coins Emma should weigh together to achieve this accuracy?

- A) 10
- B) 20
- C) 25
- D) 30

05

Which option lists the first five terms of the pattern that starts at 8 and increases by 7 each time?

- A) 8, 14, 21, 28, 35
- B) 8, 14, 22, 29, 36
- C) 8, 15, 22, 28, 35
- D) 8, 15, 22, 29, 36

06

Which of the following words has only horizontal symmetry but not vertical symmetry?

- A) IHI
- B) ZOZ
- C) OXO
- D) EHE

07

The exam scores of a group of students are given below:

50, 50, 60, 60, 60, 100, 100, 80, 80, 80, 60, 60, 80

Accordingly, what is the mode of this data set?

- A) 50
- B) 60
- C) 80
- D) 100

08

The symbol "O" represents one of the operations: addition (+), subtraction (−), multiplication (×), or division (÷).

The operations:

$$\sqrt{18} \text{ O } \sqrt{2}$$

$$\sqrt{144} \text{ O } \sqrt{16}$$

both yield integer results.

Accordingly, what is the sum of all possible values that the expression $(18 \text{ O } 2) + (12 \text{ O } 2)$ can take?

- A) 70
- B) 75
- C) 80
- D) 85

09

Given $-2 < a \leq 5$,

Which interval is the widest range of values of $a^2 - 4a + 7$?

- A) [3, 19)
- B) (3, 19)
- C) [3, 12]
- D) (3, 12]

10

In an isosceles triangle ABC , $|AB|=|AC|$. Point D lies on side $[AB]$ and point E lies on side $[AC]$ such that $[DE]$ is parallel to $[BC]$ and $|DE|=|EC|$. Then points D and C are connected to form $[DC]$

If $\angle BAC=40^\circ$, what is the measure of $\angle DCE$?

- A) 25°
- B) 30°
- C) 35°
- D) 40°

11

Daniel multiplied two 2-digit numbers correctly on a piece of paper. Then he scribbled out three digits as shown:

$$\text{1}\blacksquare \times \blacksquare\text{1} = 6\blacksquare 7$$

What is the sum of the three digits he scribbled out?

- A) 18
- B) 19
- C) 20
- D) 21

12

What is the value of $(30+18)\div(20-12)$?

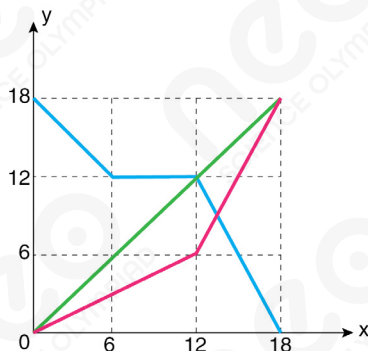
- A) 4
- B) 5
- C) 6
- D) 7

13

Given the polynomial $Q(x)=x^3+2x^2-x+5$, what is the remainder when $Q(x-4)$ is divided by $(x-1)$?

- A) 1
- B) -1
- C) 7
- D) -5

14



In the Cartesian coordinate plane, three different functions defined on the interval $[0, 18]$ are drawn in blue, green, and red.

One of these graphs represents the function $y = f(x)$.

It is known that $(f \circ f)(14) = 5$.

Accordingly, what is the value of $f(6) + f(16)$?

- A) 12
- B) 17
- C) 18
- D) 20

15

The function $y=f(x)$ is a linear function whose coefficients are consecutive integers.

Given that $f^{-1}(24)=4$, what is the value of $f(3)$?

- A) 18
- B) 19
- C) 20
- D) 21

16

Given the equalities

$$\log_5(25m) = 3 \text{ and } \log_5 n = 4,$$

What is the value of $\log_{25}(m^4 n^6)$?

- A) 12
- B) 13
- C) 14
- D) 15

17

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Questions solved	60	80	40	100	140	60	150

The table above shows the number of Mathematics questions a student solved on different days throughout the week. Accordingly, what is the arithmetic mean of this data set?

- A) 75
- B) 80
- C) 85
- D) 90

18

Find the radius of the circle given by $x^2 + y^2 + 6x + 4y - 12 = 0$.

- A) 2
- B) 3
- C) 4
- D) 5

19

When the letters of the word MOMO are written vertically above one another, the word has a vertical line of symmetry. Which of these words also has a vertical line of symmetry when written in the same way?

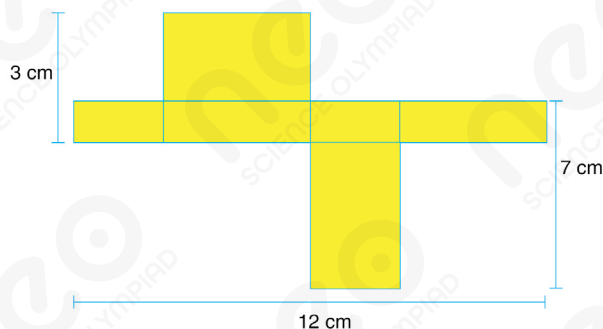
- A) WOW
- B) POP
- C) DID
- D) BOB

20

Find the centre of the ellipse $9x^2 + 16y^2 + 36x - 64y - 44 = 0$

- A) (2, 2)
- B) (-2, 2)
- C) (2, -2)
- D) (-2, -2)

21

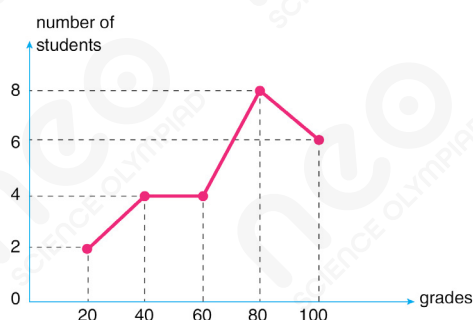


The diagram shows a net of a rectangular box with some lengths given.

What is the volume of the box?

- A) 10 cm^3
- B) 12 cm^3
- C) 15 cm^3
- D) 18 cm^3

22



According to the line graph above, which of the following statements are correct?

- I. The number of students in the class is 24.
- II. The average score is 70.
- III. Students who scored 60 are below the class average.

- A) I and II
- B) II and III
- C) I and III
- D) I, II, and III

23

The first term of an arithmetic sequence is $-\frac{1}{2}$. The sum of

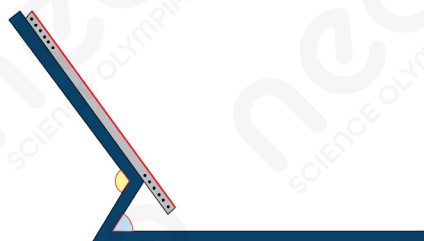
the first six terms is 54 more than the sum of the first eight terms.

Which of the following statements about the common difference of the sequence are true?

- I. It is negative.
- II. It is less than 1.
- III. It is an integer.

- A) I and II
- B) II and III
- C) I and III
- D) I, II, and III

24



The side perspective view of a tablet platform and a rectangular prism-shaped tablet fixed to this platform is shown above.

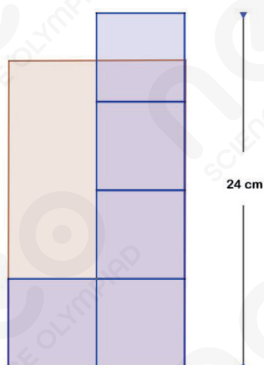
Among the three black structural parts that form the platform, the yellow angle formed at one intersection is four times the blue angle formed at another intersection.

It is also given that the angle between a red line, which represents one edge of the tablet, and a green line, which represents the edge of one of the platform pieces, is 114° .

Accordingly, which of the following could be one of the angles formed between the platform pieces?

- A) 62°
- B) 74°
- C) 82°
- D) 88°

25



Five identical ice cubes are placed in a right-prism cardboard cup with a square base sized to fit a 2×2 grid of these cubes (so the base side equals twice one cube edge). On the bottom, only two cubes are placed side by side along one edge (half the base is empty). The remaining three cubes are stacked vertically on one of the bottom cubes, so the stack is four cubes tall and the top cube sticks out of the cup.

If the total height of the ice-cube arrangement is 24 cm, what will be the water height in the cup after all ice melts?

(Assume the density difference between ice and water is negligible.)

- A) 6 B) 6.5 C) 7.5 D) 8

Answer Key

1	C
2	D
3	B
4	C
5	D
6	D
7	B
8	B
9	A
10	C
11	C
12	C
13	B
14	B
15	B
16	C
17	D
18	D
19	A
20	B
21	A
22	D
23	A
24	D
25	C