

01

$$\begin{array}{r} \text{●} 43 \\ - \text{●} 26 \\ \hline 117 \end{array}$$

Sophia subtracted two 3-digit numbers. Then she hid two cells. What is the sum of the two digits in the hidden cells?

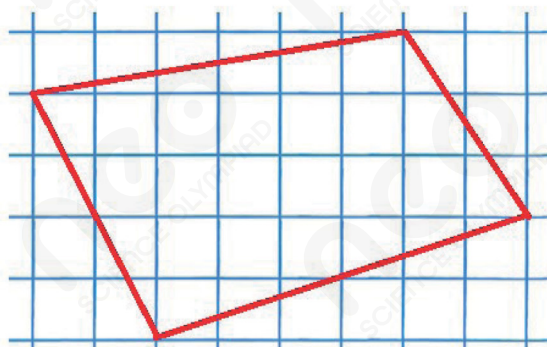
- A) 5
- B) 6
- C) 7
- D) 8

02

A cube has a surface area of 486 cm^2 . What is its volume?

- A) 343 cm^3
- B) 512 cm^3
- C) 729 cm^3
- D) 900 cm^3

03



What is the area of the polygon in the figure above?

- A) 20 square units
- B) 24 square units
- C) 28 square units
- D) 32 square units

04

The exam scores of a group of students are given below:
50, 50, 60, 60, 60, 100, 100, 80, 80, 80, 60, 60, 60, 80
Accordingly, what is the mode of this data set?

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

05

Daniel multiplied two 2-digit numbers correctly on a piece of paper. Then he scribbled out three digits as shown:
 $1\blacksquare \times \blacksquare 1 = 6\blacksquare 7$

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

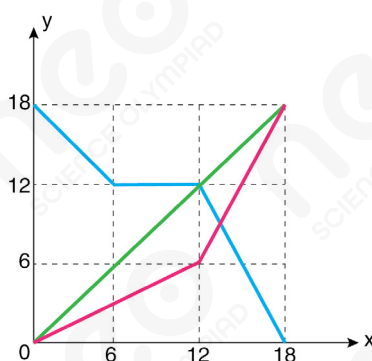
- A) 18
- B) 19
- C) 20
- D) 21

06

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

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

07



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

08

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

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

Three siblings aged 5, 8 and 9 share some money in proportion to their ages. If the 8-year-old receives \$32, what is the total amount shared?

- A) \$84
- B) \$88
- C) \$92
- D) \$96

12

Flour (cups)	Sugar (cups)
6	4
12	8
a	10
24	b

The table above shows flour–sugar ratio in a recipe.

What is $a + b$?

- A) 31 B) 32 C) 33 D) 34

13



Nadia finds an old calendar page showing 'September 1, 2013, Sunday.' She notices that her niece was born in the same year and same month on the 20th.

What day of the week was her niece born?

- A) Tuesday
B) Wednesday
C) Thursday
D) Friday

14

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

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

15

$$\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \sqrt{50} + \sqrt{72} = ?$$

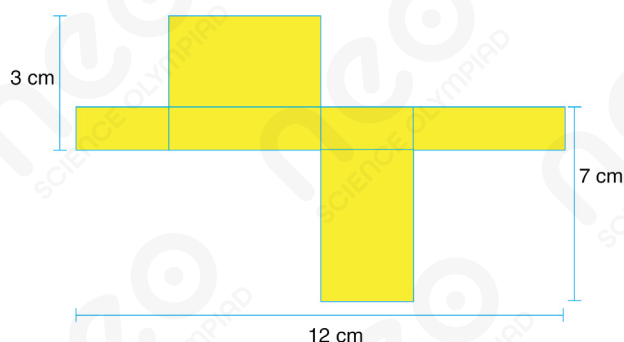
- A) $\sqrt{182}$ B) $20\sqrt{2}$ C) $21\sqrt{2}$ D) $22\sqrt{2}$

16

Given the polynomials $P(x) = x^5 + x^4 - x^2 + 2$ and $Q(x) = x^5 + 3x^4 - 4x^2 + 2x + 12$, what is the degree of the polynomial $(P(x) \cdot Q(x))$?

- A) 9 B) 10 C) 11 D) 12

17



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

18

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

19

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

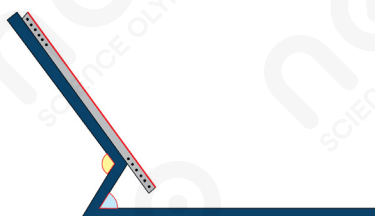
the first six terms is 54 more than the sum of the first eight terms.

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

20



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?

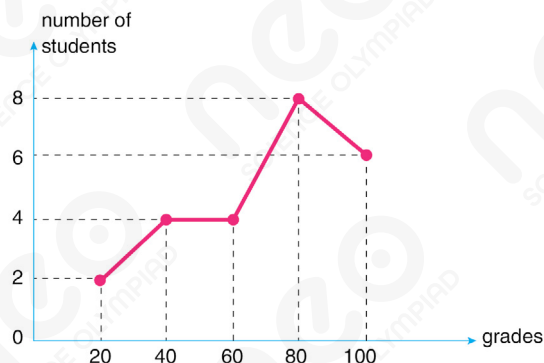
- A) 62°
- B) 74°
- C) 82°
- D) 88°

21

The binary number system uses only the digits 0 and 1, with place values based on powers of 2. How is the number 13 written in binary?

- A) 1001
- B) 1011
- C) 1100
- D) 1101

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 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

24

Given the equalities

$\log_5(25m) = 3$ and $\log_5 n = 4$,
What is the value of $\log_{25}(m^4 n^6)$

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

25

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

Answer Key

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