

Mathematica Centrum

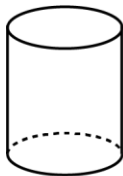
Together, let's shape the mathematicians of the future

PYTHAGORAS PREPARATORY 2023

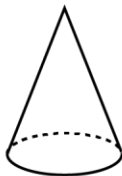
1. $21 + 22 = ?$

- A) 45 B) 43 C) 42 D) 41 E) 44

2. The number of flat faces of solids 1, 2, and 4 is equal to



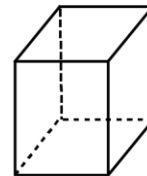
1



2



3



4

- A) 11 B) 12 C) 13 D) 9 E) 10

3. Sixty-three + twenty-five is equal to

- A) 90 B) 95 C) 88 D) 85 E) 75

4. The sum of $10 + 11 + 12$ is

- A) 33 B) 35 C) 38 D) 37 E) 34

5. How many pencils costing 40¢ each can you buy with \$2?

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

6. What number is 10 times greater than the number that is 5 times smaller than 5?

- A) 15 B) 9 C) 12 D) 8 E) 10

7. $20 \text{ nickels} = 2 \text{ quarters} + 2 \text{ dimes} + ? \text{ nickels}$.

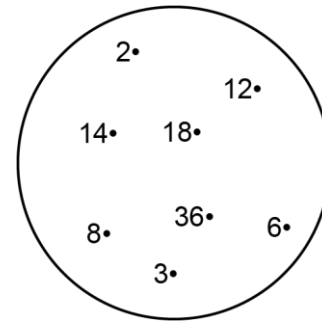
- A) 10 B) 8 C) 9 D) 6 E) 7

8. What is the perimeter of a rectangle whose length is 15 cm and width is 5 cm?

- A) 40 cm B) 15 cm C) 25 cm
D) 35 cm E) 30 cm

9. How many elements of the set shown are divisors of 18?

- A) 2 B) 6 C) 3
D) 4 E) 5

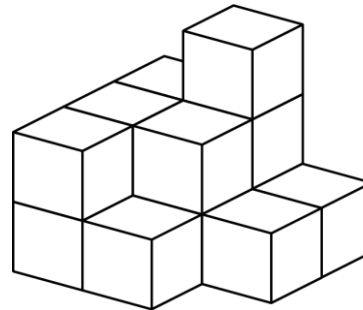


10. The 10th term in the sequence: 0, 2, 4, 6, 8, 10, 12, ... is

- A) 24 B) 26 C) 18
D) 20 E) 22

11. How many blocks in the pile are visible?

- A) 10 B) 11 C) 8
D) 12 E) 9



12. The number of faces of a cube plus the number of edges of a cube is equal to

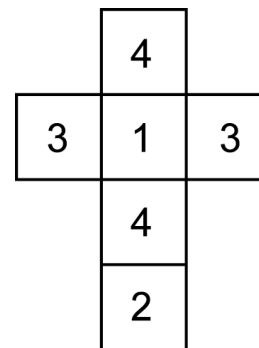
- A) 16 B) 18 C) 24
D) 22 E) 20

13. A natural number **mnpq** is made of 4 different digits: m, n, p, and q. Find the largest number **mnpq** in which m is greater than p and n is greater than q. What is the sum of m + q?

- A) 14 B) 15 C) 13
D) 12 E) 16

14. The missing number in the equation: $1 + 4 + 7 + 10 = 11 \times ?$ is

- A) 5 B) 2 C) 3
D) 4 E) 6



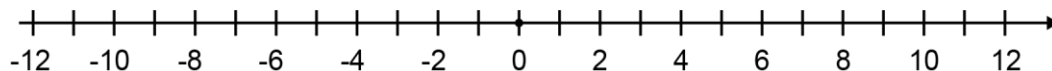
15. The 6 faces of a die are numbered, as shown in the diagram. What is the probability of getting a number which is a divisor of 12 when the die is thrown once?

- A) 1 B) 1/6 C) 2/6
D) 3/6 E) 4/6

16. Mathew is 15 years old and Mathilda, 3 years younger. What was Mathilda's age 3 years ago?

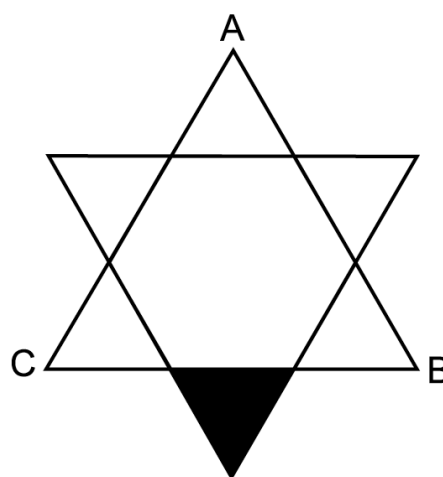
- A) 6 years old B) 7 years old C) 8 years old D) 9 years old E) 10 years old

17. The initial temperature in a city was -4 degrees. If the temperature decreased by 2 degrees each day for 6 consecutive days, then increased by 3 degrees each day for 5 consecutive days, what was the final temperature after 11 days?



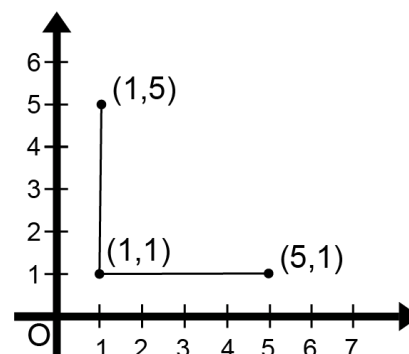
- A) 0 B) -2 C) -1 D) 2 E) 4
18. The number that is equal to 12 tens plus 10 ones is
- A) 110 B) 90 C) 120 D) 100 E) 130
19. I buy hockey cards for \$70 and sell them the next day for \$90. What is my profit?

- A) \$25 B) \$50 C) \$30
D) \$40 E) \$20
20. What is the area of the small shaded equilateral triangle, if the area of the large equilateral triangle ABC is 27 cm^2 ?



- A) 5 cm^2 B) 4 cm^2 C) 3 cm^2
D) 2 cm^2 E) 1 cm^2
21. A period of time of 2 hours and 10 minutes is how many times longer than a period of time of 2 minutes and 10 seconds?
- A) 90 times B) 60 times C) 120 times
D) 80 times E) 100 times

22. The points $(1, 5)$ and $(1, 1)$ are on the same vertical line. The points $(1, 1)$ and $(5, 1)$ are on the same horizontal line. How many of the following points: $(2, 0)$, $(2, 4)$, $(2, 6)$, $(6, 4)$, and $(1, 4)$ are on the same vertical line?



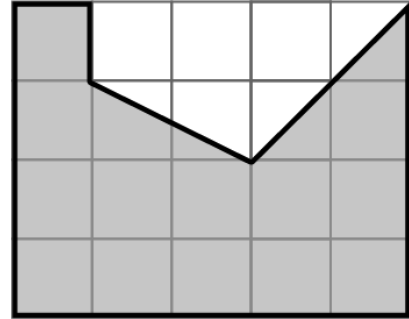
- A) 1 B) 4 C) 3
D) 5 E) 2
23. The ones' digit of $1! + 2! + 3! + 4!$ is
- A) 3 B) 5 C) 4
D) 1 E) 2

24. Mathew divides a number by 5 and then subtracts 5 from the quotient. The result of these operations is 6. Mathusalem multiplies the same number by 6 and then adds 6 to the product. What is the final result?

- A) 366 B) 360 C) 316 D) 306 E) 336

25. If the area of a small square is 1 cm^2 , what is the area of the part of the rectangle that is shaded?

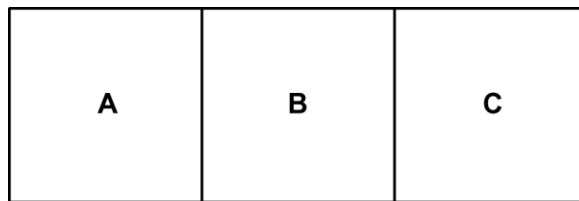
- A) 18 cm^2 B) 24 cm^2 C) 16 cm^2
 D) 15 cm^2 E) 20 cm^2



26. I am smaller than 100. One of my factors is 7. I am an odd number and a multiple of 5. What number am I?

- A) 80 B) 70 C) 35
 D) 90 E) 95

27. Three squares **A**, **B**, and **C** form a rectangle that has a perimeter of 64 cm. What is the perimeter of each square?



- A) 32 cm B) 36 cm C) 20 cm D) 24 cm E) 28 cm

28. Which of the following is the smallest?

- A) $12/36$ B) $11/37$ C) $9/36$ D) $7/18$ E) $26/72$

29. How many of the following numbers: 3, 6, 9, 11, 12, 13, 17, and 18 are prime?

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

30. $25\% \times 20\% + 15\% = ?$

- A) 260% B) 20% C) 12% D) 12.5% E) 13%

31. What is the average of 6, 7, 8, 9, and 10?

- A) 8 B) 9 C) 8.5 D) 9.5 E) 7

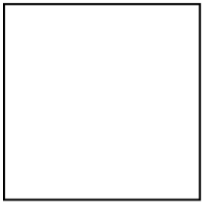
32. The sum of all the prime factors of 44 is

- A) 13 B) 15 C) 11 D) 17 E) 16

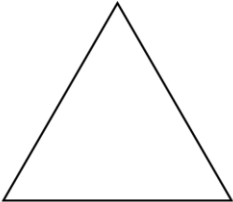
33. If $2 * 5 = 9$ and $4 * 0 = 16$ and $8 * 3 = 67$, and $3 * 8 = 17$, what is the value of $8 * 8$?

- A) 64 B) 65 C) 66 D) 72 E) 68

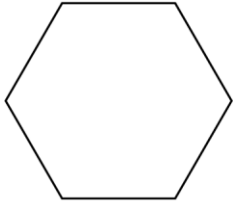
34. Which of the following figures (square, equilateral triangle, regular hexagon, circle, and rectangle) has an infinite number of lines of symmetry?



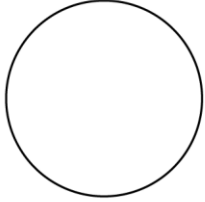
A



B



C



D



E