Mathematica Centrum

Together, let's shape the mathematicians of the future

PYTHAGORAS PREPARATORY 2019

1. The missing number in the equation: 8 x 3 = 4 x ? is

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

2. The sum of 8 + 50 + 200 + 6 000 is

A) 6 258 B) 6 558 C) 6 858 D) 6 238 E) 6 458

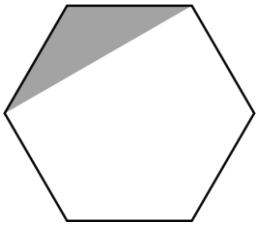
3. The value of (15 ÷ 3) x (16 - 9) is a multiple of

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

4. 20 nickels = ? quarters.

A) 5 B) 4 C) 6 D) 3 E) 7

5. What fraction of the hexagon is shaded?

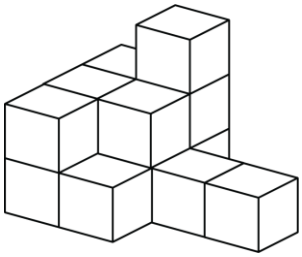


A) 1/6 B) 1/5 C) 1/4
D) 1/3 E) 1/2

6. A natural number is multiplied by 7.
The result could not be

A) 42 B) 56 C) 88
D) 49 E) 63

7. How many blocks are there in the pile?



A) 10 B) 11 C) 12
D) 13 E) 14

8. If the last day of January is a Wednesday,
then January 11 was a

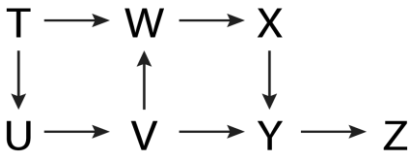
A) Wednesday B) Thursday C) Friday D) Saturday E) Sunday

9. When twice 100 is multiplied by one quarter of 12, the result is

A) 150 B) 300 C) 600 D) 200 E) 250

10. 10 dm = ? m

A) 100 B) 20 C) 5
D) 10 E) 1



11. T, U, V, W, X, Y, and Z are players that participated in a chess tournament. T → U means that T has won a game against U. How many players have not won a single game?

A) 0 B) 1 C) 2 D) 3 E) 4

12. A 2-digit natural number is multiplied by a 2-digit natural number. The product could be a natural number that has

A) 4 digits B) 6 digits C) 5 digits D) 7 digits E) 2 digits

13. Which of the following expressions is the largest?

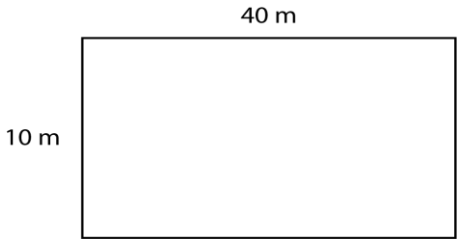
A) 3! B) 4! C) 5! D) 2! x 3!! E) 6!

14. A jar is full of old pennies, nickels, dimes, and quarters. Andrea removes 7 coins having a total value of 82¢. How many dimes did she remove?

A) 0 B) 1 C) 2 D) 3 E) 4

15. A rectangular piece of land measures 40 m x 10 m. If both its length and its width increase by 5 m, then its perimeter will increase by

A) 18 m B) 20 m C) 16 m
D) 14 m E) 22 m



16. I weigh 20 kg more than half of my weight. How many kilograms do I weigh?

A) 42 kg B) 48 kg C) 40 kg D) 44 kg E) 46 kg

17. If you could spend $1 every second, how much could you spend in a minute?

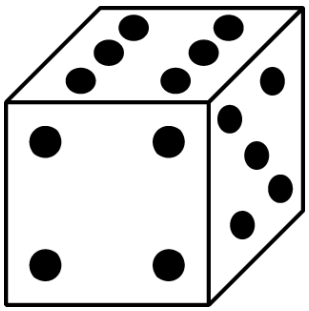
A) $50 B) $58 C) $60 D) $72 E) $24

18. A die is rolled once. What is the probability of getting a 6?

A) 3/6 B) 1/6 C) 2/6 D) 4/6 E) 5/6

19. How many even multiples of 3 are there between 0 and 100?

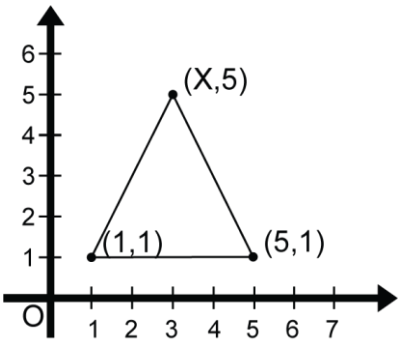
A) 16 B) 15 C) 18
D) 17 E) 14



20. What is the value of the following series: 1 + 3 + 5 + 7 + 9 + … 51?

A) 668 B) 670 C) 672
D) 674 E) 676

21. Points (1 , 1), (5 , 1), and (X , 5) are the 3 vertices of an isosceles triangle. What is the value of coordinate X?

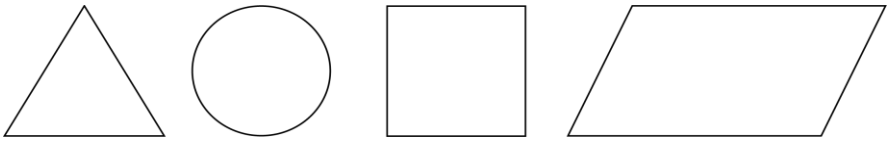


A) 2 B) 2.5 C) 3
D) 3.5 E) 4

22. How many common factors do 10 and 40 have?

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

23. How many of the geometrical figures shown below (equilateral triangle, circle, square, and parallelogram) have at least 4 lines of symmetry?



A) 0 B) 1 C) 2 D) 3 E) 4

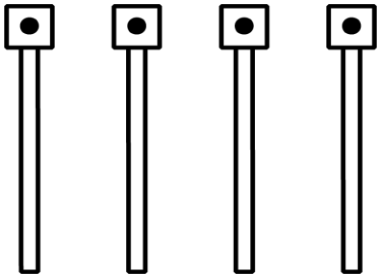
24. The unit's digit of the product 9 x 9 x 9 x 9 is

A) 7 B) 9 C) 3 D) 5 E) 1

25. The mass of a very large marine rock has been estimated to be 10 000 000 kg. Due to climactic conditions, the rock loses 1 000 kg per year. In how many years will it lose 0.1% of its mass?

A) 10 years B) 20 years C) 50 years D) 80 years E) 100 years

26. Mathilda has bought 4 belts of different colours (white, blue, red, and green). Her closet has 4 hooks and she wants to hang one belt on each hook. How many different ways can she hang her 4 belts?



A) 22 B) 24 C) 26
D) 28 E) 30

27. How many of the following numbers: 2, 3, 9, 17, and 1 119 are prime numbers?

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

28. Which of the following has the same value as $2^2 + 2^3 + 2^4$?

A) $2^3 + 2^4$ B) 2^5 C) $2^4 + 2^4$ D) $2^5 - 2^2$ E) $2^5 + 2$

29. How many cubes with edges 4 cm long do you need to form a cube with edges 8 cm long?

A) 4 B) 2 C) 16 D) 12 E) 8

30. If X is the average of 1/3 and 7/8, what is the average of X and 1/3?

A) 71/96 B) 29/48 C) 42/48 D) 48/97 E) 45/96

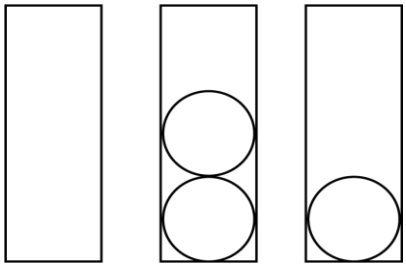
31. How many factors does 1 000 have?

A) 16 B) 18 C) 17 D) 20 E) 19

32. Andrea has 33 jujubes. She has twice as many yellow jujubes as green jujubes, three less blue ones than green ones, and one more red one than green ones. How many red and blue jujubes does she have in all?

A) 10 B) 11 C) 12 D) 13 E) 14

33. How many different ways can you put 3 tennis balls in the 3 cylindrical boxes shown below, if you must put at least one ball in the third box? The diagram shows one way to do this: none in the first, 2 in the second, and 1 in the third box?



A) 7 B) 5 C) 4 D) 6 E) 8