Mathematica Centrum

Together, let's shape the mathematicians of the future

PYTHAGORAS PREPARATORY TEST 2024

1. The number of vertices of a cube plus the number of faces of a cube is equal to

A) 24 B) 40 C) 48 D) 14 E) 36

2. Nine hundred minus six hundred five is equal to

A) 295 B) 299 C) 300 D) 301 E) 302

3. The value of X in the equation 18 ÷ X = 15 - 12 is

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

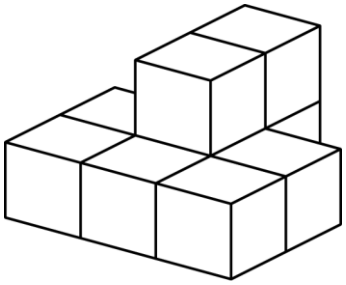
4. 1 x 2 x 3 x 4 = 4 x ?

A) 5 B) 6 C) 4 D) 12 E) 8

5. The product of 10 x 10 x 3 is

A) 100 B) 20 C) 3 000 D) 300 E) 30

6. Nine (9) blocks were glued together. How many faces of these 9 blocks are covered with glue?



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

7. (8 x 100) + (5 x 10) + 9 is equal to

A) 809 B) 789 C) 859
D) 810 E) 819

8. One person can pick 12 apples in 6 minutes. In 60 minutes, this person could pick about

A) 200 B) 80 C) 90 D) 120 E) 150

9. Mathew has $2 and $5 coins only. The minimum number of coins Mathew can have if he has an amount of $17 is

A) 1 B) 2 C) 3 D) 4 E) 7

10. The next number in the sequence: 3, 9, 7, 21, 19, 57 is

A) 55 B) 54 C) 43 D) 41 E) 42

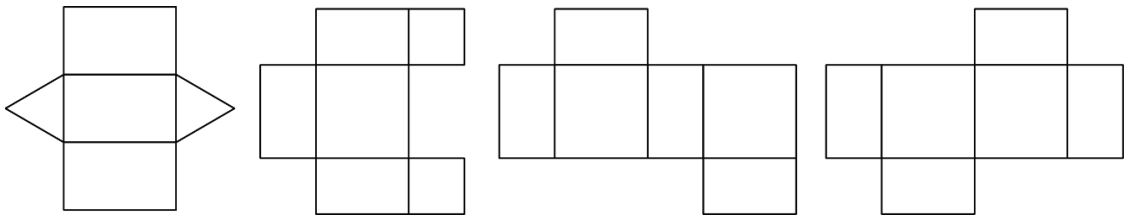
11. How many even numbers are there between 0 and 100?

A) 51 B) 98 C) 50 D) 49 E) 99

12. Which product is not equal to an even number?

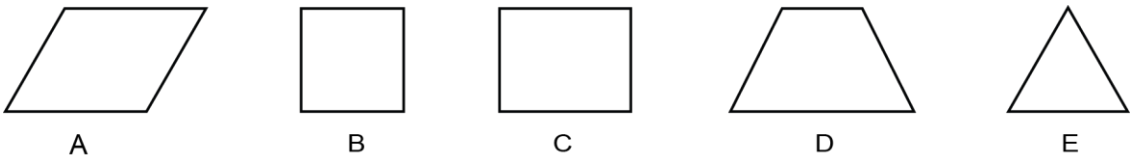
A) 12 x 9 x 3 x 5 B) 3 x 5 x 20 x 11 C) 15 x 3 x 12 D) 8 x 9 x 27 x 21 E) 1 x 3 x 5 x 7

13. How many of the following 4 nets cannot form a rectangular prism?



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

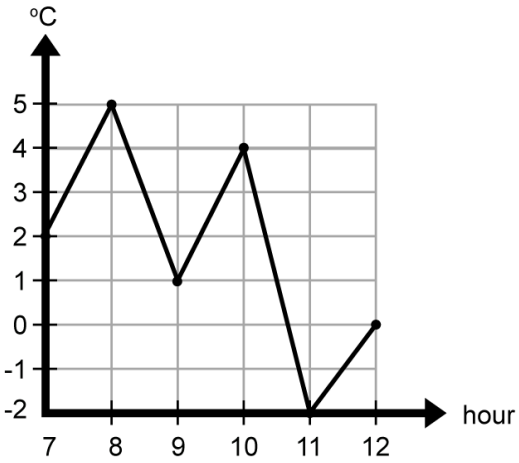
14. Which of the figures below has 1 line of symmetry?



15. How many natural numbers between 10 and 100 are divisible by 10?

A) 100 B) 20 C) 8 D) 9 E) 10

16. A scientist has recorded the temperature in degrees Celsius (ºC) every hour from 7 A.M. to 12 A.M. The broken-line diagram shows the data recorded. What is the difference between the highest temperature and the lowest temperature recorded?



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

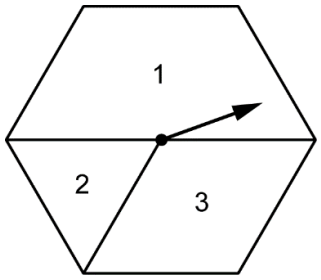
17. Mathilda has drawn as many squares as hexagons (6-sided polygons). When she counts the number of sides of all the figures drawn, the total counted is 60. How many figures did she draw?

A) 16 B) 12 C) 8 D) 18 E) 14

18. Andrea's car is 60 dm long. Which of the following is equal to 60 dm?

A) 600 cm B) 60 m C) 600 mm D) 6 cm E) 0.6 m

19. Mathilda built the hexagonal spinner shown in the diagram. If she were to spin the spinner 1 500 times, which answer best represents the approximate number of times she could expect to get a 1?



A) 750 times B) 1 200 times C) 380 times
D) 500 times E) 400 times

20. How many 3-digit natural numbers can you form if you use each of the digits 1, 2, and 3 only once in each number formed?

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

21. The average of the 7 natural numbers between 0 and 8 is

A) 4 B) 5 C) 4.1 D) 4.2 E) 3

22. In Mathilda's class, 40% of the students have brown hair, 30% have blond hair and all the others have black hair. What fraction of the students have black hair?

A) 1/5 B) 3/10 C) 2/5 D) 2/3 E) 1/3

23. When a natural number is divided by 5, the remainder is odd. The number could be

A) 12 B) 7 C) 22 D) 9 E) 18

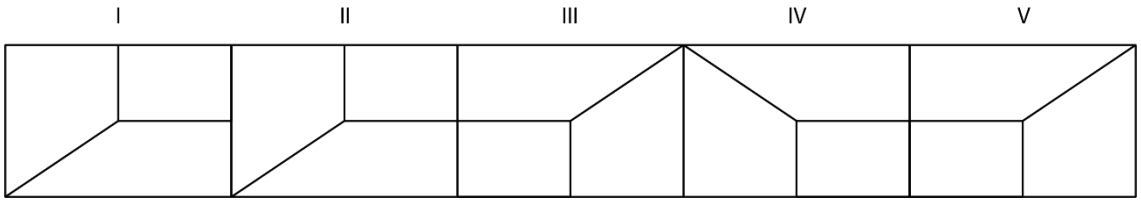
24. How many prime numbers are there between 20 and 35?

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

25. What is the value of M in the equation: 7 x 30 = M x 3 x 7?

A) 30 B) 12 C) 10 D) 11 E) 25

26. Which geometrical transformation did Mathilda use to transform figure I into figure II?



A) symmetry B) 180º rotation C) translation D) 90º rotation E) 150º rotation

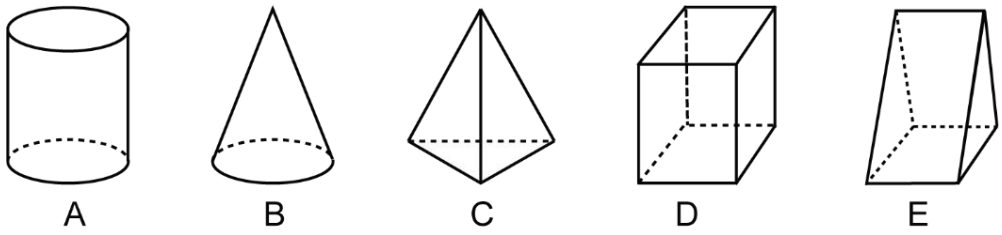
27. The tens digit of the product of 1 x 2 x 3 x 4 x 5 is

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

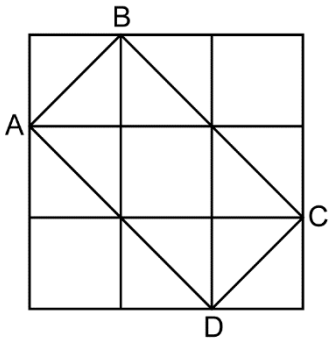
28. By what number must you multiply 48 to get 2?

A) 1/36 B) 24/16 C) 1/16 D) 1/32 E) 1/24

29. Which solid has 4 flat faces, 4 vertices, and 6 edges?



30. A large square of 144 cm² is divided into 9 small congruent squares. What is the area of rectangle ABCD?



A) 125 cm² B) 64 cm² C) 81 cm² D) 100 cm² E) 90 cm²

31. In 10 years, Mathilda will be two times older than she was 10 years ago. How old was she 15 years ago?

A) 25 years old B) 20 years old C) 5 years old D) 10 years old E) 15 years old

32. A natural number is equal to 4 times its inverse. What is the difference between these two numbers?

A) 3/2 B) 1/2 C) 2 D) 9/4 E) 2/3

33. To climb a flight of stairs, I can do it 1 step at a time or 2 steps at a time (by skipping one step). How many different ways can I climb a 3-step staircase?

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