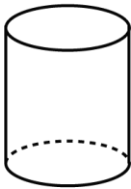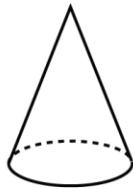# Mathematica Centrum
Together, let's shape the mathematicians of the future

PYTHAGORAS PREPARATORY TEST 2018
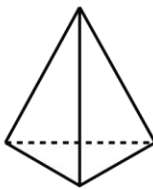
1. Which solid has 12 edges?

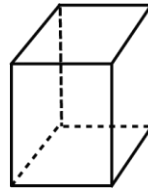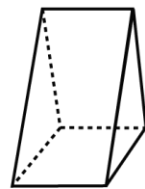
A   B   C   D   E

2. How many $5 cereal boxes can you buy with $24?

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

3. The value of X in the following equation: 2 + 9 + X + 3 - 2 = 13 is

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

4. The quotient of 210 ÷ 70 is

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

5. What fraction of the pie has been eaten?

A) 1/6　　　　　B) 1/5　　　　　C) 1/4
D) 1/3　　　　　E) 1/2
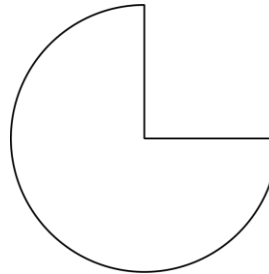
6. The value of the ? in the equation: 20 quarters = ? quarters + 40 dimes is

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

7. The tens digit in the product of 9 x 15 is

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

8. How many blocks are there in the pile?

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

9. The next term in the sequence below:
2, 3, 5, 8, 13, 21, … is

A) 32   B) 30   C) 31
D) 34   E) 33

10. Mathilda has 6 more books than Mathew. Together they have 30 books.
How many books does Mathilda have?

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

11. 10 mm = ? cm

A) 5   B) 1 000   C) 100   D) 10   E) 1

12. Which geometrical transformation did Mathilda use to transform figure IV into figure V?

A) translation   B) rotation of 90⁰ C) reflection   D) rotation of 45⁰ E) rotation of 180⁰

13. The number of sides plus the number of angles in an hexagon is equal to

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

14. A heart beats 10 times every 10 seconds. How many times will it beat in 2 minutes?

A) 100 times   B) 64 times   C) 148 times
D) 128 times   E) 120 times

15. Mathilda watched 120 minutes of a 3 hour movie.
What fraction of the total movie did she watch?

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

16. A small rectangular carton whose length measures
2 cm is carved out of a 7 cm x 5 cm rectangular carton.
What is the perimeter of the carved carton shown here
in the diagram?

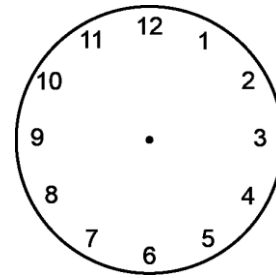A) 29 cm   B) 30 cm   C) 26 cm   D) 28 cm   E) 27 cm

17. The sum of two consecutive odd numbers is 16. What is their product?

A) 64   B) 35   C) 63
D) 56   E) 99

18. If the minute hand of a clock goes around 60 times, how many times will the hour hand go around?

A) 5 times   B) 1 time   C) 20 times
D) 60 times   E) 2 times

19. A bag contains 4 red balls, 3 green balls, and 2 blue balls. If you randomly choose one of these balls, what is the probability that the ball chosen is blue?

A) 2/6   B) 2/9   C) 2/5
D) 2/3   E) 1/2

20. Melissa has used square tiles to completely cover a 80 cm x 90 cm rectangular surface. What is the length of the side of tile X?

80 cm

A) 30 cm   B) 20 cm   C) 25 cm
D) 10 cm   E) 15 cm

90 cm
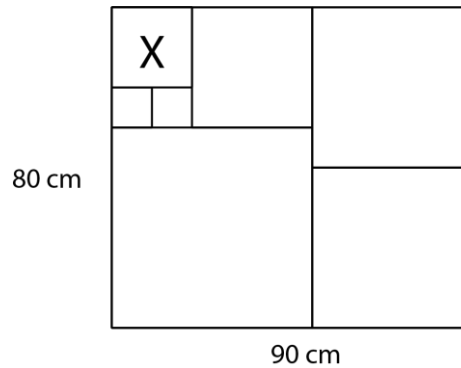
21. The greatest common factor of 3, 6, and 12 is

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

22. If $1^2 = 1$, $2^2 = 4$, $3^2 = 9$, then $4^2 + 5^2 = ?$

A) 41   B) 39   C) 40   D) 38   E) 42

23. A pile of 100 identical sheets of paper is 4 cm high. What is the thickness of one sheet of the same paper?

A) 0.4 cm   B) 0.04 cm   C) 40 mm   D) 0.4 dm   E) 400 mm

24. I have $100. If I increase this amount by 50% and then Increase this new amount by another 50%, how much will I have after the second increase?

A) $220   B) $180
C) $200   D) $225
E) $240

25. The big wheel turns in a clockwise direction and can transfer its energy to the other wheels by means of a belt. Which wheels turn in a clockwise direction?

A) 2 - 5 - 6   B) 4 - 7 - 8 - 5
C) 1 - 3 - 4 - 7 - 8   D) 1 - 7 - 4 - 2
E) 4 - 5
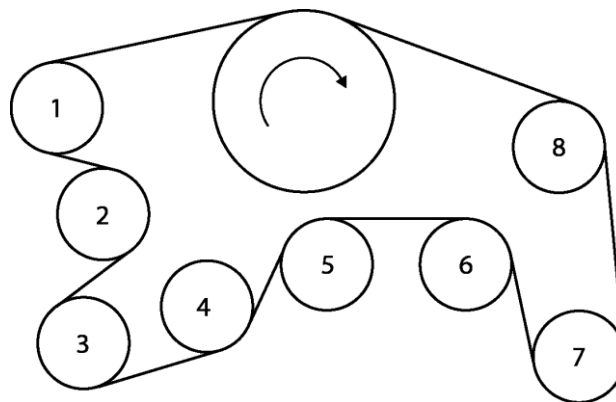
26. If N is a natural number and N + 3 is an odd number, which of the following is also an odd number?

A) 3 x N + 2   B) 3 x N + 3   C) 2 x N   D) N + 6   E) 2 x N + 4

27. The average of three different odd numbers M, N, and P is 9. If M = 13, what is the greatest possible value of P?

A) 15   B) 17   C) 19
D) 13   E) 11

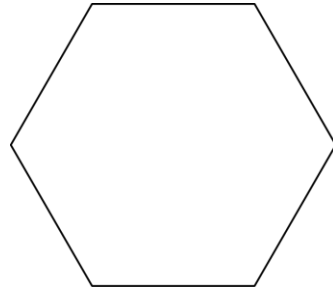**28.** Letters M, N, and B represent 3 different digits. What is the value of letter N?

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

$$
\begin{array}{r}
M\,7\,B \\
+\ 1\,N\,B\,N \\
\hline
N\,N\,6\,0
\end{array}
$$

29. Which number is not the sum of two different prime numbers?

A) 4   B) 14   C) 12
D) 24   E) 9

30. How many diagonals can you draw in the polygon shown in the diagram?

A) 11   B) 7   C) 8
D) 9   E) 10

31. Which of the following is divisible by 3?

A) 10 283   B) 998   C) 721   D) 2 682   E) 2 222

32. April 18, 2018 will be a Wednesday. April 17, 2019 will be a

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

33. The average of all the natural numbers from 1 to 9 is

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

34. Mathusalem has paid $30 for glass containers costing $3 and $2 each. How many $3 containers could he have bought?

A) 12   B) 5   C) 9   D) 8   E) 7