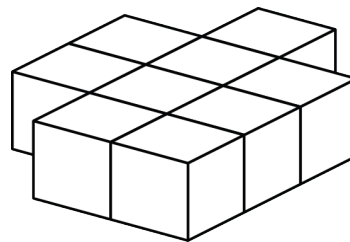# Mathematica Centrum
Together, let's shape the mathematicians of the future

BYRON-GERMAIN PREPARATORY TEST 2016

1. The base of a pyramid has 6 sides. How many vertices does the pyramid have?

   A) 5   B) 6   C) 7   D) 8   E) 9

2. Which of the following is false?

   A) 139 > 118   B) 353 > 352   C) 356 < 488   D) 637 < 899   E) 400 < 398

3. What is the difference between 7 x 12 and 72 ÷ 8?

   A) 77   B) 81   C) 74   D) 75   E) 76

4. 8 weeks and 8 days is more than

   A) 64 days   B) 63 days   C) 67 days   D) 65 days   E) 66 days

5. The ten's digit of the result of 428 - 348 is

   A) 8   B) 9   C) 7   D) 5   E) 6

6. You go to the gym 5 times each week. Which of the following is closest to the number of times you will go to the gym over a period of 6 months?

   A) 200 times   B) 80 times   C) 130 times   D) 150 times   E) 110 times

7. Nine blocks have been glued together, as shown in the diagram. How many blocks have exactly 3 faces that have glue on them?

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

8. Mathew is X years old and Mathilda Y years old. What was the sum of their ages 3 years ago?

   A) X + Y - 3   B) X + Y - 6   C) X + Y - 2   D) X + Y - 4   E) X + Y

9. How many 2-digit natural numbers are there?

   A) 80   B) 100   C) 89   D) 90   E) 91

10. Which expression yields a sum that is even?

A) 31 + 18 + 20   B) 22 + 24 + 36 + 19
C) 12 + 14 + 17   D) 12 + 14 + 55 + 33
E) 10 + 20 + 57

X	9	13	7
3	?	39	21
?	36	?	?
10	90	130	70

11. Mathilda rolls a dice 30 times. About how many times should she expect to get a 5?

A) 4 times   B) 6 times   C) 10 times
D) 8 times   E) 5 times

12. Which number, represented by a ?, has a value closest to 30?

A) 36   B) 52   C) 28   D) 27   E) 39

13. 3 hundreds + 50 ones + 16 tens is equal to

A) 610   B) 505   C) 520   D) 500   E) 510

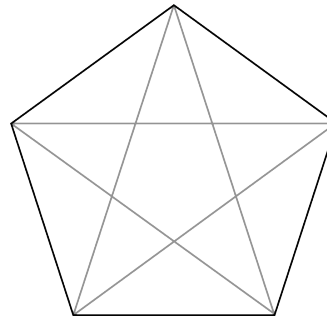**14.** 2 m + 1 dm + 5 cm is equal to

A) 215 cm   B) 225 cm   C) 205 cm   D) 200 cm   E) 212 cm

15. If you were using $5 bills and $2 coins, how many ways could you make change for a $20 bill?

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

16. Two diagonals can be drawn in a quadrilateral and 5 can be drawn in a pentagon (diagram). How many can be drawn in a hexagon (a polygon with 6 sides)?
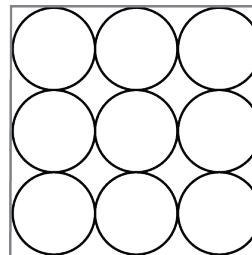
A) 10   B) 11
C) 9   D) 12
E) 8

17. If N x N = 1 + 2 + 3 + 4 + 3 + 2 + 1, then 10 x N is equal to
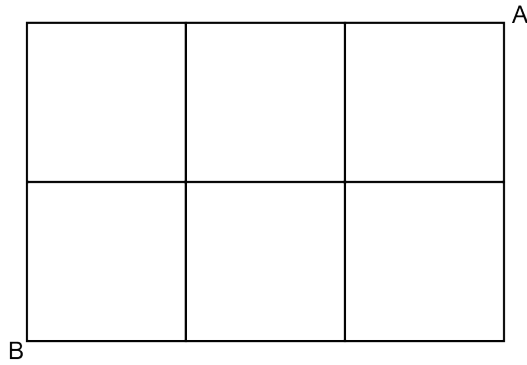
A) 50   B) 160
C) 70   D) 40
E) 80

18. Nine balls are inside a square box. Andrea wants to create something that looks like a pyramid. Using these balls as a base, how many more balls will she need to form a "pyramid"?

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

19. In the city of Neopolis, all streets are parallel or perpendicular. The distance between two consecutive parallel streets is 100 m. How many different 500 m routes are there to get from point A to point B?

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

20. Melissa has bought 5¢ and 10¢ stamps for a total of 55¢. If she were to buy the same number of 5¢ stamps, but twice the number of 10¢ stamps, it would cost her $1.05. How many 5¢ stamps did she buy?

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