Mathematica Centrum

Together, let's shape the mathematicians of the future

BYRON-GERMAIN PREPARATORY TEST 2014

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

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

2. Which number is a multiple of 4?

A) 18 B) 24 C) 34 D) 14 E) 23

3. Three quarters = 10 dimes - ? nickels.

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

4. (5 x 100) + (5 x 10) - (5 x 0.1) = ?

A) 550.5 B) 548.5 C) 54.5 D) 550 E) 549.5

5. The missing number in the equation: 10 x 2 ÷ 4 = ? ÷ 4 is

A) 5 B) 20 C) 10 D) 16 E) 24

6. The number of sides of a rectangle multiplied by the number of faces of a cube is equal to

A) 24 B) 18 C) 20 D) 16 E) 32

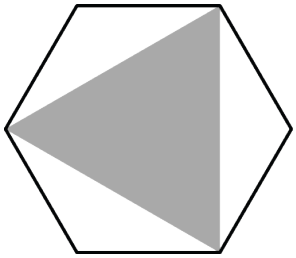
7. One half of 38 is less than

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

8. Three times a number minus 3 is equal to 21.
What is the number?

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

9. What fraction of the regular hexagon is shaded?



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

10. What is the value of n in the equation: 2 x n = n + 3?

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

11. Mathew talked for 150 seconds. He talked for

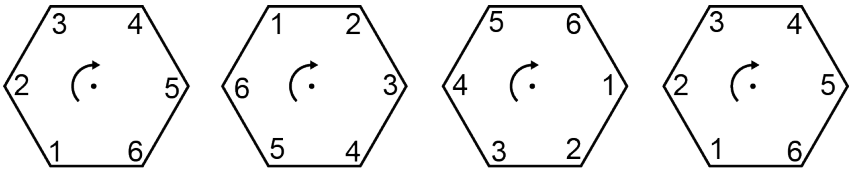
A) 1 ½ min B) 2 min C) 1 ¾ min
D) 2 ¼ min E) 2 ½ min

$$\frac{78A}{B} = 1C7$$

12. If A, B, and C represent 3 different digits, what is the sum of A + B + C that will yield a result that is exact?

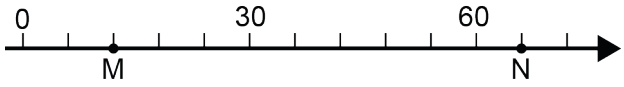
A) 19 B) 18 C) 20 D) 21 E) 17

13. The hexagons in the diagram form a sequence. The rotation around the centre (in the direction shown by the arrow) that can generate this sequence is a rotation of



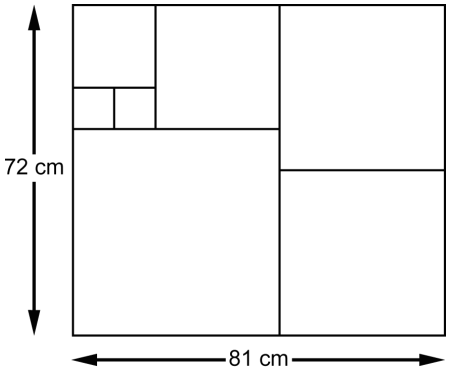
A) 3/6 of a turn B) 2/6 of a turn C) 4/6 of a turn D) 6/6 of a turn E) 5/6 of a turn

14. What is the length of segment MN (distance between points M and N on the number line)?



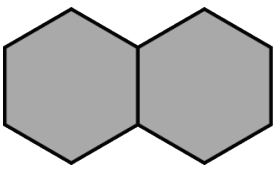
A) 45 B) 48 C) 54
D) 42 E) 60

15. Tim has used square tiles to cover a rectangular surface of 81 cm x 72 cm. What is the length of the side of the smallest tile he has used?



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

16. How many hexagons must be drawn to completely surround the 2 shaded hexagons?



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

17. The ones' digit of the sum of 4 + 14 + 24 + 34 is equal to

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

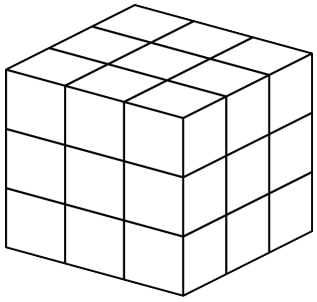
18. The fourth day of a month is a Monday. The last day of this month cannot be a Wednesday, nor a Tuesday, nor a

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

19. How many natural numbers between 10 and 60 have at least one digit which is a ‘’3’’?

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

20. A large wooden cube is painted and then divided into 27 smaller cubes (see diagram). How many of these small cubes have only one face that is covered with paint?



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

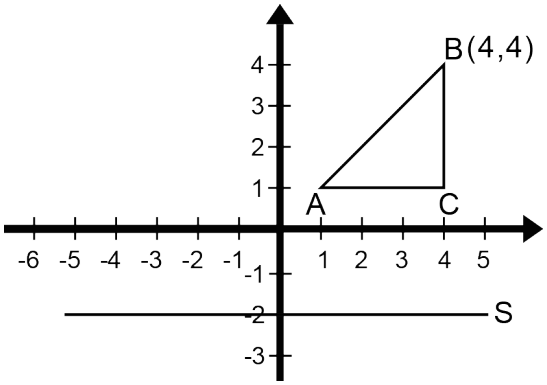
21. There are some numbers between 0 and 100 that are multiples of 7 and that, when divided by 2 or by 3, leave a remainder of 1. Which of the following numbers could be one of them?

A) 14 B) 28 C) 77
D) 49 E) 84

22. The product of all the factors of 35 is equal to

A) 1 225 B) 1 245 C) 35
D) 245 E) 175

23. What are the coordinates of the flipped image of vertex A of right triangle ABC if S is a flip line?



A) (1 , -4) B) (1 , -8) C) (1 , -6) D) (1 , -5) E) (1 , -7)