Mathematica Centrum

Together, let's shape the mathematicians of the future

PYTHAGORAS PREPARATORY TEST 2012

1. The number of edges of a cube multiplied by the number of faces of a cube is equal to

A) 18 B) 60 C) 48 D) 66 E) 72

2. How many factors do 6 and 15 have in common?

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

3. The largest 4-digit even number that can be written with the digits 1, 8, 6, and 4 is

A) 8 641 B) 6 814 C) 8 614 D) 4 681 E) 1 468

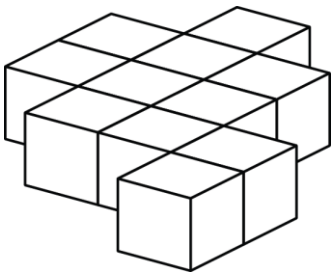
4. The average of 0, 2, 4, 6, and 8 is

A) 3.5 B) 4.5 C) 5.5 D) 4 E) 5

5. The missing number in the sequence: 3 500, 3 250, ?, 2 750, 2 500 is

A) 3 000 B) 3 150 C) 3 125 D) 3 200 E) 3 175

6. Eleven blocks have been glued together as shown in the diagram. How many faces of these blocks have no glue on them?



A) 40 B) 42 C) 44
D) 38 E) 46

7. 16 quarters = ? dimes

A) 25 B) 30 C) 40
D) 45 E) 50

8. Write the following 5 numbers: 3 782, 2 863, 1 935, 2 926, 3 931 in increasing order (from the smallest to largest). The fourth number written is

A) 3 782 B) 2 863 C) 3 931 D) 1 935 E) 2 926

9. What number is 10 more than the number that is 10 times smaller than 10?

A) 21 B) 10 C) 11 D) 20 E) 12

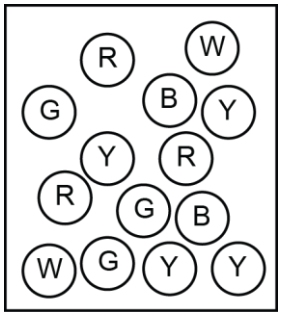
10. 11 hundreds - 280 + 14 tens = ?

A) 960 B) 1 020 C) 980 D) 1 050 E) 950

11. The base of a prism has 7 sides. The sum of the number of edges plus the number of vertices is

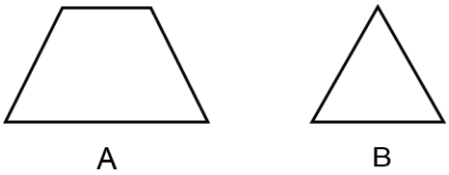
A) 32 B) 30 C) 34 D) 35 E) 36

12. Without looking, Mathew picks one marble from the box . What colour (Red, Green, Yellow, Black or White) is Mathew most likely to choose?



A) Red B) Green C) Yellow
D) Black E) White

13. The sum of the number of lines of symmetry of figure A and of figure B is equal to

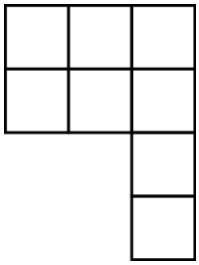


A) 3 B) 4 C) 2 D) 5 E) 6

14. How many 3-digit numbers can you form if you use the 3 following digits: 0, 1, and 2 only once?

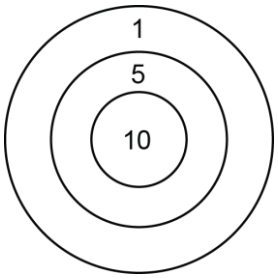
A) 4 B) 5 C) 6
D) 7 E) 3

15. The figure shown is made of 8 small squares. The side of each small square is 1 cm long. What is the perimeter of this figure?



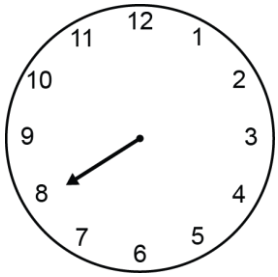
A) 17 cm B) 13 cm C) 16 cm
D) 14 cm E) 15 cm

16. A target is composed of 3 distinct areas. When hit, the areas are worth 1, 5, or 10 points. Mathusalem hit the target 8 times and scored 38 points. How many times did he hit the 5-point area?



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

17. The clock shown in the diagram has just lost its minute hand. What is the approximate time it lost it?



A) 7:30 B) 7:32
C) 7:28 D) 7:55
E) 7:40

18. How many odd numbers are there between 80 and 180?

A) 49 B) 51 C) 50 D) 52 E) 100

19. Three people (I, II, and III) bought liquid soap. I bought 250 ml for $4.50, II bought 750 ml for $12.35, and III, 500 ml for $8.90. The best buy was made by

A) I only B) II only C) III only D) I and II E) II and III

20. How many multiple of 3 are there between 102 and 120?

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

21. 10% of $80 = ?

A) $10 B) $25 C) $5 D) $20 E) $8

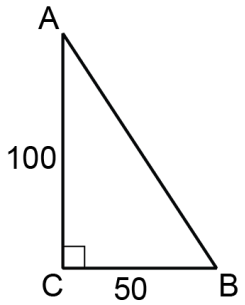
22. Which of the following fractions is the smallest?

A) 3/5 B) 1/2 C) 7/12 D) 17/30 E) 8/15

23. Melissa can ride her bicycle at a speed of 12 km/h. Andrea can ride hers at a speed of 16 km/h. They start from the same point and ride in the same direction. How many kilometres apart will they be after 2 1/2 hours?

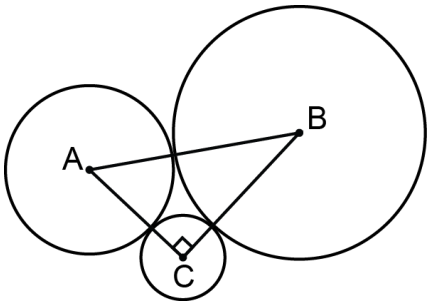
A) 11.5 km B) 9.5 km C) 10 km
D) 11 km E) 8 km

24. All measures in the diagram are in centimetres. What is the area of the right triangle ABC?



A) 3 000 cm^2 B) 1 500 cm^2
C) 2 500 cm^2 D) 1 000 cm^2
E) 2 000 cm^2

25. Three circles are tangent to each other. Circle A has a radius of 20 cm, circle B has a radius of 30 cm, and circle C has a radius of 10 cm. What is the perimeter of the right-angled triangle ABC?



A) 150 cm B) 130 cm
C) 140 cm D) 110 cm
E) 120 cm

26. How many prime numbers are there between 10 and 30?

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

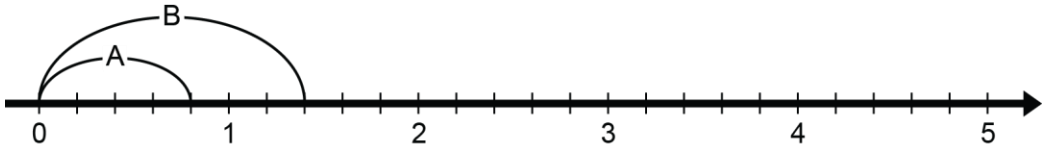
27. Which of the following numbers is 100 000 less than 1 million?

A) 900 100 B) 900 000 C) 910 000 D) 901 000 E) 990 000

28. The average of two numbers is 31. We add 6 to the first number and subtract 4 from the second. What is the new average?

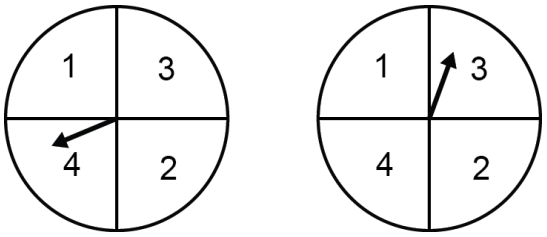
A) 30 B) 31 C) 32 D) 33 E) 34

29. The lengths of the jumps of two spiders (A and B) are shown in the diagram below. What is the distance between the two spiders (both start jumping from the origin of the number line) after A has made 5 jumps and B has made 3 jumps?



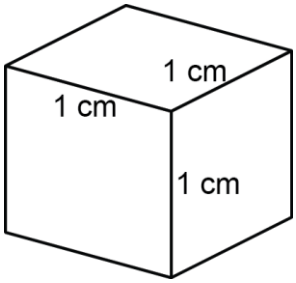
A) 3/5 B) 2/5 C) 1 D) 4/5 E) 1/5

30. Two spinners are used in an experiment. You spin the two spinners and write down the numbers as a pair. If the result of the first spinner is a 2 and the result of the second is a 3, the outcome is represented by the pair (2,3). What is the probability that the outcome is a pair where the second number is smaller than the first?



A) 1/4 B) 3/8 C) 1/2 D) 5/16 E) 1/8

31. The ratio of the area of the cube's faces compared to the cube's volume is equal to how many cm^2 per cm^3?



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

32. The product of all the factors of 100 is equal to

A) 10^6 B) 10^7 C) 10^8
D) 10^9 E) 10^{10}

33. Two (2) objects A and B have different weights. The weight of each one in pounds is a positive integer. Let A represent the weight of object A and B represent the weight of object B. We know that 8A + 3B = 68 and 6A + 9B = 78. What is the weight in pounds of 3A + 5B?

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