Brainiacs Math Olympiad Preliminary Round Sample Exam Paper

Category II – grades 5 and 6

Q1.

How many times do you have to write the digit 9 when writing the numbers from 1 to 100?

A. 10

B. 15

C. 20

D. 25

Q2.

From the number 209827325, delete 4 digits to obtain the smallest possible number. What will be the product of the deleted digits?

A. 998

B. 1008

C. 1024

D. 1140

Q3.

There are 12 bicycles in the garden, each with either 2 or 3 wheels. The total number of wheels is 30. How many bicycles have 2 wheels?

A. 6

B. 5

C. 4

D. 3

Q4.

$X\Delta Y = X + 2 \cdot Y$ and $X\Omega Y = X \cdot Y$. Find $(107\Delta 115)\ \Omega\ 6$.

A.2232

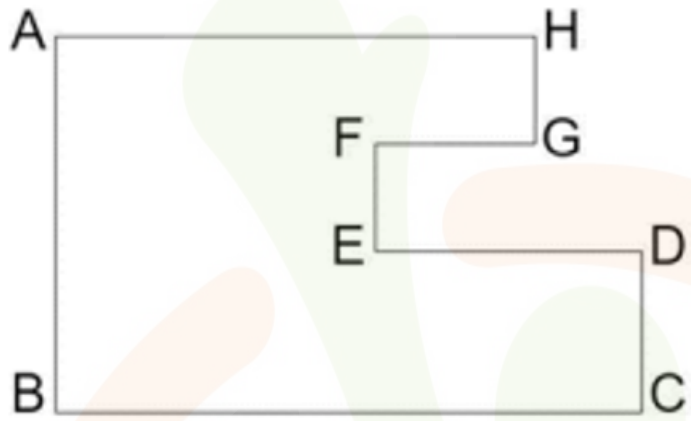
B.2226

C.2124

D.2022

Q5.

Find the perimeter of ABCDEFGH, if AB=6, BC=9 and FG = 2.



A. 36

B. 34

C. 28

D. 24

Q6.

Let X be the remainder when 2022 is divided by 11, and let Y be the remainder when 2022 is divided by 9. Find $X+Y$.

A. 17

B. 15

C. 13

D. 11

Q7.

One chicken eats 200 g of food per day. How many chickens will eat 8 kg of food in 4 days?

A.16

B.14

C.12

D.10

Q8.

How many three-digit numbers can be formed using only even digits?

A. 150

B. 120

C.100

D.50

Q9.

The length, width, and height of the aquarium are 10 cm, 20 cm, and 30 cm, respectively. What will be the volume of water if a quarter of the aquarium is filled?

A. $8000\ cm^3$

B. $6000\ cm^3$

C. $2000\ cm^3$

D. $1500\ cm^3$

Q10.

Calculate $\left(1-\frac{1}{2}\right)\bullet\left(1-\frac{1}{3}\right)\bullet\left(1-\frac{1}{4}\right)\ldots.\left(1-\frac{1}{21}\right)\bullet\left(1-\frac{1}{22}\right).$

A. $\frac{2}{11}$

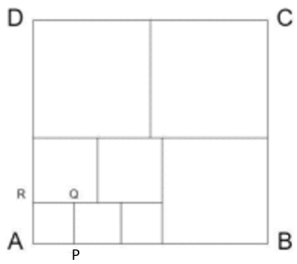
B. $\frac{1}{22}$

C. $\frac{1}{11}$

D. $\frac{21}{22}$

Q11.

The perimeter of rectangle ABCD is 43 cm. Calculate the perimeter of APQR, assuming all smaller rectangles are squares.



A.16

B.12

C.8

D.4

Q12.

The speed of the dog is 4600 $dm/\min$, the speed of the cat is 8 m/s and speed of the mouse is 27 km/h.

Which one is faster?

A. Dog

B. Cat

C. Mouse

D. Tiger

Q13.

Alex has 3 pairs of shoes, 4 pants, and 5 t-shirts. How many different combinations of clothes can he wear?

A.12

B.15

C.20

D.60

Q14.

Jim thought of a number. Jack multiplied Jim's number by 4 and then added 15, while Jane multiplied Jim's number by 15 and added 4. What number did Jim come up with if Jack and Jane obtained the same result?

A. 1

B. 2

C. 3

D. 4

Q15.

Calculate the sum: 1 + 3 + 5 + ⋯ + 97 + 99

A. 2500

B.2370

C.2250

D.2090

Q16.

The letters in the word 'MATHEMATICIAN' were placed in a box. What is the probability of drawing the letter 'A' from the box?

A.1/13

B.12/13

C.3/13

D.10/13

Q17.

Ahmad received a container of fresh eggs. He sold 1/3 of the eggs in the morning and sold 320 eggs in the afternoon. At the end of the day, he found that 1/4 of the eggs were not sold. How many eggs did he receive in the beginning?

A. 984

B. 768

C. 684

D. 638

Q18.

To complete the grid below, each of the digits from 1 to 4 must occur exactly once in each row and each column. What number should I replace X?

1		2	
2	3		
			4
			X

A. 4

B. 3

C. 2

D. 1

Q19.

Let the operation $*$ be defined by $a * b = ab - a - b + 2$. If $7 * b = 13$, what is the value of b?

A. 7

B. 5

C. 3

D. 1

Q20.

How many squares are there in the picture?

A.12

B.16

C.20

D.24