

Question 1

A farmer plants a square block of trees. He plants another 25 trees and still has a square plantation. The number of trees in the new plantation is:

- A. 50 B. 100 C. 125 D. 144 E. 169

Question 2

The average of six numbers is 4. A seventh number is added and the new average is 5. The seventh number is:

- A. 5 B. 6 C. 9 D. 11 E. 12

Question 3

A cyclist bikes for 90 minutes at 20 km/h and then for an hour at 30 km/h. What is the average speed of the cyclist for the whole journey?

- A. 24 km/h B. 25 km/h C. 27.5 km/h D. 30 km/h E. 50 km/h

Question 4

On the planet Zorg, each male has a single female parent, while each female has a female and a male parent. How many ancestors has a male if he is the sixth generation?

- A. 8 B. 19 C. 20 D. 26 E. 32

Question 5

The first five terms of a sequence are 2, 4, 6, 10, 16. What is the expression in terms of n for the n th term of the sequence?

- A. $2n$ B. $n+2$ C. $3n-n$ D. $n(n+1)$ E. $n+(n+1)$

Question 6

The highest common factor of 16 and 36 is:

- A. 4 B. 6 C. 144 D. 256 E. 576

Question 7

The lengths in centimetres of the sides of a triangle are $3x$, $4x$, and $5x$. If the perimeter of the triangle is 120 cm, then the shortest side in centimetres is:

- A. 3 B. 6 C. 30 D. 40 E. 120

Question 8

If on a map a square with sides of 2 cm represents an area of 16 km², what is the area represented by a square with sides of 4 cm?

- A. 24 km² B. 32 km² C. 64 km² D. 256 km² E. 1024 km²

Question 9

Hanife works for eight days. Each day she gets paid half of what she was paid the previous day. If she was paid \$800 on the first day, how much was she paid in total?

- A. \$1587.50 B. \$1593.75 C. \$1596.87 D. \$1987.50 E. \$2387.50

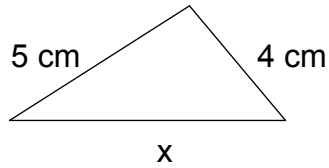
Question 10

The sides of a triangle have lengths in centimetres of 195, 130 and x , where x is a whole number. What is the smallest possible value of x ?

- A. 55 B. 64 C. 65 D. 66 E. 130

Question 11

Which of the following is true?



- A. $x < 1$ B. $x > 9$ C. $0 < x > 10$ D. $1 < x < 9$ E. $5 < x < 4$

Question 12

The result of doubling the denominator of a fraction is:

- A. doubling the value of the fraction
- B. halving the value of the fraction
- C. adds half the value of the fraction
- D. decreases the value of the fraction by 2
- E. makes no change

Question 13

Two identical jars are filled with mixtures of oil and water in the ratio of 2 to 1 and 3 to 1 respectively. If both jars are emptied into another container then the ratio of oil to water in the mixture is:

- A. 3 to 2 B. 4 to 3 C. 5 to 2 D. 6 to 2 E. 17 to 7

Question 14

A tree makes a shadow on the ground 28 m long.
A vertical stick 5 m long makes a shadow 8 m long at the same time of day.
The height of the trees is:

- A. 17.5 m B. 28 m C. 33 m D. 36 m E. 44.8 m

Question 15

A dinner costs guests \$120 for a double and \$80 for a single. The number of singles attending was twice the number of couples. A total of \$2800 was paid. How many people attended the dinner?

- A. 10 B. 20 C. 30 D. 40 E. 50

Question 16

The diagonals of a quadrilateral bisect the opposite angle. For which quadrilateral(s) is this always true?

- A. rectangle B. square C. kite D. parallelogram E. all of these

Question 17

A fire in the school library burns $\frac{1}{3}$ of the books. A further 20% are damaged by water and another four out of ten are smoke damaged. Of the original 45,000 books, how many are still in good condition?

- A. none B. 1000 C. 3000 D. 3150 E. 9000

Question 18

In 2017 an affordable house was defined as costing \$500,000. If inflation runs at 2% per year, what would be the equivalent value in three years?

- A. \$500,000 B. \$503,006 C. \$506,000 D. \$530,000 E. \$530,604

Question 19

A cruise ship has sufficient food for 1200 people for 30 days. However, for their current cruise there are only 900 people on board. How long could the cruise be extended for without running out of food?

- A. 10 days B. 22.5 days C. 36 days D. 40 days E. 45 days

Question 20

Katrina completed a 3000 m race in 10 minutes. What was her average speed?

- A. 18 km/h B. 30 m/min C. 30 km/h D. 50 m/s E. 300 m/s

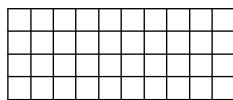
Question 21

$$3 + 2 \times 5 - 3 + 1 \times 4 + 4 - 3 \times 2 =$$

- A. 0 B. 12 C. 90 D. 186 E. 330

Question 22

This rectangle is divided into squares. How many squares are there?



- A. 40 B. 55 C. 73 D. 89 E. 90

Question 23

What is the value of M in the equation

$$2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 = M \times 14 \times 16 \times 20 \times M$$

- A. 3 B. 6 C. 9 D. 27 E. 81

Question 24

The average of $\frac{1}{8}$ and $\frac{1}{2}$ is:

- A. $\frac{1}{4}$ B. $\frac{1}{5}$ C. $\frac{2}{5}$ D. $\frac{1}{16}$ E. $\frac{5}{16}$

Question 25

If K is a positive integer between 6 and 10, which of the following is the largest?

- A. $K \times K$ B. $K + K$ C. $K!$ D. $K + 10$ E. $K \times 10$

Question 26

The lowest common multiple of 30 and 48 is:

- A. 6 B. 40 C. 78 D. 240 E. 1440

Question 27

Road works are occurring over a 10 km section of road between Levin and Otaki. The speed limit has been reduced from 100 km/h to 60 km/h. If Mr Smith was driving to the speed limit, how many minutes would be added to his trip along this road due to the road works?

- A. 4 B. 6 C. 8 D. 10 E. 12

Question 28

In a survey of the extra-curricular activities of a class of 36 students, 18 said they did dancing, 16 did swimming, 3 did swimming and running and 3 did dancing and running. Only one person did all three activities. 4 students did swimming and dancing. How many students did running only?

- A. 2 B. 4 C. 6 D. 8 E. 10

Question 29

How many ways can 84 be expressed as the product of two positive integers?

- A. 3 B. 4 C. 5 D. 6 E. 7

Question 30

Which of the following sets of numbers could be the sides of a right angled triangle?

- A. 3, 4, 6 B. 6, 8, 11 C. 8, 15, 15 D. 9, 39, 40 E. 20, 21, 29