Question 1

If it takes 95 minutes to roast a chicken. What time will it need to be put on to cook if it was to be served at 12.15 *pm*?

A. 10.40 *am*   B. 10.40 *pm*   C. 11.15 *am*   D. 11.20 *am*   E. 11.20 *pm*

Question 2

If $A \# B = A(A + B)$ and $A @ B = B(B - A)$, then $2 \# (3 @ 4) =$

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

Question 3

Mr Free travels 120 *km* to Palmerston North at 60 *km/h* and returns travelling at 80 *km/h*. What is his average speed for the whole trip?

A. 34.29 *km/h*   B. 68.57 *km/h*   C. 70 *km/h*   D. 137.14 *km/h*   E. 140 *km/h*

Question 4

Car number plates are made with exactly 3 letters and 3 numbers in the format ABC123. However, the number can not start with a zero.
How many number plates start with the letter M?

A. 608,400   B. 675,324   C. 676,000   D. 12,812,904   E. 17,576,000

Question 5

Mr Clark buys a house in Auckland for $800,000. Average house prices increase 12%, 11% and 15% in each of three successive years and then drop 15% in the fourth year. What would he expect to sell the house for after these four years?

A. $800,000   B. $972,182   C. $984,000   D. $994,560   E. $1,224,000

Question 6

Which of the following is not a pythagorean triple?

A. 3, 4, 5   B. 7, 24, 25   C. 8, 15, 17   D. 11, 60, 61   E. 13, 86, 87

Question 7

St Catherine's has 64 students in Y10. 27 study German, 17 French, and 15 Spanish.
5 are taking both German and French, 6 take both French and Spanish, and 7 study both
Spanish and German. 2 students take all three languages. How many Y10 students are
not studying a language?

A. 0   B. 11   C. 20   D. 21   E. 22

Question 8

A five digit number of the form 213*ab*, where *a* and *b* are digits, has a remainder less
than 10 when divided by 100. The sum of all of the digits is 13. From the following, what
is the value of the digit *b*?

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

Question 9

A line is drawn through the points (4, 0) and (5, 2).
Another line is drawn starting from (-2, 0). If the second line is drawn parallel to the first,
at what point does it cross the *y* axis?

A. -4   B. -2   C. 0   D. 2   E. 4

Question 10

What is the next number in this sequence?

1, 4, 1, 5, 9, 2, __

A. -5   B. 1   C. 6   D. 7   E. 9

Question 11

What is the area in square metres of a triangle with sides
of lengths 24 *m*, 26 *m* and 10 *m*?

A. 120   B. 130   C. 208   D. 240   E. 312

Question 12

If *A* is 10% of *C* and *C* is 25% of *B*, what percent of *B* is *A*?

A. 2.5 %   B. 10%   C. 25%   D. 75%   E. 97.5%

Question 13

A snake slides horizontally into a pipe at 6 centimetres per second. The pipe is 7.74
metres in length. The snake takes 14 seconds to fully enter the pipe.
How many seconds does it take the snake from starting to enter the pipe to fully exit the
pipe?

A. 101   B. 115   C. 129   D. 143   E. 157

Question 14

When I add 6 times my age 6 years from now to 7 times my age 7 years from now, I get
14 times my current age. How old will I be 4 years from now?

A. 17   B. 21   C. 45   D. 46   E. 89

Question 15

The product of two numbers is 84. The first number is divided by 3 and the second is
multiplied by 4. The product of the two new numbers is then divided by 2. What is the
result of this calculation?

A. 31.5   B. 42   C. 56   D. 112   E. 224

Question 16

80 boys play in a singles tennis tournament. When a player loses a match he is out of the tournament. How many matches must be played to determine a winner?

A. 20   B. 39   C. 40   D. 79   E. 80

Question 17

If *AAAA + BBBB + CCCC = BAAAC* where each different letter represents a different digit, what number does *C* represent?

A. 1   B. 3   C. 5   D. 6   E. 8

Question 18

Joshua digs a circular hole 3 *m* in diameter and 2 *m* deep. He then forms a cube sitting on the bottom of the hole which has sides 1.5 *m* in length.
How many cubic metres of dirt is in the hole?

A. 0   B. 9.07   C. 10.76   D. 17.51   E. 41.18

Question 19

The trunk of a monkey puzzle tree has a diameter of 40 *cm*. As a protection from fire the trunk of the tree has a bark which makes up 19% of its volume. On average, roughly how thick is the bark of the tree?

A. 2 *cm*   B. 3.8 *cm*   C. 7.6 *cm*   D. 8.7 *cm*   E. 36 *cm*

Question 20

Two fractions are spaced equal distance between 1/4 and 2/3. The larger of these is

A. 1/2   B. 1/3   C. 7/18   D. 13/24   E. 19/36

Question 21

A floor tile has the shape of a regular polygon. If the tile is removed from the floor and rotated through 50 degrees it will fit back exactly into its original place in the floor. What is the least number of sides that the tile can have?

A. 8   B. 24   C. 25   D. 30   E. 36

Question 22

To optimise the use of the tyres on a car, the manufacturer recommends that the front and rear tyres be regularly interchanged. If a front tyre lasts 40,000 *km* and a rear tyre lasts 60,000 *km*, what is the greatest distance you can travel on a set of four tyres before they should be replaced?

A. 40,000   B. 44,000   C. 48,000   D. 50,000   E. 52,000

Question 23

From Census 2014, what is the projected (approximate) percentage population median age change for New Zealand for the next 20 years?

A. -11%   B. -9%   C. 0   D. +9%   E. +11%

Question 24

A 2 *kW* heater can heat a 4 *m* x 4.5 *m* lounge from 10°*C* to a temperature of 20°*C* in 3.5 hours. If the door to the 3 *m* x 3 *m* dining room adjacent is opened, how long would it take the heater to bring both rooms up to 20°*C* if both rooms were at 10°*C*?

A. 3.5 *hrs*   B. 5.25 *hrs*   C. 6.25 *hrs*   D. 7 *hrs*   E. Not enough information

Question 25

A builder is building a gable roof over a 15 *m* wide house. (A gable roof is an isosceles triangle shape with the apex in the centre of the house). The roof has a pitch of 22.5 degrees from the horizontal. What is the height of the apex he has to build?

A. 2.9 *m*   B. 3.1 *m*   C. 3.75 *m*   D. 6.2 *m*   E. 6.9 *m*

Question 26

The internal measurements of a rectangular box are 3 *cm* x 4 *cm* x 12 *cm*.
What is the length in centimetres of the longest rod which will fit in the box?

A. 12   B. 12.37   C. 12.65   D. 13   E. 15

Question 27

Two identical jars are filled with a mixture 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. 2 to 5   B. 3 to 4   C. 5 to 2   D. 12 to 5   E. 17 to 7

Question 28

Susan is studying the effects of rats on the kiwi population on Great Barrier Island. She captures 30 rats, tags them and lets them go. Two weeks later she captures 100 rats and finds 6 of them are tagged. She is now able to estimate the rat population. What is her estimate?

A. 500   B. 600   C. 3000   D. 5000   E. 6000

Question 29

A regular octagon is formed by cutting an isosceles right angle triangle from each of the corners of a square with sides of length 200 *mm*. The length of each side of the octagon is approximately

A. 70 *mm*   B. 80 *mm*   C. 90 *mm*   D. 100 *mm*   E. 120 *mm*

Question 30

If x, y and z are positive with $xy = 24$, $xz = 48$, and $yz = 72$, then $x + y + z$ is

A. 17   B. 18   C. 22   D. 27   E. 288