Question 1:

Every week, Maia saves $\frac{3}{4}$ of her earnings. If she saves \$90 every week, then the amount she earns each week is

A. \$20 B. \$45 C. \$75 D. \$80 E. \$120

Question 2:

When making a milkshake, I use 3 times as much ice-cream as syrup and $7\frac{1}{2}$ times as much milk as syrup. In my milkshake, how many times as much milk as ice-cream do I have?

A. $2\frac{1}{2}$ B. $22\frac{1}{2}$ C. $10\frac{1}{2}$ D. 3 E. $4\frac{1}{2}$

Question 3:

In the following subtraction some of the digits are represented by letters

$$\begin{array}{rccccc} & a & 4 & b & 7 & c \\ - & 5 & d & 8 & e & 6 \\ \hline & 2 & 8 & 4 & 9 & 9 \end{array}$$

Which letter has the largest value?

A. a B. b C. c D. d E. e

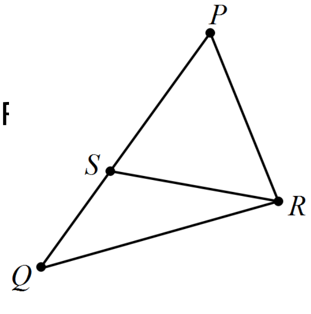
Question 4:

How many numbers greater than 4000 can be formed with the digits $\{2, 3, 4, 5, 6\}$ if no digit is used more than once in a number?

A. 120 B. 138 C. 144 D. 156 E. 192

Question 5:

The triangle PRS is equilateral and its area is half that of triangle PQR. What is the size, in degrees, of the angle PR



A. 80 B. 85 C. 90 D. 92 E. 95

Question 6:

Which of the numbers $\{5, 6, 7, 8, 9\}$ when substituted as the denominator in the fraction $\frac{19}{[\ ]}$, gives the fraction which is closest to $2\frac{1}{2}$?

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

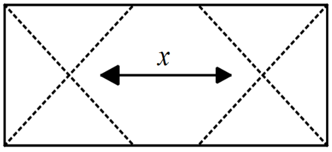
Question 7:

Every day, I swim a certain number of laps of my pool. After completing a certain number of laps, I have done 20% of the total, and after one more lap I have completed 25% of the total. How many maps do I swim each day?

A. 20 B. 30 C. 40 D. 50 E. 60

Question 8:

A train ticket is m cm long and n cm wide. During her train trip Aria makes creases in the ticket as shown in the figure where the creases bisect the angles in the corners.
The length x, in centimetres, is



A. $m - 0.5n$ B. $m - 0.2n$ C. $m - n$ D. $m - \sqrt{2}n$ E. $\sqrt{2}(m - n)$

Question 9:

Ten students sit for an examination which has a maximum score of 100. The mean of the ten scores achieved by the students in the examination was 94. What is the minimum mark a student could have scored?

A. 20 B. 90 C. 92 D. 40 E. 0

Question 10:

The local landfill can hold 1 million cubic metres of rubbish. Each truck that goes to the landfill delivers 5 cubic metres of rubbish and 6 trucks per day go to the landfill 6 days a week. The number of years that landfill will last is approximately

A. 1 B. 3 C. 11 D. 25 E. 100

Question 11:

The maximum number of diagonals that can drawn on the faces of a cube so that no two of the diagonals have a common point is

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

Question 12:

A painter, standing on a rung of a ladder, notices that there are twice as many rungs below the rung she is standing on as above it. After descending eight rungs she notices that the number of rungs below and above the rung she is on is the same. The number of rungs on the ladder is

A. 27 B. 31 C. 32 D. 48 E. 49

Question 13:

An orchardist in the Hawkes Bay packed apples into small bags of 8 and large bags of 20. 560 apples were packed into 46 bags altogether. The number of large bags used was between

A. 10 and 14 B. 14 and 18 C. 18 and 24
D.24 and 30 E. 30 and 34

Question 14:

How many integers n are there such that both n and $n + 63$ are perfect squares?

A. 1 B. 2 C. 3 D. 49 E. 99

Question 15:

Let $n = 1 + 3 + 5 + \ldots + 999$ and $m = 2 + 4 + 6 + \ldots + 1000$. Then $m - n$ equals

A. 500 B. 1000 C. -499 D. 499 E. 501

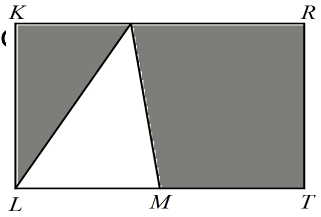
Question 1:

The first year after 2016 which is the product of three consecutive integers is

A. 2018 B. 2040 C. 2046 D. 2052 E. 2184

Question 2:

In the diagram, $KRTL$ is a rectangle, 11 cm by 8cm. LM = 4
The shaded area, in centimetres is



A. 44 B. 56 C. 72 D. 48 E. 32

Question 3:

An early purchase plan for seats at the Rio Olympic Games offered a seat at 9 events for $750 deposit and $228 per month for 12 months. Under this plan, the mean cost of a seat at any one of these events is closest to

A. $200 B. $250 C. $300 D. $350 E. $400

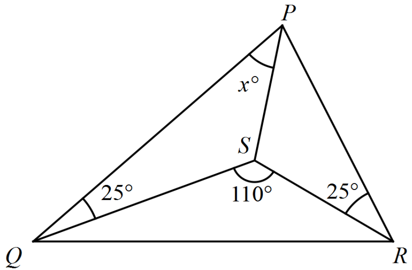
Question 4:

In how many different ways can three children share 8 identical sweets so that each child gets at least one?

A. 21 B. 24 C. 36 D. 45 E. 132

Question 5:

S is a point inside triangle PQR such that SP = SR.
The sizes of some of the angles are shown.
The value of x is



A. 5 B. 15 C. 25 D. 35 E. 45

Question 6:

In the country of Mathswell, they have only \$3 and \$5 notes. How many amounts, from

\$1 to \$100 inclusive, cannot be made up exactly with these notes?

A. 2 B. 3 C. 4 D. 7 E. 21

Question 7:

A one litre carton of milk has a square base of size 7cm by 7cm and vertical sides. The depth of milk, in centimetres, is closest to

A. 18 B. 20 C. 22 D. 24 E. 26

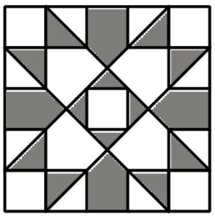
Question 8:

In an election for school captain, 320 votes were cast for five candidates. The winner's margins over the other four candidates were 9, 13, 18 and 25. The lowest number of votes received by a candidate was

A. 48 B. 49 C. 50 D. 51 E. 52

Question 9:

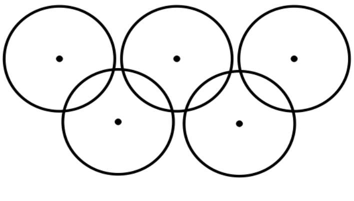
The traditional patchwork motif (illustrated) is composed of squar right angled isosceles triangles. The shaded part, expressed as a d fraction of the whole is



A. 0.36 B. 0.4 C. 0.45 D. 0.48 E. 0.5

Question 10:

Each circle has an area of 1cm^2. The area of the overlap between any pair of intersecting circles is $\frac{1}{8}$ cm^2. The total area in squa centimetres of the region enclosed by the five circles is



A. 4 B. $4\frac{1}{2}$ C. $4\frac{3}{8}$ D. $4\frac{7}{8}$ E. $4\frac{3}{4}$

Question 11:

Airini has a stride of 0.5 of a metre. If she travels by walking 2 steps forward and one step back, what is the least number of steps she need to reach a spot 20 metres away?

A. 116 B. 119 C. 118 D. 120 E. 124

Question 12:

Three students share a sum of money in the ratio 6 : 3 : 2. The student who receives the least amount gets $300. The total amount of money shared was

A. $1500 B. $1350 C. $1650 D. $3000 E. $3300

Question 13:

A palindrome is a number which reads the same forwards as backwards, for example 141. During a car trip, the driver noticed that the odometer showed, in kilometres, the palindrome 35953. Seventy-five minutes later the odometer showed the next palindrome. What was the mean speed in kilometres per hour between the two odometer readings?

A. 88 B. 110 C. 99 D. 73.5 E. 84

Question 14:

If a rectangle has a perimeter of 24cm and one side is twice as long as another, its area in square centimetres is

A. 24 B. 16 C. 20 D. 12 E. 32

Question 15:

If $\left(2\sqrt{2}\right)^2 = \sqrt{k}$, then k equals

A. $\sqrt{8}$ B. 8 C. 128 D. 64 E. 32