Question One

Steven writes down one integer twice and another integer three times. The sum of these five numbers is 100.

If one of the integers is 28, what is the other?

Question Two

It takes a team of people 5 hours to paint a wall which is 20m long and 3m tall.

How long would it take a team of half the size working at the same rate to paint a wall which is half as tall and half as long? *Give your answer in hours.*

Question Three

A man's age is 5 times his daughters age. In 18 years he will be twice his daughter's age at that time.

How old is he now?

Question Four

At the school gala visitors were asked to guess the number of jellybeans in the jar.

No-one guessed correctly, so prizes were awarded based on how close the guesses were to the exact number. Using the information below, determine how many jellybeans were in the jar?

      1st prize went to the person who guessed 400
      2nd prize went to the person who guessed 417
      3rd prize to the person who guessed 380
      4th prize went to the person who guessed 420

Question Five

The mean number of points scored for the first 14 netball games was 23.

The mean number of points scored for the remaining 6 games in the season was 33.5.

What was the mean number of goals in the whole season for this team? *(Round your answer to 1dp)*

Question Six

One corner of a square is folded exactly to the centre of the square, resulting in an irregular pentagon shape.

The areas of the pentagon and of the square are consecutive integers.

What is the area of the square?

Question Seven

Attendance is calculated based on the percentage of lessons attended.

Amish has 92% attendance for the first 825 lessons of the year.

What is the highest his overall attendance for the year can reach over the next 225 lessons?

Give your answer to 1dp

Question Eight

A train has 12 coaches. Each coach has the same number of compartments.

Tom is travelling in the third coach and in the 18th compartment from the engine.

Jerry sat in the 7th coach in the 50th compartment from the engine.

How many compartments are there in each coach?

Question Nine

A price is increased by 10%, and then increased by 10% again.

What single fraction could you multiply by to return the price to the original value?

Question Ten

The Eulerville Council is trying to estimate the number of rats in the city.

One day 60 rats are caught, tagged and released.

Two days later 50 rats are caught, and 3 of these have tags already.

How many rats would you estimate are in Eulerville?

Question Eleven

Three consecutive integers have a product of 373176.

Which of these integers is not prime?

Question Twelve

Four points lie on a line.

The distances between each possible pair of the points are, in increasing order:

2, 3, k, 11, 12, 14.

What is k?

Question Thirteen

There are some red and blue balls in a box.

If 20 red balls were removed, the ratio of the number of red balls to that of the blue balls would be 1 : 2.

If 15 blue balls were removed instead, the ratio would become 6 : 1.

How many red balls are there in the box?

Question Fourteen

It takes 4 hours for a motorboat to travel downstream along a river from X to Y.

To return upstream from Y to X it takes the motorboat 6 hours.

The distance between X and Y is 24km.

How many hours would it take a wooden log to be carried from X to Y by the current, assuming it is unhindered by any obstacles?
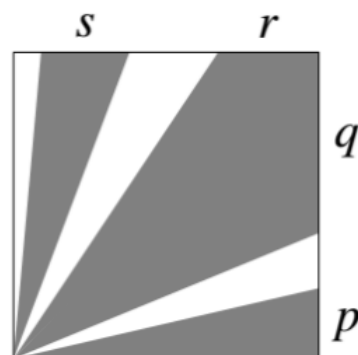

Question Fifteen

The figure shown has area 36.

The lengths p, q, r and s are also shown.

The total shaded area is 27.

What is $p + q + r + s$?

Question Sixteen

A total of 170 Year 9 and 10 students are in a hall.

Three-fifths of the Year 9s wear glasses, and three-sevenths of the Year 10s wear glasses.

The number of Year 9s **not** wearing glasses is equal to the number of Year 10s **not** wearing glasses.

How many Year 10s are there in total?

Question Seventeen

Frank divides 2019 successively by 1, 2, 3 and so on, up to and including 1000.

He writes down the remainder for each division.
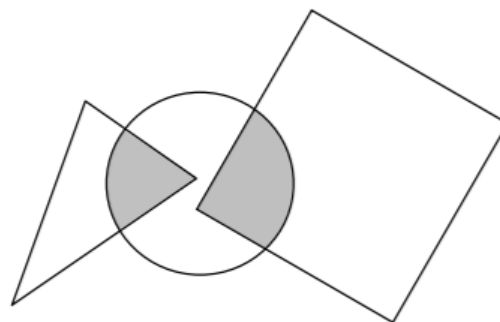
What is the largest of these remainders?

Question Eighteen

The operation $a \clubsuit b$ is defined as $a \clubsuit b = a + b - ab$.

Find the whole number x so that $8 \clubsuit x = -27$.

Question Nineteen

The given figure (*not to scale*) consists of a triangle,

a circle and a square. All three shapes have the same

individual areas.

Half of the circle is unshaded.

What fraction (in its simplest terms) of the whole figure is shaded?

Question Twenty

Allan the ant starts on one of the vertices of a cube whose edges have length 1cm.

He wants to walk along every edge of the cube at least once and return to his starting point,

making the length of his journey as short as possible.

What is the length of his journey?