Question 1:

A two-digit number is divisible by 8, 12 and 18. What is the number?

Question 2:

In the school athletic championships, there are six competitors and eight events. The top three competitors in each event score 5 points for first place, 3 points for second place and 1 point for third place. (There are no ties and no competitor can be placed twice in the same event.) If one of the competitors had a total of 27 points, what is the maximum number of second places they could have won?

Question 3:

The digits 1, 2, 5, 6, and 9 are all used to form five-digit *even* numbers, in which no digit is repeated. The difference between the largest and smallest of these numbers is

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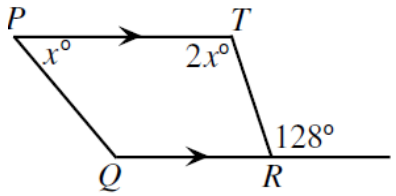
Question 4:

A normal duck has two legs, a lame duck has one leg and a sitting duck has no legs. There are 20 ducks with a total of 25 legs between them. The total of normal and lame ducks is four times the number of sitting ducks.

How many lame ducks are there?

Question 5:

What is the size of ∠PQR in the diagram?



Question 6:

There are 81 Subaru cars in a car sales yard. They are all Legacys, Imprezas or Foresters. There are half as many Imprezas as Foresters. The number of Legacys is 80% of the number of Imprezas and Foresters together. How many of the 81 cars are Legacys?

Question 7:

Angus, Tommy, Harry, Mitchell, Ben and Nick were having a photo taken of them altogether. How many different arrangements are there if Nick and Ben refused to stand next to each other?

Question 8:

A cylinder with diameter 6 cm and height 8 cm is full of water. A second cylinder of radius 6 cm and height 8 cm is empty. If all of the water is poured from the first cylinder into the second cylinder, the depth of the water, in centimetres, in the second cylinder will be

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Question 9:

An open topped box is the shape of a cube. If the outer surface area of this box is 320 cm^2, then what is the volume, in cm^3?

Question 10:

The weight of a sow (a female pig) is fifteen times the weight of the runt of the litter (the smallest piglet) and ten times the weight of the largest piglet. If the difference between the weights of the smallest and largest piglets is 4 kg, the weight of the sow, in kg, is

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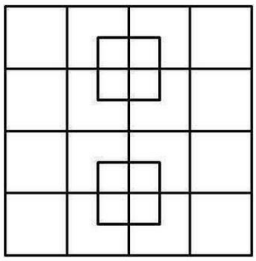
Question 11:

How many squares of any size are in this diagram?

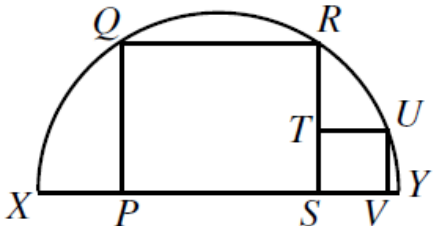


Question 12:

The average of one group of numbers is 4. A second group contains twice as many numbers and has an average of 19. What is the average of both groups of numbers combined?

Question 13:

In the diagram, a semi-circle has diameter XY. Rectangle PQRS is drawn inside the semi-circle with PQ = 12 and QR = 28. The area of the square STUV is



Question 14:

The number 2^{2013} ends in what digit?

Question 15:

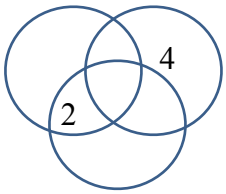
In the sequence of numbers …, *q, r, s, t,* 0, 1, 1, 2, …, each number is the sum of its two preceeding numbers.
What is the value of q?

Question 16:

In a mixture of 360 grams of flour and sugar, how many grams of flour should be added to reduce the percentage of sugar to 90% of what it was?

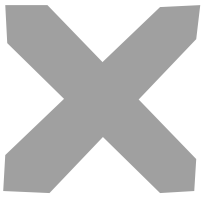
Question 17:

Marbles were put in each of the circles in the diagram on the right so that there were 14 marbles in each circle.
The numbers of marbles in two of the areas is shown.
If there was at least 1 marble in each region, how many marbles were there altogether?



Question 18:

Assuming the marks divide the square's sides into equal portions, what is the percentage of the square which is shaded?



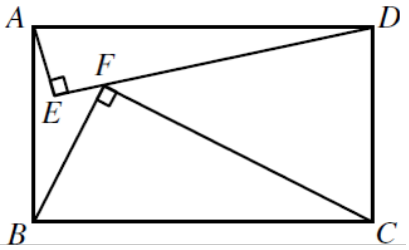
Question 19:

I think of a positive number, add two, multiply my answer by itself, take away twice the number I first thought of, and my answer is 52.

What number did I think of?

Question 20:

In the diagram, right-angled triangles AED and BFC are constructed inside rectangle ABCD so that F lies on DE. If AE = 21, ED = 72 and BF = 45, what is the length of CD?



Question 21:

A multiplicative magic square has the product of the numbers in each row, column and diagonal the same. If the diagram is filled with positive integers to form a multiplicative magic square, find the value of Z.

Question 22:

If A, B and C represent different digits from 1, 2, 3, 4, 5, 6, 7, 8, 9

then find the greatest value of $\frac{A+B+C}{A\times B\times C}$

Question 23:

At a school 12 students were absent on Monday, 15 absent on Tuesday, 9 absent on Wednesday and 22 students were absent for at least one day. What is the maximum number of students who could have been absent on all three days?

Question 24:

Two numbers x and y satisfy three of the following equations but do not satisfy the remaining equation.

$x + y = 63$ $x - y = 47$ $xy = 392$ $x \div y = 8$

What is the value of x?

Question 25:

If $A^3 = B^2 = CA$, find the smallest value of C if each of A, B, C stands for a different whole number.
