

## STATISTICS TEST SOLUTIONS

### Question 1

Four people, whose names begin with different letters, are placed in a row, side by side. What is the probability that they will be placed in alphabetical order from left to right?

- A.  $\frac{1}{24}$     B.  $\frac{1}{12}$     C.  $\frac{1}{6}$     D.  $\frac{1}{4}$

### Solution

Let the letters be A, B, C and D. Choose a letter at random.

Probability that the letter is A =  $\frac{1}{4}$

Now there are three letters left, B, C and D. Choose another letter at random.

Probability that this letter is B =  $\frac{1}{3}$

Probability that the first two letters are A and B =  $\frac{1}{4} \times \frac{1}{3}$

Continue in the same way.

Probability that the first three letters are A, B and C =  $\frac{1}{4} \times \frac{1}{3} \times \frac{1}{2}$

Probability that the first four letters are A, B, C and D =  $\frac{1}{4} \times \frac{1}{3} \times \frac{1}{2} \times \frac{1}{1} = \frac{1}{24}$

So, the correct answer is A.

### Question 2

In the diagram, the numbers represent regions.

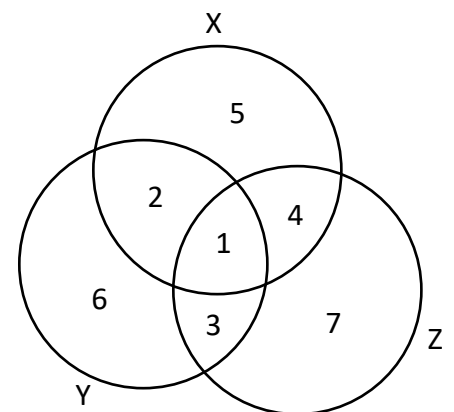
The circle X represents the set of regular polygons.

The circle Y represents the set of quadrilaterals.

The circle Z represents the set of equilateral triangles.

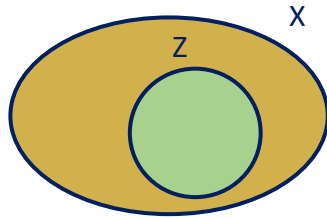
Which parts of the diagram are empty (have no elements)?

- A. 1; 3; 5    B. 2; 3; 4    C. 1; 3; 7    D. 3; 6; 7

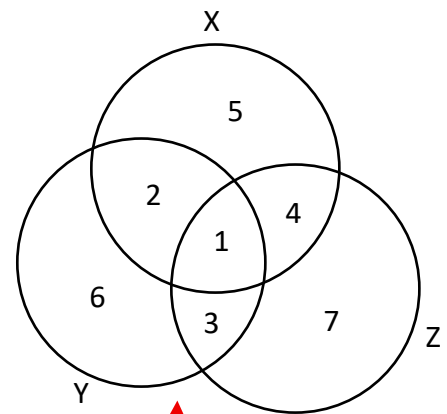
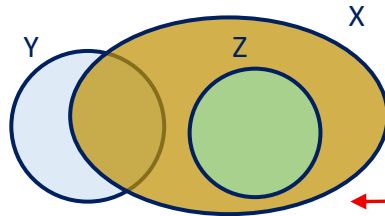


**Solution**

All equilateral triangles are regular polygons



Some quadrilaterals are regular polygons  
e.g. a square



Compare this diagram with the original one.

Regions 1, 3 and 7 are empty.

So, the correct answer is C.

To make it easier to interpret, try writing down some word descriptors:

Region 1: *Regular polygons that are also quadrilaterals and equilateral triangles.*

Region 3: *Quadrilaterals that are equilateral triangles, but not regular polygons.*

Region 7: *Equilateral triangles that are not regular polygons and not quadrilaterals.*

**Question 3**

Which of the following correlation coefficients indicates the strongest measure of the linear relationship between two variables, X and Y?

- A. -0,9
- B. -0,2
- C. 0,1
- D. 0,8

**Solution**

Think of the correlation coefficient as having two distinct parts.

The sign, positive or negative, indicates the *direction* of the relationship.

If the sign is positive, as X increases, Y increases, as X decreases, Y decreases.

If the sign is negative, as X increases, Y decreases, as X decreases, Y increases.

The numerical value (absolute value) of the coefficient indicates the *strength*, or the closeness, of the relationship.

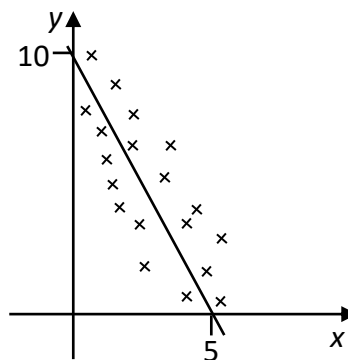
A coefficient of -0,9 has a greater magnitude than 0,8.

So, the correct answer is A.

#### Question 4

Which of the following equations relates to the line of regression shown in the diagram?

- A.  $y = -\frac{1}{2}x + 10$
- B.  $y = -2x + 10$
- C.  $y = \frac{1}{2}x + 10$
- D.  $y = 2x + 10$



#### Solution

From the graph, y-intercept = 10

$$\text{Gradient} = -\frac{10}{5} = -2$$

$$\therefore y = -2x + 10$$

So, the correct answer is B.

**Question 5**

A sample of pea-pods was examined to investigate the number of peas produced per pod. The results were as follows:

Number of peas	2	3	4	5	6
Number of pods	1	2	3	2	2

What was the total number of peas in the sample?

- A. 10      B. 20      C. 32      D. 42

**Solution**

Interpret the table carefully.

There was 1 pod with 2 peas, i.e., number of peas =  $1 \times 2 = 2$

Number of peas	2	3	4	5	6
Number of pods	1	2	3	2	2

There were 2 pods with 3 peas each, i.e., number of peas =  $2 \times 3 = 6$

Number of peas	2	3	4	5	6
Number of pods	1	2	3	2	2

There were 3 pods with 4 peas each, i.e., number of peas =  $3 \times 4 = 12$

Number of peas	2	3	4	5	6
Number of pods	1	2	3	2	2

There were 2 pods with 5 peas each, i.e., number of peas =  $2 \times 5 = 10$

Number of peas	2	3	4	5	6
Number of pods	1	2	3	2	2

There were 2 pods with 6 peas each, i.e., number of peas =  $2 \times 6 = 12$

Number of peas	2	3	4	5	6
Number of pods	1	2	3	2	2

Total number of peas  $2 + 6 + 12 + 10 + 12 = 42$

So, the correct answer is D.