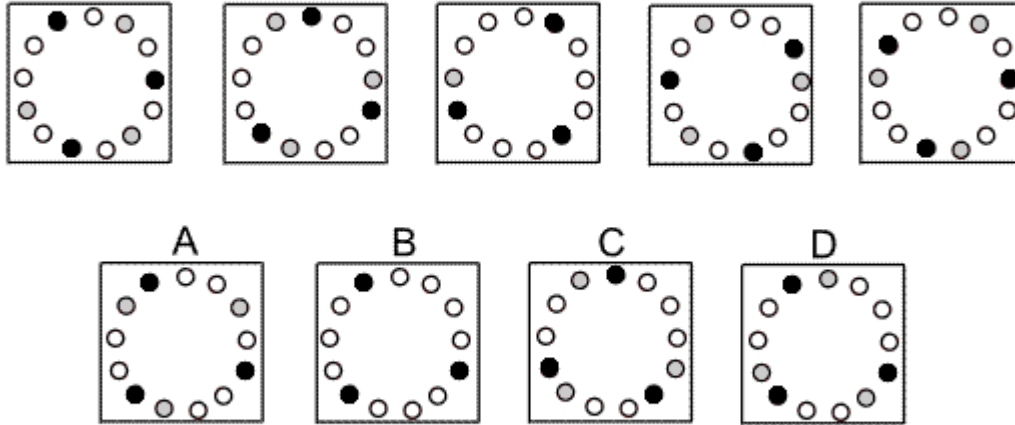


Inductive Reasoning Practice Test 4

Solution Booklet

Question 1



Solution: B

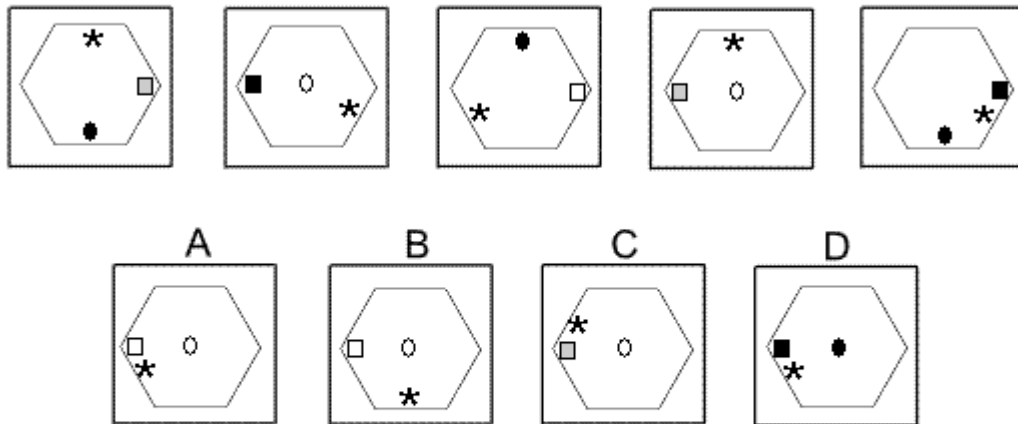
Explanation:

In this question, the black and grey dots move around the circle of dots.

The black dots move one place clockwise each time. The grey dots move two places anticlockwise each time. When a grey and a black dot occupy the same position, the grey is obscured by the black and only the black dot is visible.

For the next diagram of the sequence, all three grey dots are obscured by black dots. The correct answer, therefore, is B.

Question 2



Solution: A

Explanation:

In this question, there are three shapes - an asterisk, a square and a dot. Each shape has its own rule to follow.

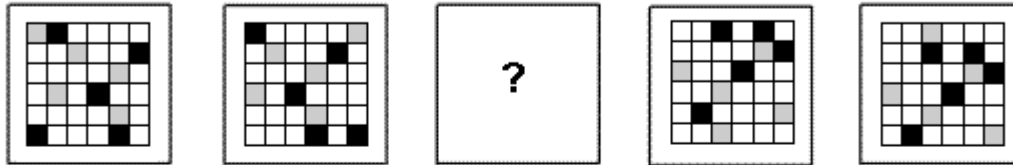
The asterisk rotates around the inside of the hexagon by 120° clockwise each time.

The square moves across the horizontal axis of symmetry of the hexagon from one vertex to the opposite vertex, then back again. Its colour changes from grey to black to white, back to grey etc.

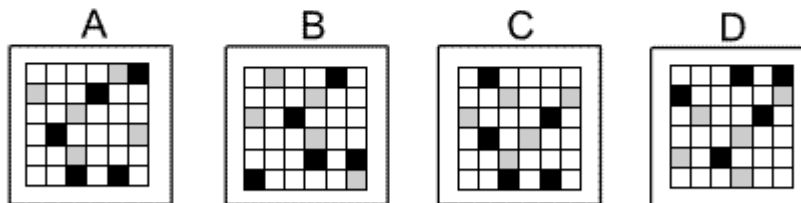
The dot moves up and down the vertical axis of symmetry of the hexagon, occupying three positions - two opposite edges and the centre of the hexagon. Its colour alternates between black and white.

Following all these rules, the correct answer is A.

Question 3



Which of the following replaces the question mark in the sequence?



Solution: D

Explanation:

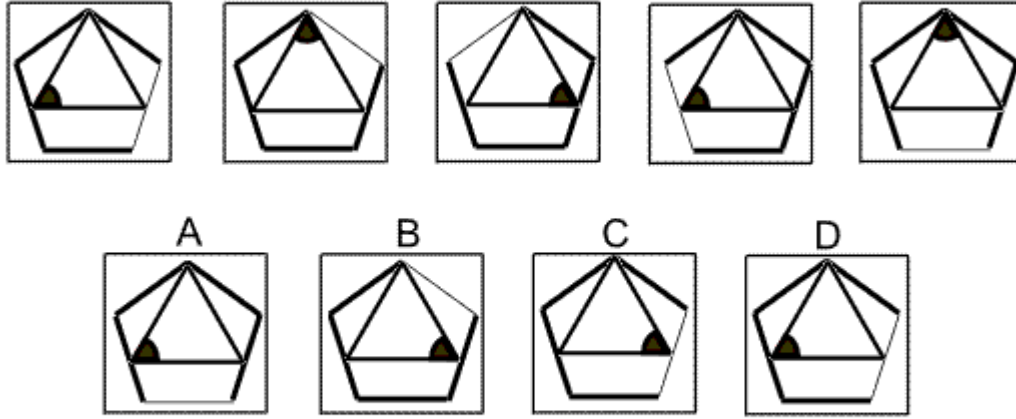
In this question there are two rules that are applied alternately.

The first rule is that all squares are moved one place to the left, except those in the left column which are moved to the right column.

The second rule is that all squares are moved one place down, except those in the bottom row which are moved to the top row.

To find the missing diagram of the sequence, the second rule should be applied, and the correct answer is D.

Question 4



Solution: C

Explanation:

In this question there is an equilateral triangle inside a regular pentagon. Each shape follows its own rule.

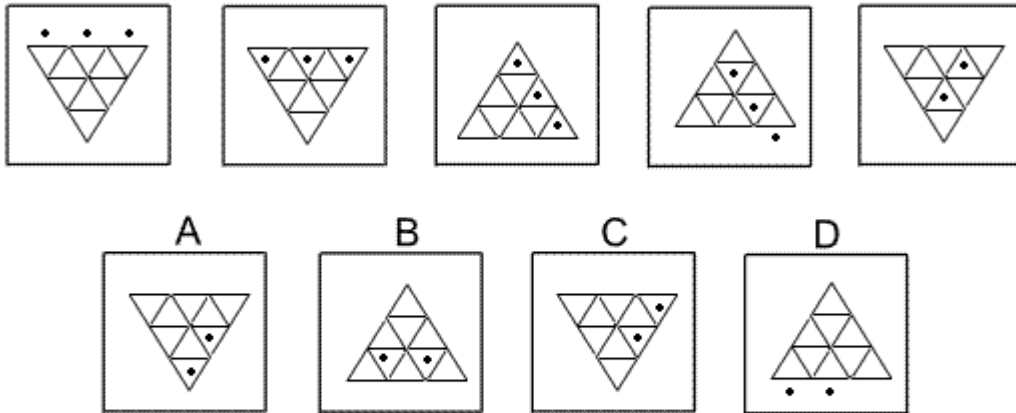
The equilateral triangle rotates by 120° clockwise each time. Following this rule, the correct answer could be B or C.

The regular pentagon rotates by 72° anticlockwise each time.

Following this rule, the correct answer could be C or D.

When both rules are applied simultaneously, therefore, the correct answer must be C.

Question 5



Solution: A

Explanation:

In this question there are three balls that move into, around and out of a grid of equilateral triangles.

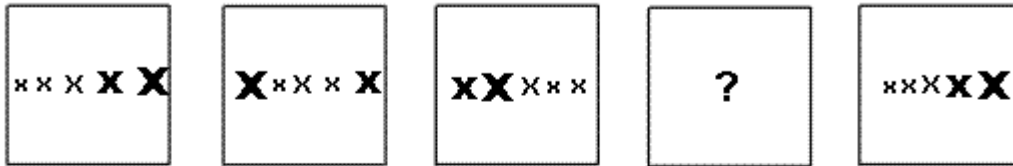
There are two rules to follow that are applied alternately.

The first rule is that the balls drop down through a horizontal edge of a triangle. If a ball drops down outside the grid, it is lost and doesn't appear in the next diagram of the sequence.

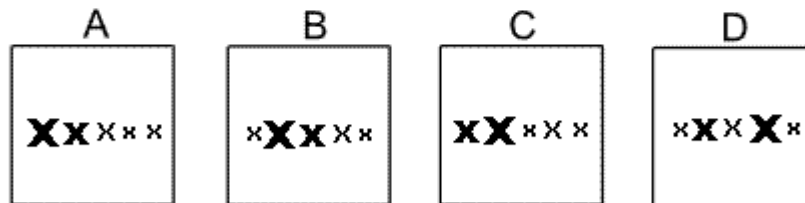
The second rule is that the triangular grid rotates through 120° clockwise.

For the next diagram of the sequence, the first rule should be applied and the correct answer is A.

Question 6



Which of the following replaces the question mark in the sequence?



Solution: D

Explanation:

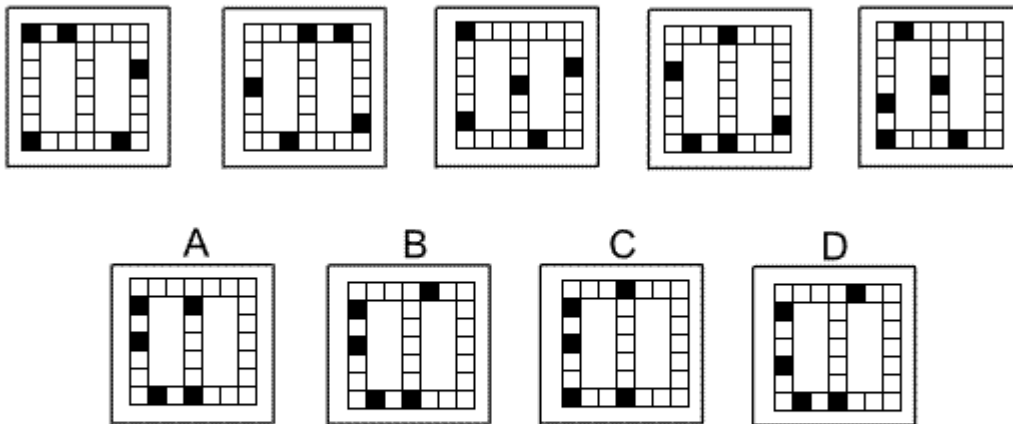
In this question there are 5 different sized letter X's. There are two rules to follow that are applied simultaneously.

The first rule is that the X's in the second and third positions (counting from the left) change positions. The second rule is that the fifth X moves to the first position and the others all move along one position towards the right.

These two rules are applied simultaneously.

Following these rules, the missing diagram of the sequence is D.

Question 7



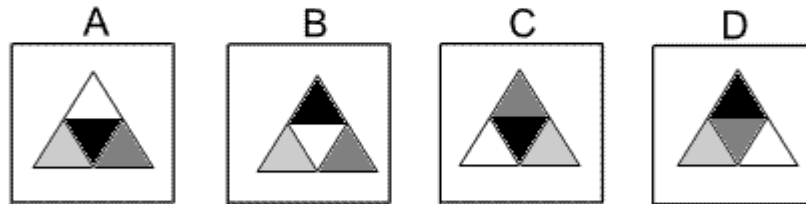
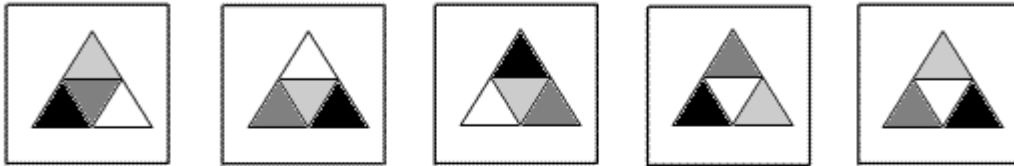
Solution: B

Explanation:

In this question the black squares move three places clockwise around the outside of the grid. The only exception is when a black square lands on the centre square at the top of the grid. In this case, in the next diagram of the sequence, it moves down the centre line of the grid by three places. When it reaches the centre square of the bottom of the grid, it then continues clockwise around the outside of the grid.

The correct answer, therefore, is B.

Question 8



Solution: A

Explanation:

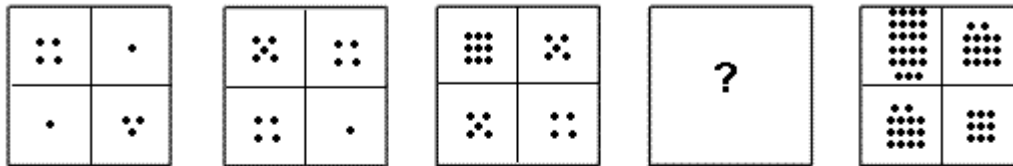
In this question there are two rules to follow that are applied alternately.

The first rule is that the colours change - black changes to dark grey, dark grey changes to light grey, light grey changes to white, and white changes to black.

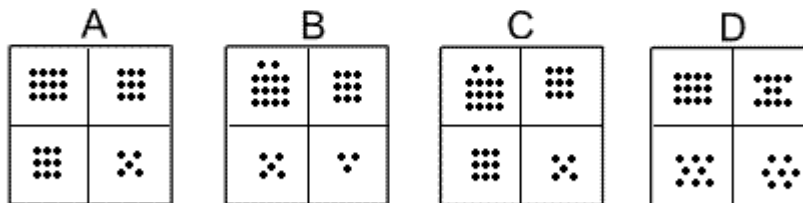
The second rule is that the triangular grid rotates by 120° anticlockwise.

To obtain the next diagram in the sequence, the first rule should be applied, and the correct answer is A.

Question 9



Which of the following replaces the question mark in the sequence?



Solution: C

Explanation:

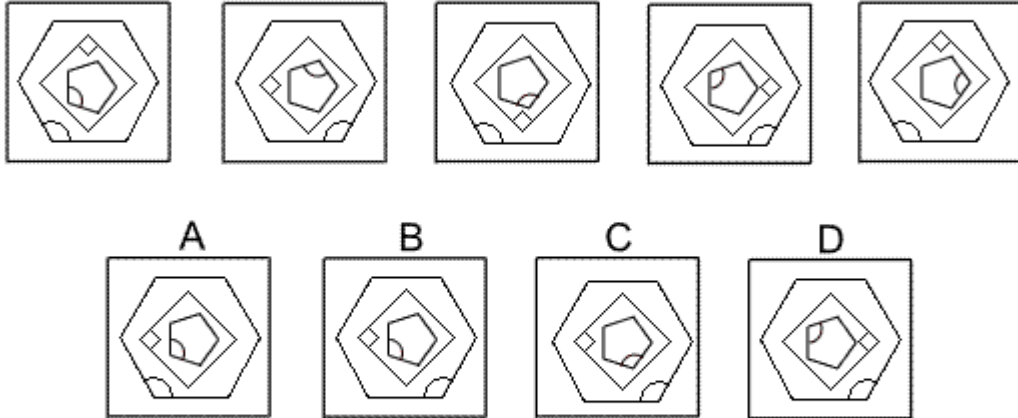
In this question there are two rules to follow that are applied simultaneously.

The first rule is that the dots in the first row move down to the second row.

The second rule is that for each column, the dots are added and the totals placed in the corresponding squares of the top row.

When these two rules are applied simultaneously, the correct diagram to replace the ? is C.

Question 10



Solution: B

Explanation:

In this question there is a regular pentagon inside a square inside a regular hexagon. Each shape follows its own rule.

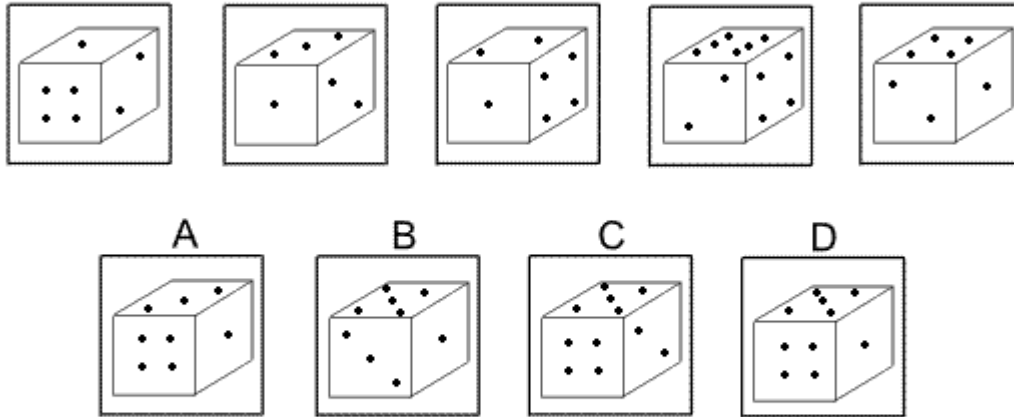
The regular pentagon rotates by 144° clockwise each time.

The square rotates by 90° anticlockwise each time.

The regular hexagon is reflected in its vertical axis of symmetry each time.

When these rules are applied simultaneously, the next diagram in the sequence is B.

Question 11



Solution: D

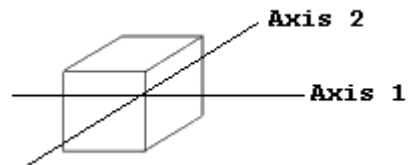
Explanation:

In this question there is a die with six faces containing 1, 2, 3, 4, 5 and 6 dots respectively.

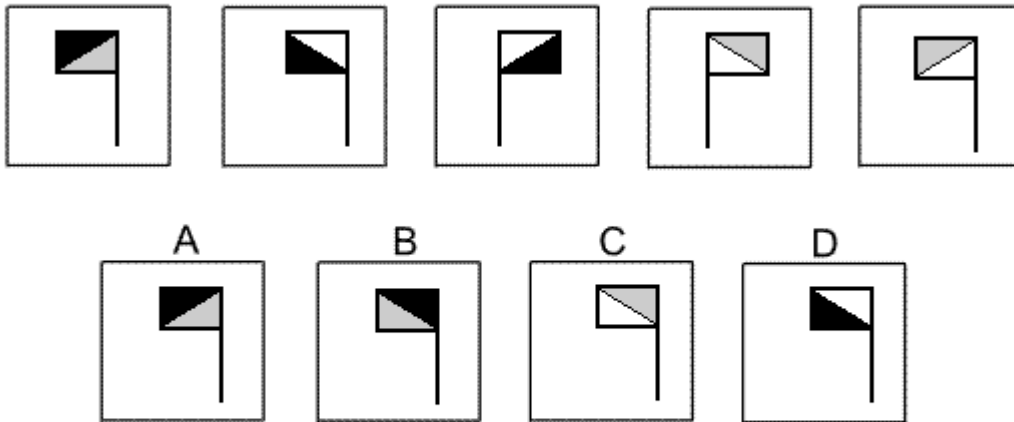
The die is rotated by 90° anticlockwise about each of the two axes of symmetry shown in the diagram. These rotations are performed alternately - first a rotation about Axis 1, then a rotation about Axis 2, then back to Axis 1, etc.

Following these rules, the next rotation should be about Axis 1 and the correct answer is D.

(Note that it can be deduced from the previous diagrams which faces of the die are opposite each other. This follows the simple rule that the numbers on opposite faces always add to 7.)



Question 12



Solution: B

Explanation:

In this question there are two different designs of flag depending on which way the diagonal is drawn. There are two rules to follow alternately.

The first rule is that the design of flag changes and at the same time the colours change - black/grey changes to white/black, changes to grey/white, then back to black/grey etc.

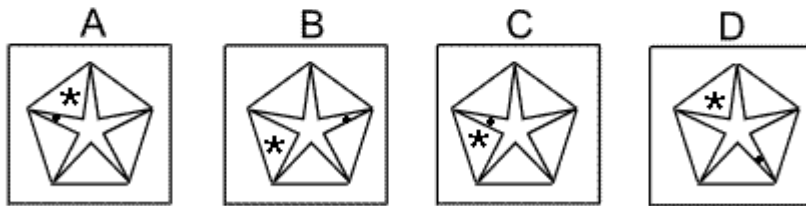
The second rule is that the flag is reflected in the vertical axis. In this case the colours do not change.

For the next diagram of the sequence, therefore, the first rule must be applied. We change to the other design of flag and the colours change to black/grey. The correct answer, therefore, is B.

Question 13



Which of the following replaces the question mark in the sequence?



Solution: C

Explanation:

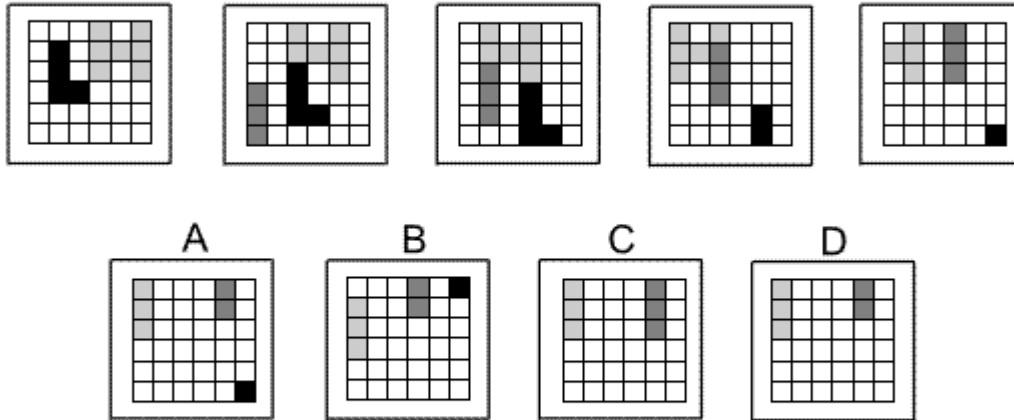
In this question there is a five pointed star inside a regular pentagon. There is also an asterisk and a dot.

The dot moves around the inside points of the five-pointed star, rotating by 72° clockwise each time.

The asterisk moves around the five triangles between the star and the regular pentagon and rotates by 144° anticlockwise each time.

When both of these rules are applied simultaneously, the missing diagram of the sequence must be C.

Question 14



Solution: D

Explanation:

In this question there is a grid of squares with a black L shape, a light grey H shape and a dark grey I shape.

Each time, the L shape moves right one place and down one place.

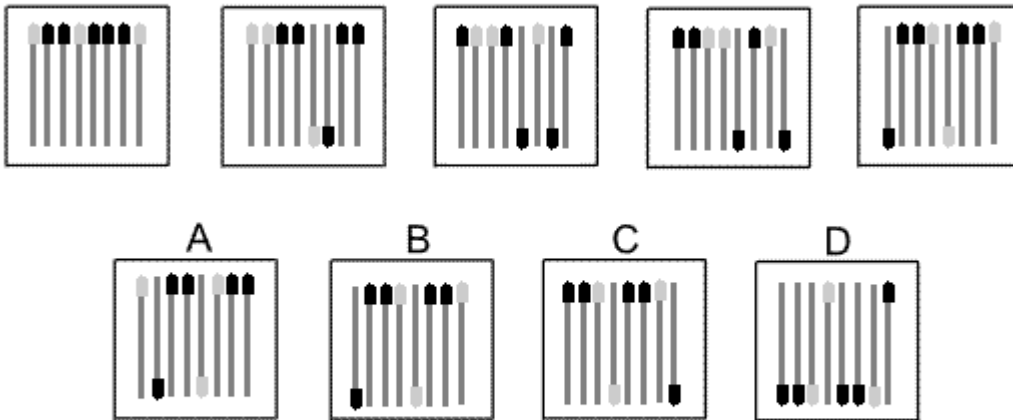
Each time, the H shape moves to the left one place. Where the L intersects with the H, the black colour of the L obscures the light grey of the H. Where the I intersects with the H, the dark grey of the I obscures the light grey of the H.

The I shape does not appear in the first diagram, but then moves one place right and one place up each time.

When any of the shapes reach an edge of the grid, the parts that move off from the grid disappear.

Following these rules, the next diagram of the sequence must be D.

Question 15

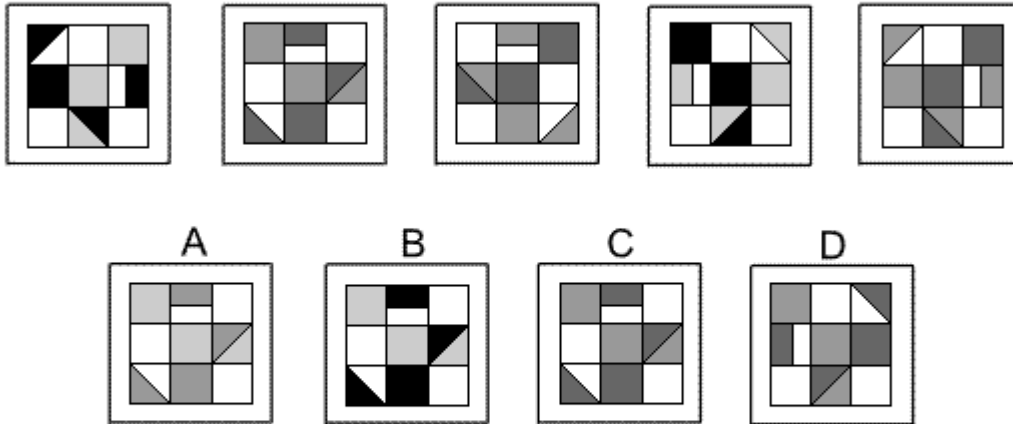


Solution: A

Explanation:

In this question there are eight matchsticks of two different colours.
Each time, the middle two matchsticks are turned upside down and then the matchstick on the far right is moved to the left.
When these two rules are applied simultaneously, the correct answer is A.

Question 16



Solution: C

Explanation:

In this question, the pattern of squares and rectangles follows two rules alternately.

The first rule is a rotation of 90° anticlockwise.

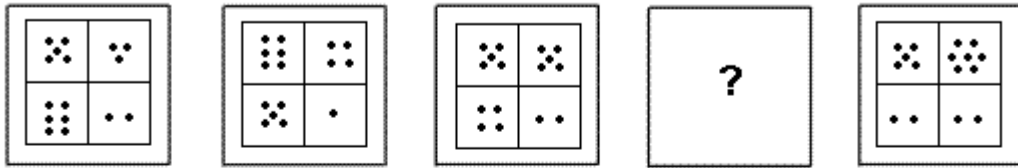
The second rule is a reflection in the vertical axis.

Following these rules, to obtain the next diagram of the sequence, the first rule should be applied next and the correct answer could be A, B or C.

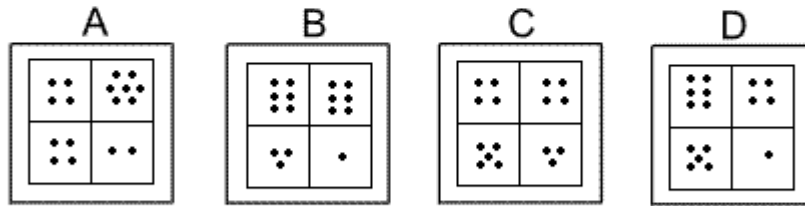
At the same time, the shading of the non-white tiles changes and follows this sequence: black changes to dark grey, changes to medium grey, changes to light grey, changes to medium grey, changes to dark grey, changes to black etc.

Following this rule, the correct answer is C.

Question 17



Which of the following replaces the question mark in the sequence?



Solution: B

Explanation:

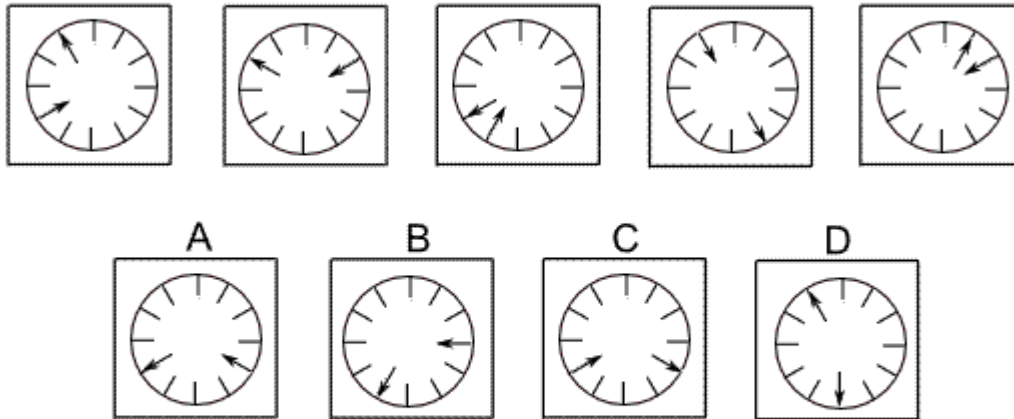
In this question there are two rules to follow that are applied alternately.

The first rule is that the numbers of dots in the top row increase by one while the numbers of dots in the second row decrease by one.

The second rule is that the numbers of dots in the left column decrease by one while the numbers of dots in the right column decrease by one.

To obtain the missing diagram of the sequence, the first rule should be applied and the correct answer is B.

Question 18



Solution: A

Explanation:

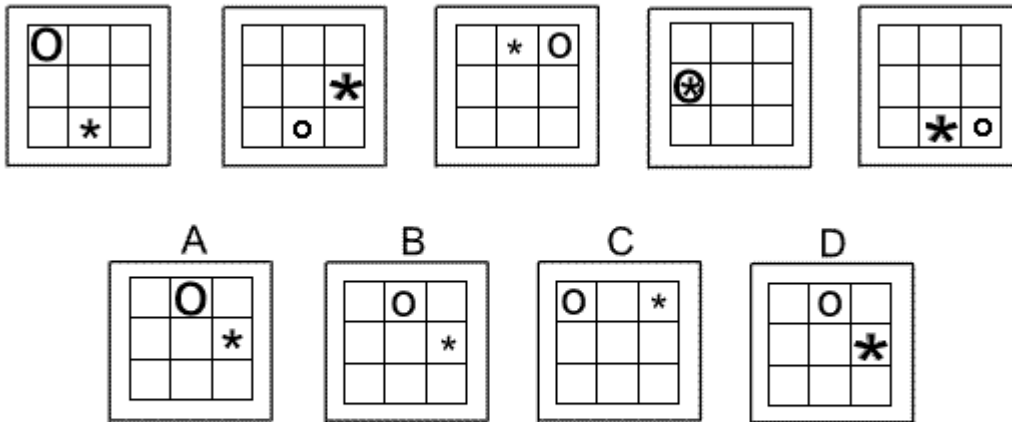
In this question there is a dial with two hands - one hand pointing towards the centre of the dial, the other pointing away from the centre of the dial. Each hand follows its own rule.

The hand pointing towards the centre of the dial moves clockwise by six places, then five places, then four etc.

The hand pointing away from the centre of the dial moves anticlockwise by one place, then two places, then three etc.

To find the next diagram of the sequence, therefore, the hand pointing towards the centre should move clockwise by two places and the hand pointing away from the centre should move anticlockwise by five places. The correct answer, therefore, is A.

Question 19



Solution: B

Explanation:

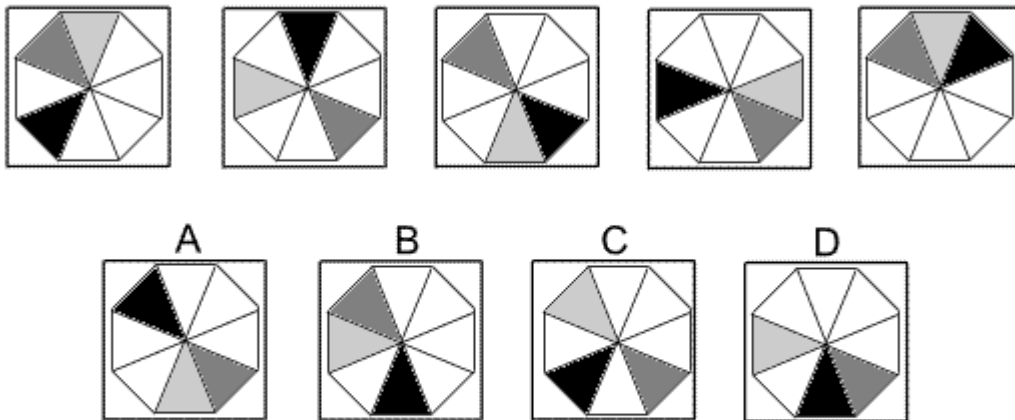
In this question there is an asterisk and a letter O which each follows its own rule.

The asterisk moves clockwise, each time by 90°, around the four squares along the edges of the grid.

The letter O moves two squares in one direction and one square in the other direction, following a letter L-shaped path like the Knight's move in chess, but always going clockwise around the grid. Following these rules, the correct answer could be A, B or D.

However the size of the two symbols also changes from small to medium to large, back to small etc. Following this rule, for the next diagram of the sequence, the asterisk should be small and the letter O should be medium. The correct answer, therefore, is B.

Question 20



Solution: D

Explanation:

In this question there is a black triangle, a medium grey triangle and a light grey triangle each of which follows its own rule.

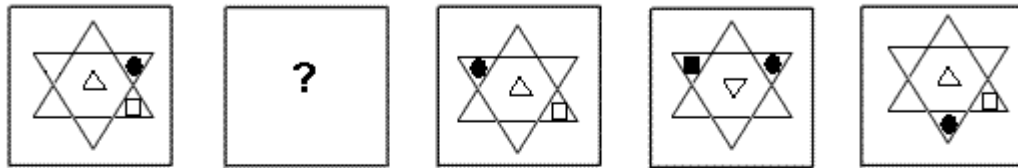
The black triangle rotates around the octagon by 135° clockwise each time.

The medium grey triangle rotates by 180° each time.

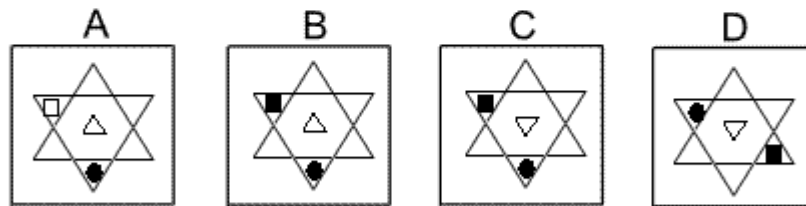
The light grey triangle rotates by 90° anticlockwise each time.

Following these rules, the correct answer is D.

Question 21



Which of the following replaces the question mark in the sequence?



Solution: C

Explanation:

In this question there is a triangle, a square and a dot that move around a hexagonal star. Each moves according to its own rule.

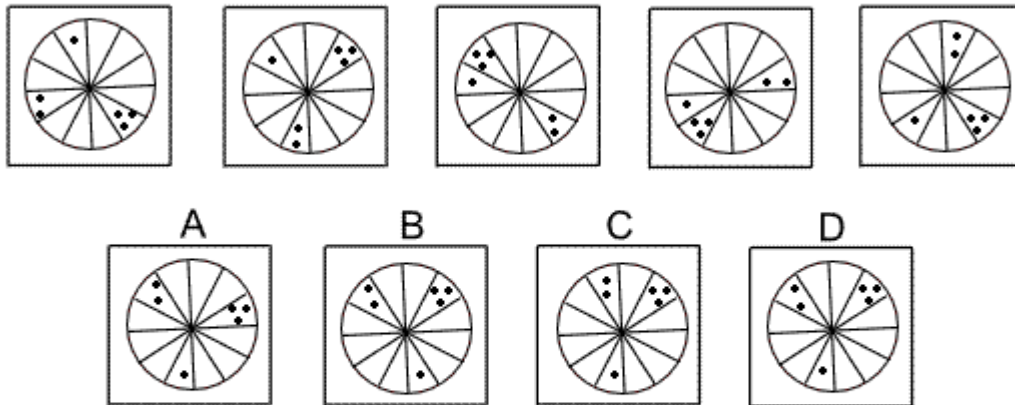
The white triangle stays in the middle of the hexagon, its colour does not change, but it is inverted from one diagram to the next.

The square moves from one triangle of the star to the opposite triangle and its colour alternates between white and black.

The dot rotates around the triangles of the star, rotating by 120° clockwise each time. Its colour does not change.

When all these rules are applied together, the missing diagram of the sequence must be C.

Question 22



Solution: D

Explanation:

In this question there is a single dot, a group of two dots and a group of three dots that move around the twelve sectors of a circle.

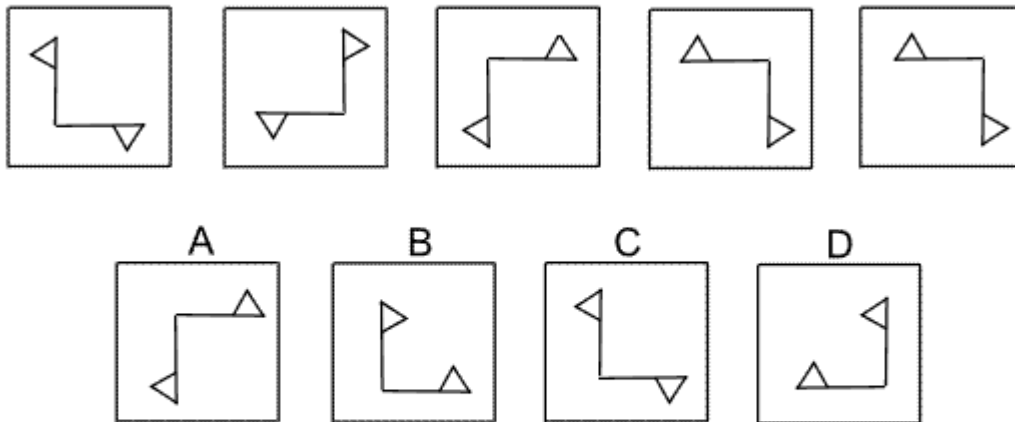
The single dot always moves one place anticlockwise.

The group of two dots always moves two places anticlockwise.

The group of three dots always moves three places anticlockwise.

When all these rules are followed, the next diagram of the sequence is D.

Question 23



Solution: A

Explanation:

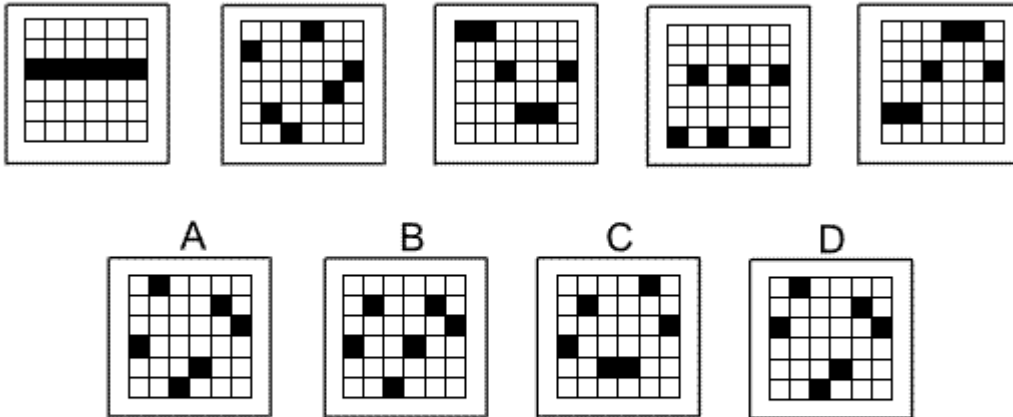
This question is about reflection in two different axes. The first axis is the vertical axis passing through the point of intersection of the two flags.

The second axis is the diagonal axis passing through the point of intersection of the two flags and stretching from the bottom left to the top right.

The pair of flags is reflected in each of these two axes alternately.

For the next diagram of the sequence, therefore, the pair of flags should be reflected in the vertical axis and the correct answer is A.

Question 24



Solution: A

Explanation:

In this question the black squares move up or down the columns of the grid according to the following rules:

The square in the first column moves up one place each time.

The square in the second column moves down two places each time.

The square in the third column moves up three places each time.

The square in the fourth column moves down four places each time.

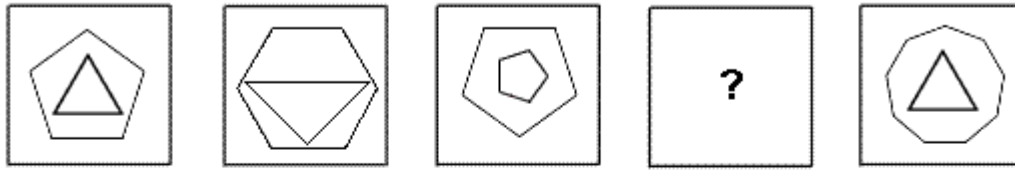
The square in the fifth column moves up five places each time.

The square in the sixth column moves down six places each time.

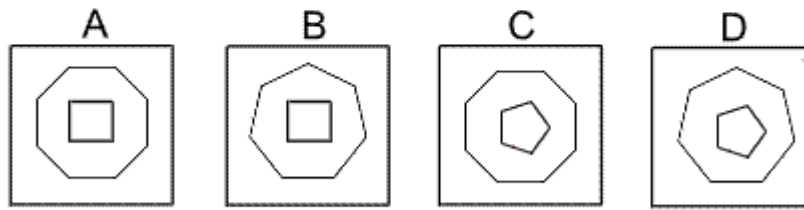
When a square reaches the top or bottom edge, continue counting from the opposite edge.

Following these rules, the correct answer is A.

Question 25



Which of the following replaces the question mark in the sequence?



Solution: B

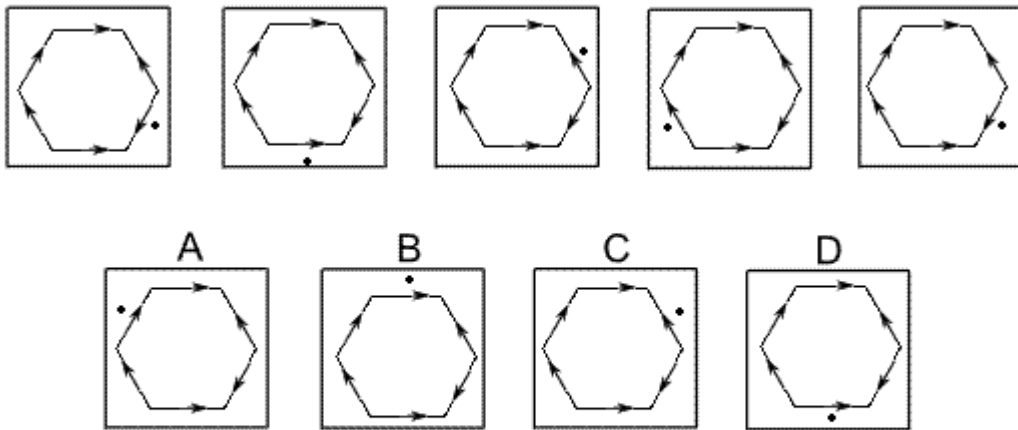
Explanation:

In this question each diagram has two polygons. The total number of sides of the two polygons increases by one each time.

For the missing diagram of the sequence, the total number of sides should be eleven.

The correct answer is B which shows a heptagon (seven sides) and a rectangle (four sides).

Question 26



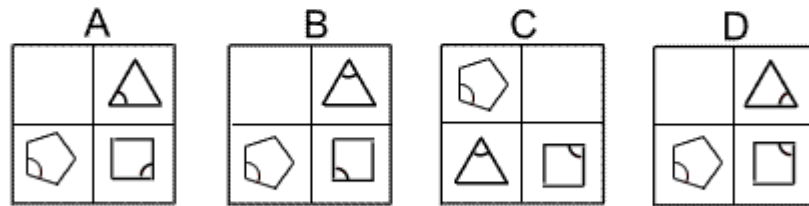
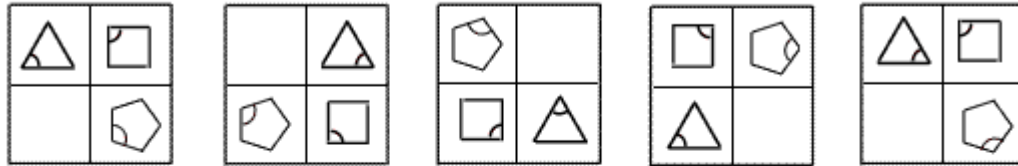
Solution: C

Explanation:

In this question the dot rotates around the perimeter of the regular hexagon, always rotating in the direction indicated by the arrow.

The numbers of places it rotates are: 1 the first time, 2 the second time, 3 the third time etc. To obtain the next diagram of the sequence, therefore, the dot should rotate 5 places in the direction indicated by the arrow, which is clockwise. The correct answer is C.

Question 27



Solution: B

Explanation:

In this question the three shapes - equilateral triangle, square and regular pentagon - rotate by 90° clockwise around the four positions of the grid. At the same time, each shape also rotates about its own centre.

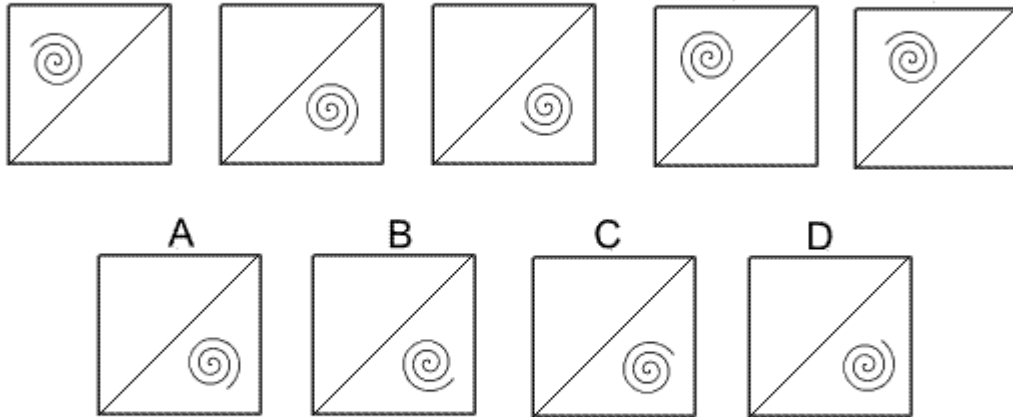
The equilateral triangle rotates by 120° anticlockwise each time.

The square rotates by 90° anticlockwise each time.

The regular pentagon rotates by 72° clockwise each time.

When all these rotations are applied simultaneously, the next diagram of the sequence must be B.

Question 28



Solution: A

Explanation:

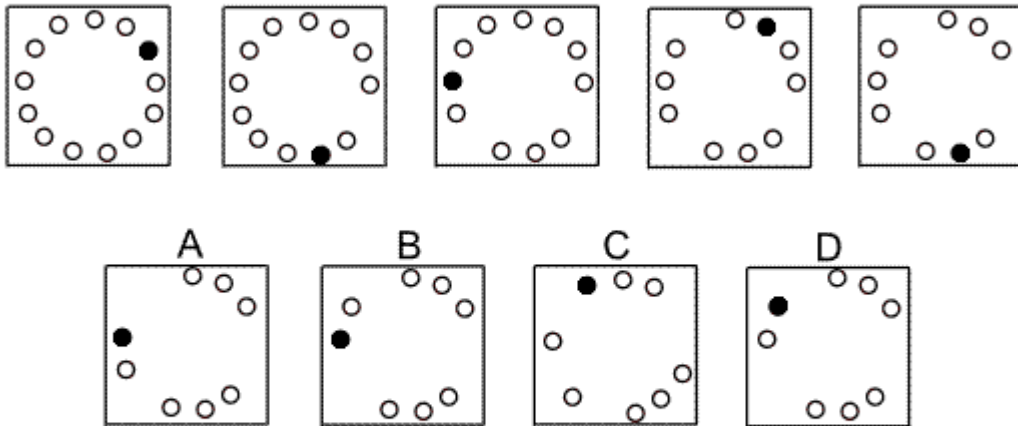
In this question there are two rules to follow that are applied alternately.

The first rule is that the spiral is reflected in the diagonal shown.

The second rule is that the spiral rotates by 90° clockwise.

To obtain the next diagram of the sequence, the first rule should be applied next and the correct answer is A.

Question 29



Solution: D

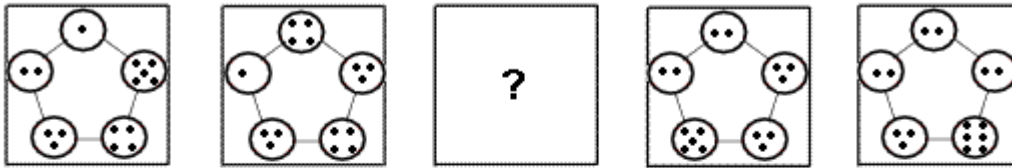
Explanation:

In this question, there is a ring of white dots with just one black dot.

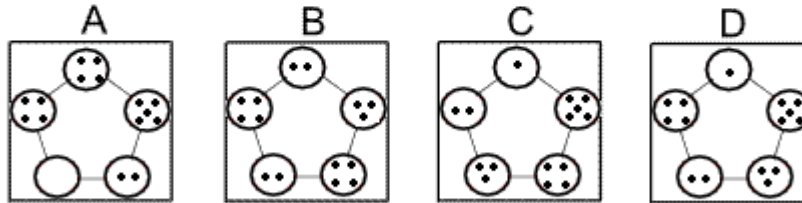
The black dot moves around the ring in a clockwise sense. Each time it jumps over three white dots (or moves four places clockwise) and at the same time the middle one of the three white dots it jumped over is removed from the ring.

The correct answer, therefore, is D.

Question 30



Which of the following replaces the question mark in the sequence?



Solution: B

Explanation:

In this question there are four rules to follow that must be applied simultaneously:

The number of dots in the top circle remains the same.

The numbers of dots in the two circles on the left each increases by one.

The numbers of dots in the two circles on the right each decreases by one.

At the same time the whole shape is rotated by 72° anticlockwise.

When all these rules are applied together, the correct answer for the missing diagram of the sequence is B.

- End of Test 4 -