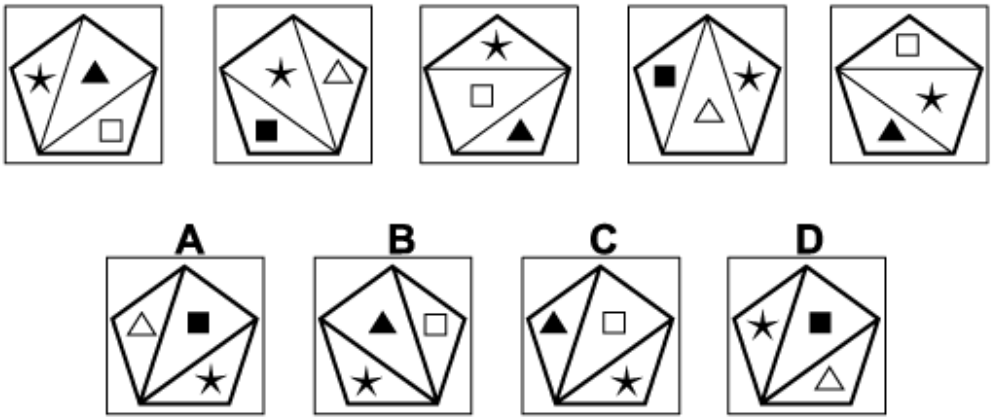
Inductive Reasoning
Practice Test 5

Solution Booklet

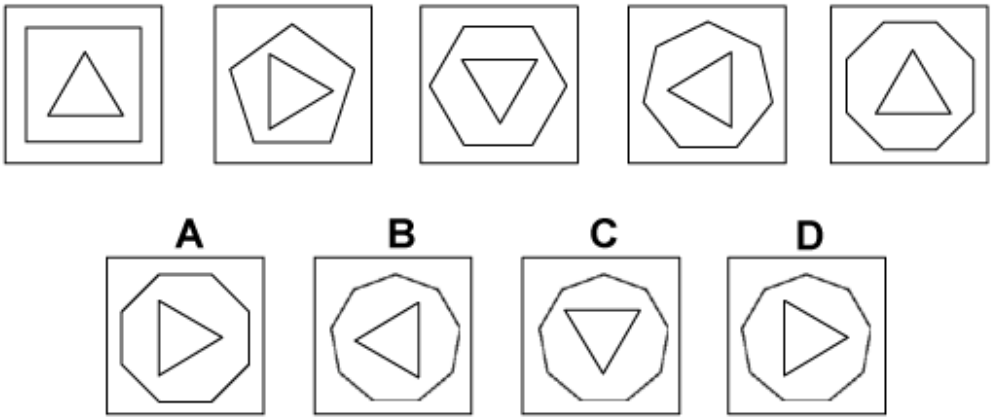
Question 1



Solution: A

Explanation:
In this question there are three rules to follow.
The first rule is that the pentagon rotates by 72° anticlockwise each time. Following this rule, the correct answer could be A, C or D.
The second rule is that the positions of the three shapes in the three triangles rotate; so that, for the next diagram of the sequence, the square should be in the centre triangle, the asterisk in the right triangle and the triangle in the left triangle - the correct answer could be A or C.
The third rule is that the square and triangle alternate in colour. For the next diagram of the sequence, therefore, the square should be black and the triangle white. The correct answer is A.

Question 2

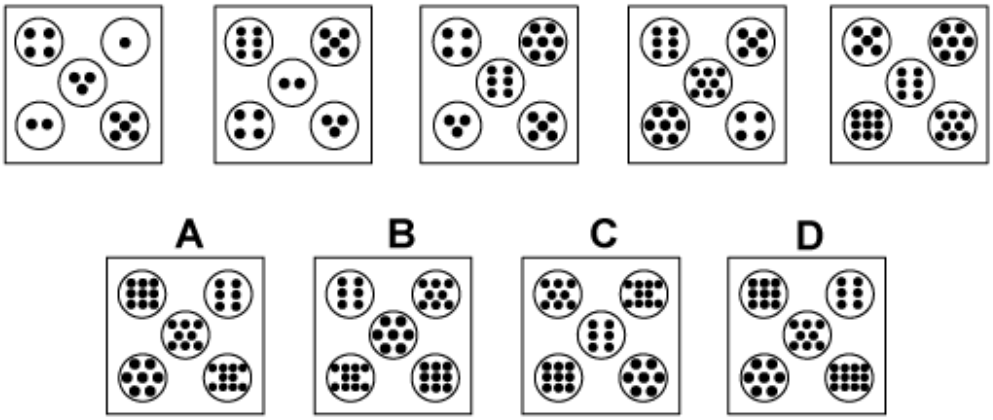


Solution: D

Explanation:
In this question there are two rules to follow.
The first rule is that the number of sides of the surrounding polygon increases by 1 each time. Following this rule, for the next diagram of the sequence it should have 9 sides. The correct answer, therefore, could be B, C or D.

The second rule is that the triangle rotates by 90° clockwise each time. Following this rule, for the next diagram of the sequence, the triangle should point towards the right. The correct answer, therefore, is D

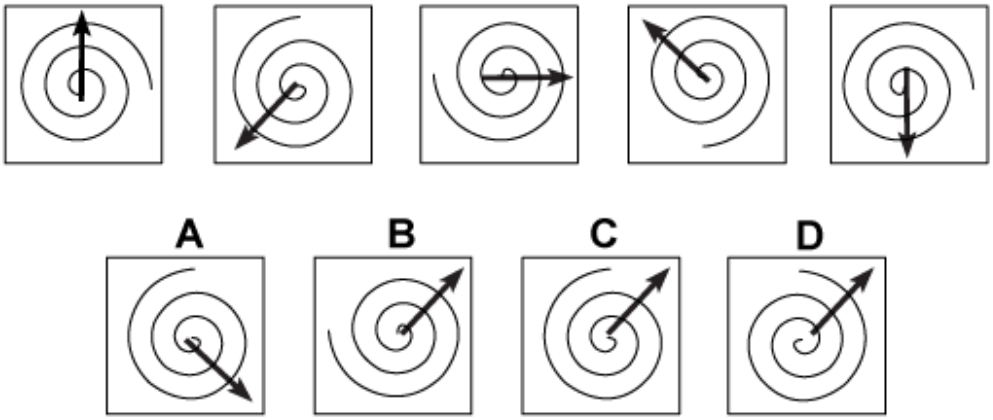
Question 3



Solution: A

Explanation:
In this question, there is a 'Z-shape' of five circles. There are two rules to follow that are applied simultaneously.
From one diagram to the next, the circles move one place around the 'Z-shape' from the top left to the bottom right, and the circle in the bottom right moves to the top left position. At the same time, the number of dots inside each circle increases by one each time.
When both these rules are applied simultaneously, the correct answer is A.

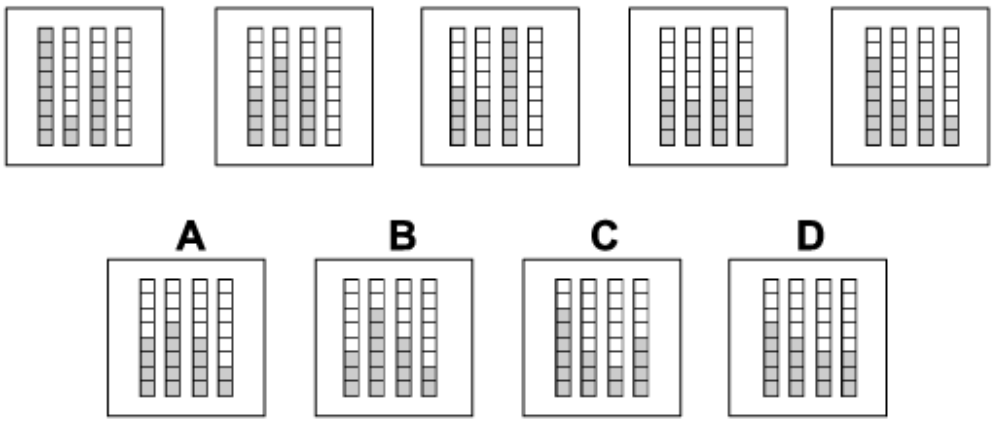
Question 4



Solution: C

Explanation:
In this question there is a spiral and an arrow both of which rotate about the centre.
The spiral rotates by 90° anticlockwise each time. For the next diagram of the sequence, the open end of the spiral should be at the top. The correct answer, therefore, could be A or C. (D is incorrect since the spiral turns the wrong way.)
The arrow rotates by 135° anticlockwise each time. For the next diagram of the sequence, therefore, it should point towards the north-east. The correct answer, therefore, is C.

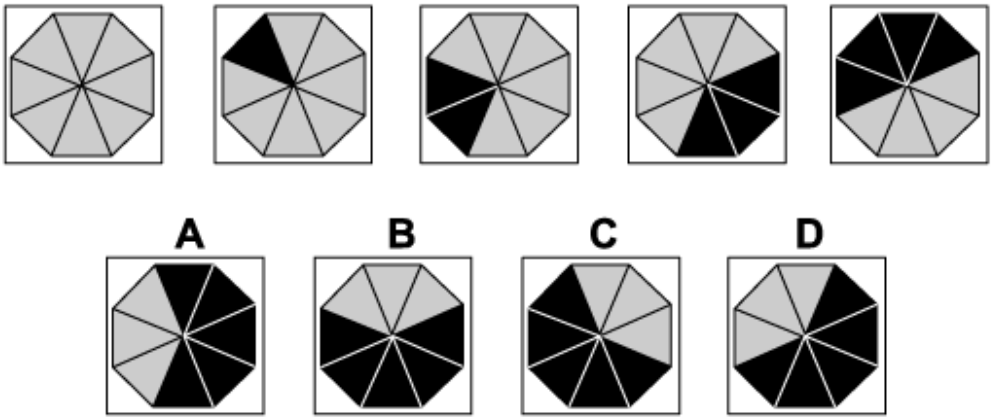
Question 5



Solution: B

Explanation:
In this question there are four columns of squares - call them columns 1, 2, 3, and 4, labelling from left to right. Squares are moved from one column to the next column to the right according to the following pattern:
Move half the squares in column 1 to column 2.
Move half the squares in column 2 to column 3.
Move half the squares in column 3 to column 4.
Move half the squares in column 4 to column 1.
etc
Following this pattern, for the next diagram of the sequence, half the squares in column 1 should be moved to column 2. The correct answer, therefore, is B.

Question 6



Solution: D

Explanation:
In this question, from each diagram to the next diagram of the sequence, follow these rules:

1. Change the colour of the top triangle to black and rotate the octagon by 45° anticlockwise.
2. Change the colour of the adjacent triangle (in a clockwise sense) to the black one also to black and rotate the octagon by 90° anticlockwise.
3. Change the colour of the adjacent triangle (in a clockwise sense) to the two black ones also to black and rotate the octagon by 135° anticlockwise.

etc
Following this pattern, for the next diagram of the sequence we should change the colour of the adjacent triangle (in a clockwise sense) to the four black ones also to black and rotate the octagon by 225°. The correct answer, therefore, is D.
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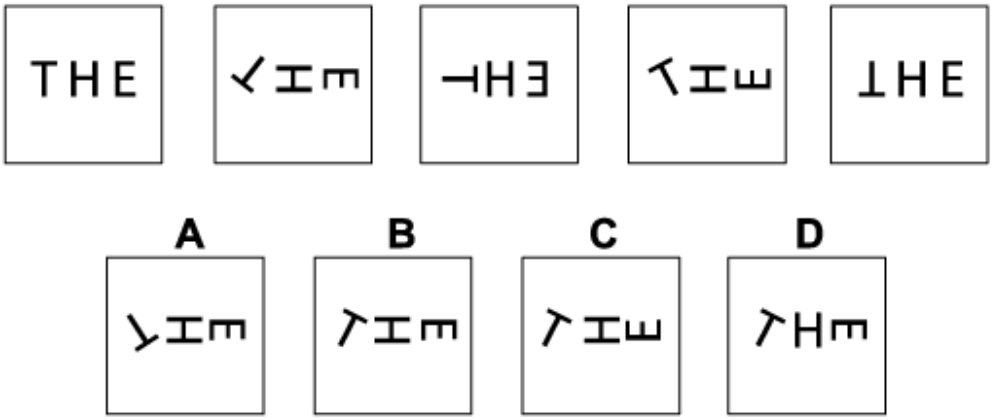
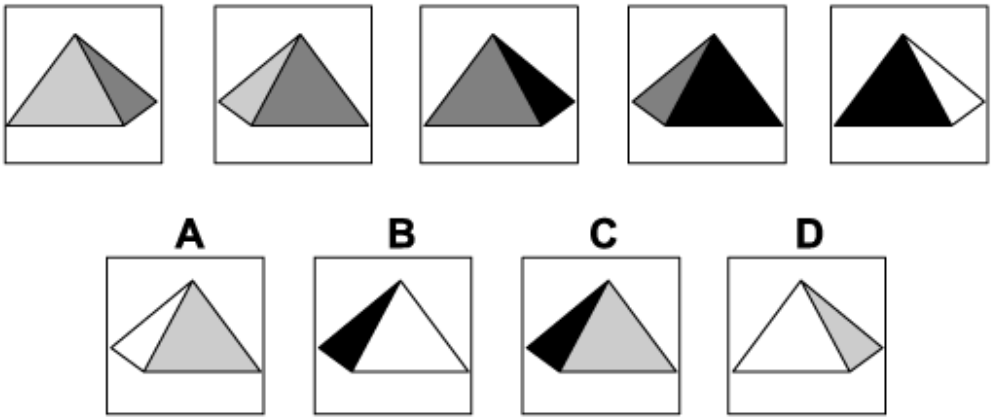
Question 7



Solution: B

Explanation:
In this question, each of the three letters - T, H and E follows its own rule.
The T rotates anticlockwise by 135° each time. Following this rule, the correct answer could be B, C or D.
The H rotates by 90° each time (clockwise or anticlockwise, it doesn't matter which). When this rule is also applied, the correct answer could be B or C.
The E rotates by 90° clockwise each time. When this rule is also applied, the correct answer must be B.

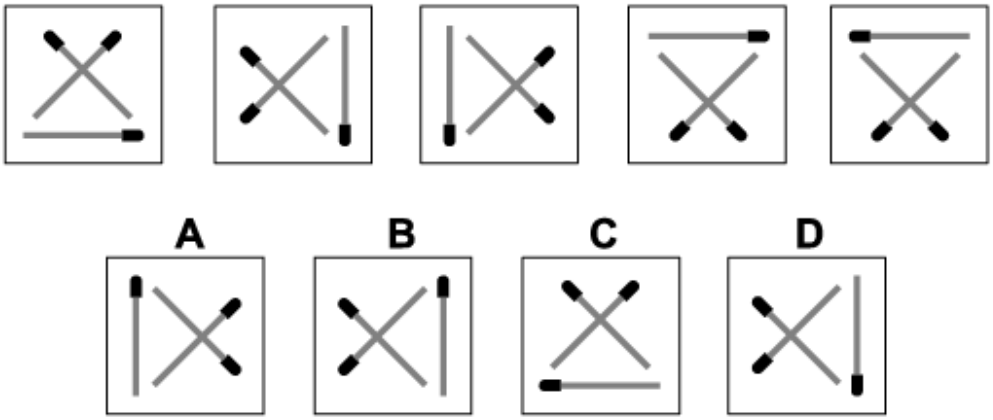
Question 8



Solution: B

Explanation:
In this question there is a square-based pyramid with its four triangular faces coloured light-grey, dark-grey, black and white. From one diagram to the next the pyramid rotates around its vertical axis by 45° each time.
For the next diagram of the sequence the two faces that are seen will be the same as in the previous diagram - black and white - but rotated by 45°. The correct answer, therefore, is B.

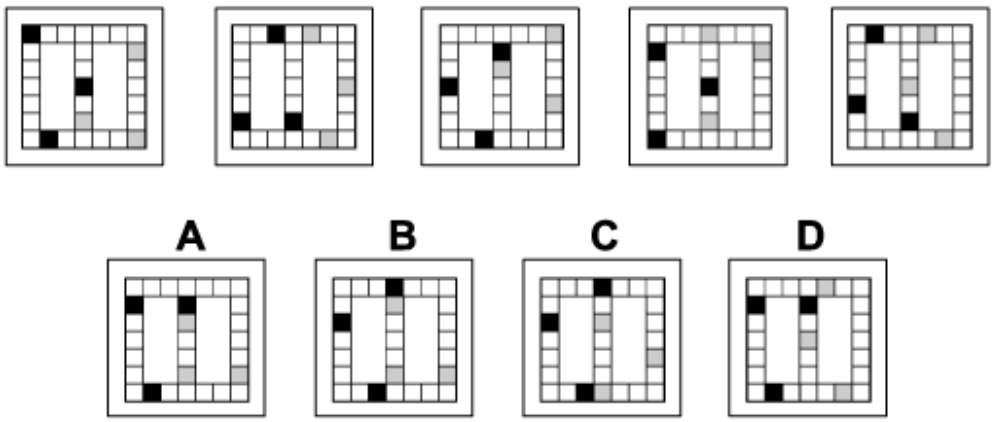
Question 9



Solution: A

Explanation:
In this question the three matchsticks reflect alternately in two axes. The first axis is along the line of the matchstick lying diagonally from the top left to the bottom right. The second axis is the vertical axis.
For the next diagram of the sequence, therefore, we should reflect in the first axis and the answer is A.

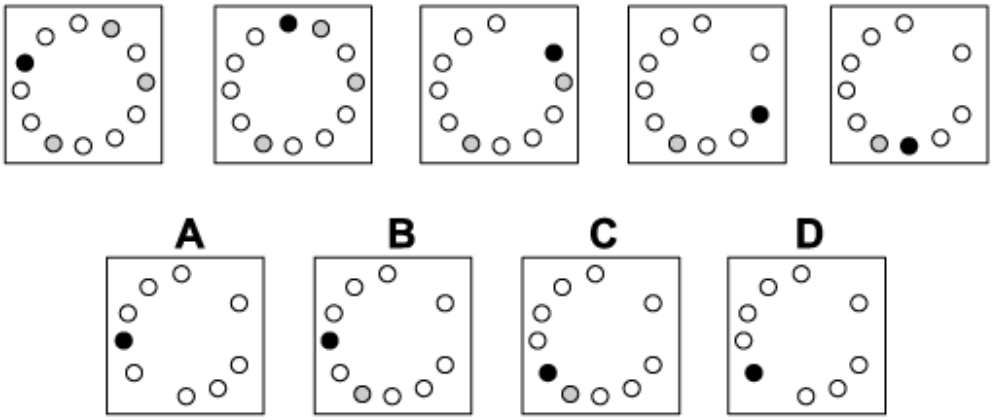
Question 10



Solution: C

Explanation:
In this question, the black squares move around the left-hand circuit, moving two places clockwise each time; and the grey squares move around the right-hand circuit, moving three places anticlockwise each time.
Following these rules, the next diagram in the sequence must be C.

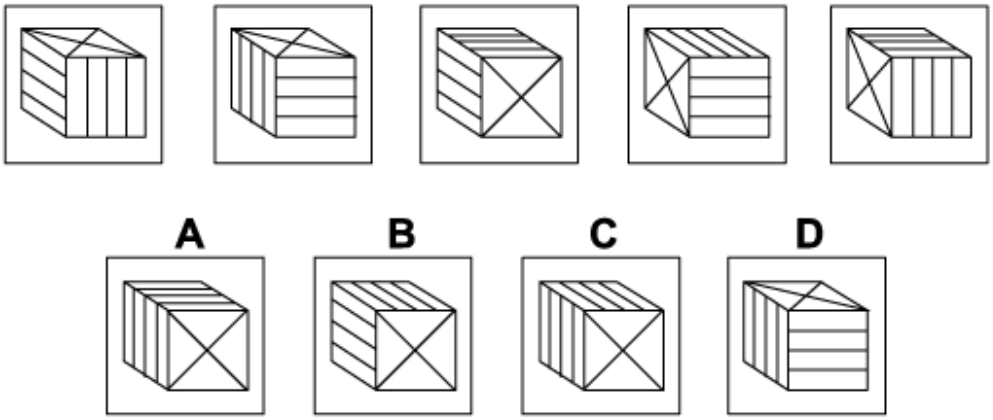
Question 11



Solution: D

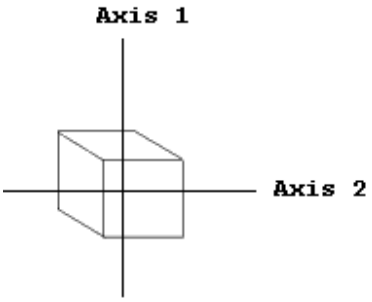
Explanation:
In this question the black dot moves clockwise around the circle of dots. It makes two kinds of move:
1. If there are no grey dots in the way, it moves forward two places.
2. If there's a grey dot in the way, it jumps over the grey dot and the grey dot is removed from the ring.
For the next diagram of the sequence it must make the second kind of move and the answer is D.

Question 12

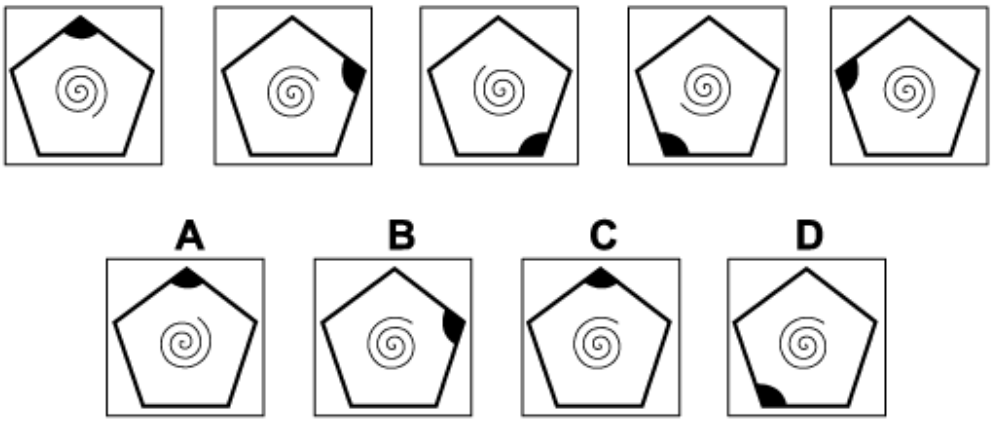


Solution: C

Explanation:
In this question there is a box with six faces. One pair of opposite faces are marked with a cross; another pair of opposite faces are marked with three parallel lines: the third pair of opposite faces are marked with three parallel lines also, but at right angles to those of the other pair.
The box is rotated by 90° 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 C.



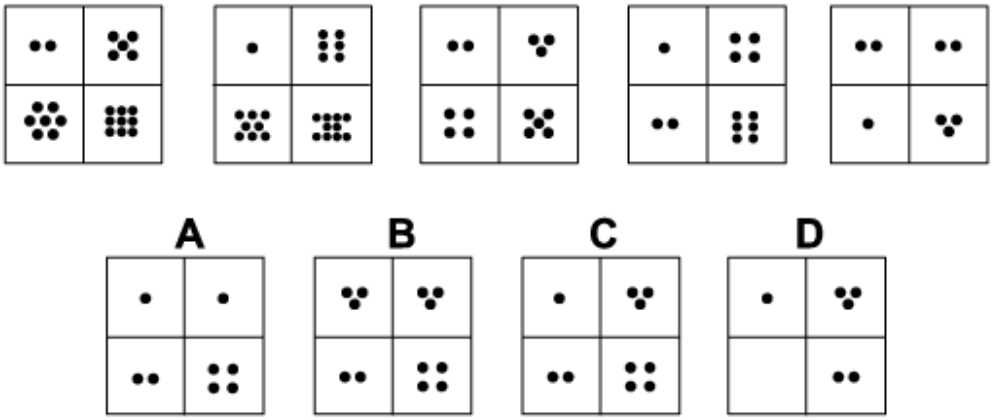
Question 13



Solution: C

Explanation:
In this question there is a regular pentagon and a spiral, each of which follows its own rule.
The pentagon rotates by 72° clockwise each time. Following this rule, the next diagram of the sequence could be A or C.
The spiral rotates by 90° anticlockwise each time. Following this rule also, the next diagram of the sequence must be C - A is incorrect since the spiral rotates in the opposite sense.

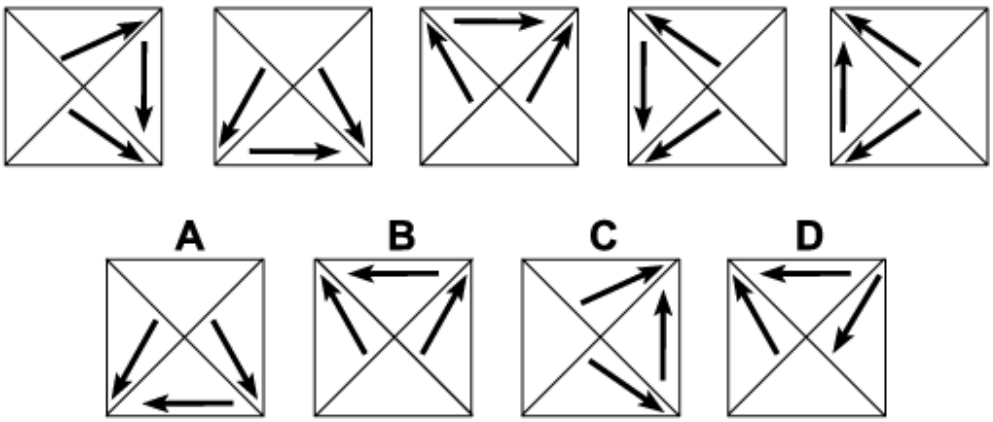
Question 14



Solution: A

Explanation:
In this question there are different rules for even and odd numbers of dots.
If the number of dots is even, then for the next diagram of the sequence the number of dots is halved.
If the number of dots is odd, then for the next diagram of the sequence the number of dots is increased by 1.
When these rules are applied, the next diagram should have ½ × 2 = 1 in the top left corner, ½ × 2 = 1 in the top right corner, 1 + 1 = 2 in the bottom left corner, and 3 + 1 = 4 in the bottom right corner. The correct answer, therefore is A.

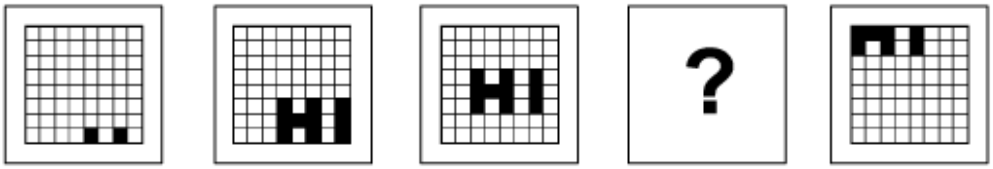
Question 15



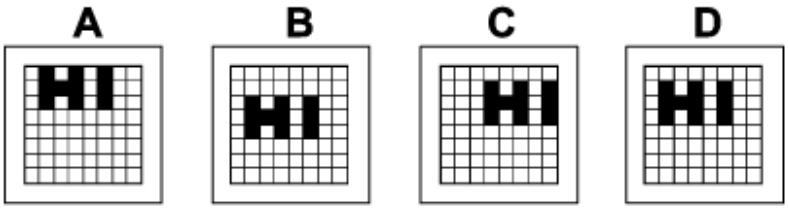
Solution: B

Explanation:
In this question there are two reflections that are applied alternately.
The first is a reflection in the diagonal line stretching from the top left corner to the bottom right corner.
The second is a reflection in the horizontal line through the centre.
To obtain the next diagram of the sequence, therefore, the first reflection should be applied. The correct answer, therefore, is B.

Question 16



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

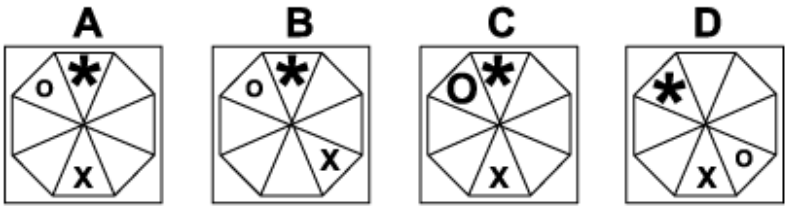


Solution: D

Explanation:
In this question the letters of the word HI move onto the grid, across the grid and off the grid. From one diagram to the next, they always move one square to the left and two squares up. The missing diagram, therefore, is D.

Question 17

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

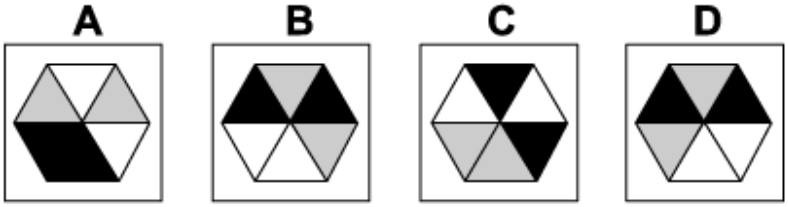


Solution: A

Explanation:
In this question there are three shapes - an O, an X and an asterisk. Each shape follows its own rule.
The O rotates around the octagon by 180° each time.
The X rotates around the octagon by 135° clockwise each time.
The asterisk rotates around the octagon by 90° anticlockwise each time.
In addition the three shapes alternate between small and large.
For the missing diagram of the sequence, the O should move to the top left triangle and should be small, the X should move to the bottom triangle and should be small, and the asterisk should move to the top triangle and should be large. The correct answer, therefore, is A.

Question 18

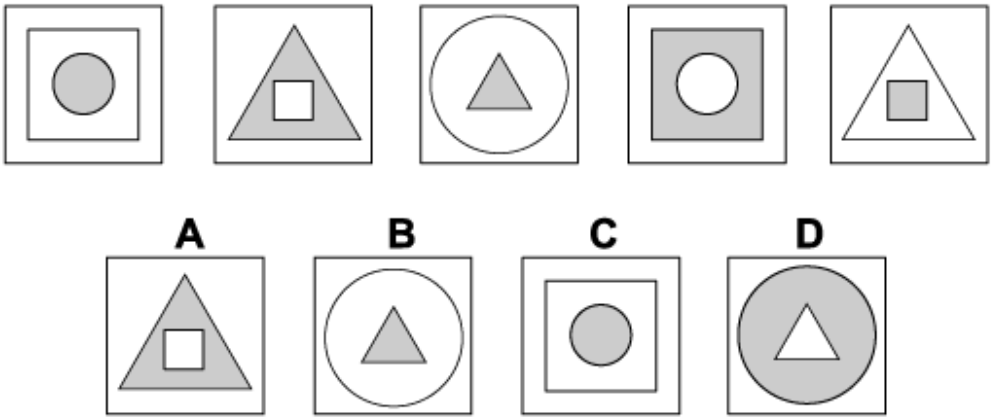
Which of the following replaces the question mark in the sequence?



Solution: B

Explanation:
In this question there are two rules that are applied simultaneously.
The first rule is that the hexagon is reflected in the vertical axis each time. Following this rule, the correct answer could be A, B or C.
The second rule is that the colours change from one diagram to the next - black changes to white, white changes to grey and grey changes to black. Following this rule, the correct answer must be B.

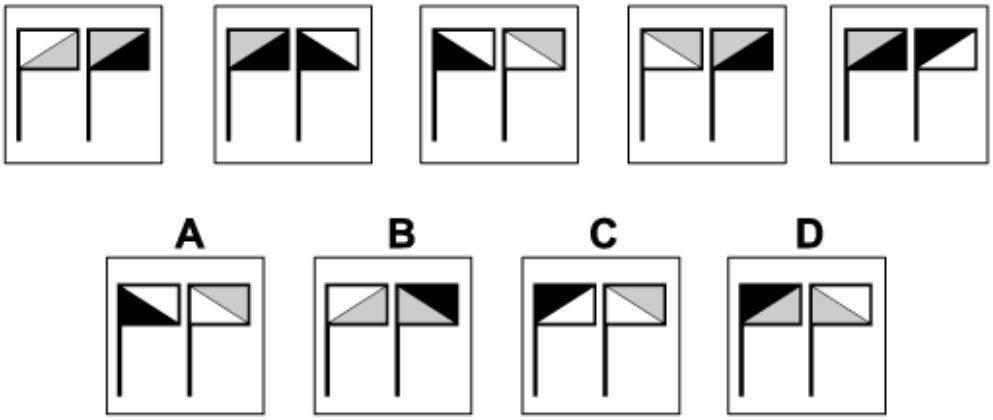
Question 19



Solution: D

Explanation:
In this question there are three figures made up of geometrical shapes - a circle inside a square, a square inside a triangle and a triangle inside a circle. The next diagram of the sequence, therefore, should be a triangle inside a circle. The correct answer could be B or D.
At the same time the colours of the inner and outer shapes alternate between white and grey. For the next diagram of the sequence, therefore, the inner shape should be white and the outer shape grey. The correct answer, therefore, is D.

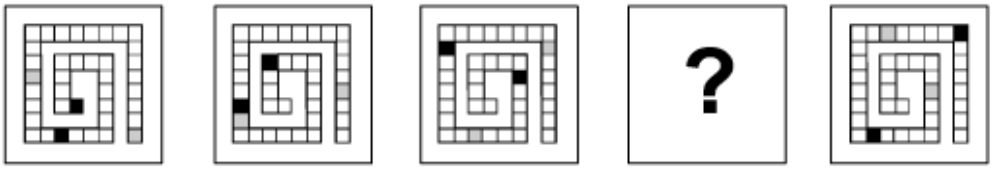
Question 20



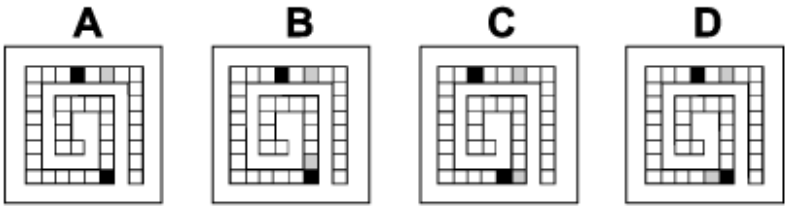
Solution: C

Explanation:
In this question there are two rules to follow.
The first rule is that the diagonals on the two flags change in direction alternately - firstly the diagonal on the right flag changes direction, then the diagonal on the left flag changes direction, then back to the right flag etc. For the next diagram of the sequence, therefore, the diagonal on the right flag should change direction. The answer could be B, C or D.
The second rule is that the colours follow a pattern. Reading from left to right, firstly we have white, grey, grey, black; then grey, black, black, white; then black, white, white grey etc. For the next diagram of the sequence, therefore, we should have black, white, white, grey. The correct answer is C.

Question 21



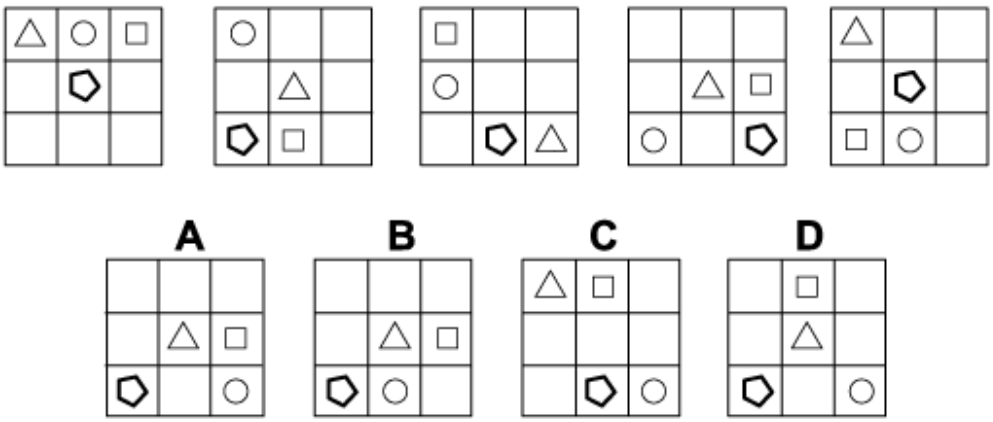
Which of the following replaces the question mark in the sequence?



Solution: A

Explanation:
In this question the black and grey squares move around the spiral.
The black squares move clockwise around the spiral, moving forward four places each time.
The grey squares move anticlockwise around the spiral, moving forward three places each time.
For the missing diagram of the sequence one black square and one grey square coincide, so only the black square is visible. The correct answer, therefore, is A.

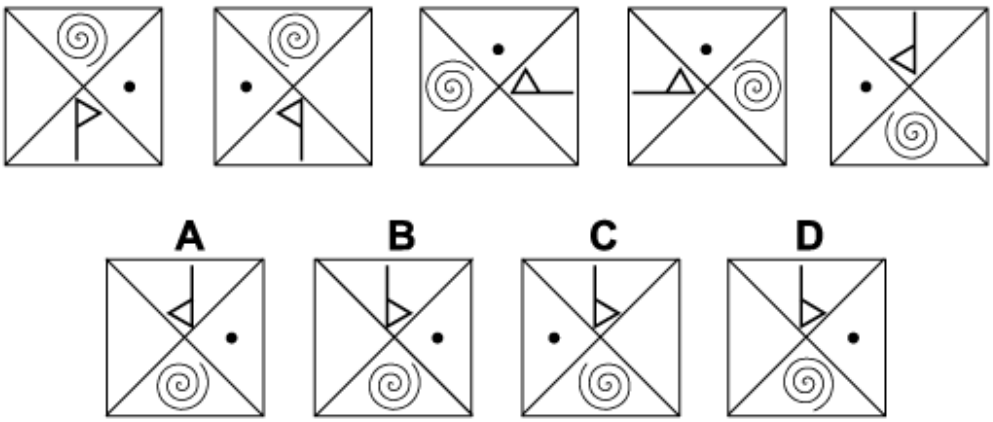
Question 22



Solution: D

Explanation:
In this question there are four shapes that move around the grid. Each shape follows its own rule.
The oval moves one place anticlockwise around the eight outer squares of the grid each time.
The triangle moves backwards and forwards along the three squares of the grid on the diagonal stretching from the top left corner to the bottom right corner.
The square moves three places clockwise around the eight outer squares of the grid each time.
The pentagon moves anticlockwise around four squares that form a triangle at the bottom of the grid - the three squares in the bottom row and the centre square.
When all these rules are applied simultaneously, the next diagram in the sequence must be D.

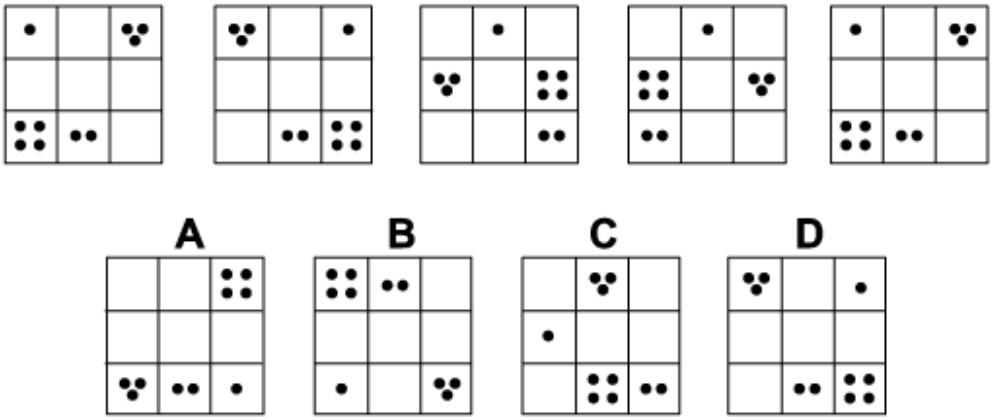
Question 23



Solution: B

Explanation:
In this question there are two reflections that are applied alternately.
The first is a reflection in the vertical axis.
The second is a reflection in the diagonal stretching from the top left corner to the bottom right corner.
To obtain the next diagram of the sequence, the first reflection should be applied next and the correct answer is B.

Question 24

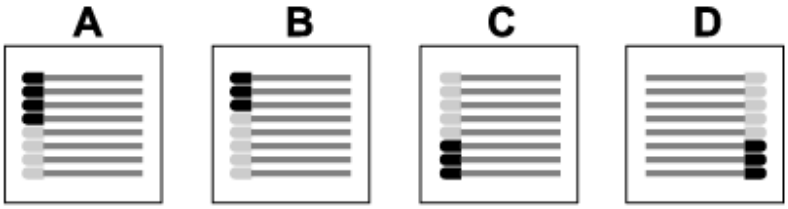


Solution: D

Explanation:
In this question there are two rules to follow that are applied alternately.
The first rule is that the first and third columns are interchanged.
The second rule is that the squares around the outside of the grid all move one place anticlockwise.
To obtain the next diagram of the sequence, the first rule should be applied next and the correct answer is D.

Question 25

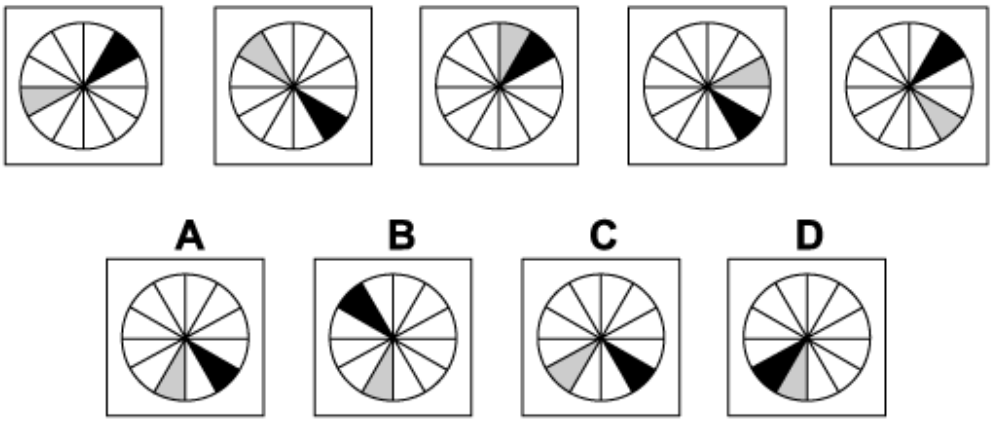
Which of the following replaces the question mark in the sequence?



Solution: B

Explanation:
In this question there are two rules to follow that are applied simultaneously.
The first rule is that the group of eight matches rotates by 90° clockwise each time. Following this rule, the missing diagram of the sequence could be A, B or C.
The second rule is that one match is spent each time, starting with the match on the right (when they are aligned upright), then the next match to the left, and so on. When this rule is applied, for the missing diagram of the sequence, the three matches on the right should be spent and the correct answer is B.

Question 26

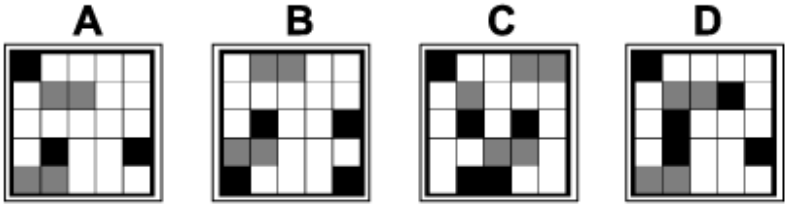


Solution: A

Explanation:
In this question there is a black sector and a grey sector each of which follows its own rule.
The black sector reflects each time in the horizontal axis. Following this rule, for the next diagram of the sequence, the black sector will be reflected down to the sector of the circle in the south-east position. The answer, therefore could be A or C.
The grey sector rotates each time by 60° clockwise. For the next diagram of the sequence, therefore, it will rotate to the sector of the circle just to the west of south. The answer, therefore, is A.

Question 27

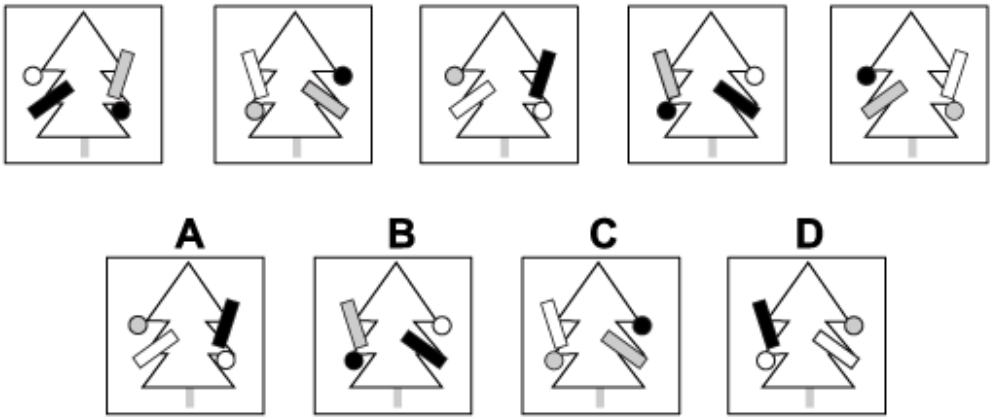
Which of the following replaces the question mark in the sequence?



Solution: C

Explanation:
In this question the grid of squares moves each time by one square to the left and one square up. Following this rule, the missing diagram of the sequence is C.

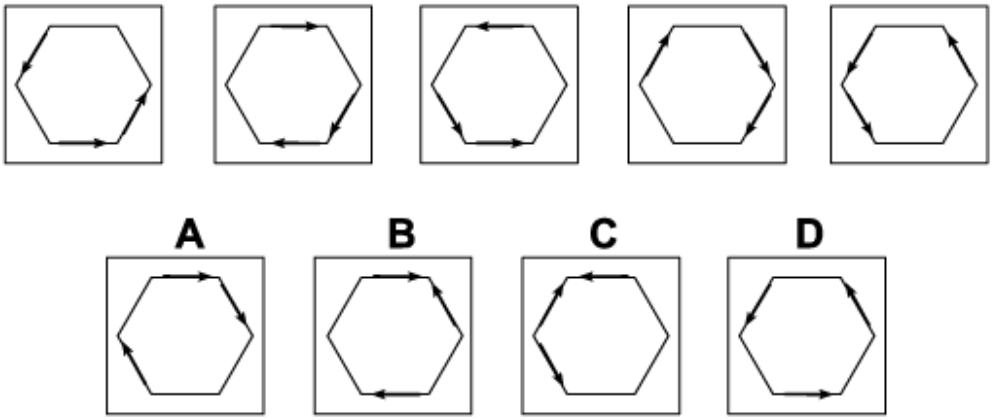
Question 28



Solution: D

Explanation:
In this question there is a Christmas tree with two balls and two crackers. There are two rules to follow that are applied simultaneously.
The first rule is that the tree and decorations are reflected in the vertical axis from one diagram to the next. Following this rule, the next diagram of the sequence could be B, C, or D.
The second rule is that the colours of the decorations change from one diagram to the next - black changes to grey, grey changes to white and white changes to black. Following this rule, the correct answer is D.

Question 29

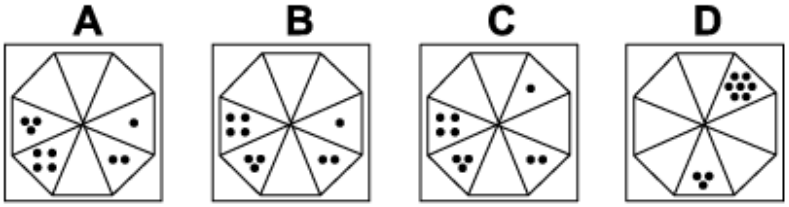


Solution: A

Explanation:
In this question there are two reflections that are applied alternately.
The first is a reflection in the diagonal stretching from the top left corner of the hexagon to the bottom right corner. The second is a reflection in the vertical axis.
For the next diagram of the sequence, the first reflection should be applied next and the correct answer is A.

Question 30

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



Solution: B

Explanation:
In this question the dots move around the triangles of the octagon, moving anticlockwise a number of places equal to the number of dots. When two sets of dots occupy the same triangle, then their scores are added together and the new number of dots is applied for the next diagram of the sequence.
When this rule is applied, the correct answer for the missing diagram is B.

- End of Test 5 -