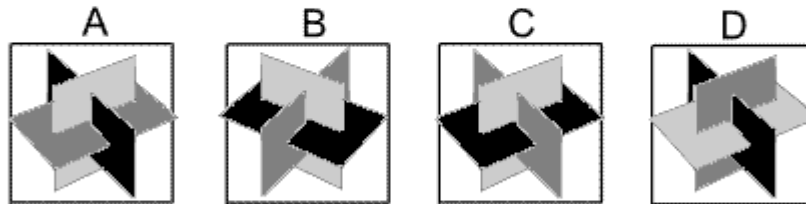


## Inductive Reasoning Practice Test 6

Solution Booklet

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**Question 1**



Solution: C

Explanation:

In this question there is a solid made up of three orthogonal rectangles, one coloured black, one dark grey and one light grey. There are two rules to follow.

The first rule is that from one diagram of the sequence to the next, the solid is reflected in the vertical axis. Following this rule, the next diagram of the sequence could be A, C or D.

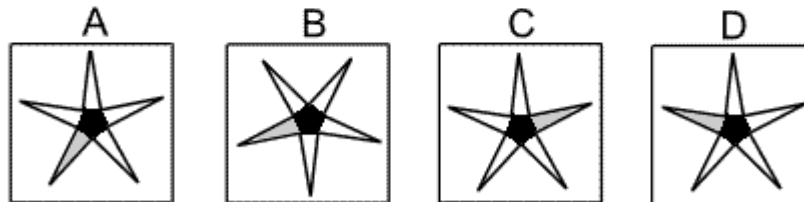
The second rule concerns the colours. Each time, from one diagram to the next, one colour stays the same while the other two interchange - firstly the light grey face stays the same, then the black face, then the dark grey face etc. For the next diagram of the sequence, therefore, the black face should stay the same while the colours of the other two interchange. Thus the correct answer is C.

---

**Question 2**



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



Solution: D

Explanation:

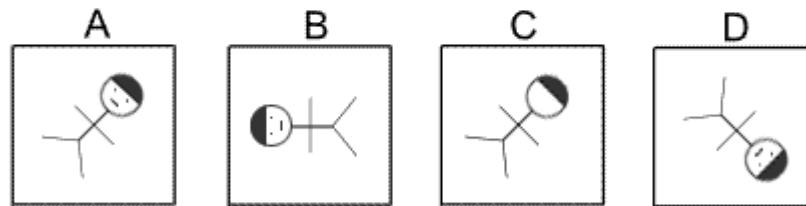
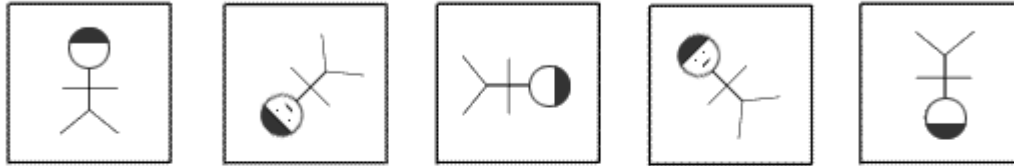
In this question there is a pentagonal star with one triangular point coloured light grey.

The star itself rotates each time by  $36^\circ$  clockwise each time. Following this rule, the missing diagram of the sequence could be A, C or D.

In addition, the grey triangle itself rotates further - the first time by  $1 \times 72^\circ$ , the second time by  $2 \times 72^\circ$ , the third time by  $3 \times 72^\circ$  etc. When the grey triangle of the second diagram of the sequence is rotated by another  $2 \times 72^\circ$ , the missing diagram is D. When the grey triangle of D is then rotated by a further  $3 \times 72^\circ$  we get the fourth diagram of the sequence. Thus D is the correct answer.

---

**Question 3**



Solution: A

Explanation:

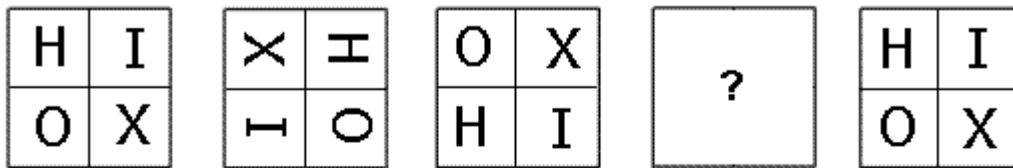
In this question there are two rules to follow.

The first rule is that the stick-man alternately has his back to us and faces us. For the next diagram of the sequence, he should face us. The correct answer, therefore, could be A, B or D.

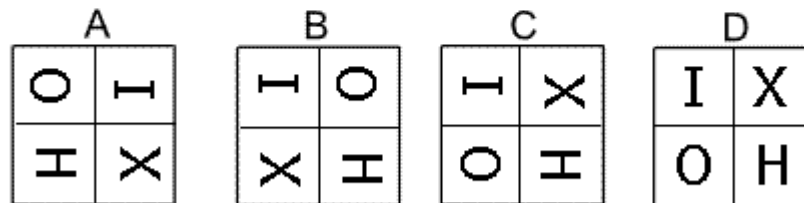
The other rule is that each time the stick-man rotates by  $135^\circ$  anticlockwise. He should, therefore, rotate from his head facing south to his head facing north-east. The correct answer, must be A.

---

Question 4



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



Solution: B

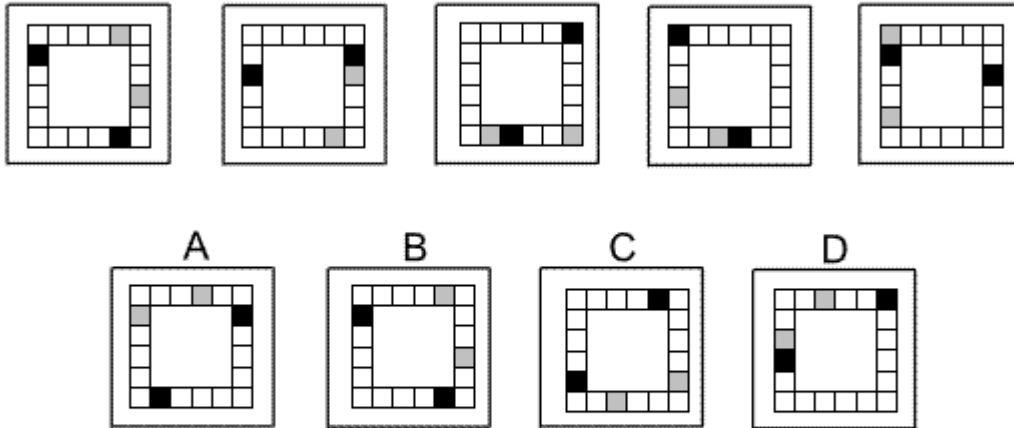
Explanation:

In this question, from one diagram to the next, the letters H, I, X and O rotate around their own centres by 90°. For the missing diagram of the sequence, therefore, the letters should be on their sides. The correct answer could be A, B or C.

At the same time the letters move around the grid following a 'Z' shape, with the letter in the bottom right corner moving to the top left corner. When this rule is also applied, the correct answer must be B.

---

**Question 5**



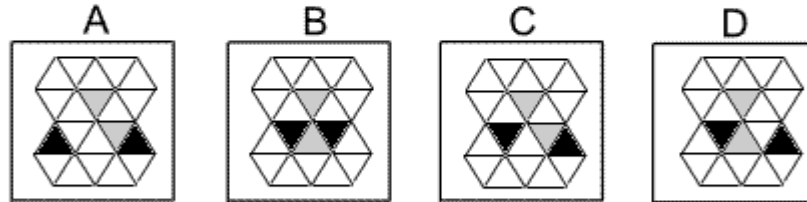
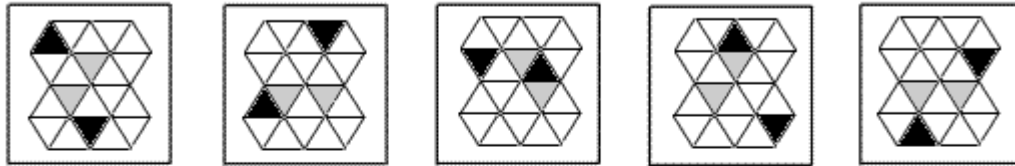
Solution: A

Explanation:

In this question from one diagram to the next the black squares move 2 places clockwise around the grid and the grey squares move 2 places anticlockwise around the grid. At the same time the grid itself is rotated by 90° clockwise. When these two rules are applied simultaneously, the correct answer is A.

---

**Question 6**



Solution: C

Explanation:

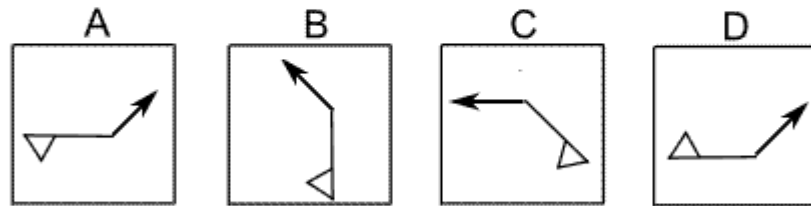
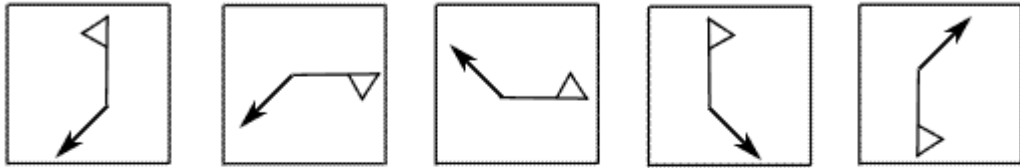
In this question there are black and grey triangles that follow their own rules.

The grey triangles rotate around the six triangles making up a hexagon at the centre of the shape. They move two places anticlockwise each time. Following this rule, the correct answer could be A or C.

The black triangles rotate around the eighteen triangles that have either an edge or a vertex touching the outside perimeter of the shape. They move three places clockwise each time. Following this rule, the correct answer must be C.

---

**Question 7**



Solution: D

Explanation:

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

The first is a reflection in the diagonal going from bottom left to top right and passing through the point where the flag and the arrow join.

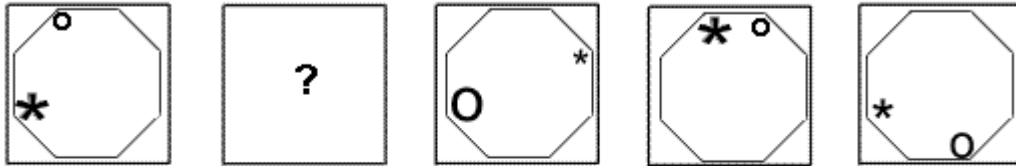
The second is a reflection in the horizontal line passing through the point where the flag and the arrow join.

For the next diagram of the sequence, the first reflection must be applied, and the correct answer is D.

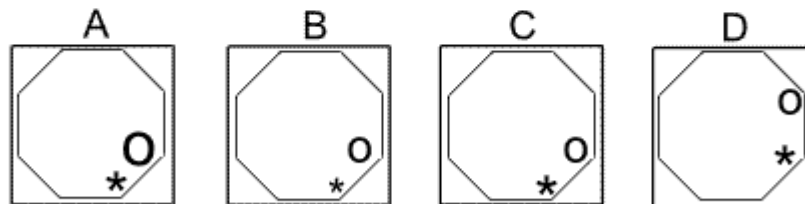


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**Question 8**



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



Solution: C

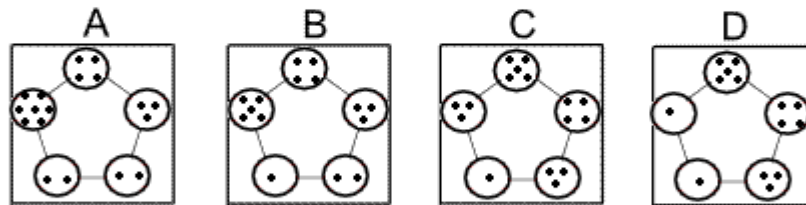
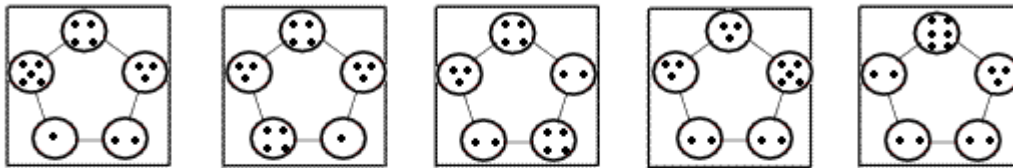
Explanation:

In this question there is an O that comes in 3 sizes and an asterisk that comes in 3 sizes. The O starts small, changes to medium, then to large, then back to small; and also rotates three places clockwise around the vertices of the octagon each time. Following this rule, the correct answer could be B or C.

The asterisk starts large, changes to medium, then to small, then back to large: and also rotates two places anticlockwise each time around the vertices of the octagon. When this rule is also applied, the correct answer must be C.

---

Question 9



Solution: B

Explanation:

In this question the circles move one place around the edge of the pentagon in an anticlockwise sense each time. At the same time, the number of dots inside each circle changes according to the following rules:

If the circle is moving upwards, then the number of dots increases by 1.

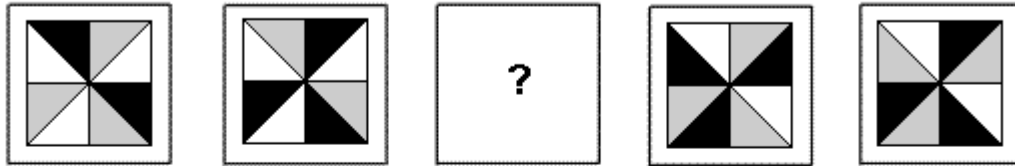
If the circle is moving downwards, then the number of dots decreases by 1.

If the circle moves sideways (i.e. the bottom left circle moves to the bottom right circle), then the number of dots remains the same.

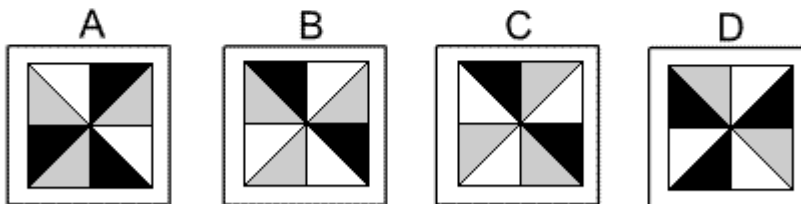
When these rules are applied, the next diagram in the sequence must be B.

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**Question 10**



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



Solution: D

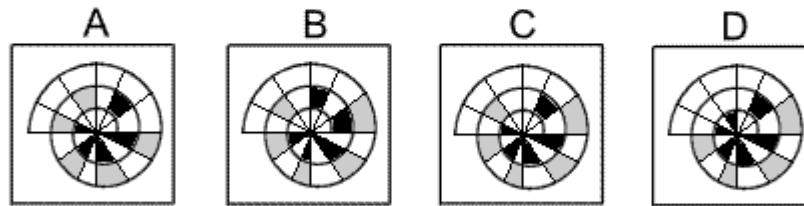
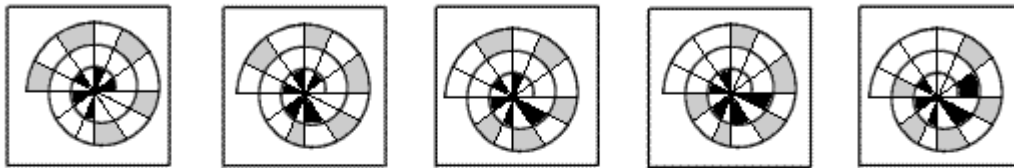
Explanation:

In this question, from one diagram to the next one colour stays the same while the other two colours interchange - firstly white stays the same while grey and black interchange, then grey stays the same while white and black interchange, then black stays the same while white and grey interchange etc.

To obtain the missing diagram of the sequence, grey must stay the same while black and white interchange. The correct answer, therefore, is D.

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**Question 11**



Solution: C

Explanation:

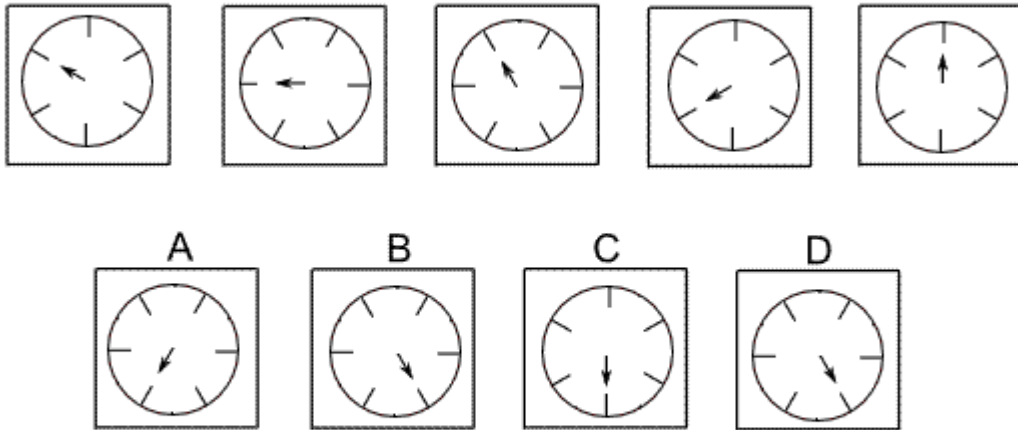
In this question there is a spiral divided into sectors. Five alternate sectors are coloured grey and start at the outside of the spiral. Five alternate sectors are coloured black and start at the centre of the spiral.

The grey sectors move one place towards the centre of the spiral each time. The black sectors move one place towards the outside of the spiral each time.

When these two rules are applied simultaneously, the correct answer must be C.

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**Question 12**



**Solution:** A

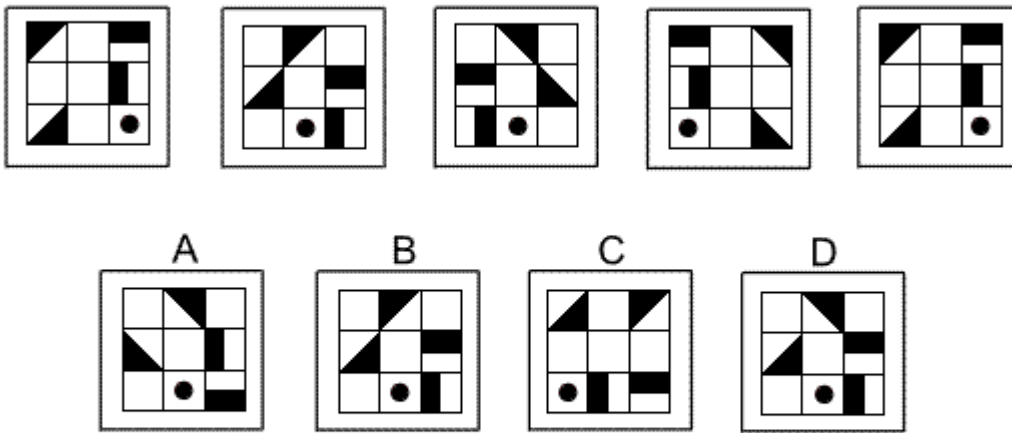
**Explanation:**

In this question the dial and arrow rotate - the first time by  $30^\circ$  anticlockwise, the second time by  $2 \times 30^\circ = 60^\circ$  clockwise, the third time by  $3 \times 30^\circ = 90^\circ$  anticlockwise etc.

To obtain the next diagram of the sequence, therefore, the dial and arrow must rotate by  $5 \times 30^\circ = 150^\circ$  anticlockwise. The correct answer is A.

---

Question 13



Solution: B

Explanation:

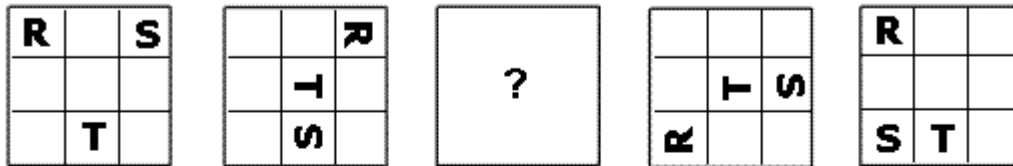
In this question there are two rules that are applied alternately.

The first rule is that the eight tiles around the outside of the grid move one place clockwise.

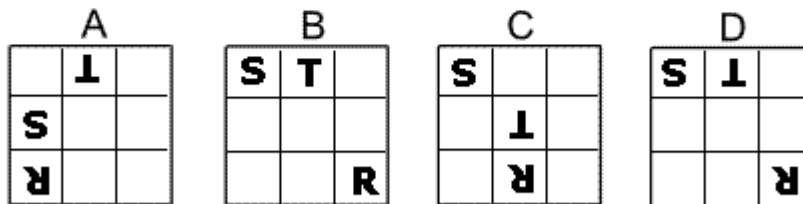
The second rule is reflection in the vertical axis.

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

Question 14



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



Solution: D

Explanation:

In this question there are several rules to follow. The first one concerns the orientation of the letters R, S and T. From one diagram to the next they always rotate by 90° clockwise. For the missing diagram of the sequence, therefore, the letters should be upside down. The correct answer could be A, C or D.

In addition each of the letters moves around the grid according to its own rule:

The R moves two places clockwise around the perimeter of the grid.

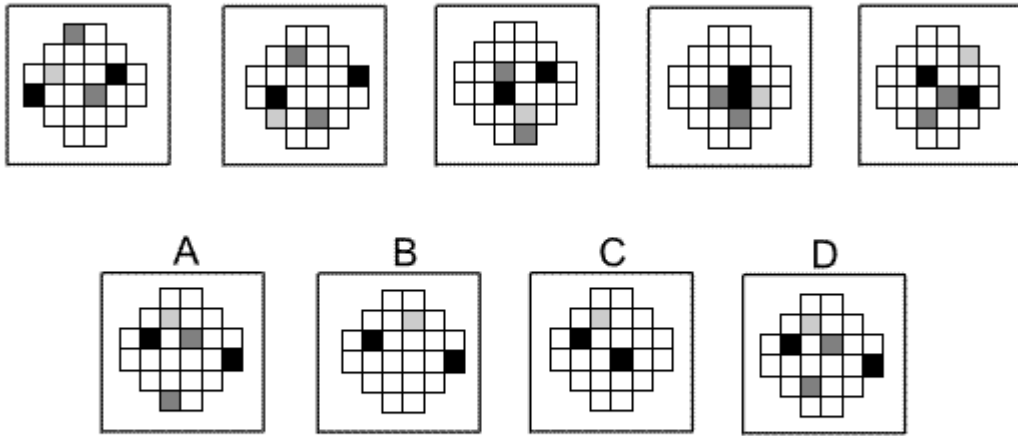
The S moves three places clockwise around the perimeter of the grid.

The T moves up and down the three squares in the centre column of the grid.

When all these rules are applied together, the correct answer is D.

---

**Question 15**



Solution: A

Explanation:

In this question the different coloured squares move around the grid, each according to their own rules.

The light grey square moves around the perimeter of the  $4 \times 4$  square in the centre of the grid, moving two places anticlockwise each time.

The two dark grey squares move up and down the two centre columns of the grid, each moving one place up or down each time.

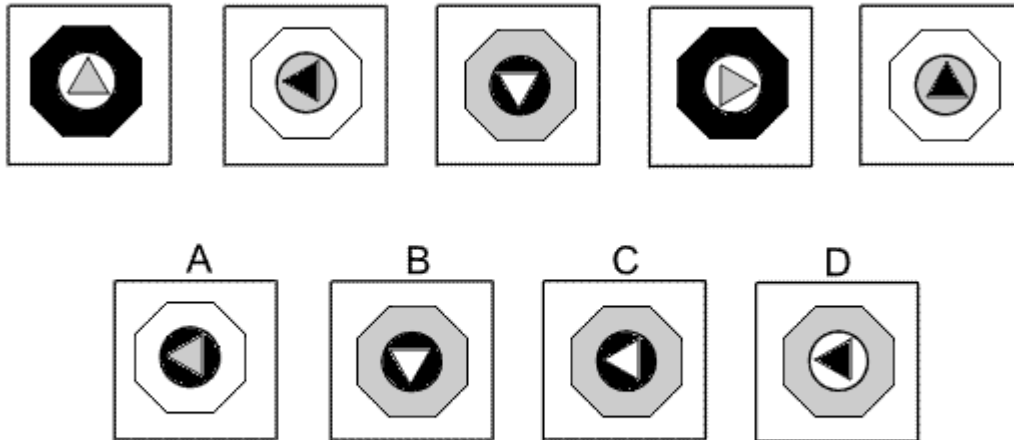
The two black squares move across the two centre rows of the grid, each moving one place left or right each time.

When all these rules are applied simultaneously, the correct answer is A.



---

Question 16



Solution: C

Explanation:

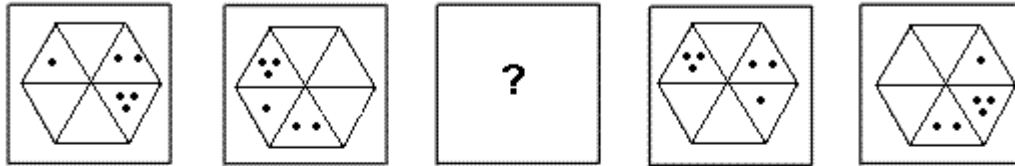
In this question there is an equilateral triangle inside a circle inside a regular octagon. There are two rules that are applied simultaneously.

The first rule is that the shapes are rotated by 90° anticlockwise each time. Following this rule, the next diagram of the sequence could be A, C or D.

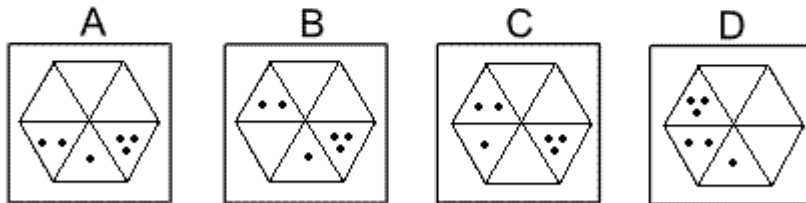
The second rule concerns the colours that change as follows: black changes to white, white changes to grey, grey changes to black. Following this rule, the next diagram of the sequence must be C.

---

**Question 17**



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



**Solution: B**

**Explanation:**

In this question the single dot, the two dots and the three dots each move around the six triangles following their own rule.

The single dot always moves one place anticlockwise.

The two dots always move two places clockwise.

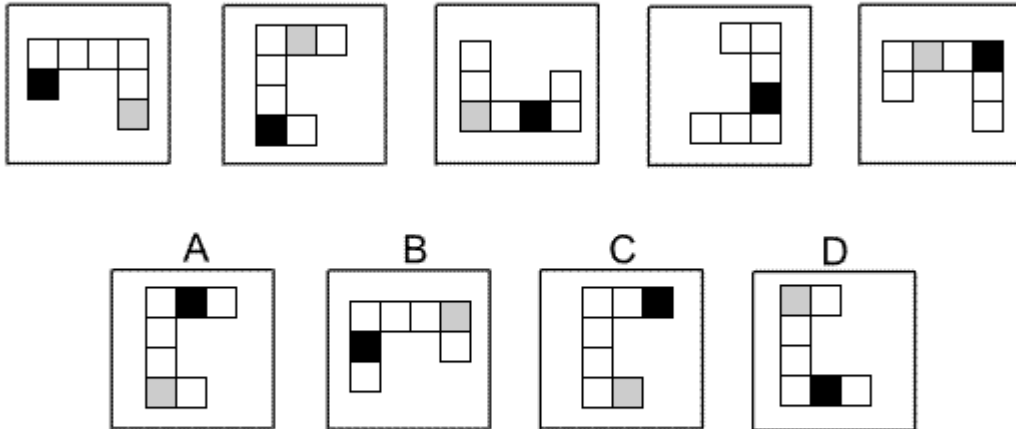
The three dots always move three places anticlockwise (or clockwise).

When these rules are applied simultaneously, the missing diagram of the sequence is B.

A.

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**Question 18**



Solution: A

**Explanation:**

In this question there is a shape made up of 7 squares. There are two rules to follow.

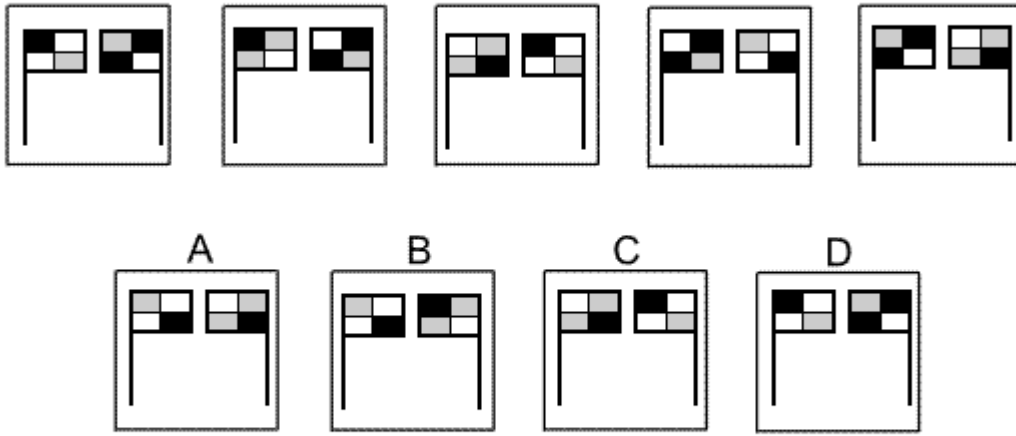
The first rule is that the shape rotates by  $90^\circ$  anticlockwise each time. Following this rule, the next diagram of the sequence could be A or C.

The second rule concerns the black and grey squares. They move one place each time towards the centre square of the shape and then away from it, always moving in the same direction.

Where the black and grey coincide, only the black is visible. Following this rule, the next diagram of the sequence must be A.

---

Question 19



Solution: B

Explanation:

In this question there are two flags, each divided into four rectangles that can be coloured black, grey or white. From one diagram to the next one colour stays the same while the other two colours interchange.

The first time black stays the same, while grey and white interchange.

The second time grey stays the same, while black and white interchange.

The third time, white stays the same, while grey and black interchange.

etc.

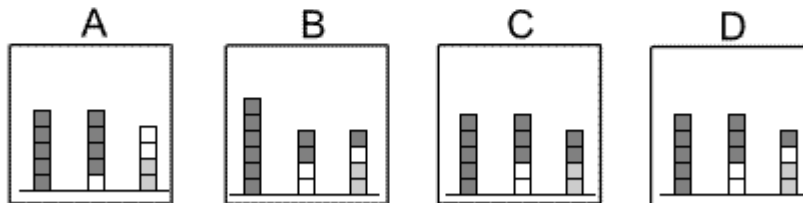
For the next diagram of the sequence, therefore, grey stays the same while black and white interchange. The correct answer, therefore, is B.

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**Question 20**



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



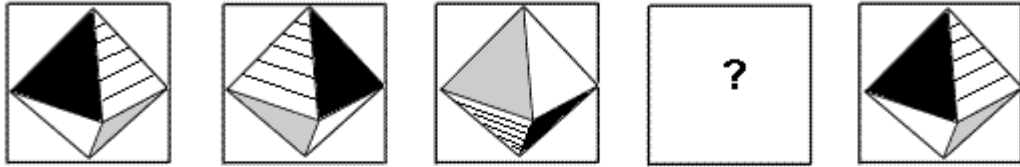
Solution: D

Explanation:

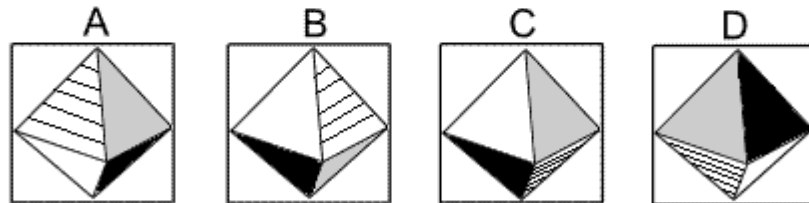
In this question there are three stacks of square blocks - a stack of 9 dark grey blocks on the left, a stack of three white blocks in the centre and a stack of two light grey blocks on the right. From one diagram to the next, one block is moved from the centre stack to the right stack and then two blocks are moved from the left stack to the centre stack. When these rules are applied, the missing diagram of the sequence is D.

---

**Question 21**



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



Solution: C

Explanation:

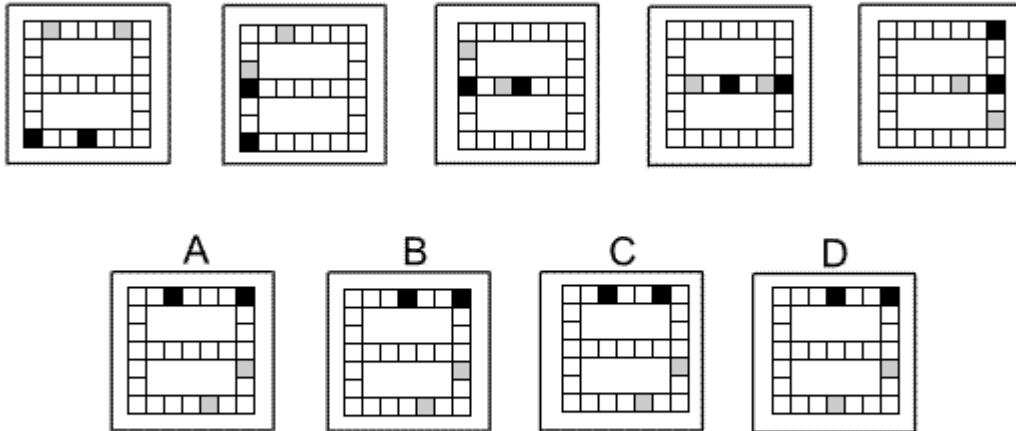
In this question there is an octahedron - a solid with eight congruent triangular faces. Two faces are black, two are grey, two are white and two are striped. There are two rules to follow.

The first rule is a rotation of  $90^\circ$  around its vertical axis (rotating clockwise as viewed from the top of the octahedron). The second rule is to turn the octahedron upside down.

For the missing diagram of the sequence, the first rule must be applied and the correct answer is C.

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**Question 22**



**Solution: B**

**Explanation:**

In this question there is a grid in the shape of a number 8.

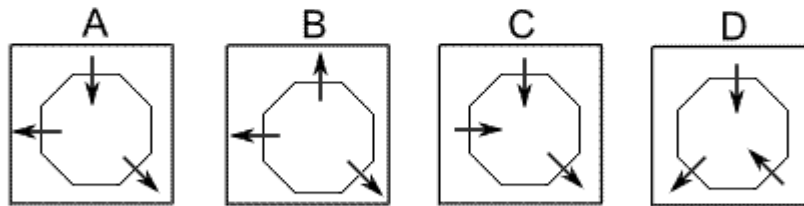
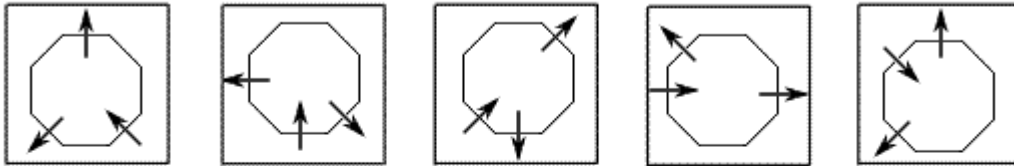
There are two grey squares that start in the top row of the grid, moving three places at a time, and following a path resembling a letter S.

There are two black squares that start in the bottom row of the grid, moving three places at a time, and following a shape resembling a backwards letter S.

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

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**Question 23**



Solution: A

Explanation:

In this question there is an octagon with arrows perpendicular to three of its sides - two arrows point away from the centre of the octagon; the other arrow points towards the centre.

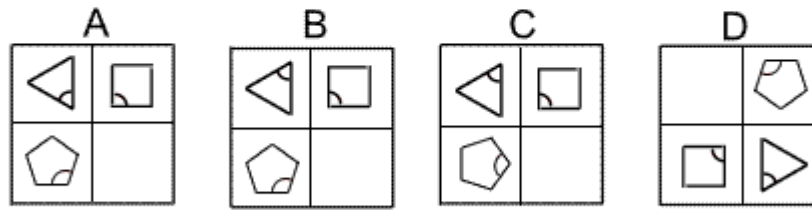
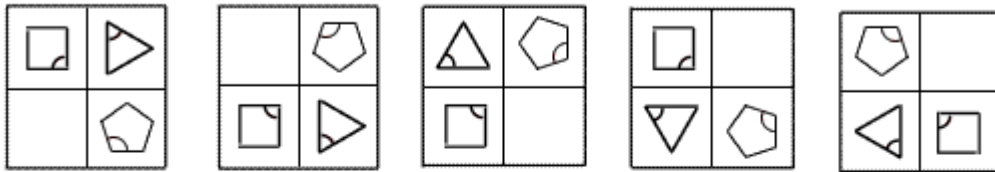
The two arrows pointing away from the centre rotate about the centre of the octagon each time by  $90^\circ$  anticlockwise. The one arrow pointing towards the centre rotates about the centre of the octagon by  $45^\circ$  clockwise each time.

When these rules are applied simultaneously, the correct answer is A.



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**Question 24**



Solution: B

Explanation:

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

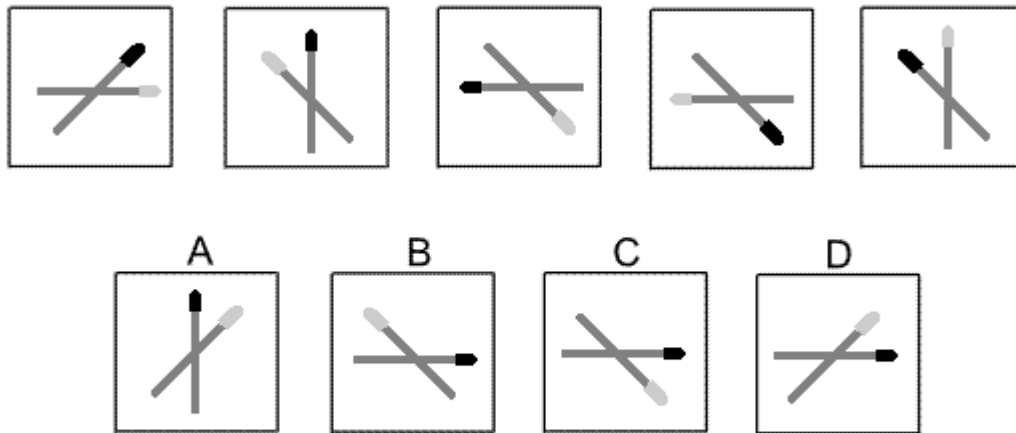
The first is a reflection in the horizontal axis.

The second is a reflection in the diagonal stretching from the bottom left corner to the top right corner.

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

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**Question 25**



Solution: D

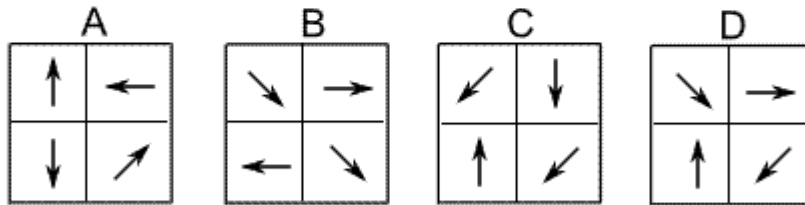
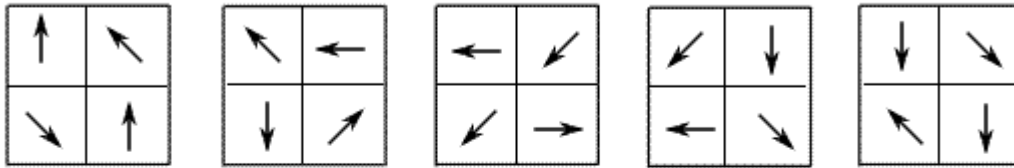
Explanation:

In this question there are two matchsticks - one with a black head, the other with a grey head. The matchstick with the black head rotates by  $1 \times 45^\circ = 45^\circ$  anticlockwise the first time,  $2 \times 45^\circ = 90^\circ$  anticlockwise the second time,  $3 \times 45^\circ = 135^\circ$  anticlockwise the third time etc. Following this rule, for the next diagram of the sequence it should rotate by  $5 \times 45^\circ = 225^\circ$  anticlockwise. The correct answer could be B, C or D.

The matchstick with the grey head rotates by  $5 \times 45^\circ = 225^\circ$  clockwise the first time,  $4 \times 45^\circ = 180^\circ$  clockwise the second time,  $3 \times 45^\circ = 135^\circ$  clockwise the third time etc. Following this rule also, for the next diagram of the sequence it should rotate by  $1 \times 45^\circ = 45^\circ$  clockwise, and the correct answer is D.

---

**Question 26**



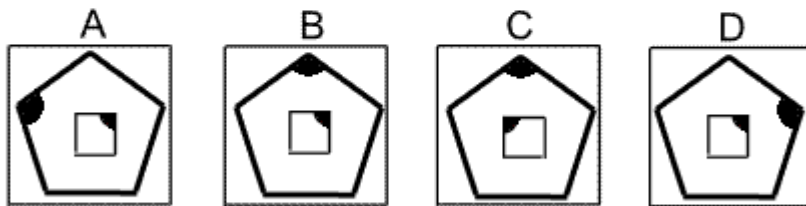
Solution: D

Explanation:

In this question the two arrows in the top row rotate by  $45^\circ$  anticlockwise each time and the two arrows in the bottom row rotate by  $45^\circ$  clockwise each time. Following these rules, the correct answer is D.

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Question 27



Solution: B

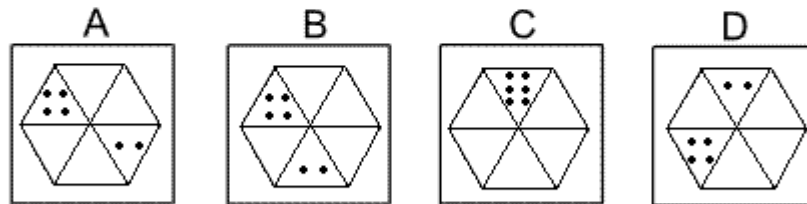
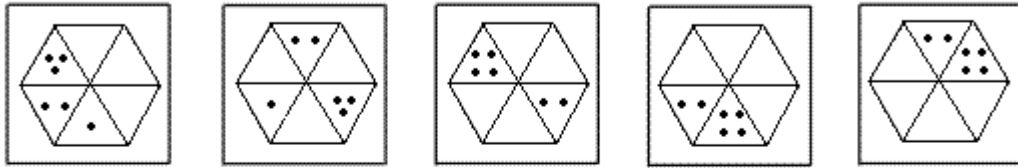
Explanation:

In this question there is a square inside a regular polygon. Each shape follows its own rule. The square rotates by  $90^\circ$  anticlockwise each time. Following this rule, the next diagram of the sequence could be A, B or D.

The pentagon rotates by  $144^\circ$  clockwise each time. When this rule is also applied, the next diagram of the sequence must be B.

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**Question 28**



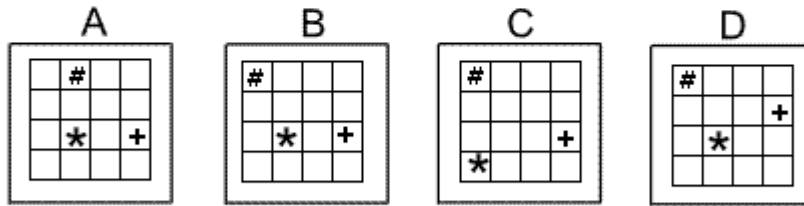
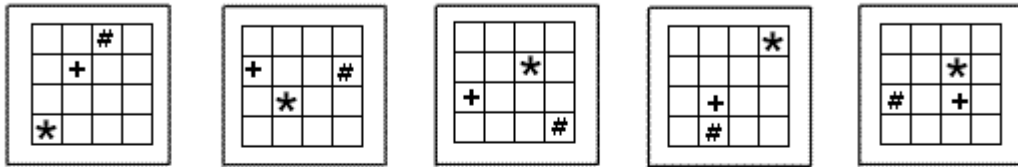
Solution: A

Explanation:

In this question the dots move clockwise around the six triangles of the hexagon, moving a number of places equal to the number of dots. When two sets of dots land on the same triangle, their scores are added together.

To obtain the next diagram of the sequence, therefore, the four dots should move four places clockwise and the two dots should move two places clockwise, and the correct answer is A.

Question 29



Solution: B

Explanation:

In this question there is an asterisk, a hash sign and a plus sign. Each shape moves around the grid according to its own rule.

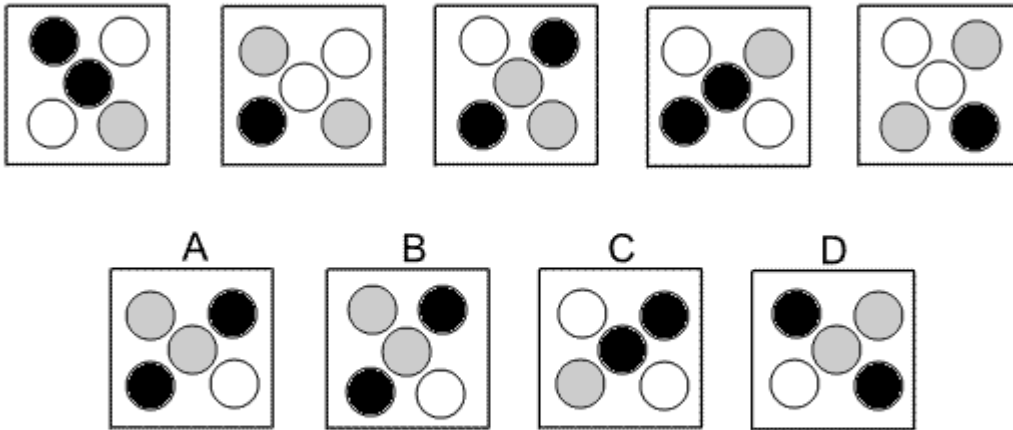
The asterisk moves up and down the diagonal stretching from the bottom left of the grid to the top right of the grid, moving one place each time. When this rule is applied, the correct answer could be A, B or D.

The hash sign moves around the 12 squares around the perimeter of the grid, moving two squares clockwise each time. When this rule is also applied, the correct answer could be B or D.

The plus sign moves around the 8 squares of the middle two rows of the grid, moving one place anticlockwise each time. When this rule is also applied, the correct answer must be B.

---

Question 30



Solution: D

Explanation:

In this question there are five coloured circles that rotate each time by 90° clockwise. When this rule is applied, the correct answer could be A, B or D.

At the same time the colours change from one diagram to the next - black changes to white, white changes to grey and grey changes to black. When this rule is also applied, the correct answer must be D.

- End of Test 6 -