CODED INEQUALITIES

To solve coded inequality problems quickly, focus on identifying common symbols and understanding the relationships between them, rather than directly translating the symbols into standard inequalities.

Here's a breakdown of the shortcut tricks:

1. Understand the Code:
Direct Relationships:
Pay close attention to how the coded symbols represent standard inequality signs (>, <, =, ≥, ≤).
Indirect Relationships:

Some codes might indicate "not smaller than" (≥), "neither greater than nor smaller than" (=), etc.

Create a Table:

Organize the coded symbols and their corresponding meanings in a table for easy reference.

2. Identify Common Symbols:

Look for Direct Connections:

If you can find a direct connection between the elements using the same coded symbol, that's your answer.

Example:

If you have "A @ B" and "B % C" and "@" means "greater than or equal to" and "%" means "greater than", then "A" is greater than or equal to "B" and "B" is greater than "C". Therefore, "A" is greater than "C".

Look for Opposite Symbols:

If you encounter opposite symbols (e.g., ">" and "<"), the relationship is ambiguous, and you might need to consider "either/or" scenarios.

3. "Either/Or" Cases:

Identify Opposite Symbols:

If you have two conclusions that are opposite (e.g., one says "A > B" and the other says "A < B"), check if the original coded statements allow for both possibilities.

Check for Equality:

If the original statements allow for equality (e.g., "A ≥ B" and "A ≤ B"), then the "either/or" case might be true.

4. Practice and Memorization:

Solve Many Problems:

The more you practice, the faster you'll become at recognizing patterns and applying the shortcuts.

Memorize Common Combinations:

Familiarize yourself with common combinations of coded symbols and their implications.

Example:

Let's say:

- "A $ B" means "A is not smaller than B" (A ≥ B)
- "A * B" means "A is neither greater than nor smaller than B" (A = B)
- "A # B" means "A is neither greater than nor equal to B" (A < B)

Question: If "P $ Q" and "Q # R", what can you conclude about P and R?

Solution:

1. **Translate:** P ≥ Q and Q < R
2. **Analyze:** Since P ≥ Q and Q < R, we can't directly compare P and R.
3. **Consider "Either/Or":** The relationship between P and R could be either P > R or P = R.
4. **Conclusion:** The correct answer would be "either P > R or P = R".

What is Inequality?

As mentioned above, Inequality refers to expressions that contain inequality signs such as <, >, =, etc. To understand the questions based on mathematical inequalities, candidates must know about various signs, which are used in such types of questions. The same is given below:

Symbol	Meaning
A > B	A is greater than B
A < B	A is less than B
A = B	A is equal to B
A ≥ B	A is either greater than or equal to B
A ≤ B	A is either less than or equal to B
A ≠ B	A is either greater than or less than B

Types of Inequality

As now we know what consists of the questions related to the Inequality reasoning section. Let us see the various types of questions that may come one by one from below:

1. Basic Inequality

In these type of Inequality reasoning questions, expressions consisting of comparison between different elements will be given and a defined relation between any 2 elements will be asked.

2. Either – or Case

In these type of Inequality reasoning questions, a definite relation between two elements cannot be determined. In this type of question there will be given 2 relations only from which either relation 1 or 2 can be true.

3. Coded Inequality

In these type of Inequality reasoning questions, codes will be assigned to inequality symbols and the expression will be given using those codes. Candidates need to decode the symbols and find the relation between the elements.

How to Solve Inequality Reasoning Questions – Tips and Tricks

Candidates can find various tips and inequality reasoning tricks from below for solving the questions related to the Inequality reasoning section.

Tip # 1: Candidates can consider the symbols by trick to find the answers quickly such as > as Father, ≥ as Mother, = as Servant, the priority for solving any questions will be given on the basis of seniority such as Father is senior than Mother and Mother is senior than Servant, and so on.

Tip # 2: Some of the rules for Basic Inequalities are as follows.

Statement	Conclusion
P > Q >R	P > R
P > Q ≥ R	
P ≥ Q > R	
P = Q > R	
P > Q = R	
P < Q < R	P < R
P < Q ≤ R	
P ≤ Q < R	
P = Q < R	
P < Q = R	
P ≥ Q ≥ R	P > R or P = R
P = Q ≥ R	
P ≥ Q = R	
P ≤ Q ≤ R	P < R or P = R
P = Q ≤ R	
P ≤ Q = R	
P < Q > R	No conclusion can be inferred
P ≤ Q > R	
P < Q ≥ R	
P > Q < R	
P > Q ≤ R	
P ≥ Q < R	

Tip # 3: Candidates need to follow the below mentioned rules for solving the either or case inequalities reasoning section:

Complementary Pair	Conditions
> + =	○ Elements in both conclusions should be the same.

< + =	○ Both are individually false. ○ Combination of the relation should be true.
> + < + =	
≤ + >	○ Elements in all conclusions should be the same. ○ The relation between the elements in all the cases should be "can't say"
> + ≤	

Inequality Sample Questions

Question 1: In the question, assuming the given statements to be true, find which of the conclusions among given two conclusions is/are definitely true, and then give your answer according to it.

Statement:

H < A < T = G > U ≥ V ≥ B

Conclusion:

I. T > B

II. G > H

(1) Only conclusion I follow

(2) Either conclusion I or II follow

(3) Only conclusion II follow

(4) None Follows

(5) Both conclusion I and II follow

Solution:

Given Statement: H < A < T = G > U ≥ V ≥ B

I. T > B = True (as T = G > U ≥ V ≥ B)

II. G > H = True (as H < A < T = G)

If we analyse the given statements, then we get the answer both conclusion I and II follows.

Question 2 : In the question, assuming the given statements to be true, find which of the conclusions among given two conclusions is/are definitely true, and then give your answer according to it.

Statement:

$F > Y \geq X < Z, C \leq X < W$

Conclusion:

I. $Z > C$

II. $F > W$

(1) Only conclusion I follow

(2) Either conclusion I or II follow

(3) Only conclusion II follow

(4) None Follows

(5) Both conclusion I and II follow

Solution:

Given Statement: $F > Y \geq X < Z, C \leq X < W$

On combining we will get $F > Y \geq X \geq C$ and $F > Y \geq X < W$

Conclusions:

I. $Z > C$ = True ($F > Y \geq X \geq C$)

II. $F > W$ = False ($F > Y \geq X < W$, relationship between F and W cannot be determined.)

Hence, the only conclusion I follow.

Get more details on Input-Output Reasoning

Question 3 : In the question, assuming the given statements to be true, find which of the conclusions among given two conclusions is/are definitely true, and then give your answer according to it.

Statement:

$B = K \geq H = T > U \leq I$

Conclusion:

I. $H > I$

II. $H \leq I$

(1) Only conclusion I follow

(2) Either conclusion I or II follow

(3) Only conclusion II follow

(4) None Follows

(5) Both conclusion I and II follow

Solution:

Given Statement: $B = K \geq H = T > U \leq I$

I. $H > I$ = False (as $H = T > U \leq I$)

II. $H \leq I$ = False (as $H = T > U \leq I$)

Hence, Either conclusion I or II follows.

Check out Statement & Conclusion Reasoning

Question 4 : In the question, assuming the given statements to be true, find which of the conclusions among given two conclusions is/are definitely true, and then give your answer according to it.

Statement:

1. $O < L > P > M \leq N \leq B$

2. L = K, M ≥ R

Conclusion:

I. K > M

II. O = M

III. R < B

IV. R = B

(1) Only conclusion II follow

(2) Either conclusion I or III follow

(3) Only conclusion I and IV follow

(4) Either conclusion III or IV follow

(5) Only conclusion I and Either conclusion III or IV follow

Solution:

Given Statement:

1. O < L > P > M ≤ N ≤ B

2. L = K, M ≥ R

I. K > M = True (as L = K, so L replaced by K then K > P > M)

II. O = M = False (as O < L > P > M)

III. R < B = False (as M ≥ R then R ≤ M ≤ N ≤ B gives either R < B or R = B)

IV. R = B = False (as M ≥ R then R ≤ M ≤ N ≤ B gives either R < B or R = B)

Hence, Only conclusion I and Either Conclusion III or IV follow.

Question 5 : In the question, assuming the given statements to be true, find which of the conclusions among given two conclusions is/are definitely true, and then give your answer according to it.

Statement:

$C = T \geq V \geq U$

Conclusion:

I. $C > U$

II. $T = U$

(1) Only conclusion I follow

(2) Either conclusion I or II follow

(3) Only conclusion II follow

(4) None Follows

(5) Both conclusion I and II follow

Solution:

Given Statement: $C = T \geq V \geq U$

I. $C > U$ = False (as $C = T \geq V \geq U$)

II. $T = U$ = False (as $T \geq V \geq U$)

As we can see either I or II is true as we can see C = T, Hence it is the correct answer.

Also check out Missing Number Reasoning

Sample Inequality Reasoning Questions

Given below are sample inequality reasoning questions that will help improve your understanding:

Directions: In the following question assuming the given statements to be true, find which of the conclusion among given conclusions is/are definitely true and then give your answers accordingly.

Statement:

$L > M > C \geq Q < P = E < F$

Conclusion:

1. $L > Q$
2. $F > C$

(1). Only I follow

(2). Only II follow

(3). Both I and II follow

(4). Either I or II follow

(5). Neither I nor II follows

Solution:

Given statement:

1. $L > M > C \geq Q < P = E < F$
2. $L > Q \rightarrow$ True (As $L > M > C \geq Q$)
3. $F > C \rightarrow$ False (As $C \geq Q < P = E < F$)

Conclusion II is false as there is an inequality symbol change between Q and C.

Hence, **Only I follow.**

Directions: In the following question assuming the given statements to be true, find which of the conclusion among given conclusions is/are definitely true and then give your answers accordingly.

Statement:

$9 > 7 < 6 = 5 \geq 4$

Conclusion:

1. $9 > 5$
2. $6 > 4$

(1). Only I follow

(2). Only II follow

(3). Both I and II follow

(4). Either I or II follow

(5). Neither I nor II follows

Solution:

Given Statement:

1. $9 > 7 < 6 = 5 \geq 4$
2. $9 > 5 \rightarrow$ False (As $9 > 7 < 6 = 5$)
3. $6 > 4 \rightarrow$ True (As $6 = 5 \geq 4$)

Hence, **Only II follow.**

Directions: In the following question assuming the given statements to be true, find which of the conclusion among given conclusions is/are definitely true and then give your answers accordingly.

Statement:

$H > I < J = K$

Conclusion:

1. $H > J$
2. $J < H$
3. $I > K$

(1). Either I or II follow

(2). Only II follow

(3). Both I, II, and III follow

(4). Only I follow

(5). Neither I, II, nor III follow

Solution:

Statement:

1. H > I < J = K
2. H > J ⇾ False (as H > I < J)
3. J < H ⇾ False (as H > I < J)

III. I > K ⇾ False (as I < J = K)

Here, J and H elements are the same but the meaning is different so they will not form a complementary pair.

Hence, **Neither I, II, nor III follow.**

Solved Examples on Inequality

As stated above also, the more a person practises, the more likely is that he/she may solve the questions correctly and more efficiently. Discussed below are a few questions on both direct and coded reasoning inequalities to simplify the concept even further for the candidates.

Directions (Q1-Q2): Answer the following questions based on the statement given below:

Statement: P < S < R < T > Q

Q 1. Which of the given conclusions is incorrect based on the given statement?

1. P < R
2. S < T
3. No relation between P & Q

4. No relation between P & T
5. P < T

Answer: (3) No relation between P & Q

Q 2. Which sign should be filled in the blank for the conclusion given below?

Conclusion: P ___ T

1. >
2. <
3. =
4. ≤
5. ≥

Answer: (2) <; P<T

Directions (Q3-Q4): Based on the statements, answer the following questions.

'P * Z' means P is neither greater nor smaller than Z

'P # Z' means P is neither greater than nor equal to Z

'P & Z' means P is neither smaller than nor equal to Z

'P + Z' means P is not smaller than Z

'P % Z' means P is not greater than Z

Q 3. For the statement given below, which of the following options is correct?

Statement: A # C * F & R % T

1. A & C
2. F # T
3. C * R
4. A % T
5. C # F

Answer: (5) C # F

Solution:

Symbol	*	#	&	+	%
Sign	=	<	>	≥	≤

Statement: A # C * F & R % T

Conclusion: A < C = F > R ≤ T

A & C ↔ A > C

F # T ↔ F < T

C * R ↔ C = R

A % T ↔ A ≤ T

C # F ↔ C > R

And only C > R is correct based on the given equation

Q 4. To prove that A > B in the given statement, which code should be filled in the blank?

Statement: C & B ____ F * E # A

1. #
2. *
3. &
4. +
5. %

Answer: (5) %

Solution:

Symbol	*	#	&	+	%

Sign	=	<	>	≥	≤

C & B ____ F * E # A

When % is placed in the blank, the statement becomes,

C & B **%** F * E # A

⇒ C > B ≤ F = E < A, which proves that A > B