



Inequalities



Inequality signs are used to compare different types of quantities.

There are a few signs that we use to explain these relations.

Definite symbols	Indefinite symbols
$>$	$\leq$ (either-or symbol)
$=$	$\geq$ (either-or symbol)
$<$	$\neq$



$A = \{1, 2, 3, 4\}$

$B = \{4, 5, 6, 7\}$

$C = \{5, 6, 7, 8\}$

$D = \{1, 2, 3, 4\}$



$A > B = C$	$A < B < C$	$A > B \geq C$	$A > B < C$
$A < B = C$	$A > B > C$	$A < B \leq C$	$A > B \leq C$
$A \geq B = C$	$A \geq B \geq C$		$A < B \geq C$
$A \leq B = C$	$A \leq B \leq C$		$A \geq B \leq C$

$>$	$\geq$
$=$	
$<$	$\leq$



Either-or cases: 'Either-Or' implies that the conclusions may not be true in their individual existence but work as a pair.

E.g. 1: $A < B > C$

Conclusions:

- I. $A > C$**
- II. $A \leq C$**

E.g. 2: $A \geq B = C$

Conclusions:

- I. $A = C$**
- II. $A > C$**

Complimentary Pairs:

$x \geq y$ or $x < y$

$x \leq y$ or $x > y$



Difference between “no relation” and “not equal to sign”

Difference between ‘Definitely True’, ‘Definitely False’ and ‘False’ conclusions.



Types of questions:

1. Simple Inequality
2. Reverse Inequality
3. Simple Coded Inequality
4. Reverse Coded Inequality
5. Fillers



Statement: $L > U \geq K, Z < U < R, R > T = S$

Conclusions:

I) $L > Z$

II) $T < Z$

- a) Only I follows
- b) Only II follows
- c) Either I or II follows
- d) Both I and II follow
- e) Neither I nor II follow



Answer – A



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Statement:

$R < A \leq F \leq T; V \geq O > T < B; O = X \geq Y < Z$

Conclusions:

I) $Z > R$

II) $V \geq Y$

- a) Only I follows
- b) Only II follows
- c) Either I or II follows
- d) Both I and II follow
- e) Neither I nor II follow



Answer – B



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Statement:

$P < A \leq S \leq T; V \geq O > T < C; O > X \geq Y \geq Z$

Conclusions:

I) $S > C$

II) $P < Y$

- a) Only I follows
- b) Only II follows
- c) Either I or II follows
- d) Both I and II follow
- e) Neither I nor II follow



Answer – E



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Statement :

$$F = A > B > C \geq D$$

$$C < E < G \leq H$$

Conclusions:

$$\text{I} - H > A$$

$$\text{II} - F > C$$

$$\text{III} - E \leq H$$

Which of the following conclusions is/are true?

- a) Only I
- b) Only II
- c) Both I and III
- d) Both II and III
- e) All I, II and III



Answer – B



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Statement :

$$M = N \geq O \geq P \geq R$$

$$R = S > T$$

Conclusions:

$$\text{I} - O < T$$

$$\text{II} - N > T$$

$$\text{III} - S \leq M$$

Which of the following conclusions is/are true?

- a) Only I.
- b) Only II.
- c) Both I and III.
- d) Both II and III.
- e) All I, II and III.



Answer – D



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Statement :

$$Y < J = P \geq R > I$$

$$I = A > O > X > Z$$

Conclusions:

$$\text{I} - J > I$$

$$\text{II} - Y > X$$

$$\text{III} - P > Y$$

Which of the following conclusions is/are true?

- a) Only I.
- b) Only III.
- c) Both I and III.
- d) Both II and III.
- e) All I, II and III.



Answer – C



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Statement :

$$A \geq C > D < B \leq E$$

$$P \geq Z > C = X > Y$$

$$J < M \leq Z \geq K = L$$

Conclusions:

$$\text{I} - A > Y$$

$$\text{II} - E > K$$

$$\text{III} - P > J$$

Which of the following conclusions is/are true?

- a) Only I.
- b) Only III.
- c) Both I and III.
- d) Both II and III.
- e) All I, II and III.



Answer – C



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Statement:

$$C \geq D = E \leq F;$$

$$Y < D \geq W$$

$$W > X \geq P = Z$$

Conclusions:

$$\text{I} - C > Y$$

$$\text{II} - F < W$$

$$\text{III} - E \geq P$$

Which of the following conclusions is/are true?

- a) Only I.
- b) Only III.
- c) Both I and III.
- d) Both II and III.
- e) All I, II and III.



Answer – A



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Statement:

$$C \geq D = E \geq F$$

Conclusion:

I- $C > F$

II- $C = F$

- a) Only I follows
- b) Only II follows
- c) Either I or II follows
- d) Both I and II follow
- e) Neither I nor II follow



Answer – C



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Statement:

$$C \leq D = E \geq F$$

Conclusion:

I- $C < F$

II- $C \geq F$

- a) Only I follows
- b) Only II follows
- c) Either I or II follows
- d) Both I and II follow
- e) Neither I nor II follow



Answer – C



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Statements: $A \geq B \geq C = D > E = F$

Conclusions:

- I) $A > D$
- II) $A = D$
- III) $B > F$
- IV) $B = F$

Which of the following conclusions is/are true?

- a) Either I or II.
- b) Either I or II and III.
- c) Either I or II and III or IV
- d) Either III or IV.
- e) All I, II, III and IV.



Answer – B



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Statements: $X \geq Y \geq Z = A < C = E$

Conclusions:

I – $X > C$

II – $X \leq C$

III – $E > Y$

IV – $Y = A$

Which of the following conclusions is/are true?

- a) Either I or II.
- b) Either I or II and III.
- c) Both III and IV
- d) Only III
- e) None of these.



Answer – A



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Statements:

$P < E = D = Z \geq M; F \geq C = D < K; M \geq R = I \geq A$

Conclusions:

I – $C > A$

II – $C = A$

III – $F < K$

IV – $F \geq K$

Which of the following conclusions is/are true?

- a) Either I or II.
- b) Either I or II and III.
- c) Either I or II and III or IV
- d) Either III or IV.
- e) All I, II, III and IV.



Answer – C



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A\$B means A is not smaller than B

A@B means A is neither smaller than nor equal to B

A#B means A is neither greater than nor equal to B

A&B means A is neither greater than nor smaller than B

A*B means A is not greater than B

Statements: F\$G, G@H, H&I, I&J, J*K

Conclusions:

I – $F > K$

II – $G \geq J$

III – $K \geq H$

Which of the following conclusions is/are true?

- | | |
|--------------------|-----------------------|
| a) Only I. | d) Both II and III. |
| b) Only III. | e) All I, II and III. |
| c) Both I and III. | |



Answer – B



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A\$B means A is not smaller than B

A@B means A is neither smaller than nor equal to B

A#B means A is neither greater than nor equal to B

A&B means A is neither greater than nor smaller than B

A*B means A is not greater than B

Statements: M\$N, N@O, O*P, P#Q, Q#R

Conclusions:

I – M @ Q

II – O # R

III – N * P

Which of the following conclusions is/are true?

- | | |
|--------------------|-----------------------|
| a) Only I. | d) Only II. |
| b) Only III. | e) All I, II and III. |
| c) Both I and III. | |



Answer – D



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$P\%Q$ means P is not smaller than Q

$P!Q$ means P is neither smaller than nor equal to Q

$P\#Q$ means P is neither greater than nor equal to Q

$P\sim Q$ means P is neither greater than nor smaller than Q

$P\$Q$ means P is not greater than Q.

Statements: $X\#W$; $T\sim V$; $W\#V$; $Y!X$; $Z\$A$; $Y\$Z$

Conclusions:

I – $A!X$

II – $X\#T$

III – $Z!X$

Which of the following conclusions is/are true?

- | | |
|--------------------|-----------------------|
| a) Only I. | d) Both I and II. |
| b) Only III. | e) All I, II and III. |
| c) Both I and III. | |



Answer – E



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$P\%Q$ means P is not smaller than Q

$P!Q$ means P is neither smaller than nor equal to Q

$P\#Q$ means P is neither greater than nor equal to Q

$P\sim Q$ means P is neither greater than nor smaller than Q

$P\$Q$ means P is not greater than Q.

Statements: $A!B$, $B\%C$, $C\sim D$, $D!E$, $E\#F$

Conclusions:

I - $A!E$

II - $B\%D$

III - $C\$F$

Which of the following conclusions is/are true?

- | | |
|--------------------|-----------------------|
| a) Only I. | d) Both I and II. |
| b) Only III. | e) All I, II and III. |
| c) Both I and III. | |



Answer – D



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'P * Q' means 'P is not greater than Q'

'P @ Q' means 'P is neither greater nor equal to Q'.

'P © Q' means 'P is not smaller than Q'.

'P % Q' means 'P is neither smaller nor greater than Q'.

'P ? Q' means 'P is neither smaller nor equal to Q'.

Statements:

A © B

B ? C

C * D

Conclusions:

I - D ? B

II - C @ A

III - C % A

Which of the following conclusions is/are true?

- a) Only II.
- b) Only III.
- c) Either II or III.
- d) Both II or III.
- e) All I, II or III.



Answer – A



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In which of these expressions “ $V > X$ ” be definitely false?

- a) $V > P \geq Q = G \geq R > X$
- b) $P < A \leq X \leq T; V \geq O > T$
- c) $X \leq A \leq L = R < V$
- d) $X > C \geq F \leq H; V < F$
- e) $V > T = O \geq P; X < J = P$



Answer – D



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“M > N” will be definitely false in which of the following expressions?

- a) $M > P \geq Q = G \geq R > N$
- b) $N \leq A \leq L = R < M$
- c) $M > C \geq F \leq H; N < F$
- d) $M > T = O \geq P; N < J = P$
- e) $P < A \leq M \leq T; N \geq O > T$



Answer – E



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' $Y \leq Z$ ' is definitely false in which of the following expressions?

- a) $W < Z \geq S \geq Q < N > Y \geq R > V$
- b) $N > Y > M = D \geq B = L > Z = R$
- c) $M \leq Y > L > W \geq V \leq B = Z < S$
- d) $S > Y = C \leq H = Z \leq Q = T = K$
- e) $B > L \leq Y > M \geq Q < T > Z < G$



Answer – B



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'P#Q' means 'P is neither smaller than nor equal to Q'.

'P*Q' means 'P is neither greater than nor equal to Q'.

'P\$Q' means 'P is not greater than Q'.

'P%Q' means 'P is not smaller than Q'.

'P@Q' means 'P is neither smaller nor greater than Q'.

Which of the following makes 'C\$E' or 'B%E' definitely true?

- a) A * B \$ C @ D % E # F
- b) A # B * C \$ D @ E # F
- c) A # B # C % D % E * F
- d) A @ B % C @ D * E * F
- e) None of these.



Answer – B



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'P#Q' means 'P is neither smaller than nor equal to Q'.

'P*Q' means 'P is neither greater than nor equal to Q'.

'P\$Q' means 'P is not greater than Q'.

'P%Q' means 'P is not smaller than Q'.

'P@Q' means 'P is neither smaller nor greater than Q'.

Which of the following makes 'A*C' and 'E#B' definitely true?

- a) A * B \$ C @ D % E # F
- b) A * D \$ B * C @ E # F
- c) A * B # C % D * E \$ F
- d) A @ B * D @ C % E @ F
- e) None of these.



Answer – B



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'P#Q' means 'P is neither smaller than nor equal to Q'.

'P*Q' means 'P is neither greater than nor equal to Q'.

'P\$Q' means 'P is not greater than Q'.

'P%Q' means 'P is not smaller than Q'.

'P@Q' means 'P is neither smaller nor greater than Q'.

Which of the following makes 'F # D \$ B' definitely true?

- a) A @ B \$ C * D # E * F
- b) A * B @ C % D # E * F
- c) A % B * C \$ D @ E * F
- d) A # B % C @ D * E * F
- e) None of these.



Answer – D



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FITB such that ' $M > N$ ' and ' $N \leq C$ ' is true for the expression ' $C _ A _ N _ E _ M$ '

- a) $>, \geq, <, =$
- b) $>, >, \geq, <$
- c) $\geq, \geq, \leq, \leq$
- d) $\geq, =, \leq, <$
- e) None of the above.



Answer – D



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FITB such that ' $P > Q$ ' and ' $E \leq K$ ' is true for the expression ' $P_A_Q_E_L_K_M$ '

- a) $>, >, \geq, <, >, =$
- b) $\geq, \geq, \geq, \leq, >, >$
- c) $>, =, \geq, =, <, =$
- d) $>, >, \geq, <, =, >$
- e) None of the above.



Answer – E



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