

Solving Further Inequalities

Be able to solve other inequalities

To solve an **inequality**, you use the same technique used to solve an equation.

Look at the this **example** :-

Comparing the **equation**

$$\begin{array}{l} x + 5 = 9 \\ x = 4 \end{array}$$

to the **inequality**

$$\begin{array}{l} x + 5 < 9 \\ x < 4 \end{array}$$

note

Here are 3 further **examples** :-

$$\begin{array}{l} x - 5 > 6 \\ x > 11 \end{array}$$

$$\begin{array}{l} x + 4 > 10 \\ x > 6 \end{array}$$

$$\begin{array}{l} x - 2 \geq 5 \\ x \geq 7 \end{array}$$

Exercise 5

1. Solve these **inequalities**, leaving your answers in the form :- $x > 3$, $x < 5$, $x \geq -1$, etc.

a $x + 1 > 5$

b $x + 2 > 11$

c $x + 8 \leq 9$

d $x + 7 < 15$

e $x - 1 \leq 8$

f $x - 5 \geq 20$

g $x - 10 > 0$

h $x - 20 < 50$

i $x + 7 \leq 7$

j $x - 8 \geq 0$

k $x + 59 < 60$

l $x - 40 > 40$

m $x + 3 \cdot 1 < 4 \cdot 2$

n $x - 111 > 99$

o $x + \frac{1}{2} < 1$

p $11 + x > 13$

q $3 + x \geq 10$

r $21 + x < 25$.

Inequalities like " $4x < 24$ " are tackled the same way as the **equivalent equation**.

Examples :-

$$\begin{array}{l} 3x > 12 \\ x > 4 \end{array}$$

$$\begin{array}{l} 6x < 12 \\ x \leq 2 \end{array}$$

$$\begin{array}{l} 7x \geq 42 \\ x \geq 6 \end{array}$$

2. Solve each inequality, leaving your answers in the form :- $x > 3$, $x < 5$, $x \geq -1$, etc.

a $3x < 21$

b $4x > 20$

c $5x < 55$

d $6x \geq 54$

e $7x \leq 49$

f $8x > 80$

g $8x < 40$

h $10x \leq 100$

i $3x > 0$

j $11x \geq 11$

k $3x < 9$

l $12x > 36$

m $2x > 4 \cdot 6$

n $18x \leq 180$

o $14x \geq 1400$

p $3x < 2400$

q $5x > 1250$

r $5x \leq 120$.