Compound Inequalities

Starter

1. **(Review of last lesson)**
   Solve the inequalities, expressing your answer in algebraic and diagrammatic form:
   (a) $4x - 3 < 25$ (b) $-3x + 4 \leq 25$

Notes

A compound inequality combines two inequalities into one.
For example, $1 < x \leq 5$ or $-4 \leq h \leq 2$.

In a compound inequality:

- The inequality signs must both ***point to the left*** (e.g. $\quad < x < \quad$)
- The ***smaller number*** is on the ***left***
- The ***bigger number*** is on the ***right***

Smaller number $\leq x \leq$ Bigger number

For example, $3 < x \leq 9$ means that $x > 3$ and $x \leq 9$.

Success Criteria — solving compound inequalities

1. Write down two ***separate*** inequalities
2. ***Solve*** them ***separately***
3. ***Combine*** the inequalities back into one

E.g. 1 Solve the inequalities:
(a) $8 < 3x - 10 < 23$ (b) $17 < 6x + 5 \leq 29$
(c) $7 < 15 - 4x < 39$ (d) $x - 19 \leq 5x - 3 < x + 5$

Working: (a)

$$8 < 3x - 10 < 23$$

$8 < 3x - 10$	$3x - 10 < 23$	***2 separate inequalities***
$18 < 3x$	$3x < 33$	***solve separately***
$6 < x$	$x < 11$	

Combine into 1 inequality: $6 < x < 11$

Video: Solving inequalities (two signs)

Solutions to Starter and E.g.s

Exercise

9-1 class textbook:	p509 M16.1 Qu 2ef, 4-7
A*-G class textbook:	p465 M16.1 Qu 2ef, 4, 6
9-1 homework book:	p171 M16.1 Qu 2, 4bc, 5, 6c, 7
A*-G homework book:	p509 M16.1 Qu 2, 4bc, 6c

Summary

Compound inequality: **Smaller number $\leq x \leq$ Bigger number**

Solving compound inequalities:

1. Write down two ***separate*** inequalities
2. ***Solve*** them ***separately***
3. ***Combine*** the inequalities back into one

Homework book answers (only available during a lockdown)