Subject	Year	Month	
Mathematics	9	Jan/Feb	Balcarras From strength to strength

Topic:

SOLVING INEQUALITIES — 7 LESSONS

Content (Intent)

Prior Learning

Y7
- Understand the meaning of the four inequality symbols
- Solve linear equations with unknown on one side

Y8
Solve linear equations including those with unknowns on both sides

Future Learning

- Solving double ended inequalities
- Solving quadratic inequalities
- Inequality regions

Objectives

- 1 lesson RECAP on all the algebra so far (including expanding and factorising)
- List integers that are solutions to an inequality
- Know how to show a range of values that solve an inequality on a number line
- Solve a linear inequality in one variable with unknowns on **one** side
- Solve a linear inequality in one variable with unknowns on **both** sides
- Solve a linear inequality in one variable involving **brackets**
- Solve a linear inequality in one variable involving **negative terms**

HIGHER SETS Solve worded problems by constructing and solving linear inequalities in one variable

For teaching purposes

Possible Questions

- Show me an inequality with the solution $x \geq 5$. And another. And another …
- Convince me that there are only 5 common integer solutions to the inequalities $4x < 28$ and $2x + 3 \geq 7$.
- What is wrong with this statement? $1 - 5x \geq 8x - 15$ so $1 \geq 3x - 15$.

Possible Misconceptions

may think that…

- it is possible to multiply or divide both sides of an inequality by a negative number with no impact (e.g. if $-2x > 12$ then $x > -6$)
- a negative x term can be eliminated by subtracting that term (e.g. if $2 - 3x \geq 5x + 7$, then $2 \geq 2x + 7$)
- apply incorrect approach to expanding brackets
  e.g. if $2(3x - 3) < 4x + 5$, then $6x - 3 < 4x + 5$

Pedagogical notes (implementation)

The mathematical process of solving a linear inequality is identical to that of solving linear equations. ! **exception** is knowing how to deal with situations when multiplication or division by a negative number is a possibility.

Students could be taught to manipulate algebraically.
E.g. ***-2x > 8****, do not divide by -2 but add 2x to both sides.*

NCETM: Departmental workshops: Inequalities

The number line to represent solutions to inequalities. An open circle represents a boundary that is not included. A filled circle represents a boundary that is included.
Set notation; e.g. {-2, -1, 0, 1, 2, 3, 4}

How will understanding be assessed & recorded (Impact)

End of term Assessment in February
Exams in May

How can parents help at home?

MathsWatch clips (Qualification KS3)
A20a, A20b

Further reading/discussion

Reading / Enrichment

KM: Stick on the Maths: Inequalities

KM: Convinced?: Inequalities in one variable

NRICH: Inequalities

Literacy

Linear) inequality
Unknown
Manipulate
Solve
Solution set
Integer

< (less than) > (greater than) ≤ (less than or equal to) ≥ (more than or equal to)

Numeracy Links

Careers Links

Engineer
Business Owner
Accountant