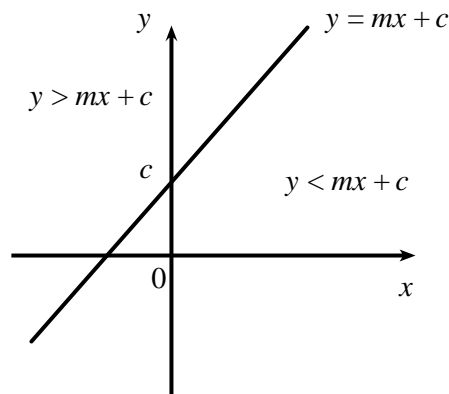


Linear Inequalities

The straight line $y = mx + c$ divides the graph into two regions.

Above the line $y > mx + c$

Below the line $y < mx + c$



To illustrate a linear inequality

- **Find 3 points on the boundary line** by replacing the inequality symbol ($<$, $>$, \leq or \geq) with $=$
- Draw a **dashed line** if $=$ is **included** in the inequality and a **full line** if it is **included**.
- **Decide which side of the line is required**, using a point to check.
- **Shade out** the region **not required** and **label the required region** clearly.

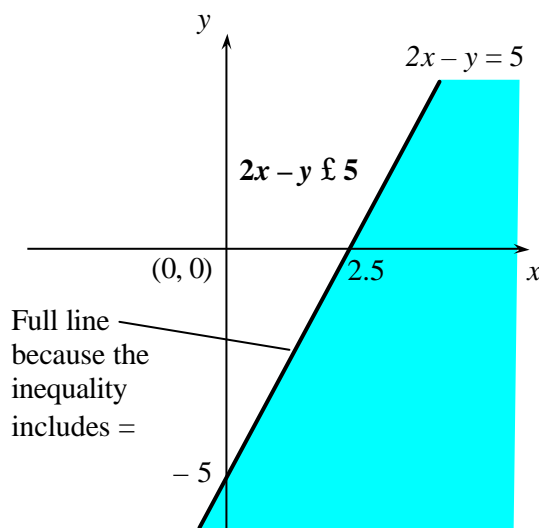
Example $2x - y \leq 5$

The boundary line is $2x - y = 5$

x	0	2.5	3
y	-5	0	1

To decide which is the correct side consider the point $(0, 0)$
Here $2x - y = 0$ which is less than 5.
So $(0, 0)$ is in the required region.

Shade out the other side of the line and label the required region clearly.



Draw a sketch to show these regions:

a $y < 5x$

b $y > 4x + 3$

c $x + y \leq 10$

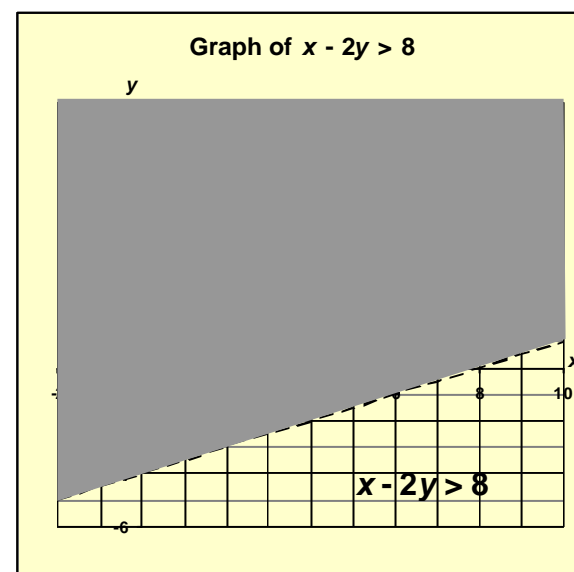
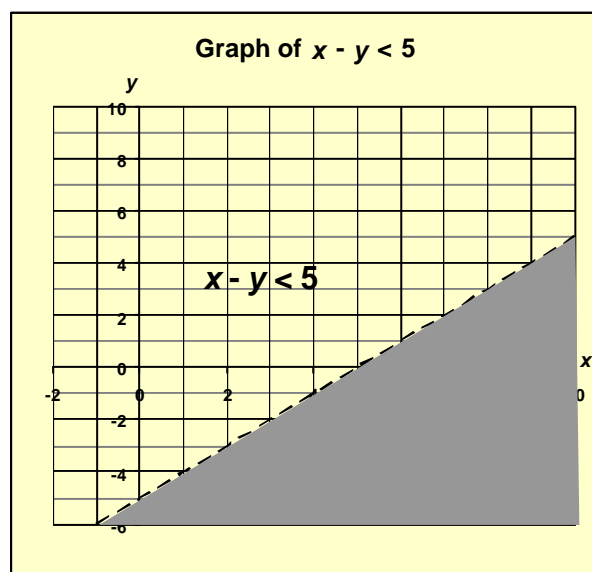
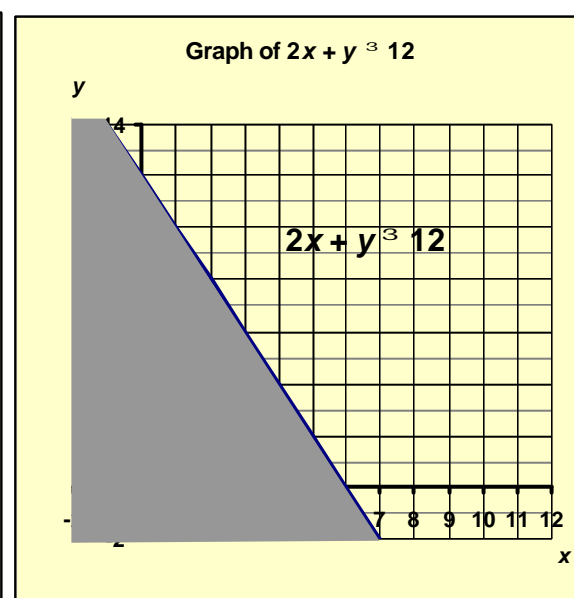
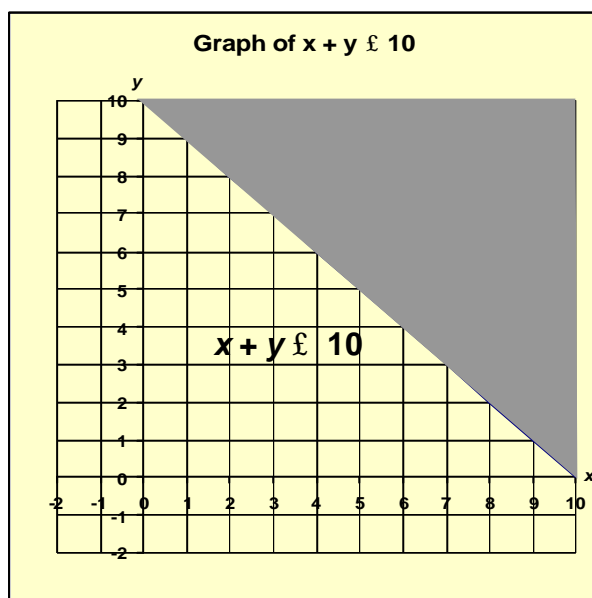
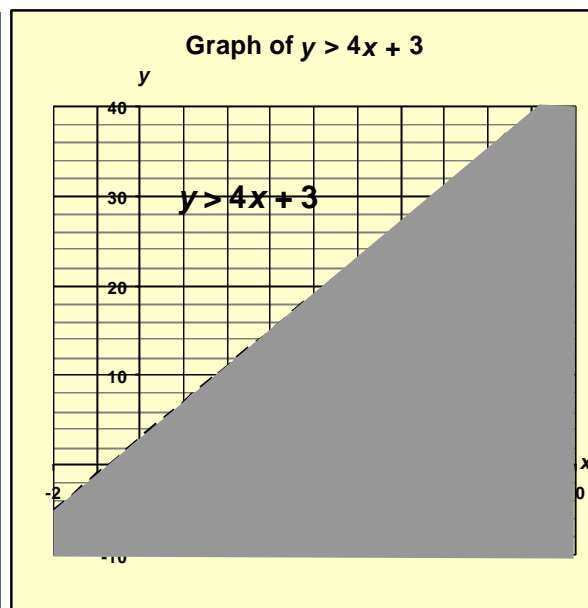
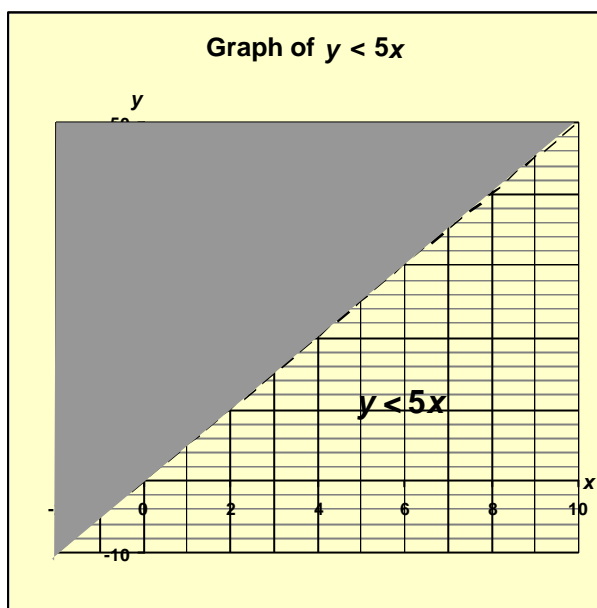
d $2x + y \geq 12$

e $x - y < 5$

f $x - 2y > 8$



Answers



Teacher Notes

Unit Advanced Level, Applying mathematics

Notes

This activity is intended as an introduction to linear inequalities. The Powerpoint presentation with the same name includes the example on page 1 and also other examples. The answers are also given on the Excel spreadsheet with the same name. Except in the first Powerpoint slide, the convention used is to shade out the region not required (as in the Applying mathematics specification).

