

Algebraic Regions on a Graph - PDF Copy

The presentation contains the slides below with the objective of showing how to: **Identify and draw a region on a graph that is bounded by inequalities.** The explanation begins with a review of the inequality signs and the equation of lines before progressing to the identification of algebraic regions on a graph

Algebraic Regions on a Graph

Objective
Be able to identify a region on a graph that is bounded by inequalities

☆ 1

The inequality signs

These signs describe comparisons between numbers. Here are examples:

Notice that the larger number is always on the wide side of the sign

This number is smaller than $5 < 7$ This number is greater than $7 > 1$

For example, 1 is smaller than 7 and... 7 is greater than 1

☆ 2

The inequality signs

This number is greater than $9 > 7$ This number is smaller than $7 < 9$

For example, 9 is greater than 7 and... 7 is smaller than 9

Notice that the larger number is always on the wide side of the sign

☆ 3

The inequality signs

This number is equal to or smaller than $3 \leq 3$ This number is equal to or greater than $3 \geq 3$

For example, 3 is equal to 3

We could also use it to describe, for example, a comparison between 3 and 11

3 is less than 11 and... $3 \leq 10$ 11 is greater than 3

☆ 4

The inequality signs

This number is equal to or greater than $7 \geq 7$ This number is equal to or smaller than $7 \leq 7$

For example, 7 is equal to 7

We could also use it to describe, for example, a comparison between 2 and 3

3 is greater than 2 $5 \geq 2$ 2 is less than 3 and...

☆ 5

Here is an INEQUALITY

$$2 \leq x < 5$$

The INTEGER values of x that satisfy this inequality are

2, 3 and 4

☆ 6

Which set of INTEGERS satisfies the following INEQUALITIES

$$1 \leq x \leq 5$$

A{1, 2, 3, 4, 5} B{2, 3, 4, 5} C{1, 2, 3, 4}

$$-2 \leq x < 1$$

A{-1, 0, 1} B{-2, -1, 0} C{-2, -1, 0, 1}

$$-3 < x < 2$$

A{-2, -1, 0, 1} B{-2, -1, 0} C{-2, -1, 0, 1, 2}

☆ 7

Which set of INTEGERS satisfies the following INEQUALITIES

$$-3 < y \leq 0$$

A{-3, -2, -1} B{-2, -1, 0} C{-2, -1}

$$2 < y < 4$$

A{2, 3, 4} B{2, 4} C{3}

$$-1 < y < 4$$

A{-1, 0, 1} B{-2, -1, 0} C{0, 1, 2, 3}

☆ 8

The equations of lines

We use lines to identify the boundaries of regions and equations to describe lines so here is a recap of some of these equations...

☆ 9

What are the equations of these lines?

Notice, the y-axis is $x = 1$ and x-axis is $y = 1$

☆ 10

What are the equations of these lines?

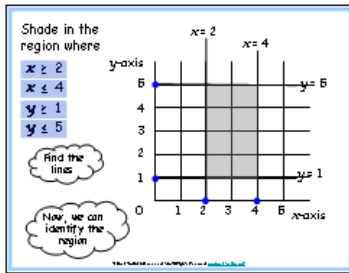
Notice, the y-axis is $x = 1$ and x-axis is $y = 1$

☆ 11

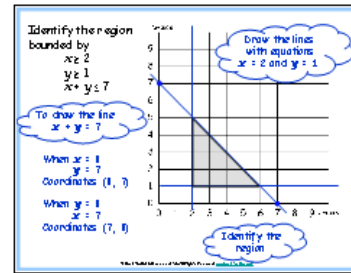
Using Lines to Describe Regions

Next, we look at two examples of how lines can be used to describe a region on a graph...

Continued



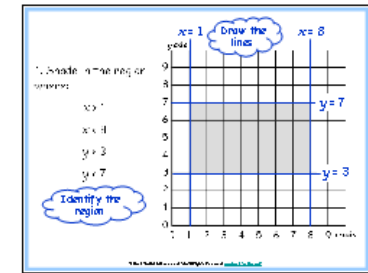
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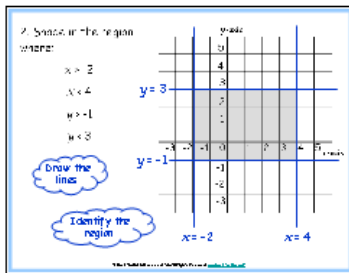
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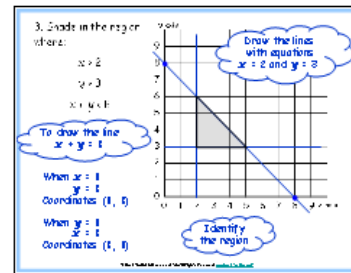
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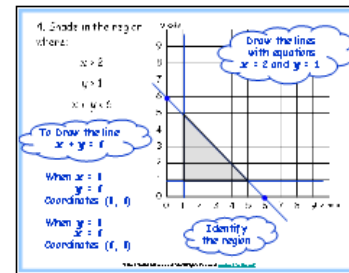
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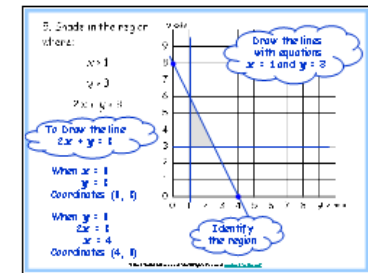
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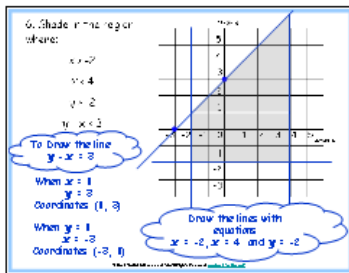
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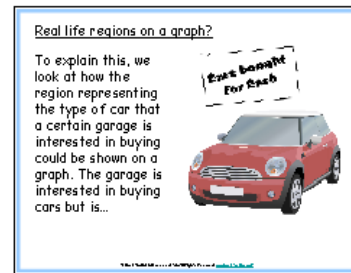
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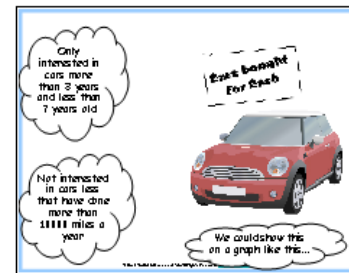
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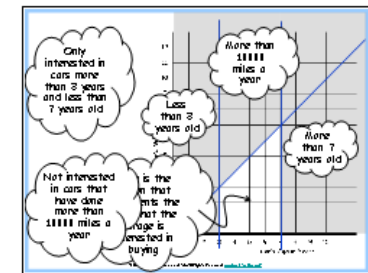
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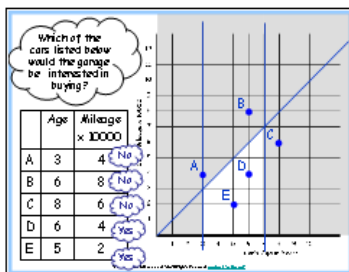
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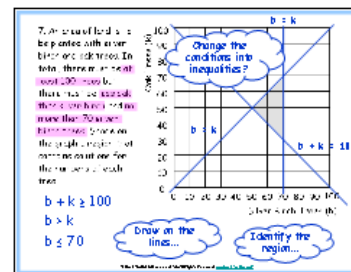
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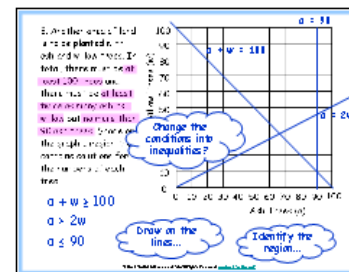
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