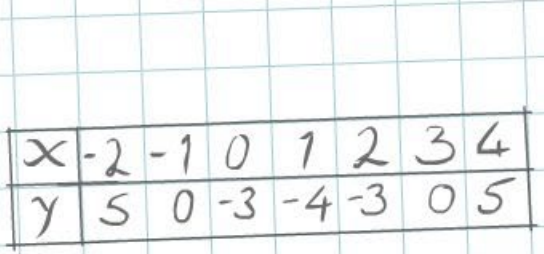
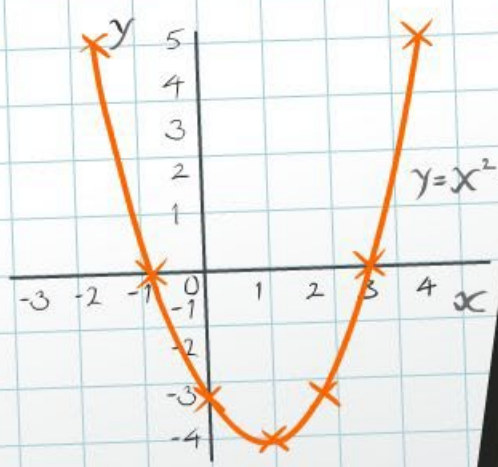
Equations, formulas and identities

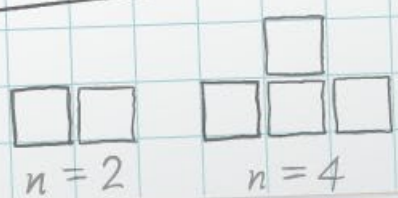


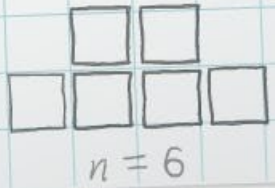


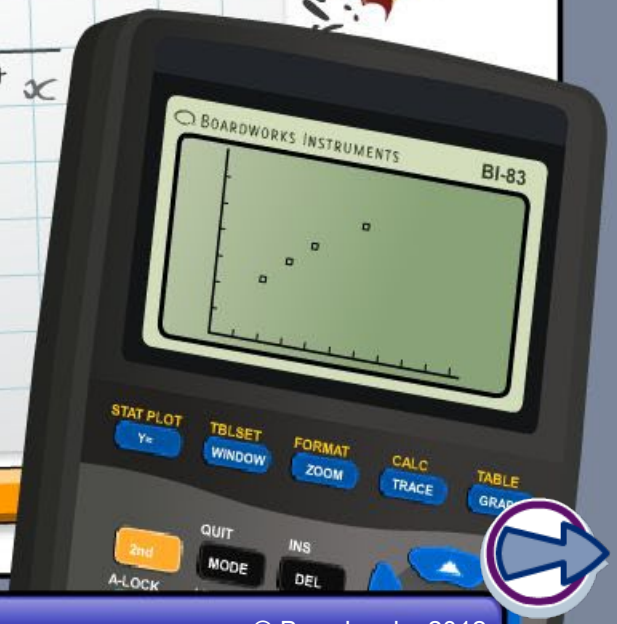
$x^2 - 2x - 3 = 0$

$(x+1)(x-3) = 0$

$x = -1$ or $x = 3$







Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

They are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

Expressions and identities

An algebraic **expression** contains a combination of numbers, letters and operations.

For example, $3x + 5 + 2x - 6$.

Expressions **do not** contain an equal sign.

Sometimes an expression is simplified or rearranged to an equivalent form.

$$3x + 5 + 2x - 6 = x + 1 + 4x - 2$$

When this is written with an equals sign this is called an **identity**. An identity is true for all values of x.

Equations

An **equation** contains an **equal** sign linking an algebraic expression and a number, or two algebraic expressions.

For example, $x + 7 = 13$ is an equation.

An equation is true for particular values of x.

Finding the value or values of the unknown that make the equation true is called **solving** the equation.

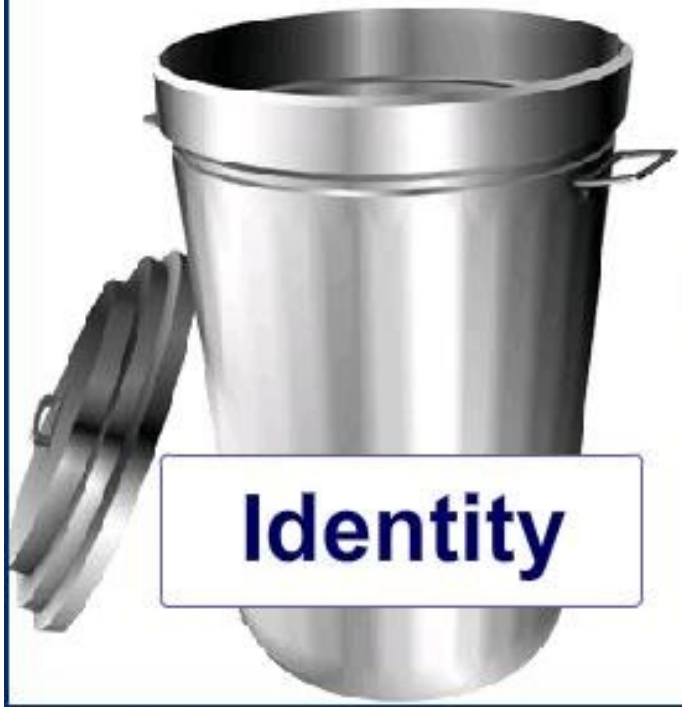
$$x + 7 = 13$$

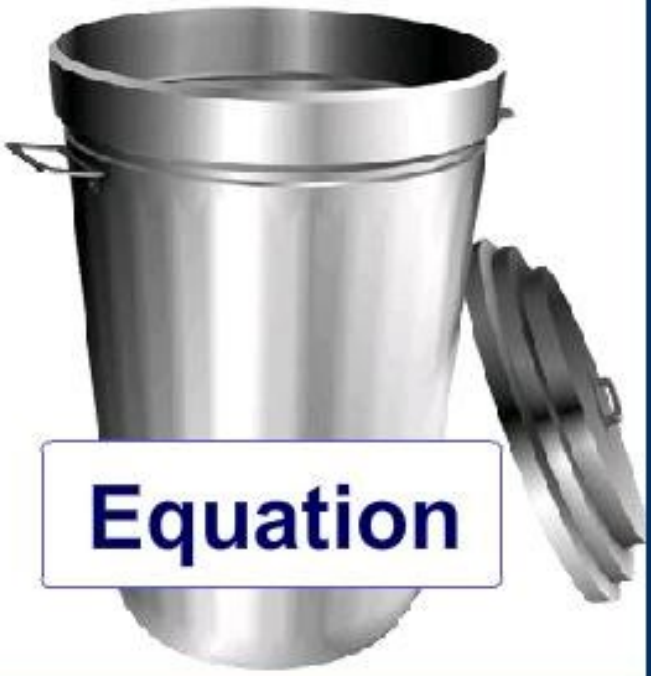
$$x = 6$$

When solving an equation, line up the equal signs.

Identities and equations

Sort the trash! Are these identities or equations?





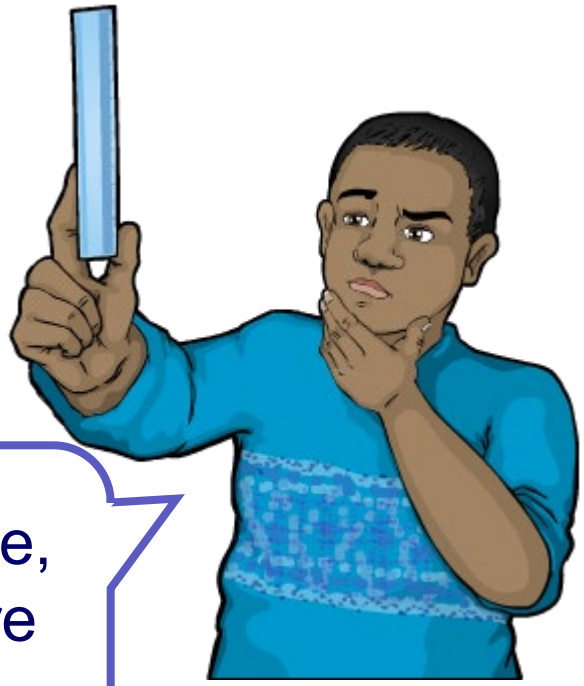
Formulas

A **formula** is a special type of equation that links two or more physical variables.

For example, this is a formula for the area of a rectangle:

$$A = l \times w$$

- A is the **area** in **meters squared**
- l is its **length** in **meters**
- w is its **width** in **meters**.



Physical variables such as length, time, and mass often have **units**. These are part of the definition of the formula.

Summary

What are the missing words in the definitions?

1. A contains a combination of numbers, letters and operations. It does not contain an equal sign. An example is B.

2. C contains an equal sign and at least one letter. It can be solved to find the values for the letter that make it true. An example is D.

3. E is true for all values of the unknowns. An example is F.