

Changing the Subject of a Formula Using Function Machines

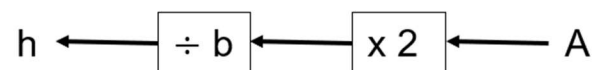
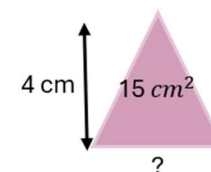
A formula is a rule that shows the relationship between different variables in a particular context. You can rearrange a formula so that a different variable is on one side of the equation by itself. This is called changing the subject of the formula. Various methods can be used to change the subject of the formula. The following examples use function machines.

To change the subject of a formula:

1. Write the formula and draw a circle around the variable that will be the new subject.
2. Start with the new subject and write out the function machine for the formula, showing each operation step by step.
3. Undo each step using the inverse operation.
4. Write the new subject equal to the rearranged formula.

Example: Find the base of a triangle given the area and the height. To solve this problem, you need to rearrange the formula for the area of a triangle making the base the new subject of the formula.

$$A = \frac{bh}{2}$$

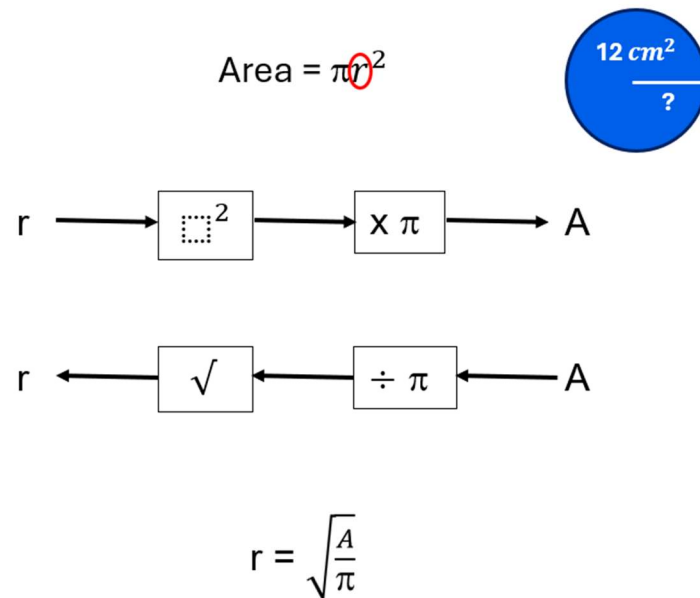


$$h = \frac{2A}{b}$$

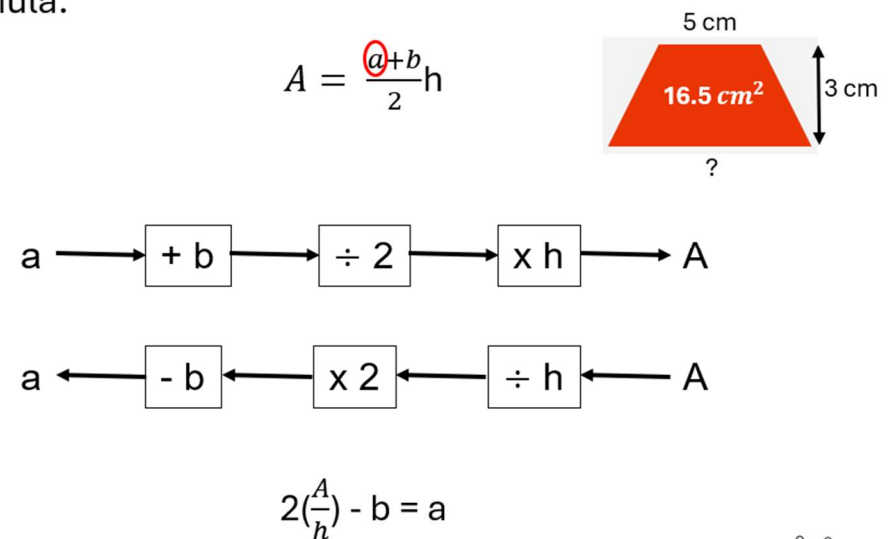
Changing the Subject of a Formula Using Function Machines

A formula is a rule that shows the relationship between different variables in a particular context. You can rearrange a formula so that a different variable is on one side of the equation by itself. This is called changing the subject of the formula. Various methods can be used to change the subject of the formula. The following examples use function machines.

Example: Find the radius of a circle given the area. To solve this problem, you need to rearrange the formula for the area of a circle making the radius the new subject of the formula.



Example: Find the missing side length of a trapezium given the area and the given side length. To solve this problem, you need to rearrange the formula for the area of a trapezium making the missing side length the subject of the formula.



This Photo by Unknown Author is licensed under [CC BY-SA-NC](#)