Changing the Subject of a Formula

In the formula, $A = lb$, A is the subject of the formula. We can use this formula to find A when we are given l and b.

We can change the subject of the formula to either l or b.

To change the subject of the formula to l we divide both sides of the formula by b.

$$A = lb \quad \Rightarrow \quad \frac{A}{b} = \frac{lb}{b} \quad \Rightarrow \quad \frac{A}{b} = l \quad \Rightarrow \quad l = \frac{A}{b}$$

A formula is simply an equation.
To change the subject, apply the same rules as we have applied to equations:

1. Add the same variable to both sides.
2. Subtract the same variable from both sides.
3. Multiply both sides by the same variable.
4. Divide both sides by the same variable.
5. Square both sides
6. Square root both sides.

Example Change the subject of the formula, $V = \frac{1}{3}\pi r^2 \mathrm{h}$, to r.

$$V = \frac{1}{3}\pi r^2 \mathrm{h}$$ Multiply both sides by 3

$$3V = \pi r^2 \mathrm{h}$$ Divide both sides by $\pi \mathrm{h}$

$$\frac{3V}{\pi h} = \frac{\pi r^2 \mathrm{h}}{\pi h}$$

$$\frac{3V}{\pi h} = r^2$$ Square root both sides

$$r = \sqrt{\frac{3V}{\pi h}}$$

Changing the Subject of a Formula Practice

http://www.bbc.co.uk/bitesize/standard/maths_ii/relationships/changing_the_subject_of_a_formula/revision/1/

Revise CHANGING THE SUBJECT OF A FORMULA and try the TESTBITE.

http://www.supermathsworld.com/ Ask your teacher for the login details.

Select ALGEBRA from the menu. Select CHANGING THE SUBJECT 1 CHANGING THE SUBJECT 2. Try on EASY, MEDIUM and HARD level.