

Dependent and Independent Variables

Variables and constants are used in math and science

A variable is... something that can be changed. It can “VARY”

A constant is... something that does not change. It remains “CONSTANT”

Did you know that if you can add
 $2+3$ then you can learn today's
lesson about variables?



Ok...here it goes!

$$2+3=5$$



So, I guess you're ready!

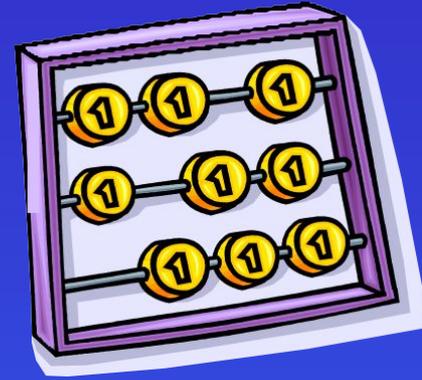
$$2 + \underline{\quad} = ?$$



What does this problem
equal?

That's right! It Depends...

$$2 + \underline{3} = 5$$

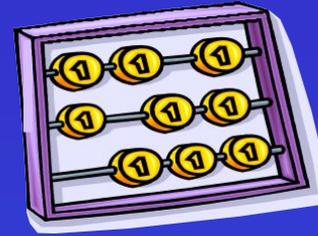


$$2 + \underline{7} = 9$$



$$2 + \underline{50} = 52$$

$$2 + \underline{3} = 5$$



$$2 + \underline{7} = 9$$

$$2 + \underline{50} = 52$$



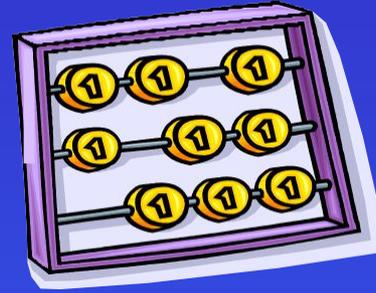
In every example, we changed one number... ..and it affected the answer!

Therefore, the answer **depended** on the number we changed! It's called the DEPENDANT variable

Use your whiteboards for the following examples...

Simple, but try it!

$$10 + \underline{\quad} = \underline{\quad}$$



$$10 + \underline{\quad} = \underline{\quad}$$

$$10 + \underline{\quad} = \underline{\quad}$$

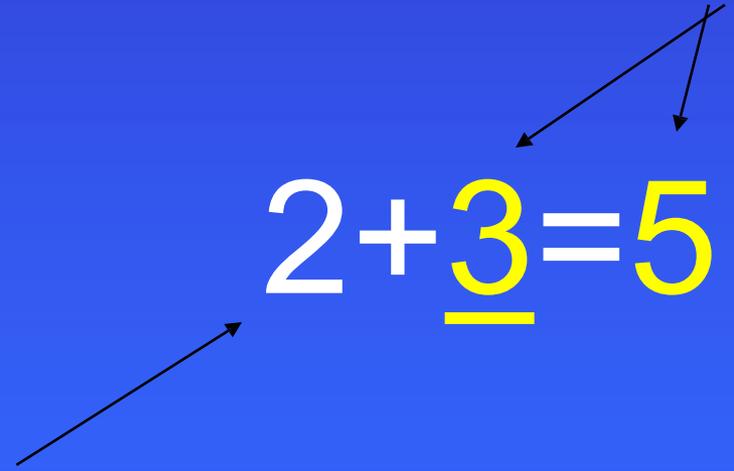


Fill in the above problems to make 3 true math sentences.

Variables are used in Math and Science!

A variable is... something that can be **changed**.

In our math problems, the numbers we changed are called variables.



The diagram shows the equation $2+3=5$. The number 3 is underlined in yellow. Three arrows point to the numbers: one from the bottom left to the number 2, one from the top right to the number 3, and one from the top right to the number 5.

$$2 + \underline{3} = 5$$

A constant is... something that **does not change**.

In our math problems, the number we decided not to change is called a constant.

You
ask...

?

?

What does this
have to do with
Science?

?

?

?

?

?

?

Science experiments use...

Independent variables – the one factor changed by the person doing the experiment.

Dependent variables – the factor being measured in an experiment.

Constants – all the factors that stay the same in an experiment.

Now, how does it fit with science experiments?

Imagine you want to do an experiment to test what kind of plant food works the best. Miracle Gro, Jobe sticks, or Scott's.



You would want to be sure that you changed **ONLY** what you are testing so that your results wouldn't be messed up.

Our Experiment



A B



C

Constants	water soil light daisy seed	water soil light daisy seed	water soil light daisy seed
Independent Variable	Miracle Gro	Jobe's Sticks	Scott's
Dependent Variable	Plant growth (Grew the most)	Plant growth (Grew very well)	Plant growth (Grew the least)

Our Constants and Variables!



Constants:

The type and amount of dirt (same).

The amount and timing of watering (same).

The type and amount of light (same). The amount of plant food given (same).

+

Independent variable:

The brand of plant food testing. (Miracle Gro, Jobes Stick, Scott's)

=

Dependent variable:

The health and growth of the plants.

Here's How it

Works!
Constants

Independent
Variable

Dependent
Variable

Same types
and amounts
of:

water, light,
and soil

+

Different
plant foods
tested.

=

Health and
growth of
plants

Now...

for any experiment, you should be able to identify the constants, independent variables, and dependent variables just by thinking...

$$2 + 3 = 5$$

OR

$$\text{Constants Var.} + \text{Independent Var.} = \text{Dependent}$$