

SOLVING EQUATIONS

"CROSSING THE RIVER" method

- the " $=$ " is a RIVER, A CONTAMINATED ONE. EVERYTHING THAT Crosses IT "changes"

From + To -

From - To +

From \times (multiplying) To \div (dividing)

From \div (dividing) To \times (multiplying)

- Choose the side of the $=$ where the variable "lives". The numbers "live" on the other side.
- Whatever term is in the wrong side of the RIVER MUST go home by crossing the River. This means, it changes.
- The Goal: the Variable ends up by itself, and positive, on the chosen side.

Let's DO SOME EXAMPLES:

$$\boxed{3x - 10 = 7}$$

x lives on
this side

River
River
River

Numbers
live on
this side

So is in the
correct side

$$3x - 10 = 7 \rightarrow is \text{ in the correct side}$$

\downarrow
is in the
wrong side
so it has to be
moved

$$3x - 10 = 7$$

Stays

crosses the river
• changes from (-) to (+)

$$3x = 7 + 10$$

$$\hookrightarrow 3x = 17$$

$$3x = 17$$

$$x = \frac{17}{3}$$

This number is in the
wrong place,

so it moves.

It's multiplying, so it moves dividing!

x is by itself ✓
 x is positive ✓
 x is on the
all numbers on the
other side ✓

So: To solve an equation, make sure to move everything around so that the variables end up on one side and the numbers on the other side.

Remember: Anytime anything "crosses the River"
(goes to other side)

it changes to opposite operation!