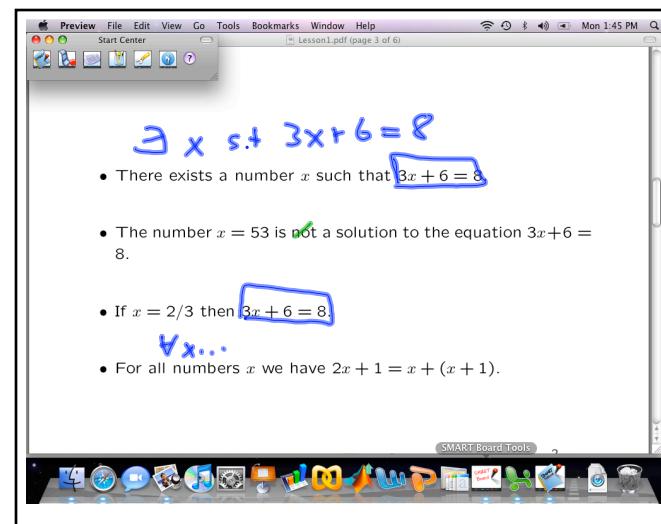


$$\begin{aligned}x^2 - 3x + 4 & \quad (1) \\3x + 6 &= 8 \quad (2) \\3 &= 1 + 2 \quad (3) \\3 &= 4 \quad (4) \\(2x + 1) &= x + (x + 1) \quad (5)\end{aligned}$$

- 1) Definitions have to stay the same when you replace an equation with an equivalent one.
- 2) Do we want to focus on form or truth?



An equation is..  $3=4$

a numerical statement that sets two mathematical values equivalent to each other.

a Statement that includes an equal sign where the value on either side is equivalent.

a mathematical statement that denotes equality

A relationship between 2 mathematical statements

a direct comparison between 2 mathematical statements using an equal sign

= a statement with an equal sign which asserts the equivalence of two quantities

Theorem

If  $x$  is a solution to  $3x+6=8$ ,  
then  $x = \frac{2}{3}$

Proof

If  $x$  is such that  $3x+6 = 8$ ,  
then  $3x = 2$ , because ....

Therefore,  $x = \frac{2}{3}$ , because ..

Rules of arithmetic (things that come after the because).

Commutative law ...