

So when we use deductive reasoning we are proving it true for all cases that can possibly happen.

In other words, there are no counterexamples that will prove it false.

So here was the number trick once again:

- A) Pick any number-----(9)
- B) double it (x by 2)-----(18)
- C) add 40 to that number-----(58)
- D) to the sum you have right now, take one halve of that sum (divide by 2)----- $58/2 = 29$
- E) subtract off the original number you picked in the first place in step A----- $29-9 = \underline{\quad}$ ?
- F) Why are you always staring at the number 20?

So we will prove it true for all cases.

Conjecture: No matter what number we pick, the answer to this trick will

Instead of just picking any number now, let this any number be n

n  $n \in \mathbb{R}$  (n is any member of the Real Number system). This mean it can be any number lolDeductive

- A) Pick any number -----(n)
- B) double it (x by 2)----- $(2n)$
- C) add 40 to that number----- $(2n + 40)$
- D) to the sum you have right now, take one halve of that sum (divide by 2)----- $(2n+40)/2$

There is some math here:  $(2n + 40) / 2 = \frac{2n + 40}{2} = \frac{2(n + 20)}{2} = n + 20$

- E) subtract off the original number you picked in the first place in step A----- $(n+20) - n = 20$
- F) Conclusion: The result will always be 20 or one half of the number you asked the person to add in step C----- :-)