



2

50

0

32

?







*what's the pattern?*

*can we predict this?*

on first proof (by construction)

# our first proof (by construction)

## Theorem

For all integers  $n$ , if  $n$  is even, then  $n^2$  is even.



- Pick some arbitrary even integer  $n$  and try some examples:

- $2^2 = 4 = 2 \times 2$
- $10^2 = 100 = 2 \times 50$
- $0^2 = 0 = 2 \times 0$
- $(-8)^2 = 64 = 2 \times 32$
- $n^2 = \quad = 2 \times ?$

*what's the pattern?  
can we predict this?*

# our first proof (by construction)

## Theorem

For all integers  $n$ , if  $n$  is even, then  $n^2$  is even.

