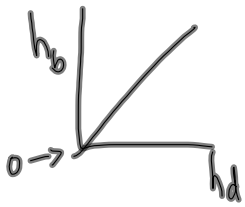
Bounce that Ball

80 cm drop → 60 cm
40 cm drop → 28 cm
(x2 and x2)



Working with Proportionalities in Physics.

If you have a linear graph with a y-intercept of zero then this suggests a direct proportionality

$y \propto x \Rightarrow$ "y is directly proportional to x"
"y varies directly with x"

Consider your bounce that ball data:

$h_b \propto h_d$ (proportionality statement)

$h_b = k h_d$ (general equation where k is the proportionality constant)

$60\text{cm} = k(80\text{cm})$

$k = \frac{60\text{cm}}{80\text{cm}}$

$k = 0.75$ ← proportionality constant

$h_b = 0.75 h_d$ (specific equation)

$(y = mx + b)$

A varies directly with the square of B

$A \propto B^2$

F varies directly with the square of V and inversely with r

$F \propto \frac{V^2}{r}$