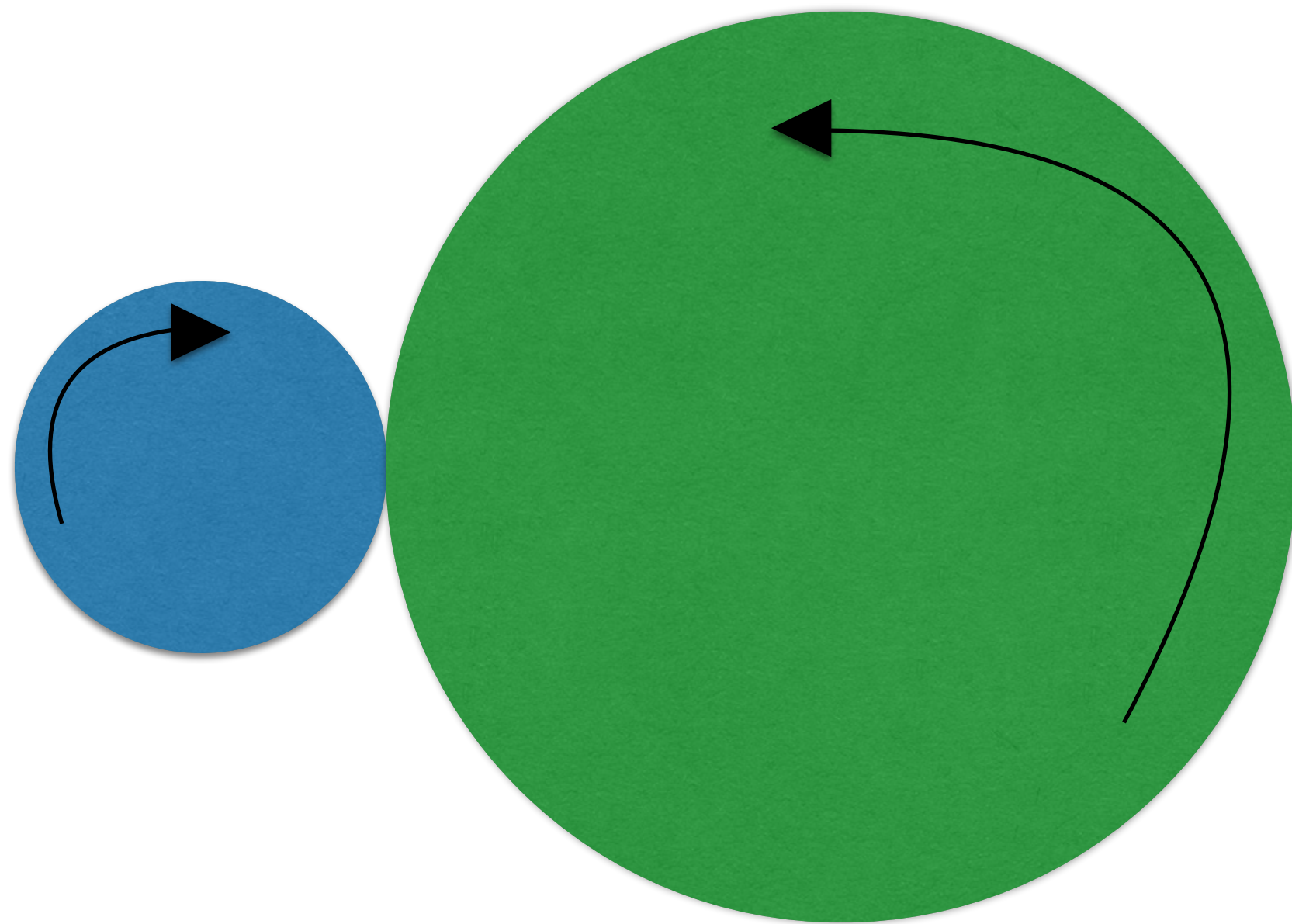


Basics of Differentials

Andrew Palardy

Basic Gears



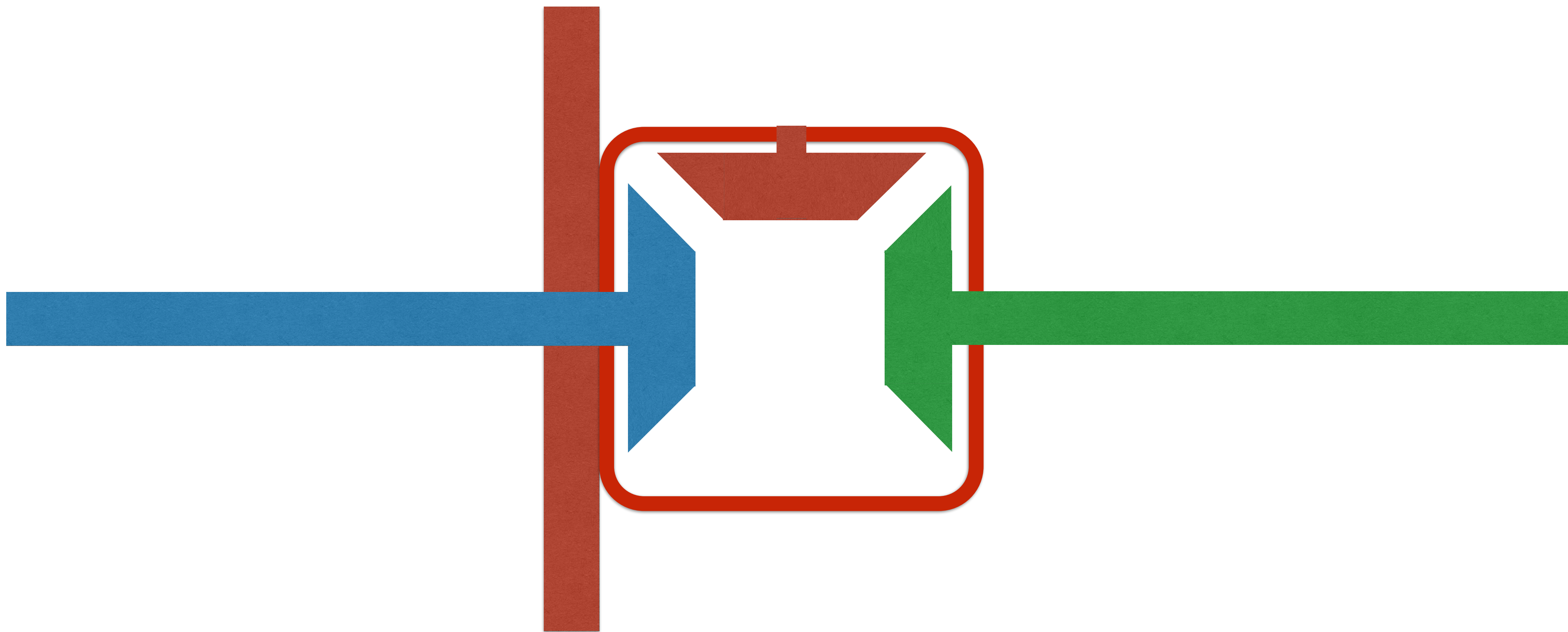
Ratio is easily calculated
from tooth counts

example:

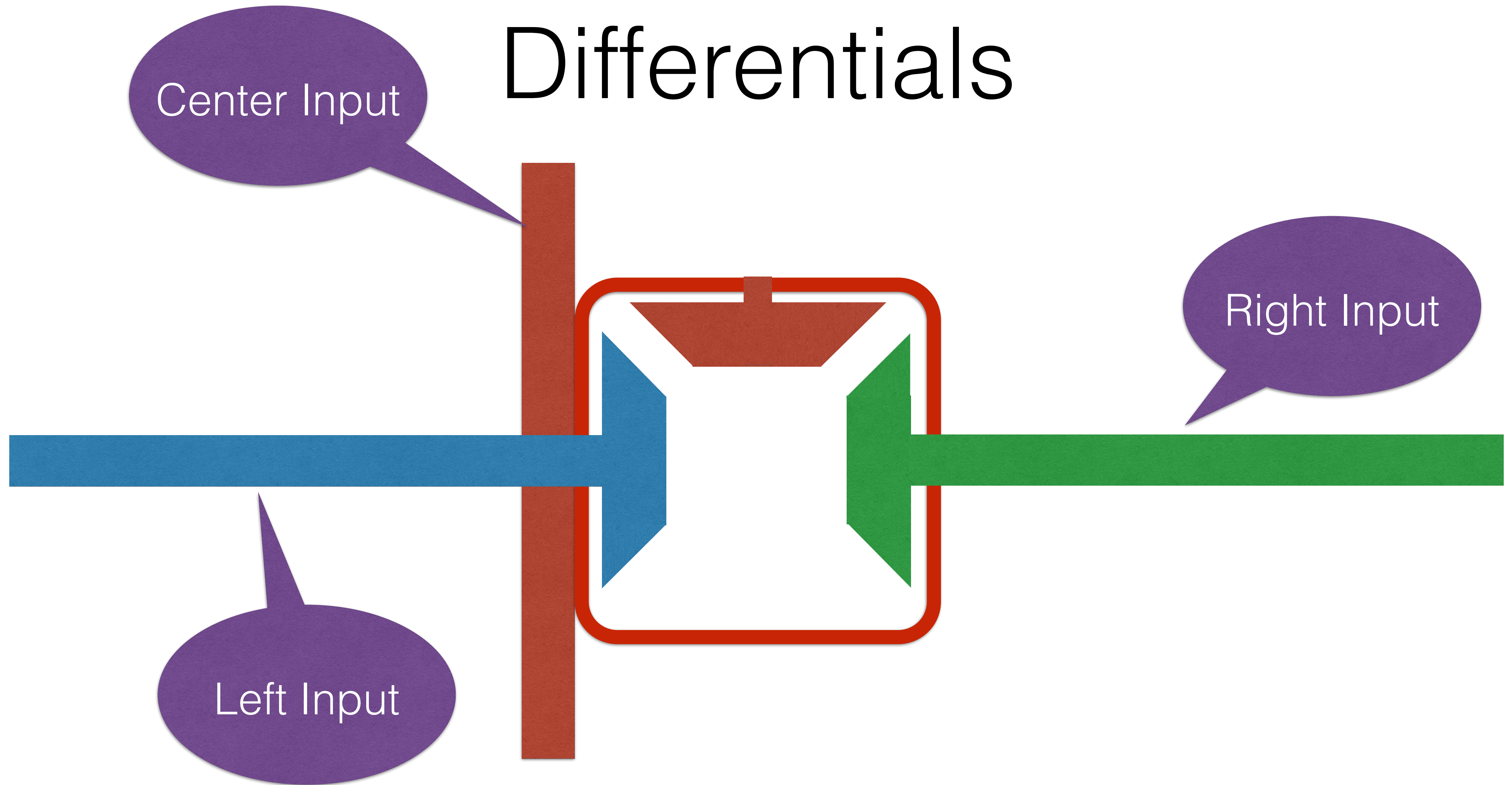
12t to 36t:

$$\text{ratio} = 12/36 = 1/3$$

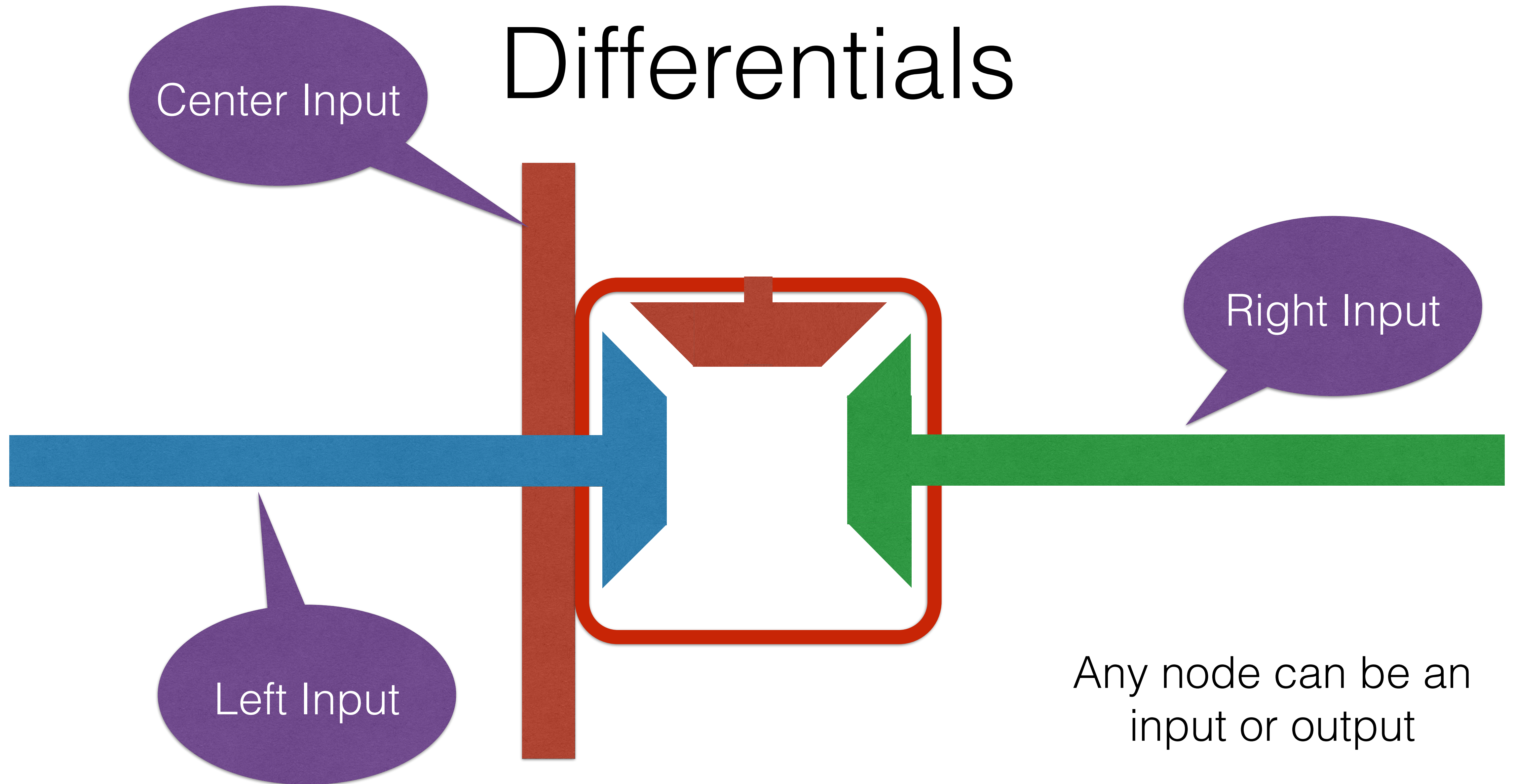
Differentials



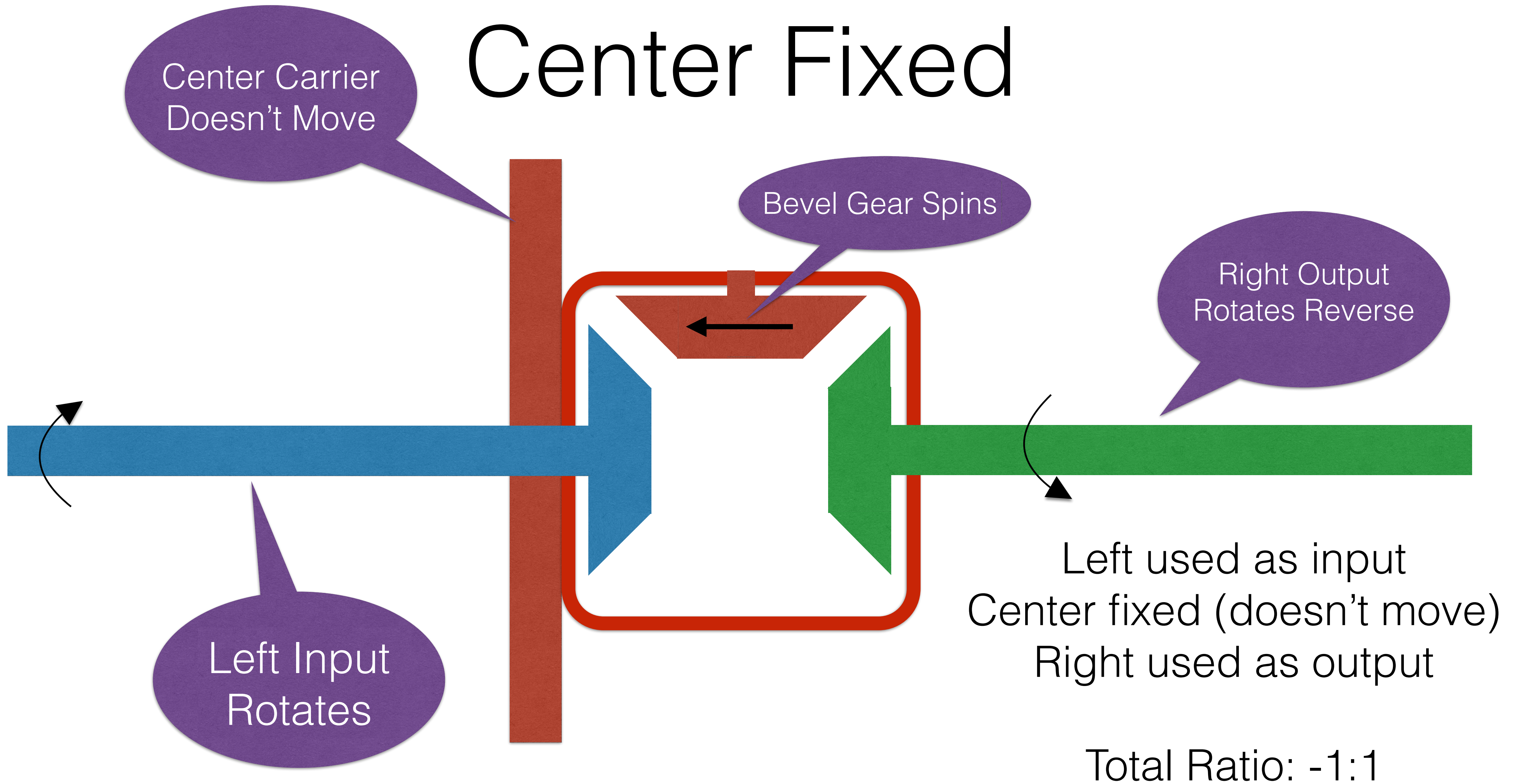
Differentials



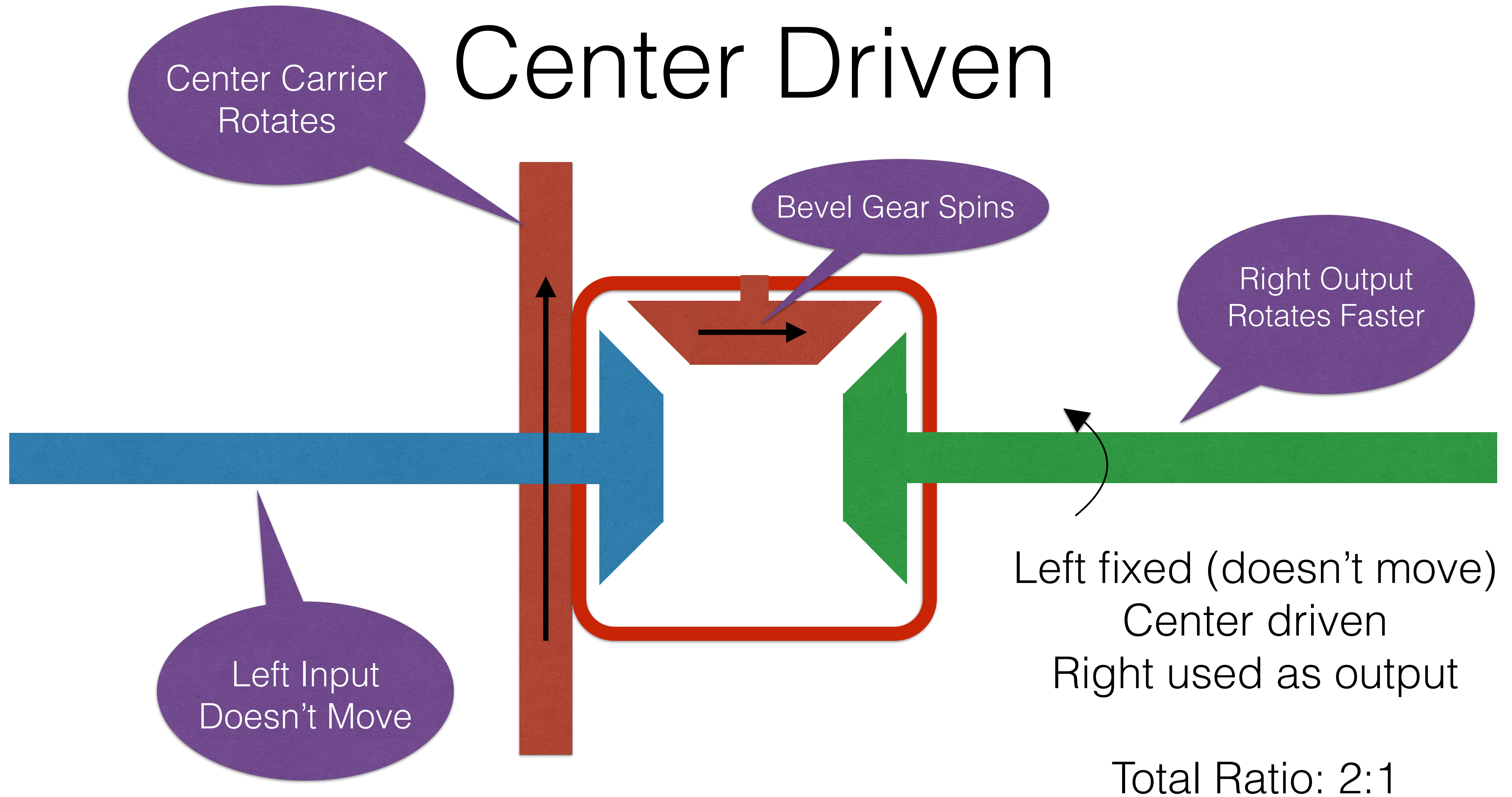
Differentials



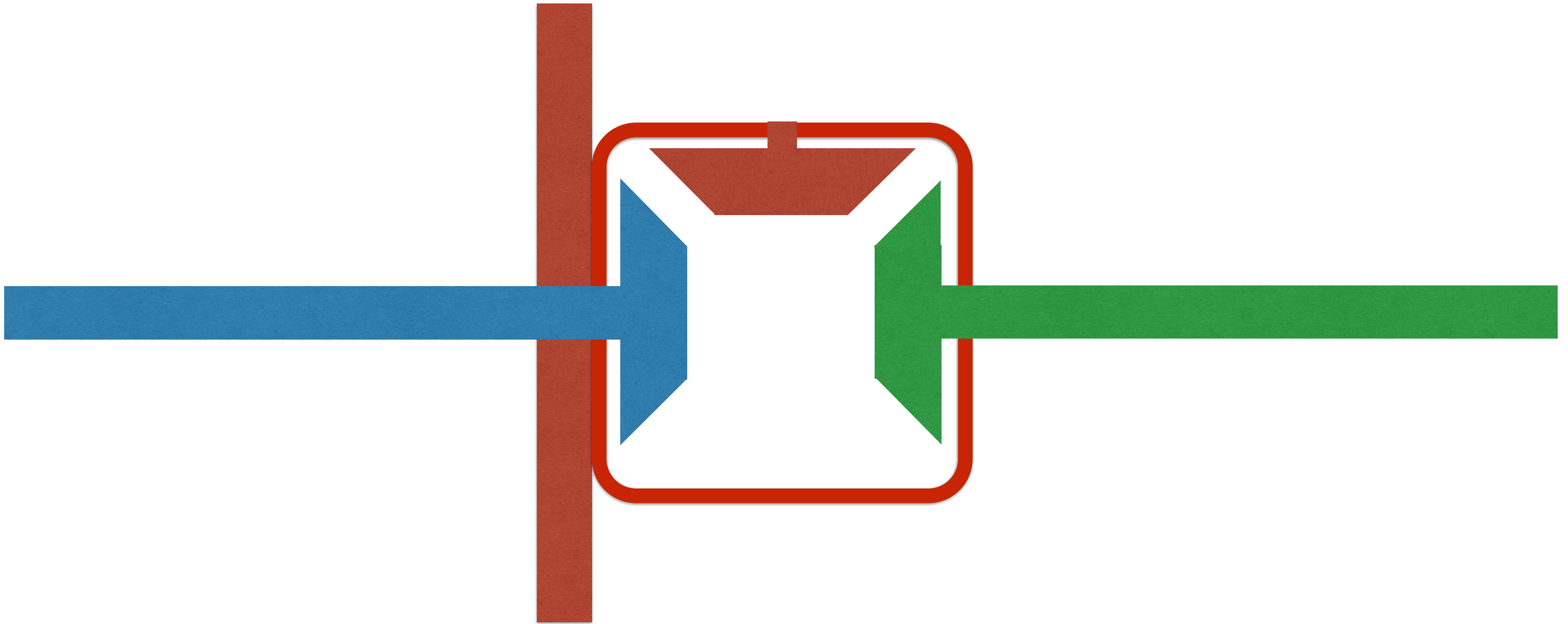
Center Fixed



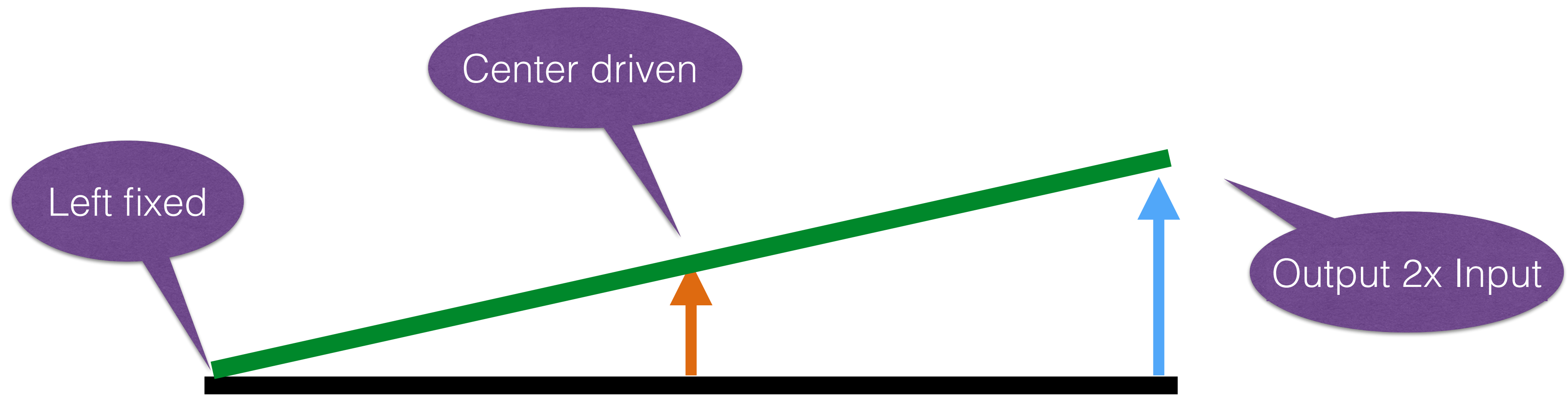
Center Driven



Center speed always equals average
of right and left speeds



The Lever Analogy

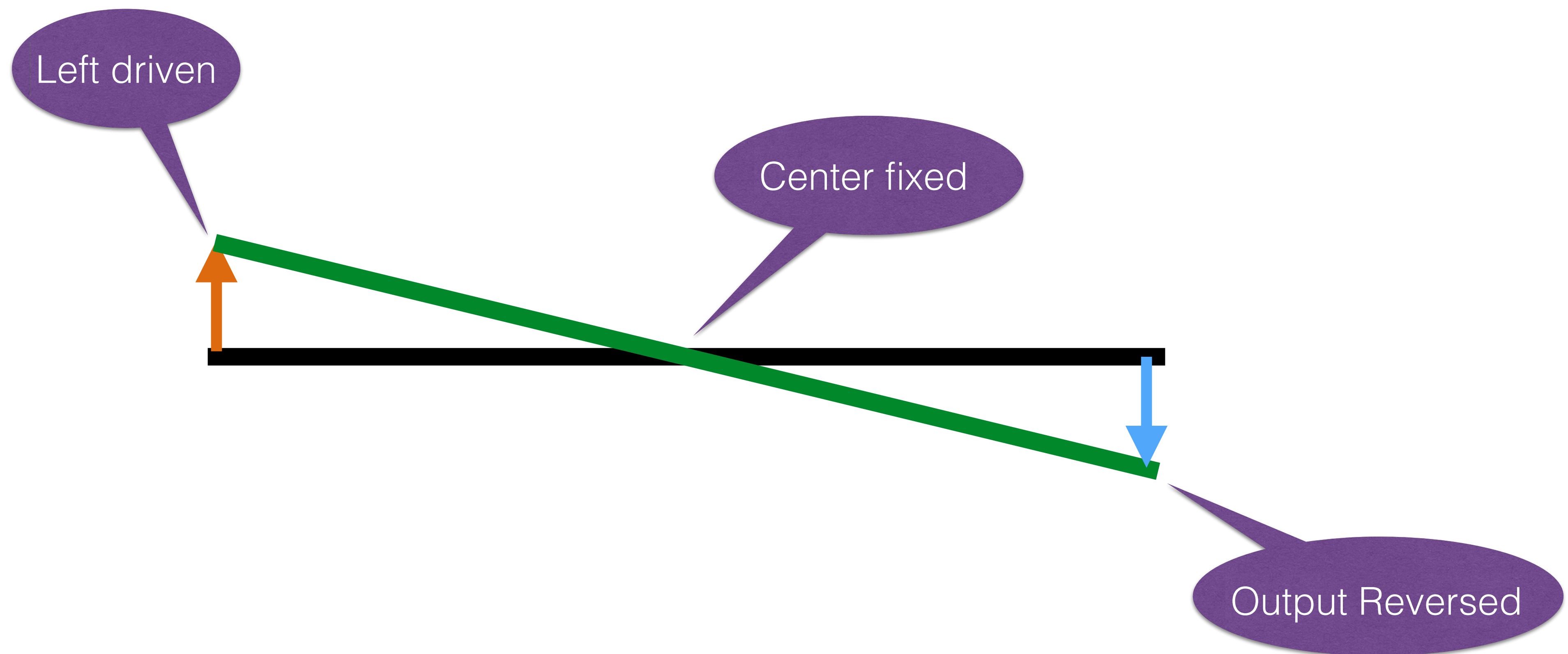


Height represents Speed

Total Ratio: 2:1 Center to Right

Center node 'balances' outer nodes

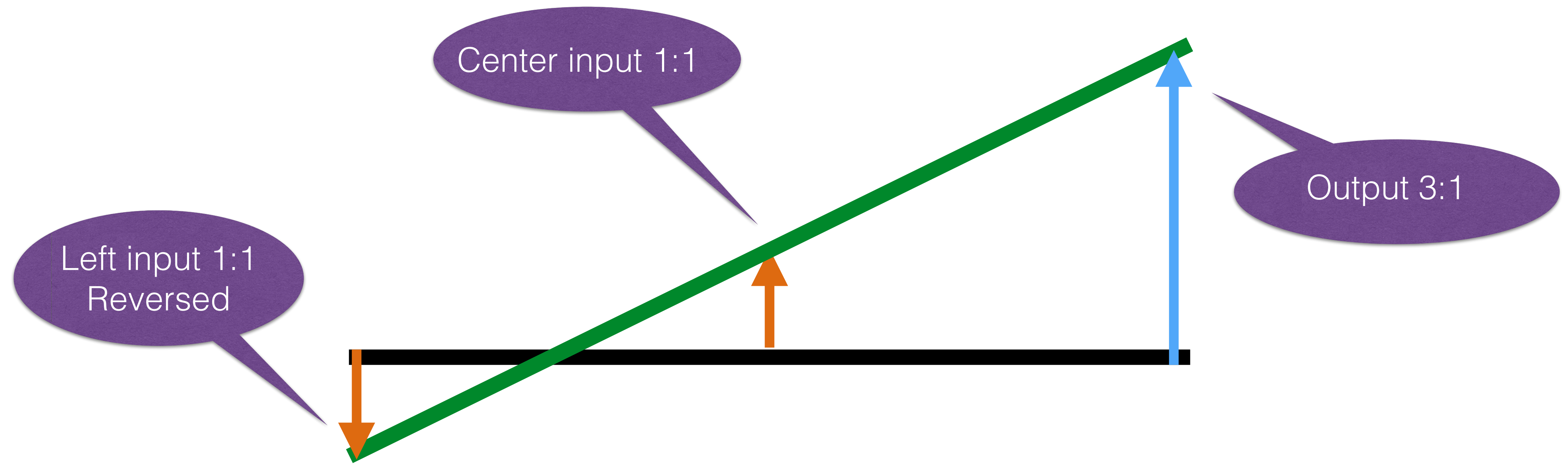
The Lever Analogy



Total Ratio: -1:1 Left to Right

Center node 'balances' outer nodes

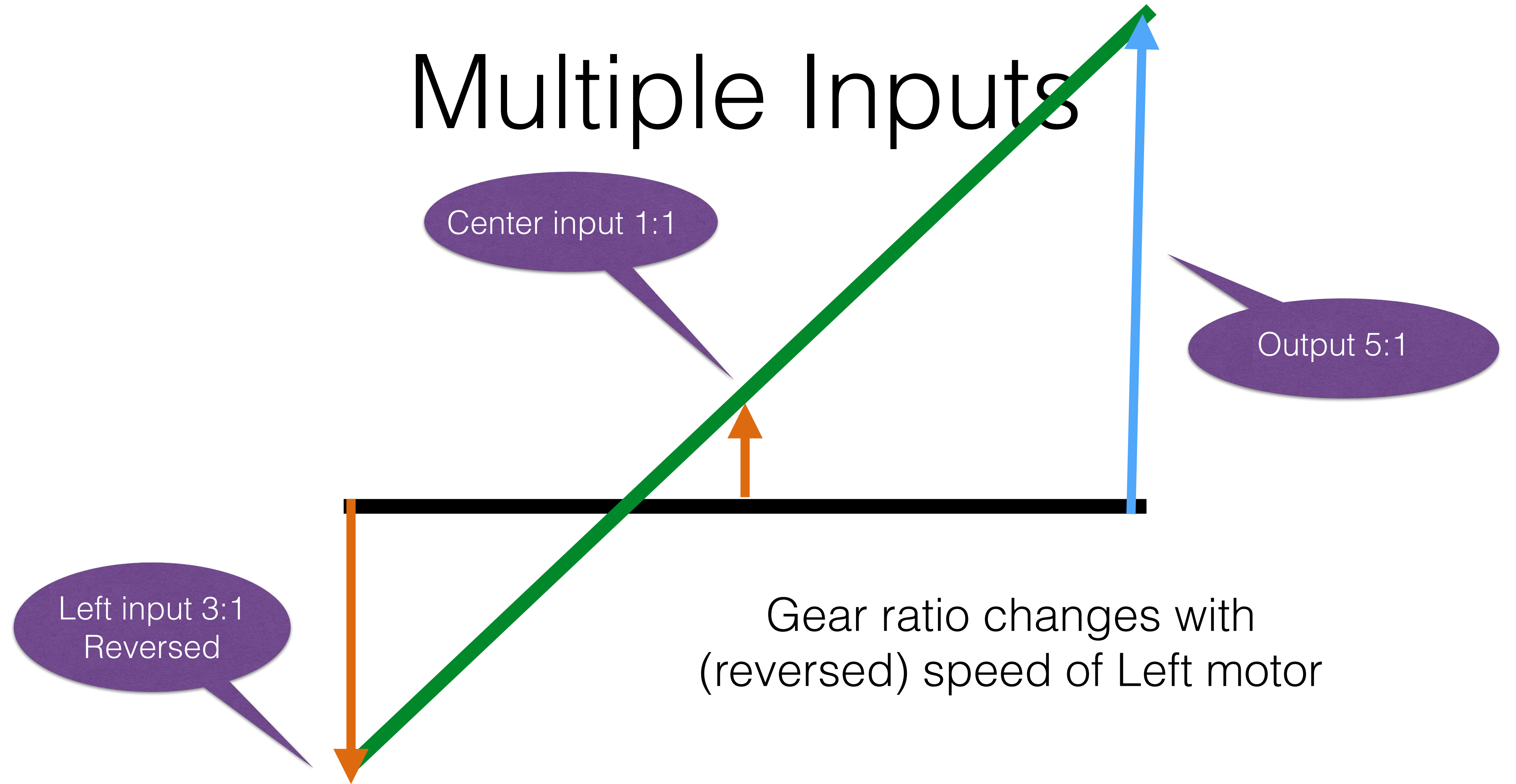
Multiple Inputs



Total Ratio: -1:1 Left to Right

Center node 'balances' outer nodes

Multiple Inputs



Total Ratio: -1:1 Left to Right

Center node 'balances' outer nodes

Examples

