Functions / My Blocks
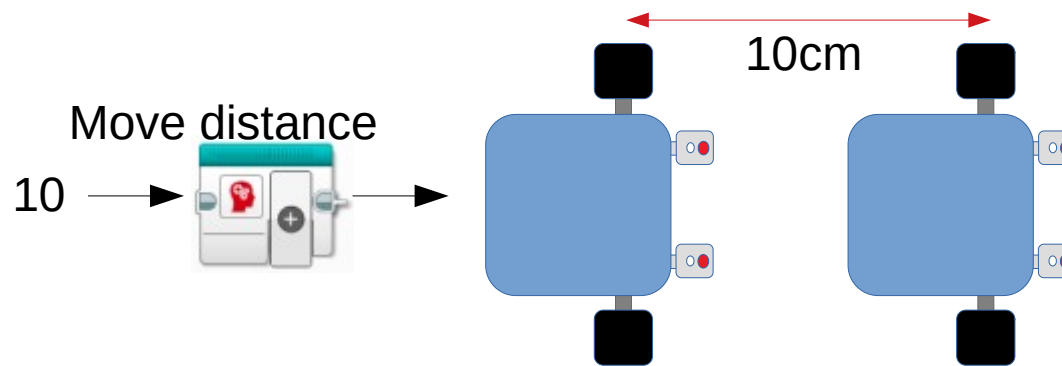
Useful Functions / My Blocks

- Makes your programming easier

- Less trial and error

- Neater and more understandable programs
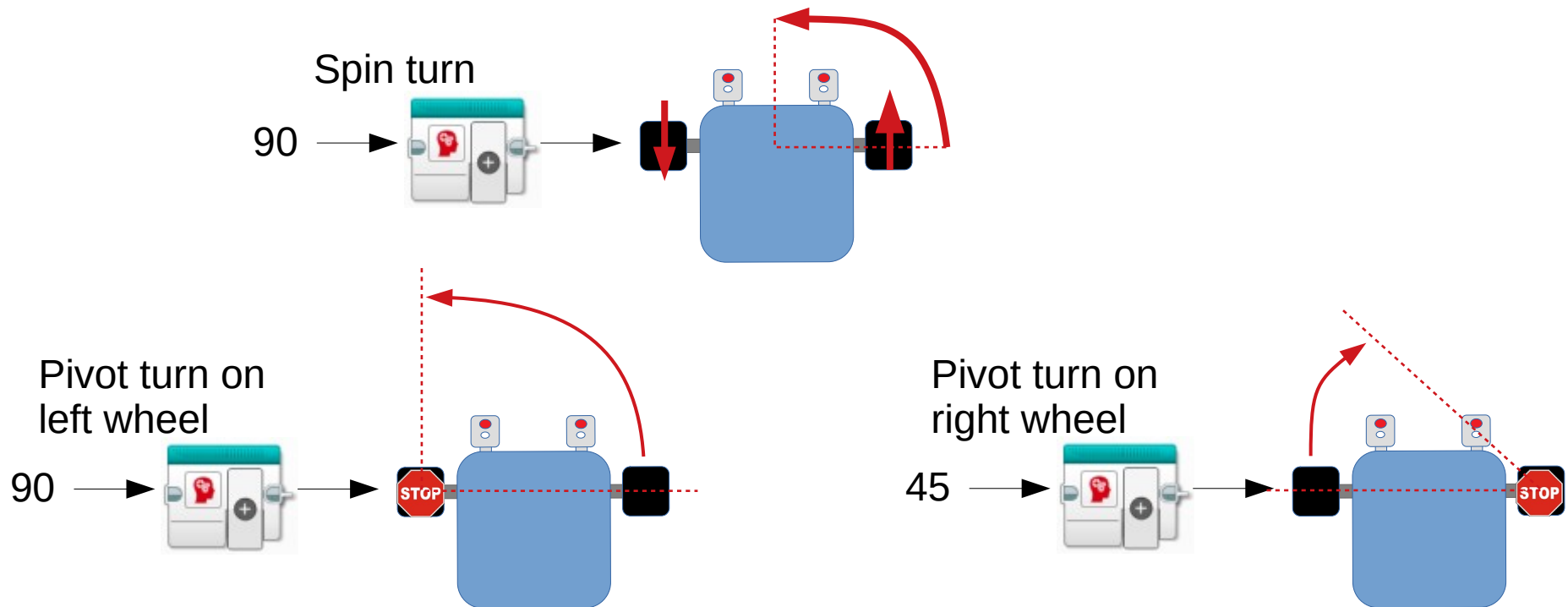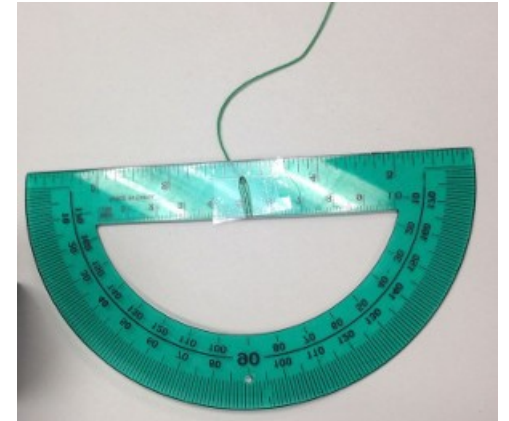
Useful Functions (Dead Reckoning)

- Move distance (cm)
    - Use with a measuring tape to reduce trial and error

Useful Functions (Dead Reckoning)

- Turns
  - Use with a protractor or…
    https://quirkycort.github.io/misc/angles.html
  - Spin turn (degrees)
  - Pivot turn right and Pivot turn left (degrees)

Spin turn

90

Pivot turn on
left wheel

90

Pivot turn on
right wheel

45

Dead Reckoning

- Dead reckoning functions are <u>inaccurate</u>
- Easy to make, acceptable if…
  - Distances are short, and
  - Wheels are far apart
- Gyro versions are superior in most cases

Useful Functions (Following)

- Move distance following line

- 4 types
  - Left sensor – Left side of line
  - Left sensor – Right side of line
  - Right sensor – Left side of line
  - Right sensor – Right side of line

Move distance
following line

20

20cm
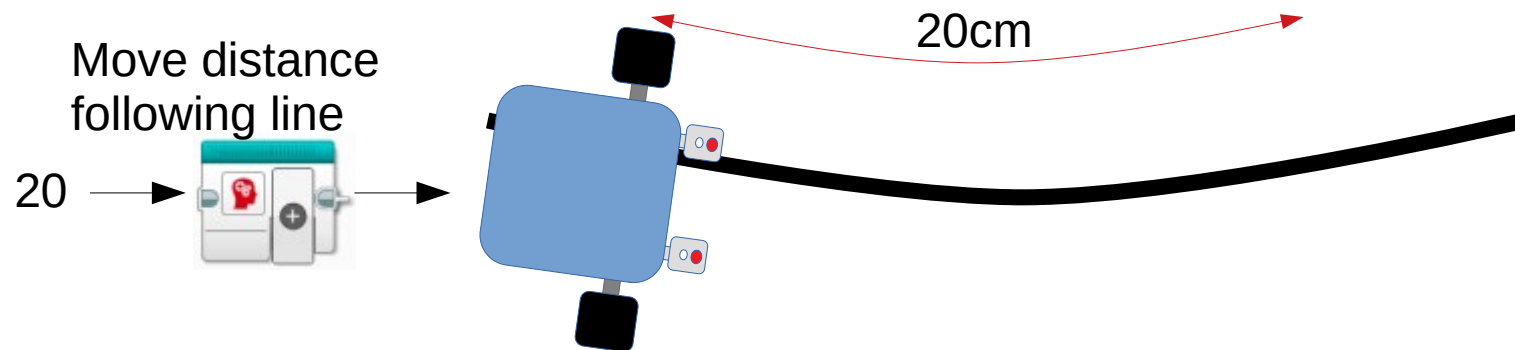
Useful Functions (Following)

- Move distance following wall
  - Use ultrasonic pointing sideways
  - Useful when traveling long distance
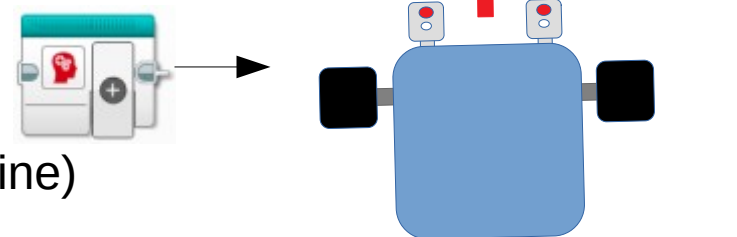 - Better to glide against wall if not turning

Move distance
following wall

20, 5

20cm

5cm

5cm
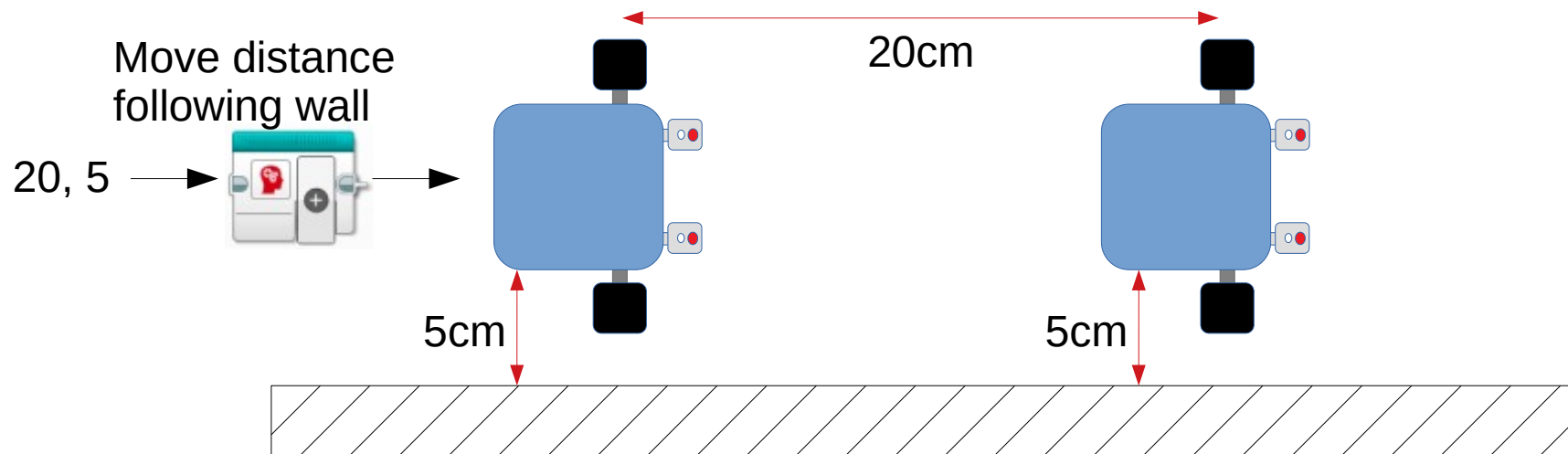
Useful Functions (Alignment)

- Clockwise align to line

- Counter-clockwise align to line

Clockwise Align

Counter-Clockwise Align
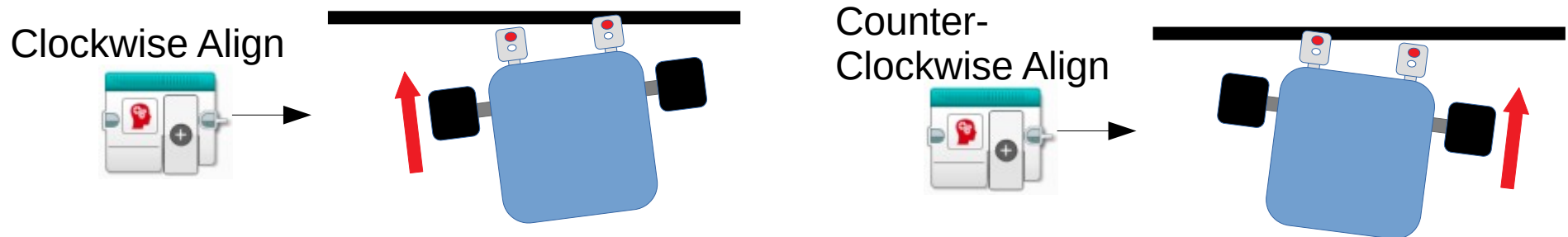
- Move till white (Left and Right)
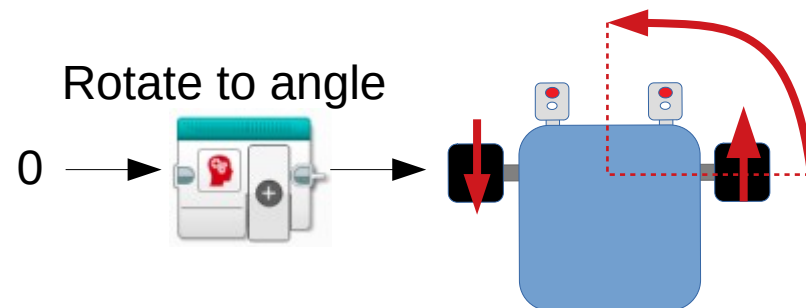
- Move till black (Left and Right)

Move till black (Stops when it reaches the black line)

Useful Functions (Gyro)

- Rotate to gyro angle (degrees)
  - Unlike a normal spin turn, this takes reference from the starting angle
  - Similar use as wall alignment, and can be used when the wall isn't available
  - Must calibrate gyro before use

Rotate to angle

0

Useful Functions (Gyro)

- Move distance following gyro
  - Use the gyro to help robot move in a straight line
  - Better to align to wall or line if possible
  - MUST calibrate gyro

Move distance while maintaining gyro angle

20cm

20
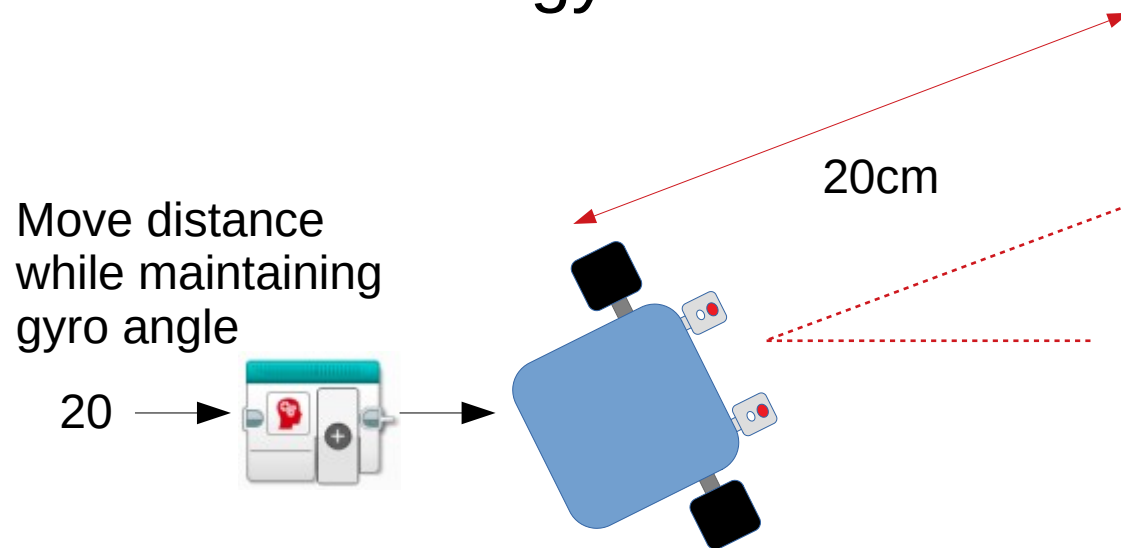
Caveat

- You may not need all of these functions...

- ...but most of these can be reused for future FLL and WRO

- Will likely need to prepare variations of these basic functions. For examples...
  - "Move following line (cm)" → "Move following line (until black)"
  - "Move till white" → "Move till yellow"

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