



FORCES AND MEASUREMENT

1. How does the vehicle steer?
2. How does this differ from a normal car?
3. What differences were there between running the vehicle on a smooth floor and on carpet (if any)?
4. Suggest two ways to increase the friction between the rear wheels and the floor.
5. Suggest one way to decrease friction between the front wheels and the floor.
6. How did you calculate the average speed of your vehicle?
7. What average speed did your vehicle achieve?
8. How did this compare to other vehicles?
9. What was the steepest angle of ramp it could climb?

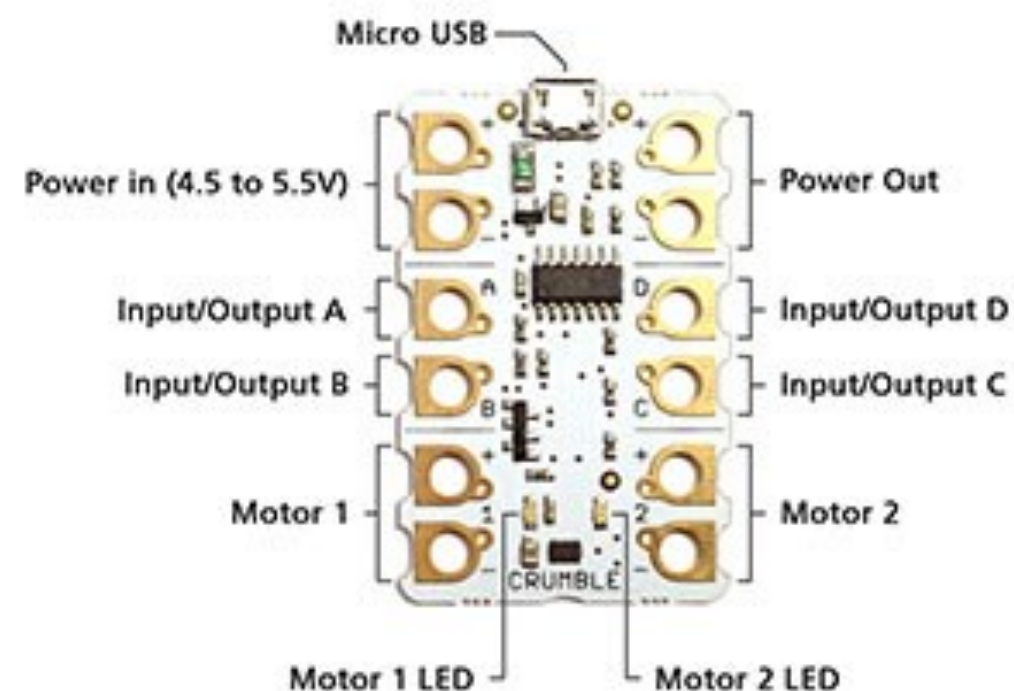


CRUMBLE VEHICLE EXTENSION ACTIVITIES WORKSHEET

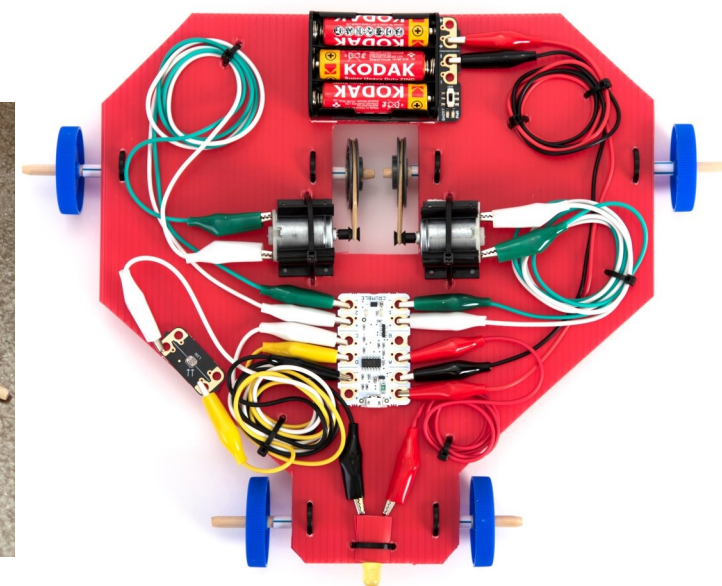
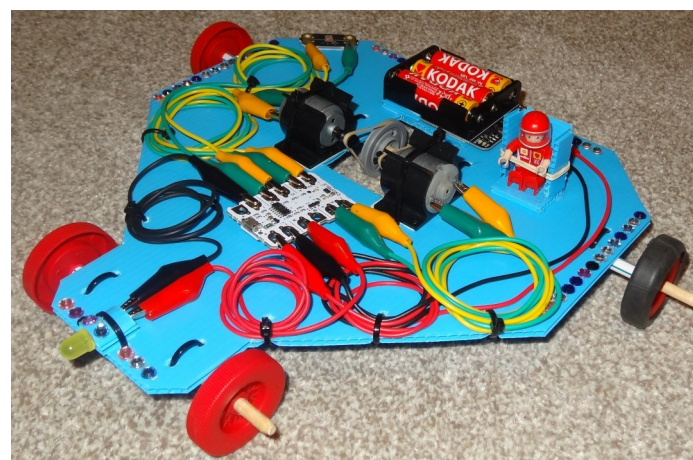
NAMES:

.....

THE CRUMBLE CONTROLLER:



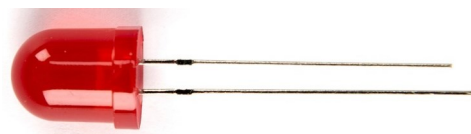
THE ROBOTIC VEHICLE:





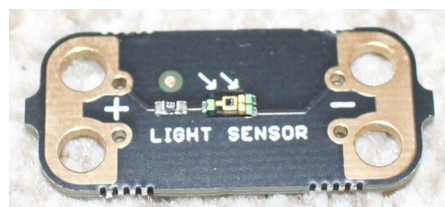
ELECTRICITY

1. What do the initials LED stand for?



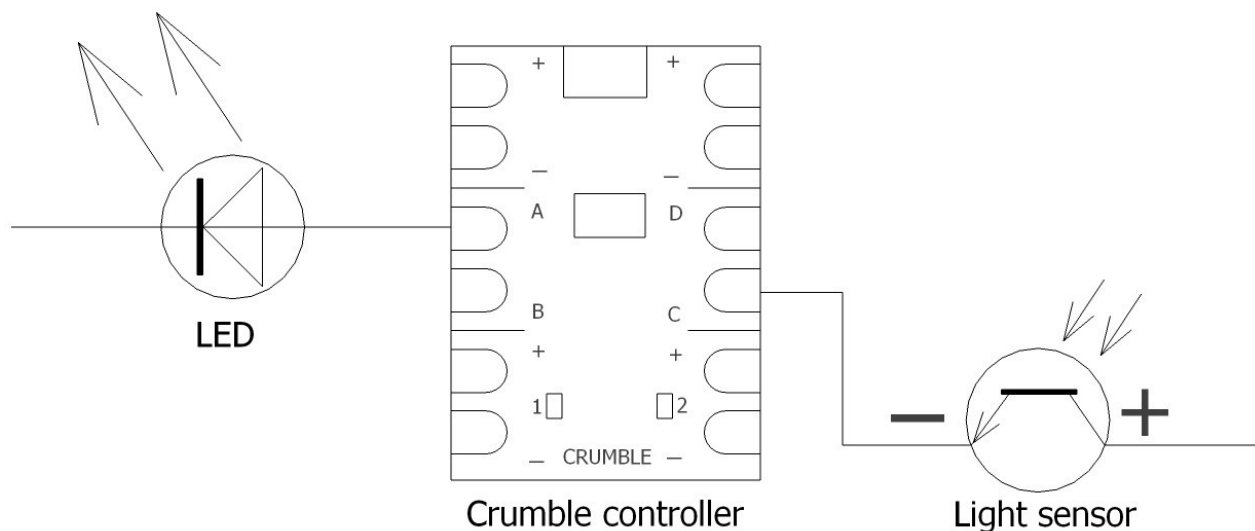
2. Which leg of the LED should be connected to the negative (-) terminal, the long leg or the short leg?

3. When light falls on the light sensor does it conduct electricity more easily or less easily?



4. What is the light sensor used for on the Crumble robotic vehicle?

5. Complete this wiring diagram to show how the LED and light sensor are connected to the Crumble controller.



PROGRAMMING

On the right is a program used to switch the headlight on if it is dark. For the Crumble controller, which of the following parameters A, C, D and u are being used as:

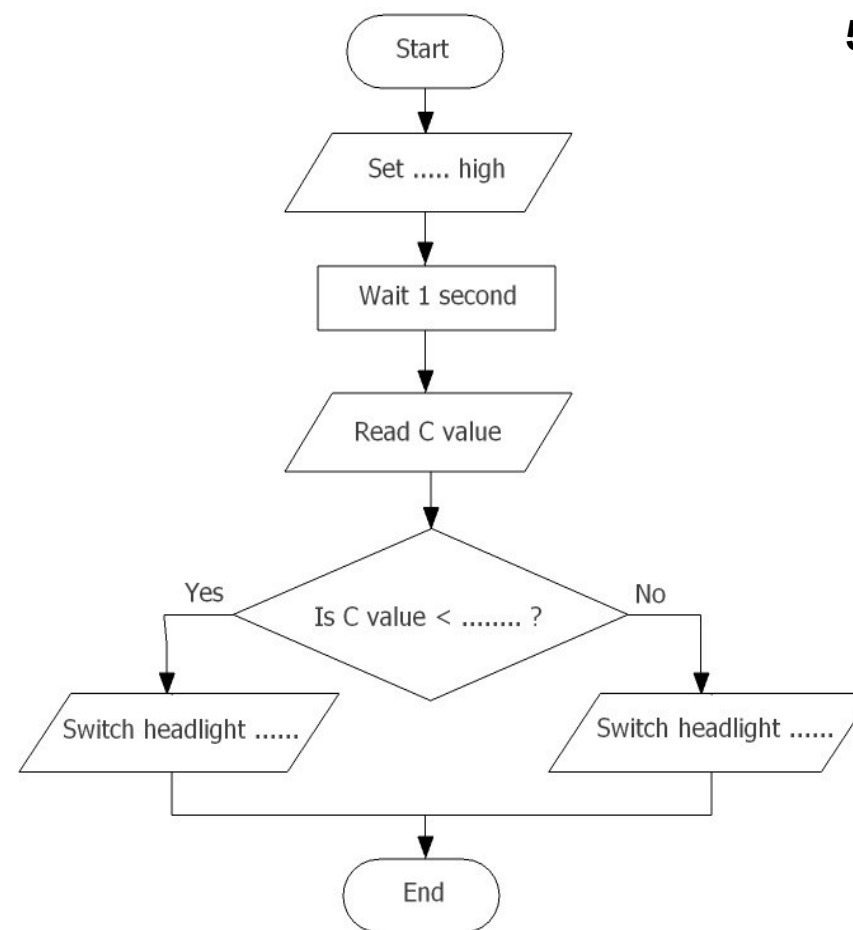
```

program start
set D HI
wait 1.0 seconds
let u = analogue C
if u < 230 then
set A HI
else
set A LO
end if

```

1. Input.....
2. Output.....
3. Variable.....

Complete the flowchart below to show the logic of this program.



5. Below is a program to flash the headlight on and off continuously.

```

program start
do forever
set A HI
wait 1.0 seconds
set A LO
wait 1.0 seconds
loop

```

Which part demonstrates sequencing?
Which part demonstrates repetition?