



# Engineering Invention Fair Project

**Wash and know before you go**  
*Hands-free 20 second hand washing timer*



**Define** the problem  
you are solving.

Not knowing if  
I've washed  
my hands for  
20 seconds.

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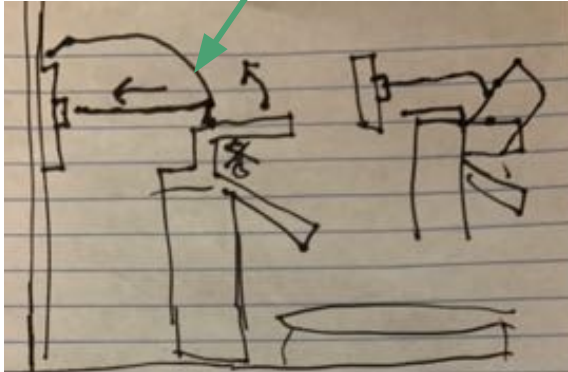
# Identify

Constraints on your solution (e.g. time, money, materials) and criteria for your success. 1.wire 2.timer 3.alarm 4.battery 5.circuit board

# Brainstorm

Solution 1: Automatic timed alarm for faucet

Arm attached to handle to hit button on timer



Solution 2: Timed color-changing faucet flow



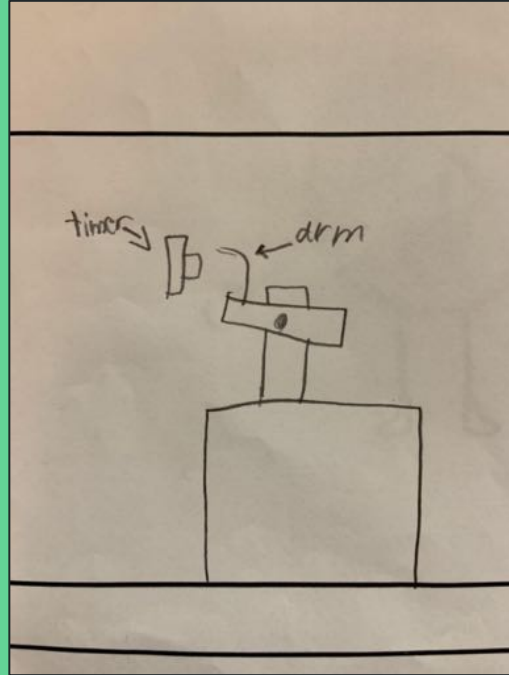
Water changes color

I chose Solution 1 because the arm links the faucet to the timer. We couldn't find or build a timed light to change the water color for Solution 2.

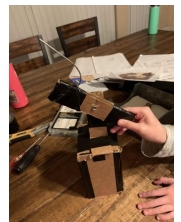
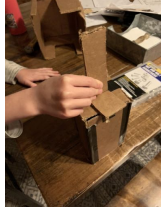
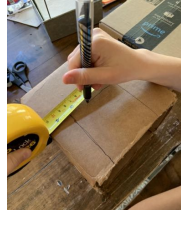
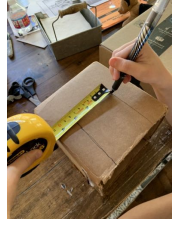
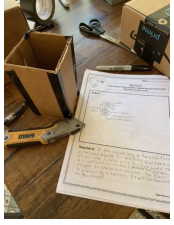
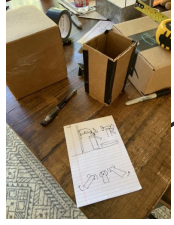
**Select** the most promising solution

I chose this solution because it physically connects turning on the faucet to starting a 20 second timer. Then, it would stop spreading viruses by not having to touch a button for a 20 second timer.

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**Prototype** This is a drawing of my invention.



**Test** and evaluate your  
prototype

## Limitations and implications

- 1) We had to use a pre built timer so you have to buy that.
  - 2) The arm was weak and it was hard to press the timer button so you need a stronger arm to press the button.
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**Iterate** how can you improve your prototype?

I can improve my prototype by adding an easier button for the arm to press or a stronger arm.

# Communicate

The prototype was fun to make. The timer worked we because I chose to use a pre built one. The prototype would have been difficult to achieve if we had to make it. The real invention is the arm that is connected to the faucet handle. This is why you can start the timer hands free. The arm needs to be stronger because the one on the prototype kept moving.