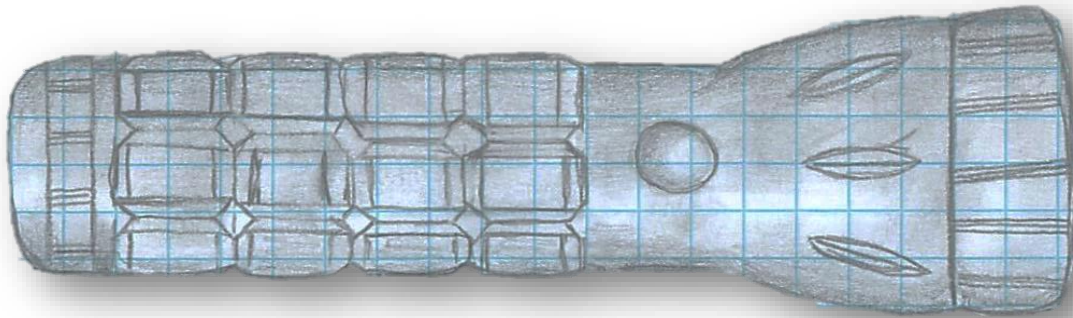


FLASHLIGHT MANUAL

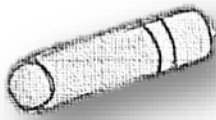


How the flashlight works

A flashlight is powered by batteries. They create an electrical current that flows through metal contacts and brings electricity to the lamp in the flashlight. A thin wire in the light bulb is connected to the batteries.

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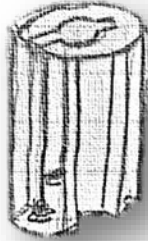
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battery



screw



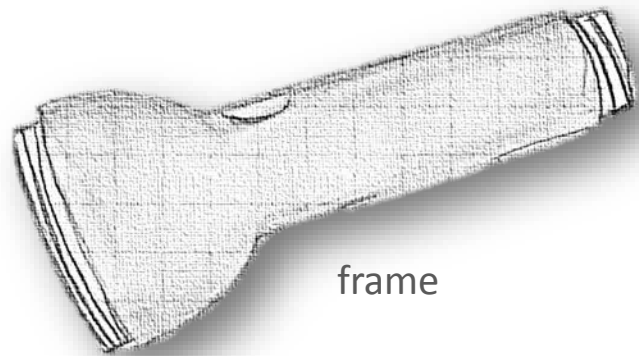
battery holder



reflector



battery
spring



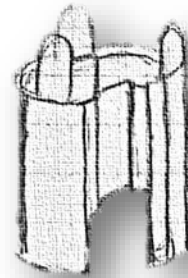
frame



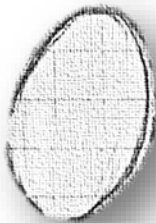
tail cap



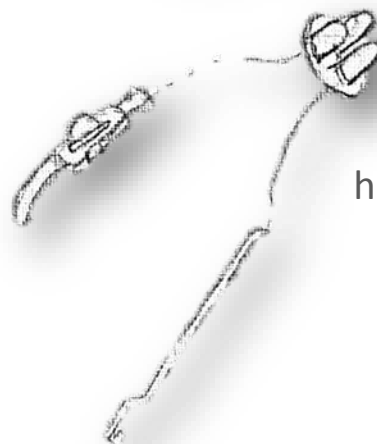
switch seal



lamp
protector



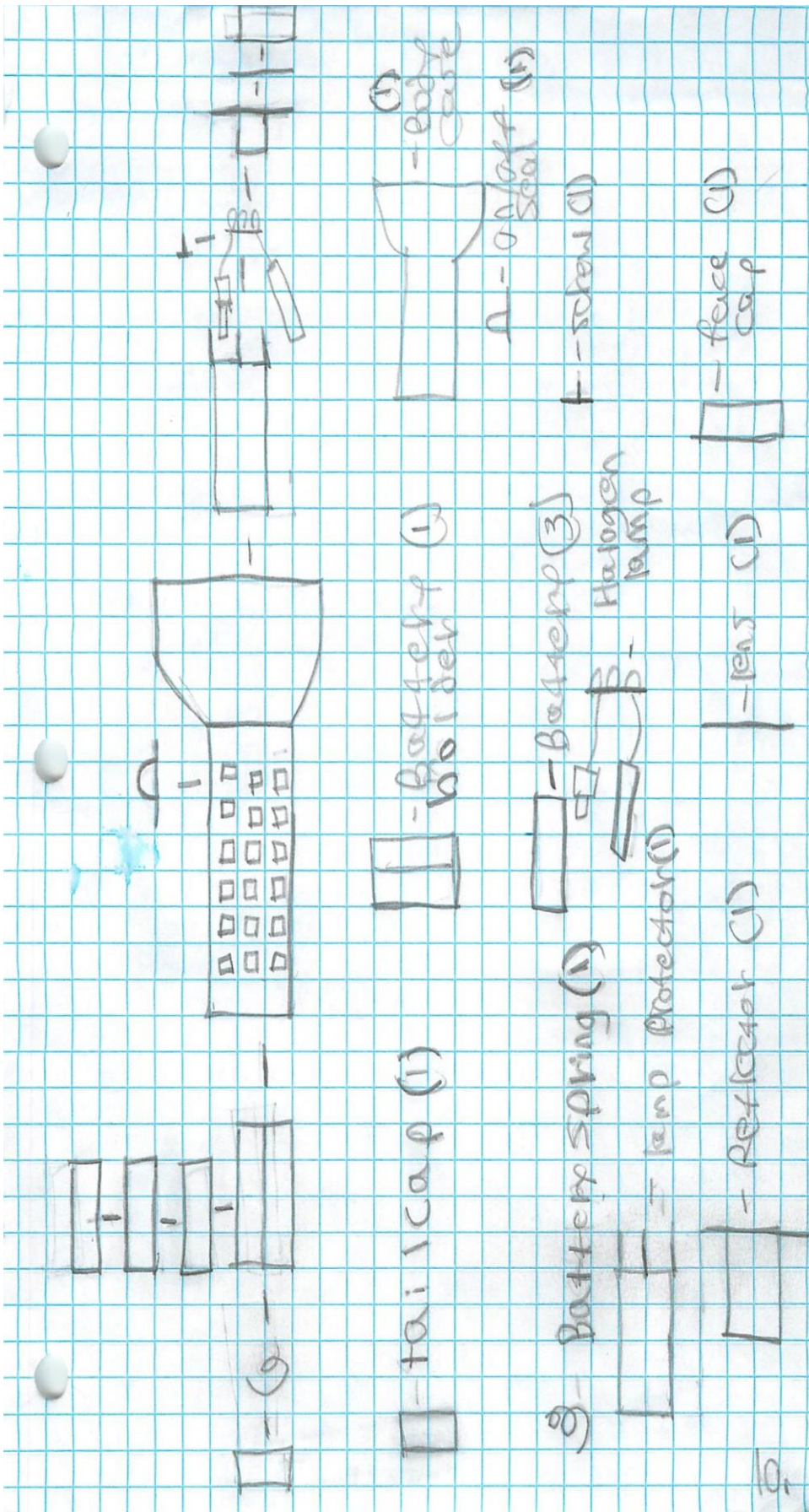
lens



halogen lamp



face cap



Step-by-step: How to put the flashlight together

1. Put the battery spring and place it in the tail cap.
2. Take the batteries and put them in the battery holder.
3. Place the lamp protector inside the frame from the top of the frame.
4. Put the battery holder inside the frame from the bottom.
5. Put the tail cap on the frame from the bottom, then close it.
6. Put the halogen lamp in the reflector.
7. Put the reflector with the halogen in it inside the frame from the top.
8. Put the lens in the face cap.
9. Put the face cap on the frame from the top, then close it.
10. Put the switch seal in the hole in the center of the frame.

BILL OF MATERIALS

Bill of materials for:			Names:					
Product #	Name	Qty	Dimension	Function	Interaction with other parts	Research cost	Website	
1	lens	1		protect the light	keeps the light protected	15 ¢	EBay	
2	battery	3		energy	energy source	\$1.80 x3	EBay	
3	reflector	1		reflect the light	reflects light from the light bulbs	1.42	EBay	
4	tail cap	1		keeps the battery in	holds the batteries in	99 ¢	EBay	
5	face cap	1		holds the lens	holds the lens and the lights	70 ¢	EBay	
6	battery spring	1		for electrical current	used as an electrical current	27 ¢	EBay	
7	screw	1		holds the halogen light	holds the light in place	31 ¢	EBay	
8	battery holder	1		holds the batteries	connects batteries to the lights	1.19	EBay	
9	switch seal	1		turns it on and off	turns the light on and off	70 ¢	EBay	
10	halogen lamp	1		project light	gets power from the batteries	60 ¢	EBay	
11	lamp protector	1		protects the light	protects and holds the light	\$1.05	EBay	
12	frame	1		holds everything together	holds all the parts	\$1.18	EBay	

PURPOSE OF THE FLASHLIGHT

- What is a flashlight?

A flashlight is a portable electrical light source, in which the light source is connected to batteries by a small thin wire.

- How does a flashlight work?

A flashlight is powered by batteries. They create an electrical current that flows through metal contacts and brings electricity to the lamp in the flashlight. A thin wire in the light bulb is connected to the batteries.

- How to use a flashlight?

The use of a flashlight is very easy; it is a simple-to-use device. You only need to move the switch to make a flashlight work. The switch is located at the center of the frame.

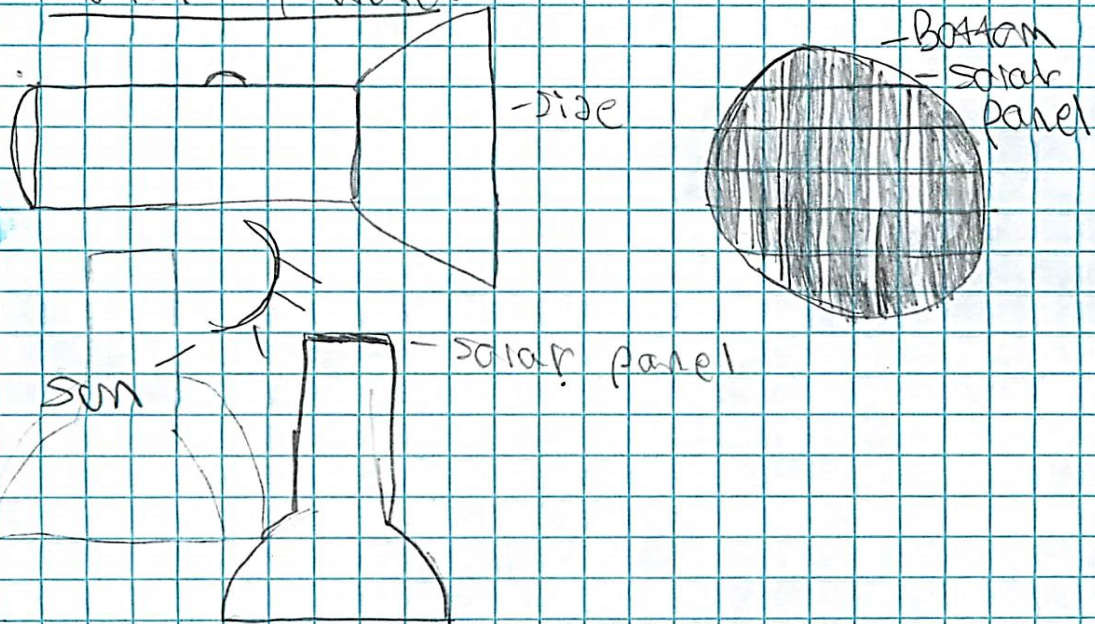
Engineering Exploration Design Team Contract				
Group Number:	Date:	Initials	Phone #	Email Address
8	10/6/14			
Team Spokesperson for this assignment/project:				
Member Name	Roles	Initials	Phone #	Email Address
	suplex		N/A	
	Team leader		N/A	
Team Goals:				
• finish the project				
Team Performance Expectations				
<ul style="list-style-type: none"> - everyone do their part - get in time - COMMUNICATE well 				
Strategies for Conflict Resolution (provide at least 3)				
<ul style="list-style-type: none"> • take about the problem • ask a teacher • find more solutions 				
Responsible Members				
Initials				

Based on page 71 of *The Mechanical Design Process* (4th edition)
 By Professor David G. Ullman, © 2008, McGraw-Hill

CONCLUSION

3 improvements

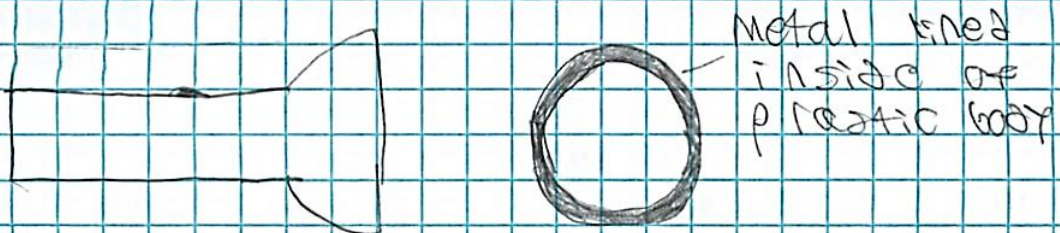
- The flashlight could be battery and solar powered



- Dimmable flashlight



- Break resistant



3 project improvements

- 3 or more people per group. Things would get done faster if all groups had 3 or more people.
- Make time to plan. I think we should have had a little more time to plan on who would do what and what we would take apart and how.
- Turn in Notebooks instead of online.
- We should be able to turn in our Notebooks in instead of having to submit them online because it's easier.

Feedback: Overall this was a fun project that is better than doing classroom work and it's interesting to learn about how different parts work.

Team evaluation:

our team did well we were able to get our project done fast and in good quality, Bader was great

Conclusion:

Our group did what we were supposed to do, we were able to successfully take apart the flashlight and begin on the required documents. We did well being partners we both did what we were expected to do and were able to get our work done fast.