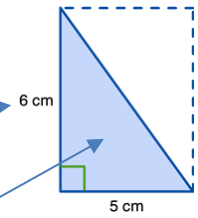
Activity Sheet	
Gr 7 - Lesson #1	Building and Setup – Think Inside the Box
Date:	Name(s):

Check That I'm Done ☑		
☐ Commented on my code	☐ Modify it task	☐ Coding Challenge

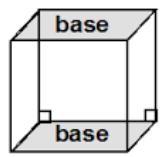
Learn

Packaging is a very important part of creating a product. On one hand, the package needs to be large enough to protect the product (and show it off), but on the other hand, packaging materials can be very expensive. Here's some of the math behind packaging.

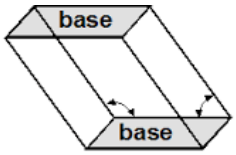
How much packaging you use is determined by the surface area of the box. The surface area of a rectangle can be found by multiplying the Length by the Width.



A triangle is half of a rectangle so it's formula for surface area is (Length x Width) ÷ 2.

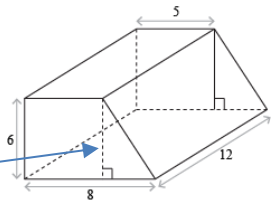


Right prism



Non-right prism

The volume of a right prism is fairly easy to find. You simply take the area of the base (LxW) and then multiply it by the height (LxWxH). This works for any right prism (that is a prism with walls at right angles). For more complex shapes, you can just add the prisms together.



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Predict and Plan

Brain storm by writing down at least 5 jot notes explaining what makes good packaging.

Think about some great packages you've seen in the past. Reflect on the effectiveness of the design, how secure it is, how wasteful it is, did it draw you in, did it educate you, was it interactive?

Good packaging is…

1. _____
2. _____
3. _____
4. _____
5. _____

Demonstrate/Design/Discover

- ✓ It is going to be your job to investigate and then design a great package for your groups EV3 robot.

- ✓ First, measure your robot carefully to determine some possible boxes below. **Show your work.**

1. A) What is the minimum volume of a box your robot could fit inside if it was a simple rectangular prism?

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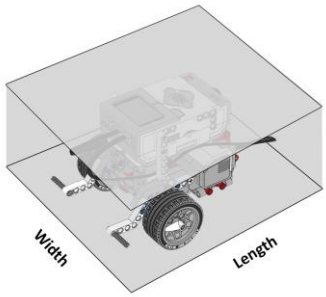
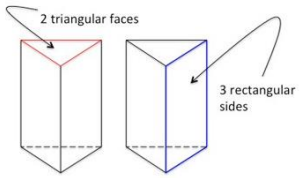
B) What's that boxes surface area?

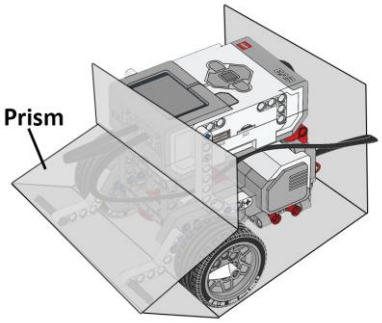


2. A) What is the minimum volume of a box your robot could fit inside if it was a simple <u>triangular prism</u>?



B) What's that boxes surface area?

3. Creat a box with the smallest possible volume, using 2 (or more) right prisms. Hint: Start with the smallest base possible.



A) What's it's volume?

B) What's it's surface area?

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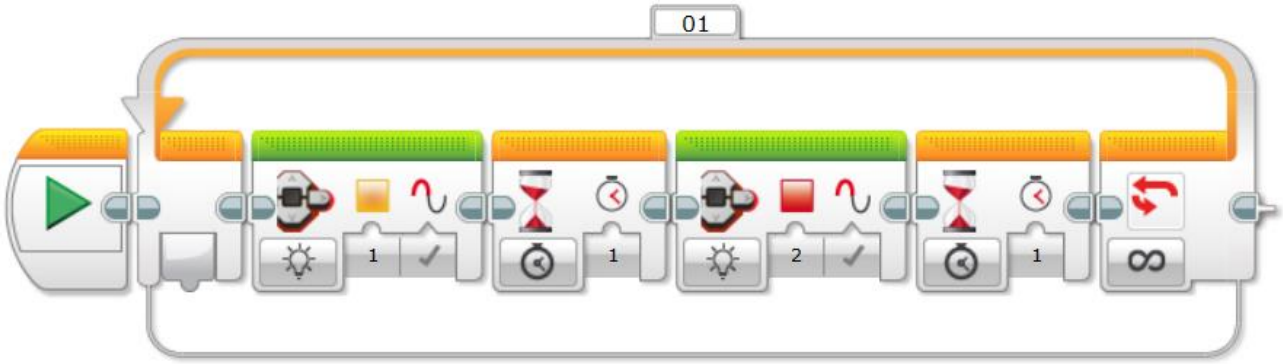
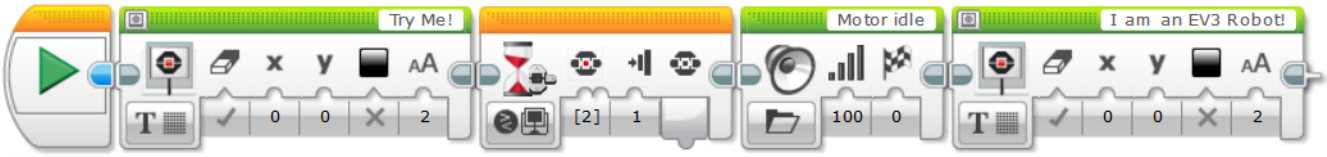
- ✓ Pretend you're working for Lego and want to show off this new, pre-built EV3 robot in stores. You will do this by creating a great package and program to capture people's attention. You are going to be constructing this out of paper. You can either choose to minimise the packaging materials OR you can minimise the space it takes on the shelf. The choice is up to you, but be prepared to explain your thinking. Your package MUST also:
  1. Cover the entire robot except for a window so they can access the buttons and see the screen.
  2. Attract people to your packaging using flashing lights (sample below)



  3. Have a try me now button on the brick, which responds with sounds (sample below)



  4. Have a description of the robots features and abilities, describe the input and output ports, what's included in the packaging, any warnings, or anything else you feel would help people understand what is inside.

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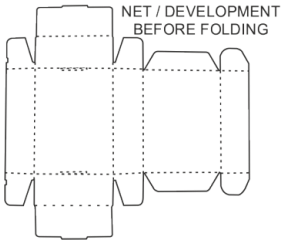
Tips: It's a good idea to draw on your package BEFORE final assembly. Divide the work fairly amongst your group. Your packaging will need to be assembled with scissors and tape. Using tabs can make it easier to put together.



Record

What is the exact volume and surface area of the packadge you designed? Don't forget to subtract the hole for the screen. Show all of your work. Use labels for each calculation.

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