



Design Technology

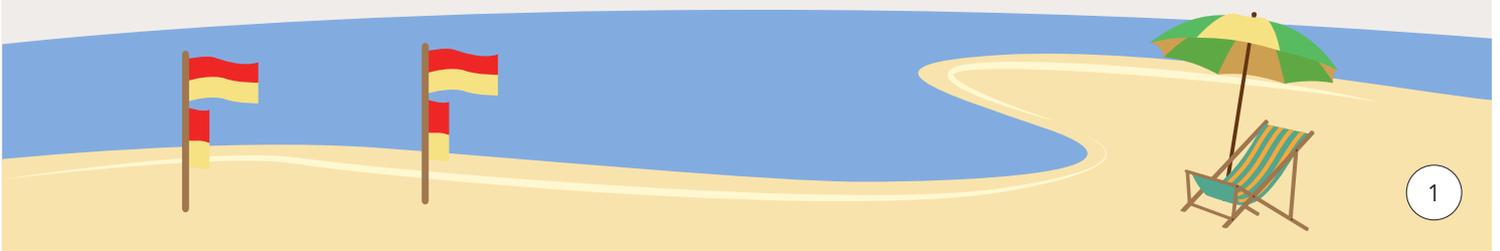
A Helmet Fit for a Hero

Time recommended: 5 hours (project)
Year 3 and 4

Strand:

Design and Technologies Processes and Production Skills

- Generate, develop, and communicate design ideas and decisions using appropriate technical terms and graphical representation techniques (ACTDEP015)
- Select and use materials, components, tools and equipment using safe work practices to make designed solutions (ACTDEP016)
- Evaluate design ideas, processes and solutions based on criteria for success developed with guidance and including care for the environment (ACTDEP017)
- Plan a sequence of production steps when making designed solutions individually and collaboratively (ACTDEP018)



Name: _____



A helmet fit for a hero

Having the best equipment available is key to ensuring emergency services such as the Westpac Lifesaver Rescue Helicopter Service run as efficiently as possible.

Having modern equipment and technology is needed for the Westpac Lifesaver Rescue Helicopter Service to operate properly.

From the large aircraft needed to carry many people, down to the rescue winches used for pulling people to safety, and the different fabrics used in the Crew's uniforms, each item on the Base has been carefully designed and made.

One of the most important pieces of equipment is the Crew's helmets. Not only do they protect their heads, they also have other helpful things that make missions much easier. These things include:

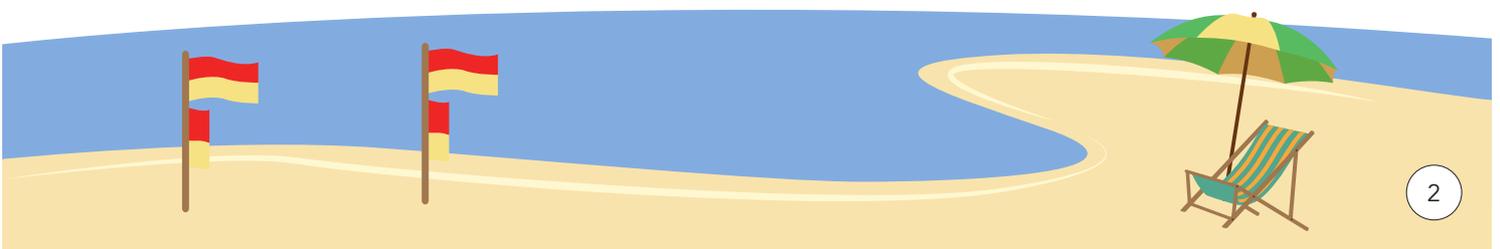


- A pop-down visor which protects their eyes from flying debris, sunlight and wind
- In-built radio communication so crewmembers can talk to other crewmembers and also to the Base when they are on a mission

Another very important piece of equipment on the helicopter is the rescue winch. This is an automatic winch with a long line of steel wire that can be lowered down from a hovering helicopter to people below.



A Rescue Crew Officer clips his harness to the end of the cable and the pilot lowers his crew member down carefully. At the bottom, the Rescue Crew Officer puts a harness on the person to be rescued, clips them to the end of the cable, and then signals to the pilot to winch them both up to the helicopter, and to safety.





TASK ONE:

1. In groups of three, discuss and write down different design ideas for:
 - A new helicopter with extra features to help make a rescue quicker and easier
 - A new helmet design
 - Another way to get injured people onto the helicopter without using a harness

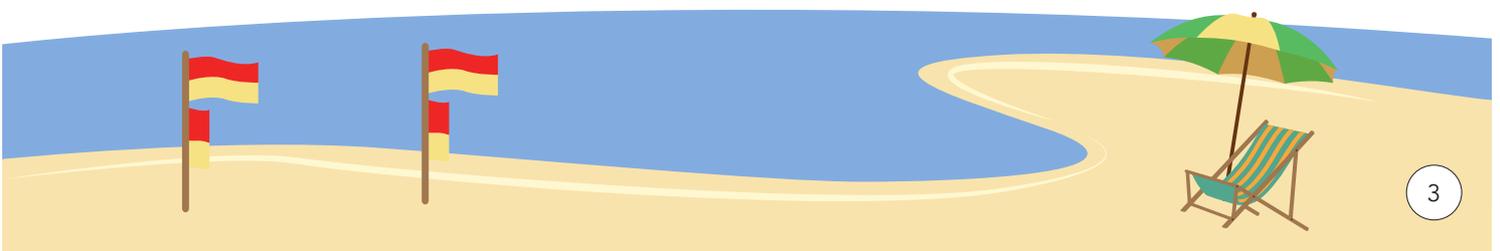
TASK TWO:

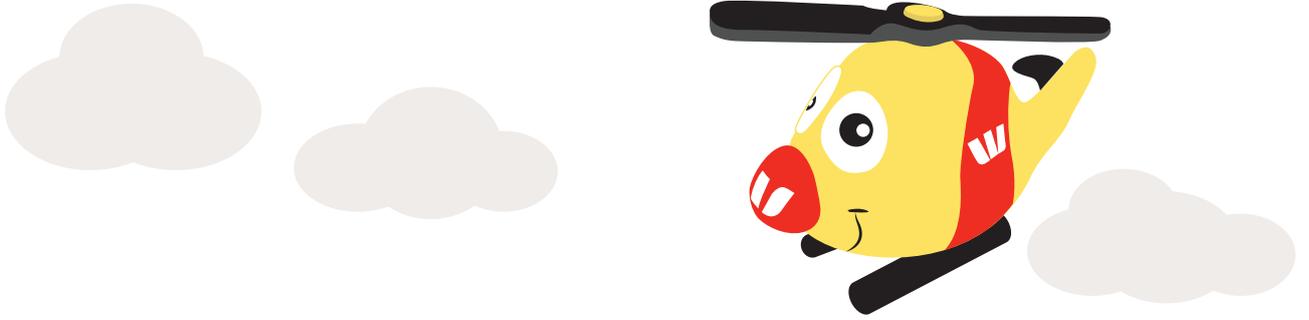
As a group you now need to agree on one of your design ideas, and then begin to develop it further:

1. Which design improvement do you all agree is the one that will work best?

2. Do you all agree that this design works best for the job it needs to do? If yes/no, why?

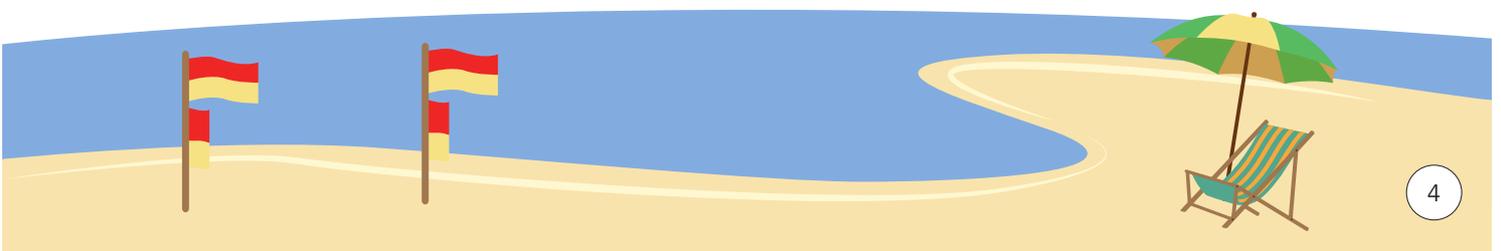
3. Will the design be able to help everybody? If yes, why?





4. What are the sustainability considerations you might need to keep in mind if you go ahead with your design, both during production and post production when the design is in use?

5. Could you sell a lot of your new products all over Australia, or will it only be of interest to a few people/organisations who do certain jobs? Describe the type of people you think might buy your products, and how many do you think you could sell?





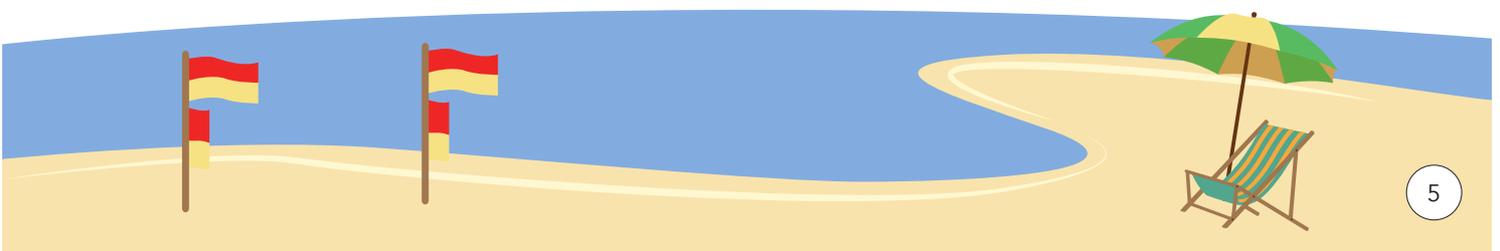
TASK THREE:

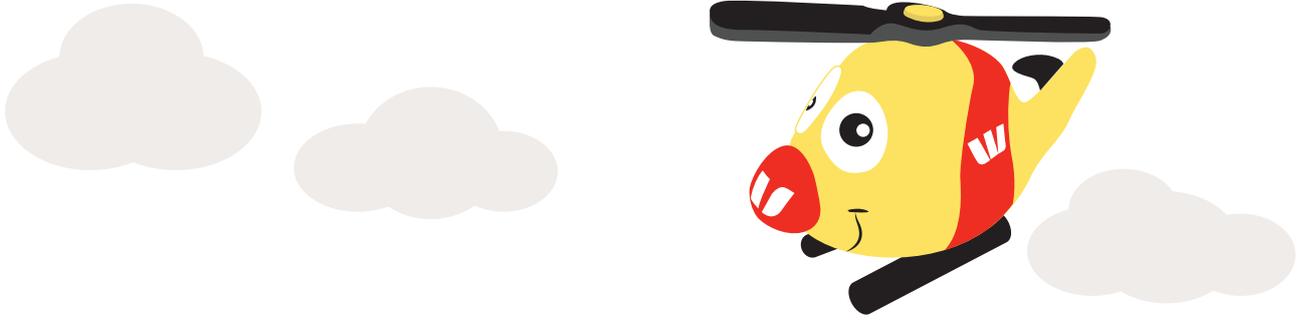
Before you begin to build your chosen design as a group you must first:

1. Talk about the ways the design might be changed to be even more successful. Write what is discussed.

2. Study how different designs would be built and how much waste each design would leave behind. Then think about what might be recycled during the production, and used again for something else.

3. Do you think the way your product is designed is the best for the job it has to do? How it looks is important, too, and even its shape. Is it nice to look at? Yes/No and Why?





TASK FOUR:

Now you can start to plan the design of the item in more detail.

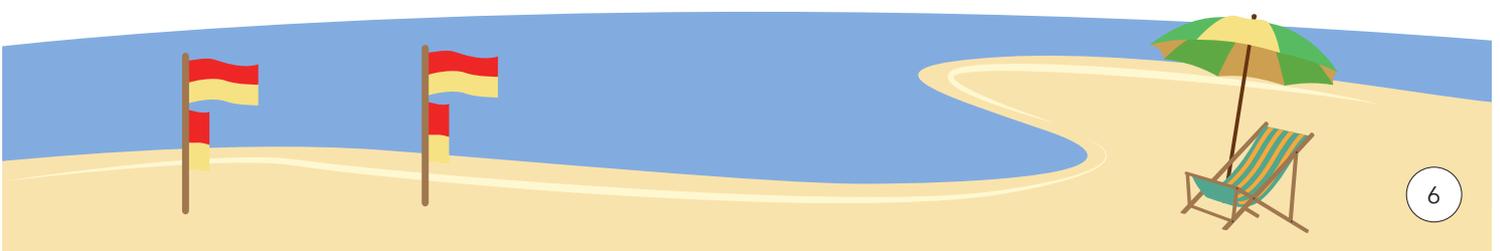
1. Write a list of the different materials you will need to create the design. Think about the properties of each part - how they will make your design better?

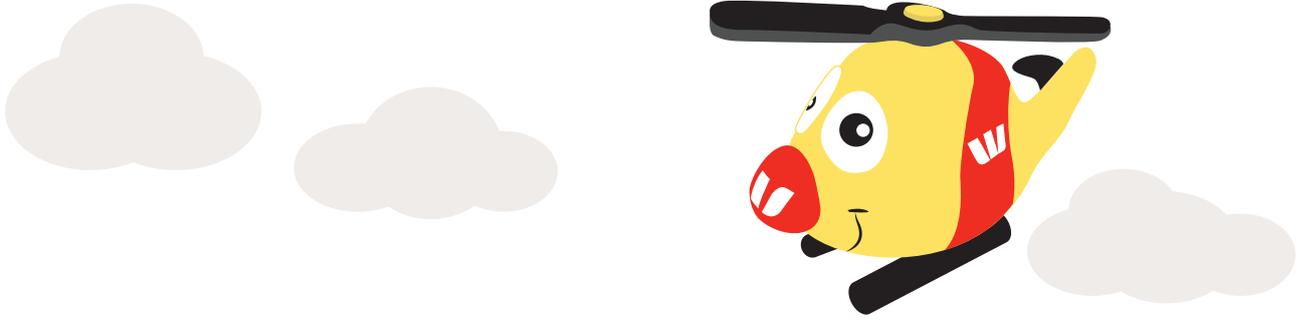
2. Look at different ways of assembling your design. How will you join, attach, and connect the different parts to ensure they will stay in place, work well, last a long time and not wear out?

3. As a group discuss your ideas in detail using drawings and models. Each of you will explain your own contribution with a sentence to describe your idea and any changes you have made to the original design.

4. Work together in your group to plan and then write every step in making your new design, using digital tools.

5. As a group, gather together all your plans and present your new ideas to the class.



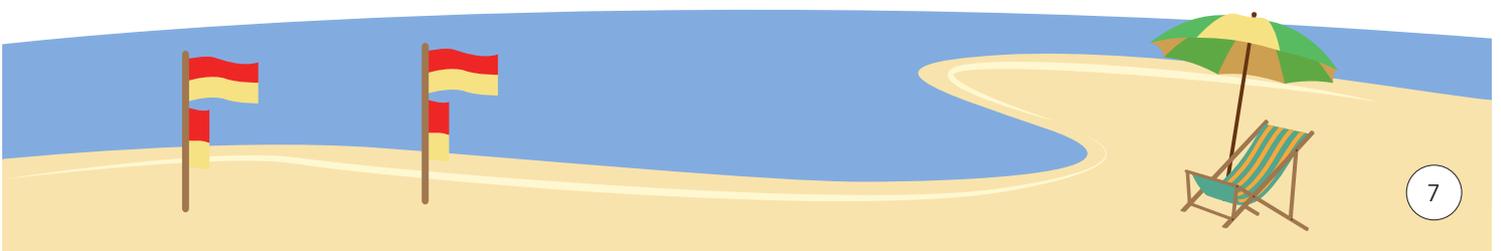


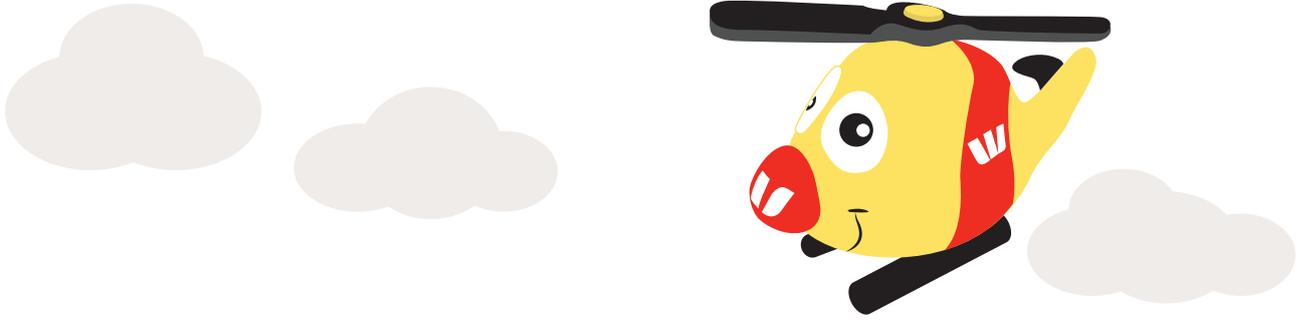
TASK FIVE:

As a group, agree on one part of the design that you will each be responsible for.

1. Using proper technological terms, explain to each group member the procedures and techniques you will use to cut, join and finish the element for which you are responsible.

2. Explore the procedures and techniques you have explained to your team. Do your joining, connecting and assembling plans work?
3. Does the creation of your new design use digital technology? How do you think digital technology has changed how your designs are made?



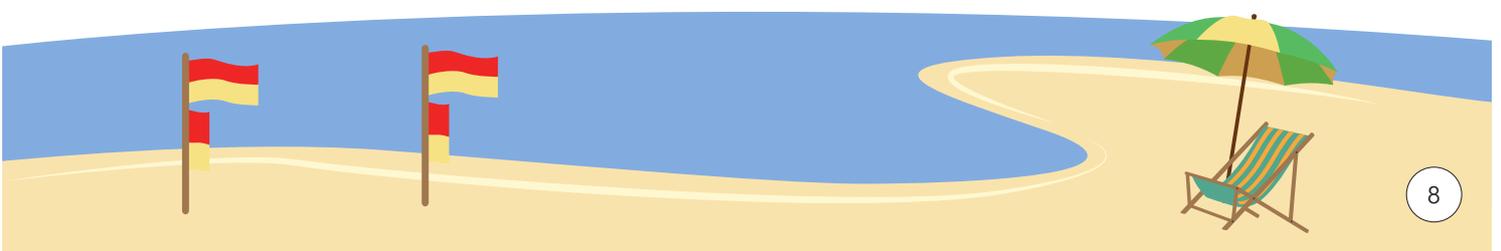


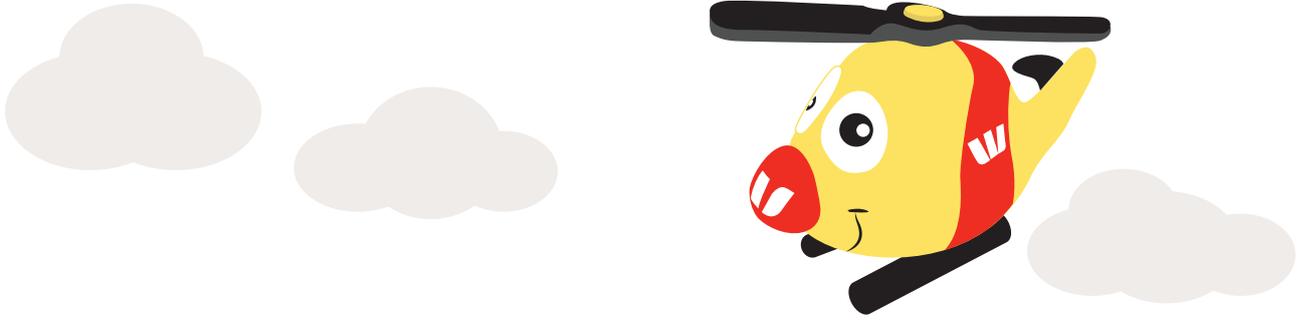
TASK SIX:

Once you have investigated the procedures and techniques you want to use, you can start your design work.

1. First you must safely select the materials, parts, tools, and equipment you will need to start making your design.
2. Once your group has selected and written a list of each chosen element, discuss as a group the impact on the environment when using the processes and equipment that you have each chosen. Will materials have to be mined? Will the process create pollution?

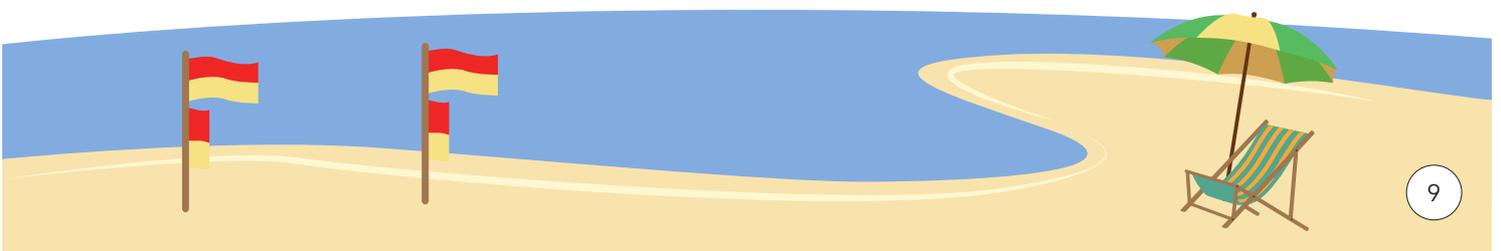
3. List any possible impacts that the making of your design might have, for example: will it create dust that will need to be cleaned up so as to not get in other people's eyes? Will it be noisy so that earplugs need to be worn? Will there be anything left over to recycle once you have cut the pieces you need for your design?





4. Before you begin the actual making of your design, as a group discuss and write the safety procedures you will need when working with each element.

5. List anything you will need to complete before, during and after working with each element, to ensure your group and class mates are kept safe.





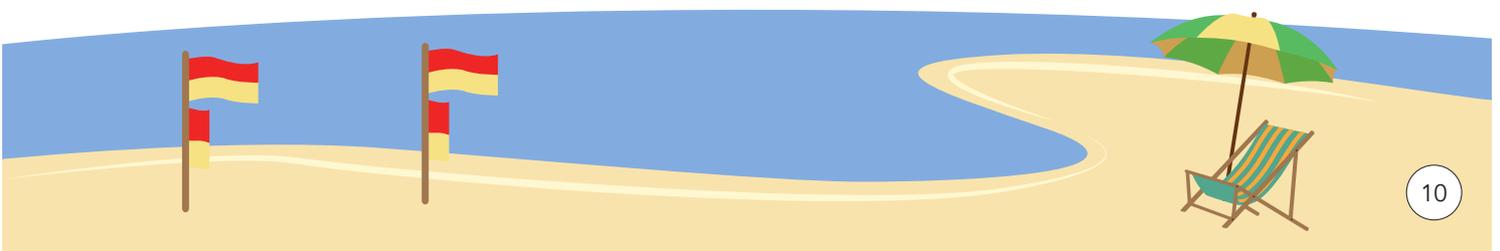
TASK SEVEN:

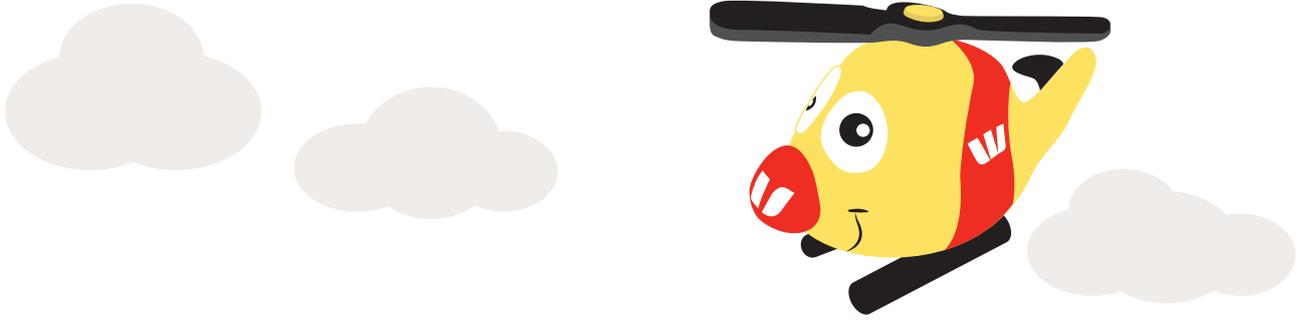
It is important to record and report each step of your design production and what you have done. This way if the finished product doesn't quite work the first time, you can go back through your steps one by one and make small changes to see what works best.

Designing a cool new gadget is all about trial and error.

1. As a group, agree on the best way to plan out all your steps and decide who is responsible for each step. Write a time plan so the project stays on schedule. Who will be responsible for writing each process you complete, and making sure all measurements and procedures are recorded? Who will be the Project Manager and ensure the group is working well as a team and in a safe manner?

2. As a group work out the steps you might take if you decided to produce your design in large quantities. How will mass production (making large quantities of something) change the way it is made? Will you need more space, buy more materials, or bring in more people?





3. Finally, before you get building, you will all need to work with the Project Manager to plan each step of the production process in order to create the best design. What steps will you and your team members each be responsible for when production begins?

