

Teamwork is key to success!

It is important that each team member takes on a specific role to ensure communications between the two communities is restored effectively and efficiently. Each role is crucial in developing a communications solution with each role requiring different strengths.

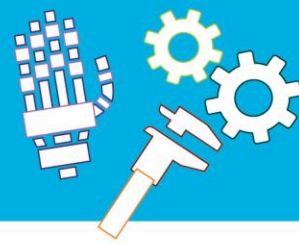
Project Manager - Specialist briefing sheet

You need to have a clear overview of what the team is trying to achieve in the time you have available.

Duties:

- Check out the assessment information so you know how to score maximum marks.
- Timekeeper - keep an eye on the clock and make sure jobs get completed on time.
- Track the overall progress of the activity of the team to make sure everyone is on task.
- Be flexible and give help where it is needed.
- Prompt the team: Have you thought about the size of each part and how they will fit together? What materials will you need? What is the best material for each part? What part needs to be made first? How are you going to fix each part? What tools will you require? Remember there is a cost involved.
- Keep your Team's reflections up to date. You can do this yourself or delegate to a team member.
- With the support of your team, you will take the lead in presenting the 3 minute presentation to the judges at the end of the day. You will present this yourself or delegate to a team member with strong communication skills.
- Your role is to lead, and to manage your team effectively.





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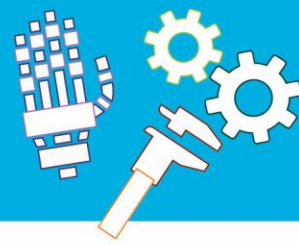
Accountant - Specialist briefing sheet

To set up a communications system needs not just clever engineering but great accounting to make sure you don't go over budget.

Duties:

- You must keep accurate records of what has been bought and sold back using the accounting sheet in the engineer rescue team brief.
- Decide what materials need to be bought and do the buying.
- Find the options that will be the most appropriate. Some options do the same job, however, they are much cheaper.
- Be the expert on the prices of all the materials and advise which are best to use in terms of their cost. Keep looking at alternatives.
- You will get a chance at the end to negotiate with the supply centre to sell back (at a discounted rate) any materials you have not used or any equipment for which you have found an alternative.
- At the end, you will need to present an accurate, final copy of your accounting sheet.





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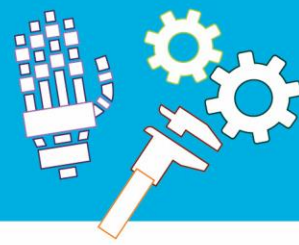
Electrical Engineer - Specialist briefing sheet

Your role is to ensure power and the correct voltage is supplied to the prototype. Understanding what will work and what won't is key to solving the problem.

Duties:

- Lead the team in engineering an electrical circuit. Your final solution must include an electrical component otherwise marks will be deducted.
- Keep in mind different solutions require different amounts of power to function.
- Determine how you will supply energy to your solution.
- Ensure, where possible that the most sustainable way to power your solution has been used.
- Determine if a switch to turn power on and off is required or if there is an alternative (i.e. muffler or shutters).
- Remember to be resourceful with materials and always be on the lookout for cheaper alternatives.
- Materials and energy resources are in very short supply because of the local situation so be creative with your solution.





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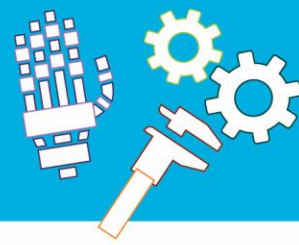
Mechanical Engineer - Specialist briefing sheet

You will lead the team in design and construction work. Your device must be able to send an encoded signal across a distance of 10 km in the real situation in the mountains, but 5 metres in testing. Your solution must be free of the interference caused by the solar radiation disrupting radio and phone signals and its effects on the power supply grid.

Duties:

- You will lead the team in design and construction work.
- Check out the assessment information to make sure you build your prototype to gain maximum marks.
- Decide how you are going to transmit the signal. Light or sound? Is this the fastest way of transmitting your signal?
- Consider if speed of transmission is important.
- Determine how you will know that messages have been received.
- Determine how the encoded message can be amplified so it can be received in all weather conditions.
- Determine if the solution requires a supporting framework or mounting.
- Consider how you would get your message around or over a mountain.
- Materials and energy resources are in very short supply because of the local situation so be creative with your solution.





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Cryptographers (coding specialist) x2 - Specialist briefing sheet

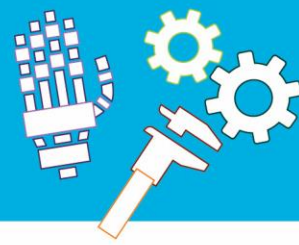
This role requires 2 people and is crucial in ensuring that important messages are sent to and received by the isolated town. You will be responsible for coding and decoding your team's messages.

Remember - you will be assessed on the accuracy, the speed and the creativity of your messaging.

Duties:

- Lead the team in devising a way of encoding messages that can be read in English.
- Determine how you will know that a message or word has started and finished.
- Develop a code that is simple, effective and repeatable.
- Determine how you will record messages at the receiving end.
- Consider how can errors in transmission be detected and corrected at the receiving end.
- Investigate codes that have already been developed such as Morse Code and Q codes. Can you speed these up?
- Think about messages that you may need to send to the isolated town of Beta. What quick codes could you assign to these?
- You could base your coding ideas on the frequency of letters in English words you might need. The most used letters have simple codes.
- Remember, you will be provided an unknown message to test your solution. Until then, you should be practicing sending as many messages as possible.
See the reverse page for practice messages.





Practice questions

Using your prototype how would you send the following?

- A, E, I, O, U, S, H, R, T, N, H, D
- Your school name

Now try the following key words

Food	Communicate	Solution	Helicopter	Tomorrow
Transport	Now	Engineer	Help	Done
Arriving	Coming	Rescue	OK	Lookout

You will need to think about the following when practicing sending your messages

- How will you know that a message, word, letter has started and finished?
- How would you join 2 words together?
- How can these words be abbreviated to transmit faster?

