

# ■ CONFOUNDING COMMUNICATIONS

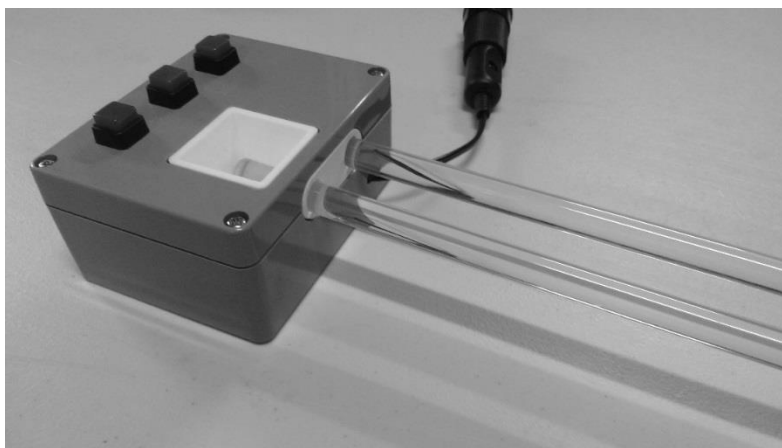
## STUDENT QUICK-START

### SCENARIO

You are an elite team of spies sent to acquire top secret information from enemy headquarters. Unfortunately, the enemy spy agency is monitoring your communications, so your team will need to send coded messages with this information back to headquarters.

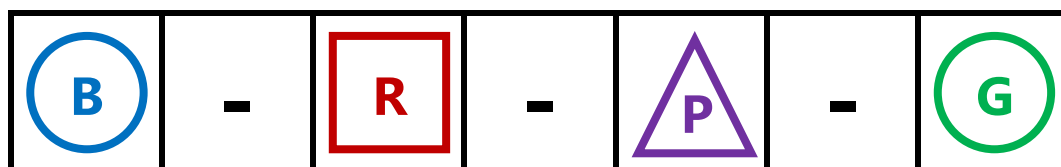
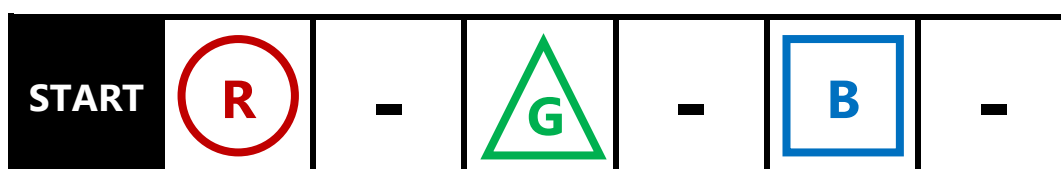
### AIM


The aim of this half-day activity is to design efficient codes to send messages along fibre optic rods using only pulses of coloured light.



### WHAT TO DO

Your team will be given a communications device which consists of two lightboxes connected by two fibre optic rods. Each box has three buttons to produce different colours of light. The following sequence is an example of a message that must be transmitted:



You will need to decide how to represent these symbols by transmitting different colours of light. Your team will **need** a code for the hyphen and the  block which is always in the top left corner.

The first scenario is composed of simple coloured shapes. The second scenario has an increased number of symbols to transmit. The third, fourth, fifth, and sixth scenarios involve the transmission of alphanumeric messages.

Begin by developing a code to transmit all the possible symbols that will be used in the scenario using the practice cards supplied. For testing, you will be asked to split your team into two: Senders who encode and send the message, and Receivers who receive and decode the message. Each sub-team sits at opposite ends of a table separated by a screen.

When the Activity Personnel give the signal to start, Senders need to transmit the message sequence using the lightboxes. The Receivers will decode the message and write the symbols in the correct order into the corresponding scenario on the provided score sheet.

## TIMETABLE

Half-Day Activity	
<b>Scenarios 1 &amp; 2</b> (45m)	Following a 5-minute briefing by your Activity Personnel, your team will have roughly 20 minutes to design a code and practice for scenarios 1 & 2. Afterwards, for testing, you will be given scenarios to transmit and decode. You are allowed 10 minutes per scenario.
<b>Scenarios 3, 4, 5 &amp; 6</b> (1h)	You will be given roughly 15 minutes to design a new code and practice for scenarios 3-6. Again, you are allowed 10 minutes per scenario. The remaining 5 minutes is left for pack up.

## RULES

Receivers and Senders are separated by a curtain. Once the test begins, neither team is permitted to talk, look around the curtain, or use mobile phones and smartwatches.

**Severe point penalties apply if these rules are broken.**

Upon completing a scenario test your team **must** immediately raise your hands and have your time recorded on your score sheet by the Activity Personnel.

## SCORING

Your team's score is based on the accuracy and speed in transmission of the message. Start from the "START" square in the top left-hand corner. Each symbol must be written in the exact location. If a symbol is missed the rest of the code may be completely wrong!

**⚠ At the end, ensure that your Score Sheet is with the Activity Personnel.**

## TIPS

- Your code should allow for accurate, quick and easy encoding and decoding. Do not make it too complex!
- Keep colour similarities in mind when you design the code i.e. can all teammates clearly see the difference between blue and purple?
- Some things to consider while designing the codes are: different colour combinations, length of light pulses, and time between light pulses.
- Receivers can also reply to messages received, so you may want to consider incorporating codes for acknowledging whether the Receivers understood the Senders message.
- Your team will have the opportunity to practice with the code your team develops before the official tests to make sure there is no confusion.