

How to send a message around the bend

(Ireland)

Background

Along a reflective surface (e.g. mirrors) the incident angle is equal to the reflected angle. Here students investigate converting words (text) into light (energy) then back to words. This exercise is to represent what happens inside a data terminal where the words we send on one device to another (e.g. Phone/computer) are scrambled into light packets and then unscrambled back into words.

You will need:

- ✓ Plane mirrors
- ✓ Retort stand
- ✓ Flash light
- ✓ Fibre optic cable (optional)
- ✓ Morse code chart

Follow these steps:

1. Both students look at the Morse code. One student practices sending a letter to the other student by flashing the torch through Morse. The other student is to unscramble the light packet and work out which letter they just sent.
2. One person in the group creates a sentence in Morse, writes it down on paper & sends it to the other through light packets - Morse code.
3. The receiver is to decode the message.

So what happened?

The message was sent to the other student. They are now modelling what happens inside a data terminal when we send messages to one another.

What next?

Repeat the exercise but this time both students are to go to the corner of the desk and crouch down so they can't see each other. They are to repeat the exercise using plain mirrors and a retort stand and see if they can communicate with each other and send a message around the bend. They can then repeat the exercise using a fibre optic cable.



International Morse Code

1. The length of a dot is one unit.
2. A dash is three units.
3. The space between parts of the same letter is one unit.
4. The space between letters is three units.
5. The space between words is seven units.

A	· —	U	·· —
B	·· — ·	V	·· — · ·
C	·· — · —	W	·· — —
D	·· — · ·	X	·· — · —
E	··	Y	·· — · — ·
F	·· · — ·	Z	·· — — ·
G	·· — · — ·		
H	·· · — · —		
I	·· ·		
J	·· — · — —		
K	·· — · — ·	1	· — — —
L	·· — · — · ·	2	·· — — —
M	·· — —	3	·· · — —
N	·· — · —	4	·· · — — ·
O	·· — — —	5	·· · — — · ·
P	·· — · — · —	6	·· · — — · —
Q	·· — · — —	7	·· · — — · · ·
R	·· — · — ·	8	·· · — — · — ·
S	·· · — ·	9	·· · — — · — · ·
T	·· —	0	·· — — — —

