HOMESCHOOL SCIENCE EXPERIMENT

MAKING A SIMPLE TELEGRAPH

• – – •• USING MORSE CODE – •• –

Name: _____

Date: _____

Age/Grade: _____

QUESTION: How can we send messages using electrical signals?

HYPOTHESIS: _____

_____

MATERIALS

- 1 x 1.5V battery (AA)
- 1 x SPST push button switch (momentary switch)
- 1 x LED (any color)
- 1 x 330Ω resistor
- 2–3 x Alligator clip jumper wires
- Cardboard or wood base (optional)
- Tape or hot glue (optional)

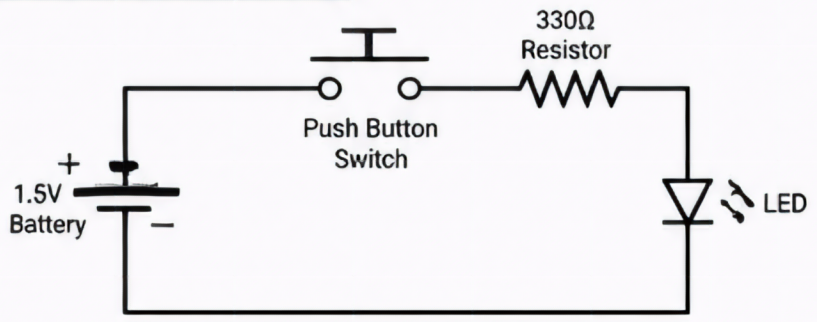
SAFETY

- Use only 1.5V batteries.
- Do not short the battery (connect + and – directly together).
- Ask an adult for help if needed.
- Keep small parts away from young children.

BACKGROUND

A telegraph sends messages using electrical signals.
Morse code uses short signals (dots) and long signals (dashes) to represent letters and numbers.
The receiver turns the signals back into text.

CIRCUIT DIAGRAM



Press the button to send a signal. The LED lights up.

PROCEDURE

1. Build the circuit as shown in the diagram.
2. Press the push button briefly to make a short signal (dot).
3. Press and hold the button for about 3 seconds to make a long signal (dash).
4. Use the Morse code chart to send letters.
5. Have a partner watch the LED and write down the message.
6. Switch roles and send a new message.

TIP: Practice your timing.
Dot = short press (~1 second)
Dash = long press (~3 seconds)
Space between parts of a letter = short pause (~1 second)
Space between letters = medium pause (~3 seconds)
Space between words = long pause (~7 seconds)

••• MORSE CODE CHART

LETTER	CODE
A	• –
B	– • • •
C	– • – •
D	– • •
E	•
F	• • – •
G	– – •
H	• • • •
I	• •
J	• – – –
K	– • –
L	• – • •
M	– –

LETTER	CODE
N	– •
O	– – –
P	• – – •
Q	– – • –
R	• – •
S	• • •
T	–
U	• • –
V	• • • –
W	• – –
X	– • • –
Y	– • – –
Z	– – • •

NUMBER	CODE
1	• – – – –
2	• • – – –
3	• • • – –
4	• • • • –
5	• • • • •
6	– • • • •
7	– – • • •
8	– – – • •
9	– – – – •
0	– – – – –

OBSERVATIONS & REFLECTION

1. What happened when you pressed the button? _____
2. How did dots and dashes help you send messages? _____
3. What did you learn about communication and signals? _____

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