

Quirky Cards

TECHNOLOGY

A simple electrical circuit has a power source (e.g., a battery) connected by wiring to an output (e.g., a light). A switch turns electrical current on or off.

Activity

Meri and Joe want to make and sell electronic greeting cards. Each card will have a circuit with LEDs. When the card is opened, it will light up. Meri and Joe list the components they need for each circuit. Then they go shopping!

Components List

- 4 LEDs
- Two button cell batteries
- 30 cm wire
- 1 leaf switch

A leaf switch consists of 2 strips of metal that make contact when pressed.



LED stands for light-emitting diode. An LED looks like a small light bulb.

Joe's dad gave Meri and Joe a box of 20 leaf switches. The electronics shop has specials on some of the other items that they need:

LEDs	
Single LED	\$0.50
3-pack	\$1.20
4-pack	\$1.80
Pack of 20	\$8.00

Button cell batteries	
Each	\$2.30
Twinpack	\$5.00
Pack of 3	\$7.50
Pack of 10	\$24.00

Copper wire	
30 cm pre-cut length	\$0.20
1 m length	\$0.50
6 m spool	\$2.40
12 m spool	\$3.60

1. Without including the cost of a leaf switch, what is the lowest amount that the electronic circuit materials for 1 card would cost?
2. Meri and Joe are keen to make their first batch of 20 cards.
 - a. How many LEDs, batteries, and metres of wire will they need?
 - b.
 - i. Some items are available in bigger packs (for example, packs of 10 batteries). What is the lowest number of packs or items that they could buy to make 20 cards?
 - ii. How much would they spend in total for these?
3. What is the best deal on offer for:
 - a. LEDs?
 - b. batteries?
 - c. wire?
4.
 - a. Using the specials, what is the least that Meri and Joe would pay for the circuits for their first 20 cards?
 - b. Do all of the special deals give value for money? Discuss with a classmate.
5. The cardboard that Meri and Joe use to make their cards costs \$1 per card. The envelopes cost 50 cents. Leaf switches cost \$1.50 each.
 - a. Should Meri and Joe include the cost of a leaf switch when working out how much to charge for a card? Why or why not?
 - b. What do you think they should charge for:
 - i. 1 card?
 - ii. a pack of 5 cards?

