**Shedding Light on Electricity Episode 2: Electric Circuits**      Name: _____

1.  There are four things required to make use of electricity: _____,
    _____, _____, and _____.

2.  Draw a simple diagram of a circuit where a battery is connected to a light globe.

3.  Describe why the light globe in the circuit shown on the right is not on.
    _____
    _____
    _____
    _____

4.  Draw a circuit diagram (using circuit symbols) of a circuit that has a switch
    which switches on one light globe.

LIGHT GLOBES IN SERIES

5.  (a) Draw a circuit diagram of a circuit where a battery powers two light globes that are connected in
    series.
    (b) Draw a second circuit diagram that includes a switch so that the two light globes connected in
    series can be turned on and off.

6.  If one light globe in the circuits above suddenly blows, why will the other one also go out?
    _____
    _____
    _____

7.  How does the amount of light emitted by the two globes in the circuit above compare to the amount
    of light that would be emitted if just one of the globes was connected to the battery?
    _____
    _____

LIGHT GLOBES IN PARALLEL

8.  (a) Draw a circuit diagram of a circuit where a battery powers two light globes that are connected in
    parallel.
    (b) Draw a second circuit diagram that includes a switch so that the two light globes connected in
    parallel can be turned on and off.

9.  If one light globe in the circuits in Q8 suddenly blows, how will the other one be affected? Explain.
    _____
    _____

10. How does the amount of light emitted by the two globes in the circuit in Q8 compare to the amount
    of light that would be emitted if just one of the globes was connected to the battery?
    _____
    _____

11. Draw a circuit diagram of a circuit where one switch switches on one light globe and the other switch
    switches on another light globe.




CRITICAL-THINKING EXERCISES

12. Describe the operation of the circuits on the right. (You can refer to each
    component as switch A, light globe C etc). Eg. When switch A is pressed…
    (The circuits are not necessarily well constructed!)
    (a) _____
    _____
    _____
    (b) _____
    _____
    _____
    _____
    (c) _____
    _____
    _____
    _____
    _____
    (d)_____
    _____
    _____

13. Which globes in the circuit on the right will remain lit in the following
    circumstances? (There may by none)
    (a) Globe B blows (or is removed). _____
    (b) Globe C blows. _____
    (c) Globes B and D blow. _____
    (d) Globes A and B blow. _____

14. Points A-E are points in the circuit where switches can be placed.
    Where would you place a single switch so that
    (a) all light globes can be turned on and off at the same time? _____
    (b) light globe 2 can be turned off and on while the others stay on? _____
    (c) light globes 2 and 3 can be turned on and off at the same time (while light
        globe 1 remains on)? _____

   15. If you had two switches, where would you place them so that light globe 1
       can be switched on and off with one switch and light globes 2 and 3 can be
       switched on and off with the other?
       _____