

## Switches

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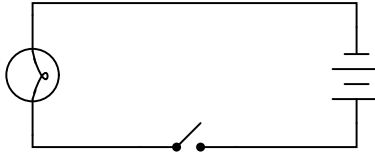
Resources and methods for learning about these subjects (list a few here, in preparation for your research):

## Questions

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### Question 1

What is the purpose of the *switch* shown in this schematic diagram?



[file 00013](#)

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### Question 2

How is an electrical switch constructed? What goes on inside the switch that actually "makes" or "breaks" a path for electric current?

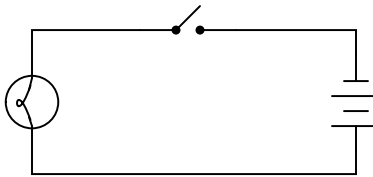
[file 00154](#)

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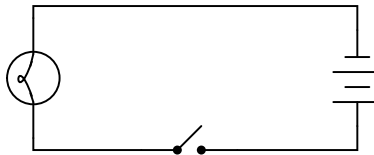
### Question 3

What difference will it make if the switch is located in either of these two alternate locations in the circuit?

Switch on negative side of circuit



Switch on positive side of circuit



[file 00014](#)

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### Question 4

Does this switch (in the closed state) have a low resistance or a high resistance between its terminals?

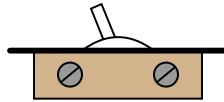


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Question 5

How might you use a meter (or a conductivity/continuity tester) to determine whether this electrical switch is in the *open* or *closed* state?

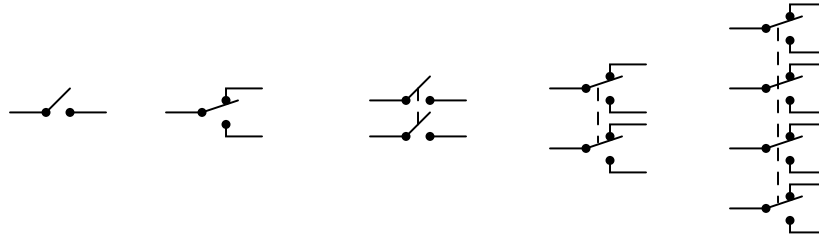


file 00065

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Question 6

Identify the following types of switches, according to the number of "poles" and "throws" each switch has:

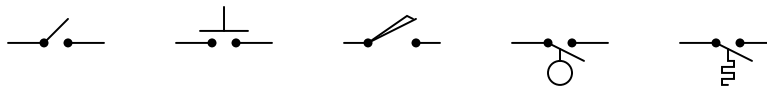


file 00046

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Question 7

Identify the following types of switches, according to their style of actuation (how each switch is physically operated):

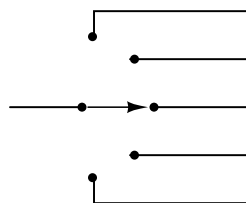


file 00047

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Question 8

What type of switch is represented by this schematic symbol?

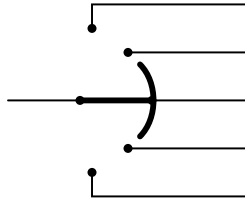


file 00049

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Question 9

What type of switch is represented by this schematic symbol?

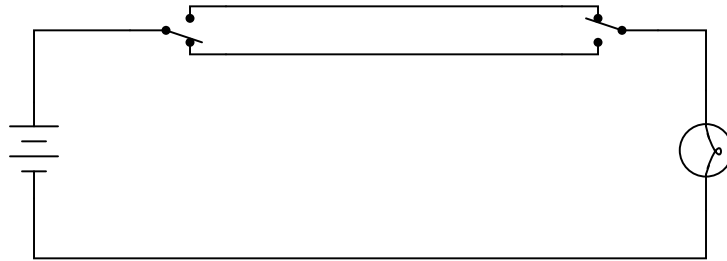


file 00153

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Question 10

What positions do the switches have to be in for the light bulb to receive power?

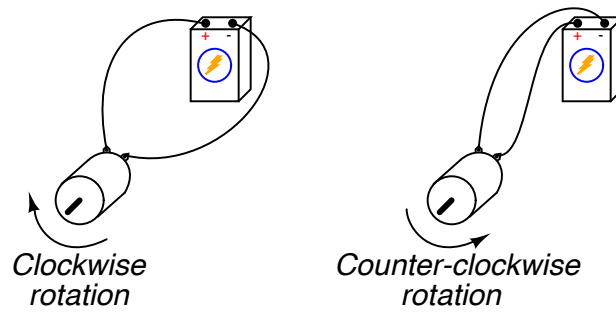


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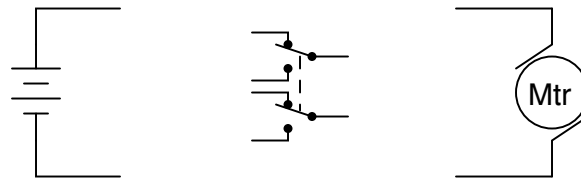
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### Question 11

Electric motors of the *permanent magnet* design are very simple to reverse: just switch the polarity of the DC power to the motor, and it will spin the other direction:



Complete this schematic diagram, showing how a DPDT switch may be placed in this circuit to reverse the motor's direction of rotation without the need to disconnect and re-connect wires:

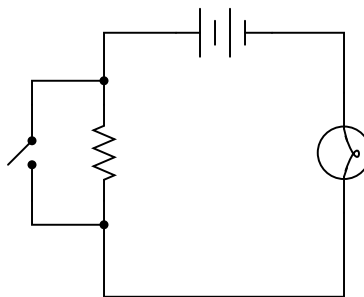


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### Question 12

What will the light bulb do when the switch is open, and when the switch is closed?

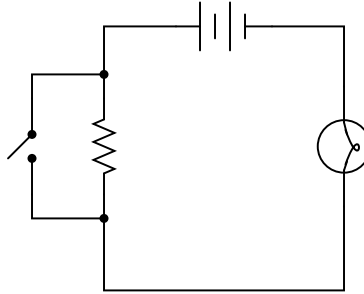


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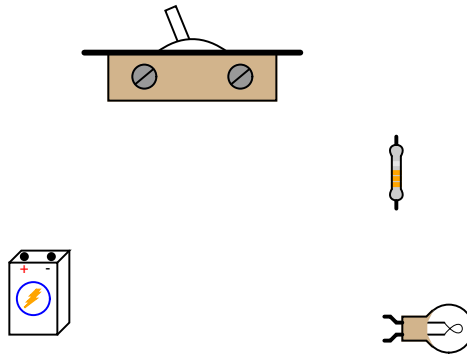
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Question 13

Examine this schematic diagram:



Now, without moving the following components, show how they may be connected together with wires to form the same circuit depicted in the schematic diagram above:



file 00067

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Question 14

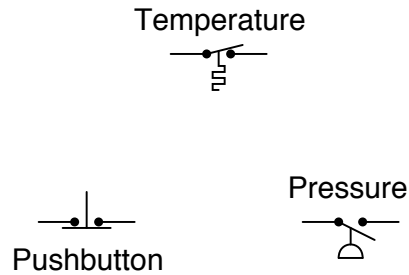
What does the *normal* status of an electrical switch refer to? Specifically, what is the difference between a *normally-open* switch and a *normally-closed* switch?

file 02363

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### Question 15

Identify the "normal" status of each switch, whether it is *normally-open* (N.O.) or *normally-closed* (N.C.):



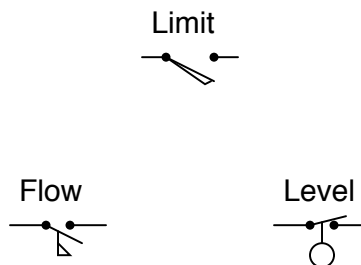
Based on the symbols shown, describe what physical condition results in the switch contacts being open, and what condition results in the switch contacts being closed, for each switch.

[file 02364](#)

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### Question 16

Identify the "normal" status of each switch, whether it is *normally-open* (N.O.) or *normally-closed* (N.C.):



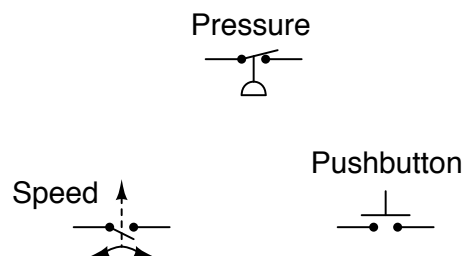
Based on the symbols shown, describe what physical condition results in the switch contacts being open, and what condition results in the switch contacts being closed, for each switch.

[file 02365](#)

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### Question 17

Identify the "normal" status of each switch, whether it is *normally-open* (N.O.) or *normally-closed* (N.C.):



Based on the symbols shown, describe what physical condition results in the switch contacts being open, and what condition results in the switch contacts being closed, for each switch.

[file 02366](#)