

# LIGHT / DARK SENSOR

V.Ryan © 2000 - 2008

On behalf of The World Association of Technology Teachers

## W.A.T.T.



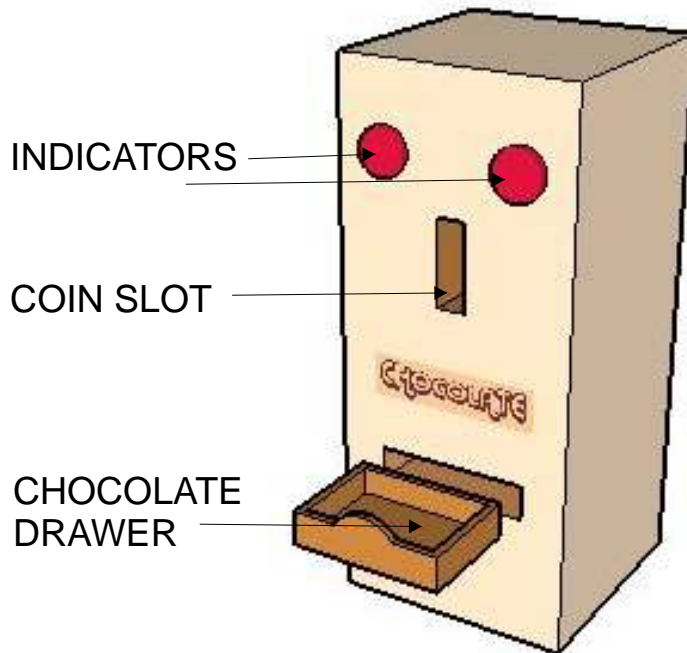
World Association of Technology Teachers

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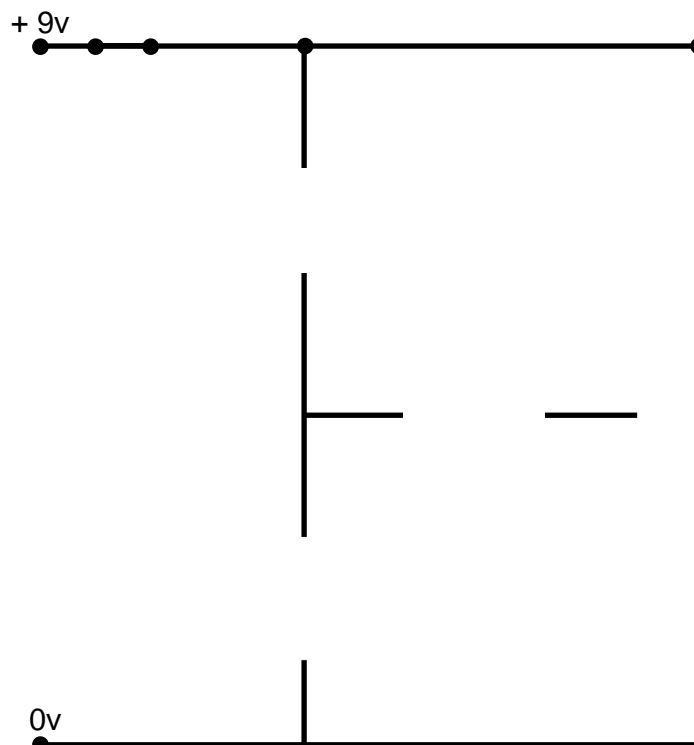
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# SENSOR QUESTION

Below is a typical chocolate bar dispenser. It includes a light sensor that detects when the dispenser needs filling.



1. The circuit diagram below is incomplete. Add all the missing components and explain how the circuit works. Include the following components: 1 LDR, 2 fixed resistors, 1 npn transistor and a relay that is energised when light is sensed.



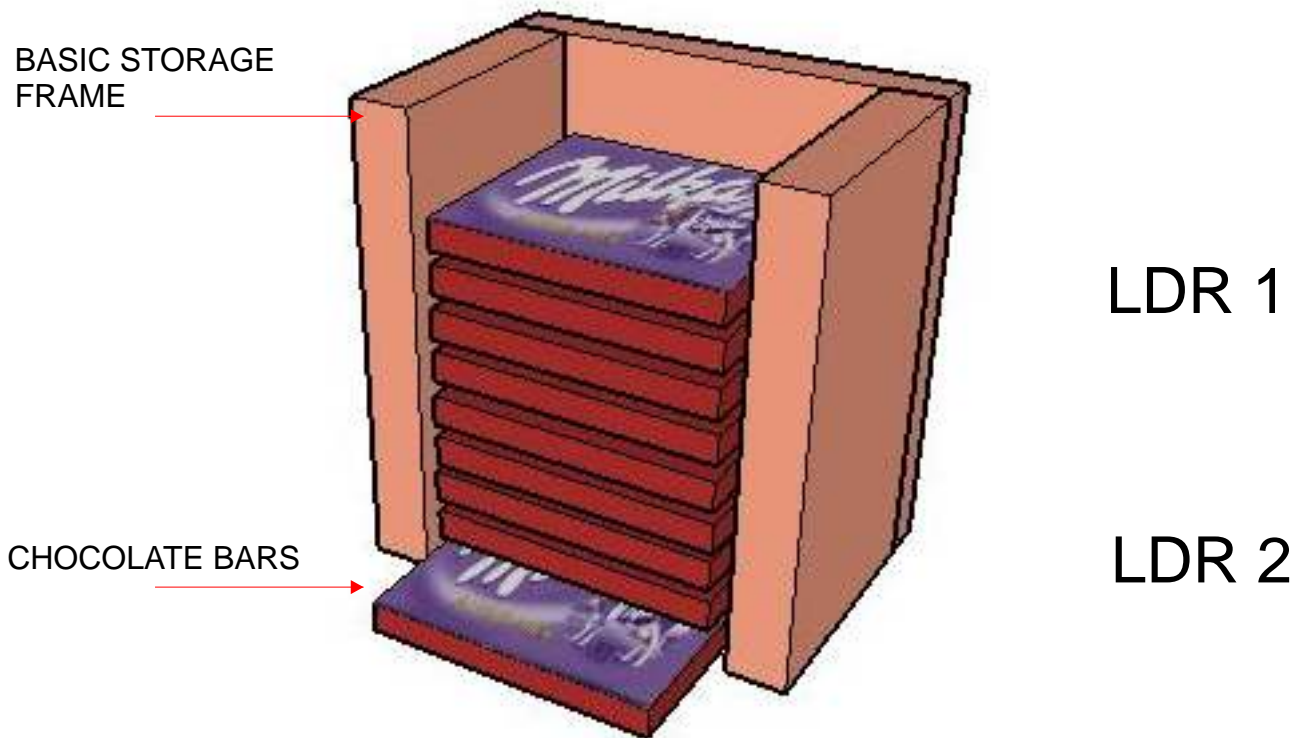
LIGHT SENSOR CIRCUIT

2. The circuit/dispenser designer has recently improved the design of the dispenser and wants to use two LDRs.

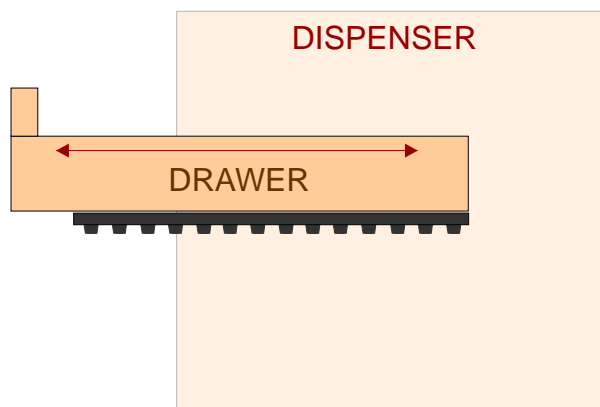
LDR 1 = LOW This will sense when there are five products left in the dispenser

LDR 2 = EMPTY This will sense when the dispenser is empty.

Indicate on the diagram below where LDR 1 and LDR 2 will be located.



3. A mechanism has been added to the drawer. This moves the drawer forwards and backwards to allow chocolate to be removed from the drawer. Add a suitable mechanism to the incomplete drawing below. Label your diagram



4. Add notes explaining how the mechanism works.

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5. When there are only five chocolate bars left in the dispenser the low warning light should light. This allows staff in the shop to fill up the machine. When the dispenser is empty the empty warning light is turned on and an alarm sounds.

Complete the flowchart below with appropriate missing statements.

