LDR characteristics

Core BUILD THE BASICS

C1 **State** the full name of an LDR. **[1]**

C2 **State** whether an LDR is an input, process or output device. **[1]**

C3 Use this table. **State** the resistance at 200 lux. **[1]**

Light (lux)	10	20	50	100	200	500
R (kΩ)	100	62	32	20	12	6.5

C4 **Describe** how the resistance of an LDR changes as it gets darker. **[1]**

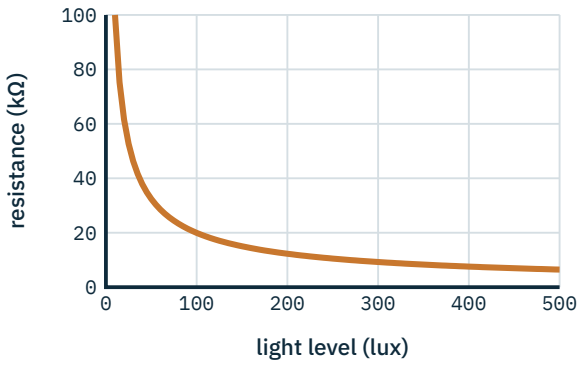
C5 Use the table. **State** the LDR resistance at 20 lux. **[1]**

C6 **State** whether V_{out} rises or falls as it gets darker (LDR at the bottom). **[1]**

C7 Use the table. **State** the light level when the LDR is 6.5 kΩ. **[1]**

Stretch GO FURTHER

S1 Use this graph. **State** the light level when the resistance is 20 kΩ. **[1]**



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S2 At 200 lux the LDR is 12 kΩ. It is the bottom resistor with R_1 = 10 kΩ and V_s = 5.0 V. **Calculate** V_{out}. **[3]**

S3 The LDR is moved to the top of the divider. **Explain** what happens to V_{out} as it gets darker. **[2]**

S4 V_s = 6 V, R_1 = 10 kΩ, LDR (bottom) = 62 kΩ. **Calculate** V_{out}. **[3]**

S5 Calculate V_{out} for the same circuit at 200 lux (12 kΩ). **[2]**

S6 **Describe** how V_{out} changes from day to night in S4–S5. **[1]**

Exam Ready QUALIFICATIONS SCOTLAND STYLE

E1 A street light uses an LDR at the bottom of a divider, a transistor and a lamp. **Describe** the operation of the circuit as it gets dark. **[4]**

E2 At 500 lux the LDR is 6.5 kΩ. It is the bottom resistor with R_1 = 10 kΩ and V_s = 6.0 V. **Calculate** V_{out}. **[3]**

LDR characteristics

E3 **Explain** why an LDR is a suitable input for a night light. **[2]**

E4 A garden light (Kirkton Growers, fictional) has a 9 V supply, a 47 kΩ resistor (top) and the LDR (bottom). At 50 lux the LDR is 32 kΩ. **Calculate** V_{out}. **[3]**

E5 **Explain** why the LDR is the bottom resistor in a night light. **[2]**

Total: 33 marks. Use the Data Booklet. Show your working and give units.