Ämnesprov, läsår 2013/2014



Elevens namn och klass/grupp

Prov som återanvänds av Skolverket omfattas av sekretess enligt **17 kap. 4 § offentlighets- och sekretesslagen.** Detta prov återanvänds av Skolverket t.o.m. **2020-06-30.**



10. A municipality wants their inhabitants to exchange the bulbs

EU has made a decision implying that the inhabitants in the EU countries have to stop using bulbs. A Swedish municipal government wants to help their inhabitants with their change to stop using the bulbs. The municipal government wants to offer the inhabitants to exchange a bulb towards a lamp approved by EU.



You live in the municipality where the government wants to exchange the bulbs. The students at your school have got a task to write a proposal on which type of lamp that will replace the bulbs.

Your task is to write a proposal to the government where you recommend which type of lamp, LED, compact fluorescent lamp or halogen lamp that will be distributed to the inhabitants.



Fact sheet		Lamp type		
		LED	Compact fluorescent lamp	Halogen lamp
Aspects	Energy	Uses 10 % of the energy amount a bulb does. See figure. An average households using of household electricity.	Uses 20 % of the energy amount a bulb does. See figure. An average households using of household electricity.	Uses 70 % of the energy amount a bulb does. See figure. An average households using of household electricity.
	General	Made of for instance, glass and metals. 25 times durability compared to a bulb.	Made of for instance, glass and metals such as the heavy metal mercury. 10 times durability compared to a bulb.	Made of for instance, glass, metals and halogen gas. 2-3 times durability compared to a bulb.
	Lamp function	 85 Ra 100 lm/watt Light up at once. Most LEDs can be dimmed. Durability decreases with high temperatures. Focuses the light to a smaller area. The luminous power declines with time. Some models emit UV light. 	 82 Ra 50 lm/watt Lights up with delay. Some compact fluorescent lamps can be dimmed, however the colour rendering decreases. The luminous power might decline with 80 % at – 20° C. Emits light in all directions. 	 100 Ra 15 lm/watt Lights up at once. All halogen lamps can be dimmed. Light from halogen lamps reminds of natural daylight. Halogen lamps get hot. Emits light in all directions.

Im (lumen): Is the unit of luminous power, that is, the total amount of visible light emitted by a lamp.

Ra (rendering average): Is the unit of how well a light source reproduces colours. The highest value for a lamp is Ra 100. Today, all lamps sold to households must have at least Ra 80.

Figure. An average households using of household electricity.









Institutionen för tillämpad utbildningsvetenskap