Price Comparison Activity

Moving forward lets account for the cost of purchasing efficient light bulbs and their **payback**, also known as a **return on investment**. Return on investment in this case is when the energy savings found on your power bill equal the amount you paid for your bulbs. Let's do a **price comparison** for incandescent bulbs, CFLs and LEDs.

For this exercise we will assume that you have 12 sockets in your home that need to be filled with light bulbs to last 10,000 hours.

You can purchase a 24 pack of 60W incandescent bulbs for $11.87 (or $0.50 a bulb).

$$\$0.50\ x\ 12\ =\ \$\_\_\_\_\_(cost)$$

However, incandescent bulbs only last 1,000 hours on average. Yet, we need our bulbs to last 10,000 hours which means the bulbs will need to be replaced.

$$10{,}000\ h/\ 1{,}000\ h\ =\ \_\_\_\_\_\ (replacement\ rate)$$

$$\$\_\_\_\_\_(cost)\ x\ \_\_\_\_\_(replacement\ rate)\ =\ \$\_\_\_\_\_(purchase\ cost)$$

You can purchase an 8 pack of 23W CFLs for $14.98 (or $1.87 a bulb).

$$\$1.87\ x\ 12\ =\ \$\_\_\_\_\_(cost)$$

However, CFLs last 4,000 hours on average, more than incandescent bulbs but again, we will need to replace the bulbs to achieve 10,000-hours.

$$10{,}000\ h/\ 4{,}000\ h\ =\ \_\_\_\_\_(replacement\ rate)$$

$$\$\_\_\_\_\_(cost)\ x\ \_\_\_\_\_(replacement\ rate)\ =\ \$\_\_\_\_\_(purchase\ cost)$$

You can also purchase a single 8.5W LED for $7.50.

$$\$7.50\ x\ 12\ =\ \$\_\_\_\_\_(cost)$$

However, LEDs have an average lifespan of 25,000 hours, even more than the 10,000hrs we need, so they will last even longer than what we need.

$$10{,}000\ h/25{,}000\ h\ =\ \_\_\_\_\_(replacement\ rate)$$

$$\$\_\_\_\_\_(cost)\ x\ \_\_\_\_\_(replacement\ rate)\ =\ \$\_\_\_\_\_(purchase\ cost)$$

This means that to fill 12 sockets in your home for 10,000 hours you would spend:

Bulb Type	**Purchase cost ($)**
Incandescent (60W)	
CFL (23W)	
LED (8.5W)	

Now lets add in energy consumption!

We need to run 12 bulbs for 10,000 hours making our total consumption 120,000 hours.

How much energy would we need if those 12 bulbs were incandescent and used **60W**? How much would it cost?

$$60W\ x\_\_\_\_\_h\ (total\ consumption\ hours) = \_\_\_\_\_Wh$$

$$\_\_\_\_\_Wh\ /\ 1000 = \_\_\_\_\_kWh$$

$$\_\_\_\_\_\ kWh\ (from\ above)\ x\ \$0.148 = \$\_\_\_\_\_\ (consumption\ cost)$$

How much energy would we need if those 12 bulbs were CFLS and used **23W**? How much would it cost?

$$23W\ x\_\_\_\_\_h\ (total\ consumption\ hours) = \_\_\_\_\_Wh$$

$$\_\_\_\_\_Wh\ /\ 1000 = \_\_\_\_\_kWh$$

$$\_\_\_\_\_\ kWh\ (from\ above)\ x\ \$0.148 = \$\_\_\_\_\_\ (consumption\ cost)$$

How much energy would we need if those 12 bulbs were LED and used **8.5W**? How much would it cost?

$$8.5W\ x\_\_\_\_\_h\ (total\ consumption\ hours) = \_\_\_\_\_Wh$$

$$\_\_\_\_\_Wh\ /\ 1000 = \_\_\_\_\_kWh$$

$$\_\_\_\_\_\ kWh\ (from\ above)\ x\ \$0.148 = \$\_\_\_\_\_\ (consumption\ cost)$$

Now, lets total it all up!

	Incandescent (60W)	**CFL (23W)**	**LED (8.5W)**
Purchase Cost (for 10,000 hours of use)			
Consumption Cost			
TOTAL			