

Physics - Key Stage 3 - Energy

Lesson 11: Energy in the home

Mrs Evans



Independent practice: complete the table

	s	min	h
a	7200	120	2
b	___ ? ___	90	___ ? ___
c	36000	___ ? ___	___ ? ___
d	___ ? ___	___ ? ___	6
e	___ ? ___	450	___ ? ___
f	144000	___ ? ___	___ ? ___



Example	A 5 W lamp transfers 45 kJ of energy How long is the lamp on for?
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Independent practice: calculate time for...

Give your answers in s; **for a challenge min and h too!**

1. ...a 10 W bulb that transfers 200 J of energy
2. ...a 15 W phone that transfers 7500 J of energy
3. ...a 6 W fan that transfers 48000 J of energy
4. ...a 9 W oven that transfers 15 kJ of energy
5. ...a 0.3kW toaster that transfers 10 J of energy

Scaffolds for these questions, on the following pages

Values

Equation

Substitute

Rearrange

Answer

Units



Question 1	Calculate time for a 10 W bulb that transfers 200 J of energy
V alues E quation S ubstitute R earrange A nswer U nits	



Question 2	Calculate time for a 15 W phone that transfers 7500 J of energy
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 3	Calculate time for a 6 W fan that transfers 48000 J of energy
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 4	Calculate time for a 9 W oven that transfers 15 kJ of energy
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 5	Calculate time for a 0.3kW toaster that transfers 10 J of energy
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Example	A 12 W lamp is turned on for 1.5 h . How much energy is transferred by the lamp?
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Independent practice: calculate energy for...

Give your answers in J; **for a challenge kJ too!**

1. ...a 10 W bulb that is on for 10s
2. ...a 12 W phone that is on for 40s
3. ...a 5 W fan that is on for 4 mins
4. ...a 8 W oven that is on for 1 hour
5. ...a 0.2kW toaster that is on for 3 mins

Scaffolds for these questions, on the following pages

Values

Equation

Substitute

Rearrange

Answer

Units



Question 1	Calculate energy for a 10 W bulb that is on for 10s
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 2	Calculate energy for a 12 W phone that is on for 40s
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 3	Calculate energy for a 5 W fan that is on for 4 mins
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 4	Calculate energy for a 8 W oven that is on for 1 hour
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 5	Calculate energy for a 0.2kW toaster that is on for 3 mins
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Example	A 0.6 kW light is turned on for 18 h . Price per unit is 7 p, how much will this cost?
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Example	A 0.6 kW light is turned on for 18 h . Price per unit is 7 p , how much will this cost?
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Independent practice: calculate cost for...

Give your answers to the nearest whole p; **for a challenge £ too!**

1. ...a 10 kW bulb that is on for 10 h, price per unit is 12 p

2. ...a 8 kW phone that is on for 6 h, price per unit is 20 p

3. ...a 500 W fan that is on for 90 mins, price per unit is 15 p

Scaffolds for these questions, on the following pages

Values

Equation

Substitute

Rearrange

Answer

Units



Question 1	Calculate cost for a 10 kW bulb that is on for 10 h, price per unit is 12 p
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 2	Calculate cost for a 8 kW phone that is on for 6 h, price per unit is 20 p
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	



Question 3	Calculate cost for a 500 W fan that is on for 90 mins, price per unit is 15 p
V alues	
E quation	
S ubstitute	
R earrange	
A nswer	
U nits	

