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?
Values **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 0.04 kW 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
Values **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
Values **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
Values **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
Values **E**quation **S**ubstitute **R**earrange **A**nswer **U**nits	

Question 5	Calculate time for a 0.04 kW toaster that transfers 10 J of energy
Values **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?
Values **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
Values **E**quation **S**ubstitute **R**earrange **A**nswer **U**nits	

Question 2	Calculate energy for a 12 W phone that is on for 40s
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Question 3	Calculate energy for a 5 W fan that is on for 4 mins
Values **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
Values **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
Values **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?
Values **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?
Values **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
Values **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
Values **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
Values **E**quation **S**ubstitute **R**earrange **A**nswer **U**nits	