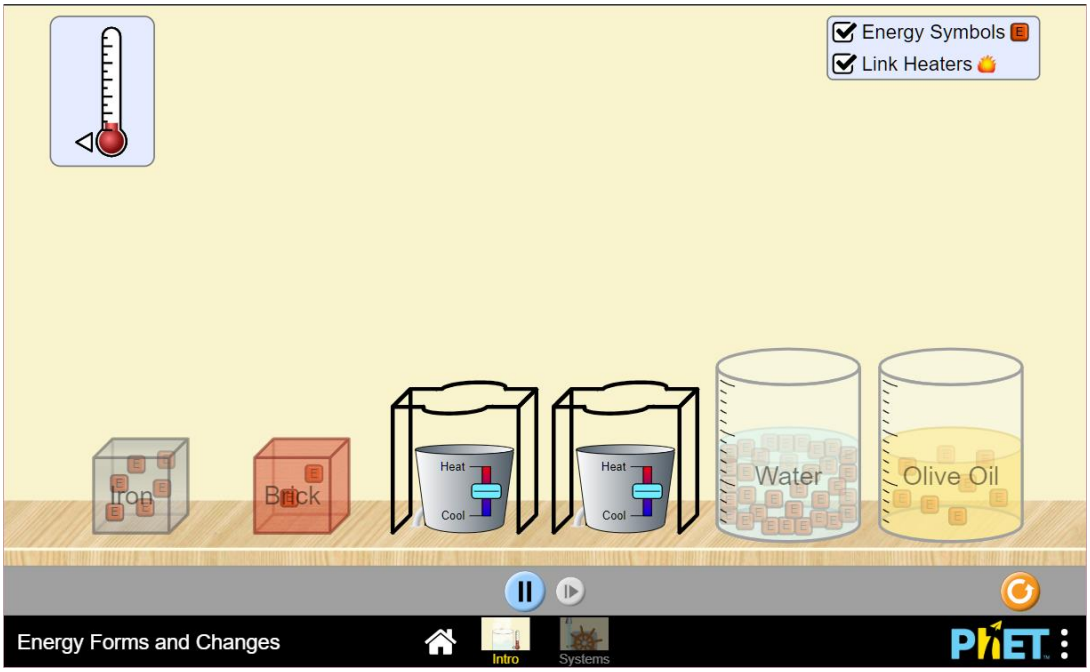
PhET simulation worksheet

Name: _____
Class: _____ ( )
Date: _____

Unit 5 Topic: Energy conversions (p. 97)

Enter PhET simulation **Energy forms and changes**.

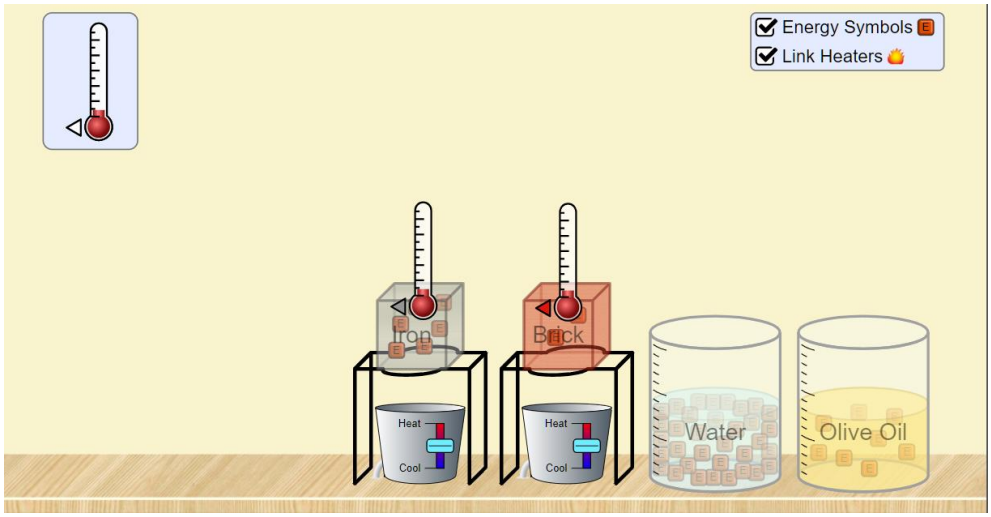
https://digital.oupchina.com.hk/junsci/video/jsci_phet_u5energy_e.html



Enter the 'Intro' mode. Tick the box 'Energy Symbols' on the top right corner.

By ticking the box 'Link the heaters', you may compare the energy transfer in different materials.

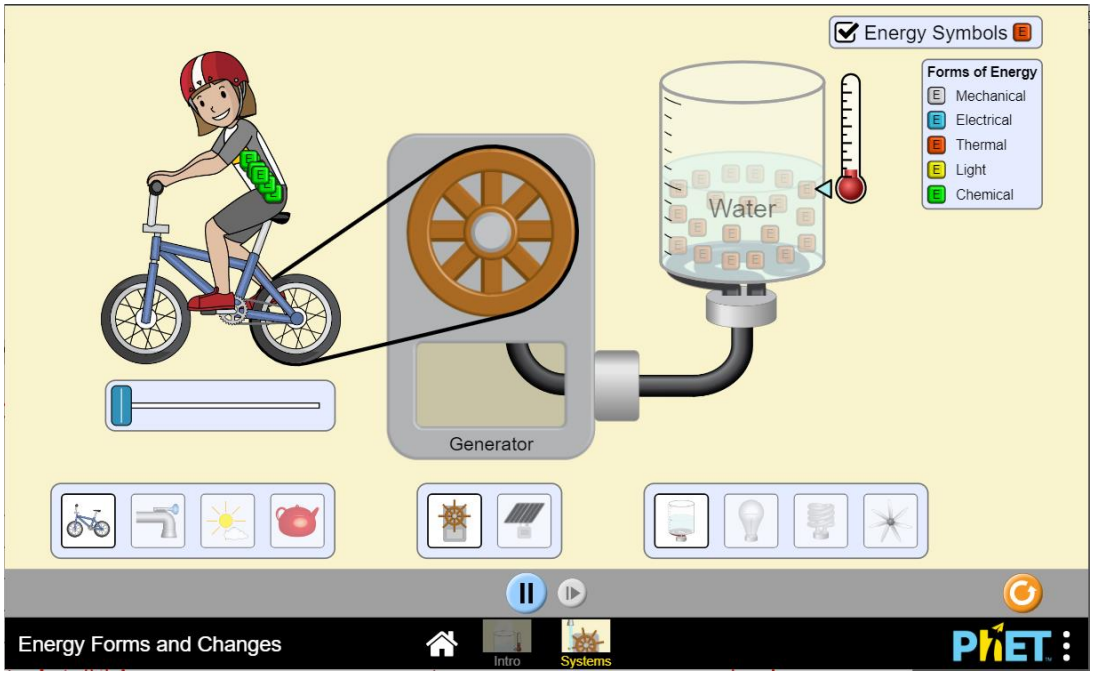
1 Put the iron block and the brick on the stands. Drag a thermometer to each of the blocks. Push the light blue button up or down to heat or cool the blocks.



a During heating, energy is transferred from the **(i)** _____ (blocks / flame) to the **(ii)** _____ (blocks / flame).

b During cooling, energy is transferred from the **(i)** _____ (blocks / flame) to the **(ii)** _____ (blocks / flame).

Enter the 'Systems' mode. The simulation shows the energy input (e.g. from bicycle riding), electricity generation by the generator or solar panel, and the energy output (e.g. heater that heats up the water).



2 Set different forms energy input and energy output. Tick the box 'Energy Symbols' on the top right corner to show the forms of energy output.
Write down the forms of energy that are involved in the energy conversion in the following cases.

Case A

Energy input	**Electricity generation by**	**Energy output**
Bicycle riding	Generator	Water heater

Energy conversions:

(a) _____ energy of the food we feed the boy → **(b)** _____ energy of the bicycle →

(c) _____ energy generated by the generator → **(d)** _____ energy of the water heater

Case B

Energy input	**Electricity generation by**	**Energy output**
Sunlight	Solar panel	Incandescent light bulb

Energy conversions:

(a) _____ energy of the Sun → **(b)** _____ energy generated by solar panel →

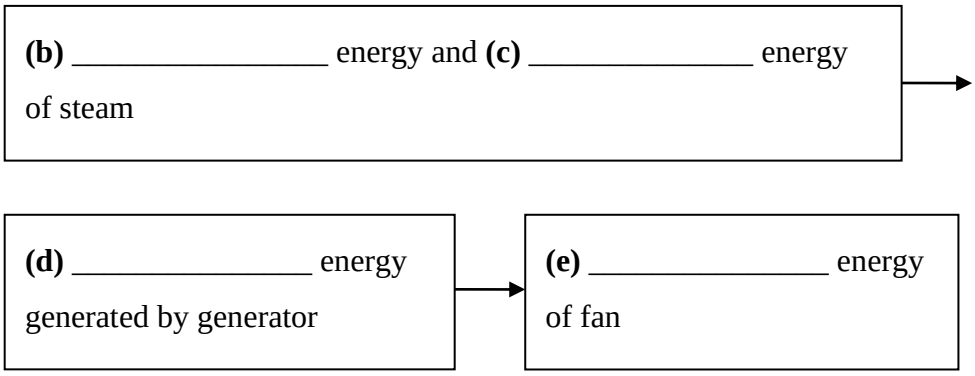
(c) _____ energy and **(d)** _____ energy of incandescent light bulb

Change the energy output to a fluorescent light bulb. The amount of thermal energy loss becomes **(e)** _____ (more / less).

Case C

Energy input	**Electricity generation by**	**Energy output**
Boiling water	**(a)** _____	Fan

Energy conversions:



END

Answers

1	**a**	**i**	flame	1 m
		ii	blocks	1 m
	b	**i**	blocks	1 m
		ii	flame	1 m
2	**Case A**			
	a		Chemical	1 m
	b		Kinetic	1 m
	c		Electrical	1 m
	d		Thermal	1 m
	Case B			
	a		Light	1 m
	b		Electrical	1 m
	c		Light / Thermal	1 m
	d		thermal / light	1 m
	e		less	1 m
	Case C			
	a		Generator	1 m
	b		Kinetic / thermal	1 m
	c		thermal / kinetic	1 m
	d		Electrical	1 m
	e		Kinetic	1 m

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https://digital.oupchina.com.hk/junsci/forms/phet0501e.html

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