

80 State questions for AQA GCSE

Physics Energy

1. State the equation that links kinetic energy, mass and speed.
2. State the unit used for kinetic energy.
3. State the unit used for mass in the kinetic energy equation.
4. State the unit used for speed in the kinetic energy equation.
5. State what happens to the kinetic energy of an object when its speed increases.
6. State the equation that links gravitational potential energy, mass, gravitational field strength and height.
7. State the unit used for gravitational potential energy.
8. State the unit used for gravitational field strength.
9. State what happens to the gravitational potential energy of an object when it is lifted higher.
10. State what happens to the gravitational potential energy store of an object as it falls.
11. State what happens to the kinetic energy store of an object as it falls.
12. State the energy store of a moving car.
13. State the energy store of a book on a high shelf.
14. State the energy store of a stretched elastic band.
15. State the equation that links elastic potential energy, spring constant and extension.
16. State the unit used for spring constant.
17. State what type of energy store increases when a spring is stretched.
18. State the equation that links change in thermal energy, mass, specific heat capacity and temperature change.
19. State what is meant by specific heat capacity.
20. State the unit for specific heat capacity.
21. State what happens to the thermal energy store of water when it is heated.
22. State the independent variable in the specific heat capacity required practical from the organiser.

23. State the dependent variable in the specific heat capacity required practical from the organiser.
24. State one control variable in the specific heat capacity required practical.
25. State why insulation is wrapped around the block in the specific heat capacity practical.
26. State the piece of equipment used to measure the temperature of the block.
27. State the piece of equipment used to measure current in the circuit.
28. State the piece of equipment used to measure potential difference in the circuit.
29. State one way energy can be transferred.
30. State the three energy transfer pathways listed in the organiser.
31. State what is meant by energy being transferred mechanically.
32. State what is meant by energy being transferred electrically.
33. State what is meant by energy being transferred by heating.
34. State the law of conservation of energy.
35. State what usually happens to wasted energy.
36. State what power means in physics.
37. State the equation that links power, energy transferred and time.
38. State the equation that links power, work done and time.
39. State the unit used for power.
40. State what lubrication reduces.
41. State one example of a lubricant.
42. State why reducing friction can make an energy transfer more useful.
43. State what conduction is.
44. State what convection is.
45. State why hot water rises in a convection current.
46. State why cold water sinks in a convection current.
47. State one way heat loss can be reduced in a house.
48. State which part of the house loses the most heat in the organiser's diagram.
49. State one method of reducing heat loss through the roof.
50. State one method of reducing heat loss through windows.

51. State what efficiency tells us about an energy transfer.
52. State the equation for efficiency using energy.
53. State the equation for efficiency using power.
54. State why no device is 100% efficient.
55. State what is meant by a renewable energy resource.
56. State what is meant by a non-renewable energy resource.
57. State one example of a fossil fuel.
58. State one example of a renewable energy resource.
59. State one advantage of solar power.
60. State one disadvantage of solar power.
61. State one advantage of wind power.
62. State one disadvantage of wind power.
63. State one advantage of hydroelectric power.
64. State one disadvantage of hydroelectric power.
65. State one advantage of tidal power.
66. State one disadvantage of tidal power.
67. State one advantage of geothermal energy.
68. State one disadvantage of geothermal energy.
69. State one advantage of biofuels.
70. State one disadvantage of biofuels.
71. State one advantage of fossil fuels.
72. State one disadvantage of fossil fuels.
73. State one gas released when fossil fuels are burned that contributes to global warming.
74. State one gas released when fossil fuels are burned that can cause acid rain.
75. State one reason why the UK is increasing its use of renewable energy resources.
76. State one reason why some people object to renewable power plants being built near them.
77. State one reason why electric and hybrid cars are becoming more common.
78. State one reason why changing from fossil fuels to renewable energy resources can be expensive.
79. State one energy resource that is reliable because it does not depend on the weather.

80. State one renewable energy resource that is unreliable because it depends on the weather.

Answers

1. Kinetic energy = $\frac{1}{2} \times \text{mass} \times \text{speed}^2$.
2. Joules, J.
3. Kilograms, kg.
4. Metres per second, m/s.
5. The kinetic energy increases.
6. Gravitational potential energy = mass $\times$ gravitational field strength $\times$ height.
7. Joules, J.
8. Newtons per kilogram, N/kg.
9. The gravitational potential energy increases.
10. It decreases.
11. It increases.
12. Kinetic energy store.
13. Gravitational potential energy store.
14. Elastic potential energy store.
15. Elastic potential energy = $\frac{1}{2} \times \text{spring constant} \times \text{extension}^2$.
16. Newtons per metre, N/m.
17. Elastic potential energy store.
18. Change in thermal energy = mass $\times$ specific heat capacity $\times$ temperature change.
19. Specific heat capacity is the energy needed to raise the temperature of 1 kg of a material by 1 °C.
20. J/kg °C.
21. Its thermal energy store increases.
22. The material.
23. The specific heat capacity.
24. Insulating layer, initial temperature or time taken.
25. To reduce energy transfer to the surroundings.
26. A thermometer.
27. An ammeter.
28. A voltmeter.
29. Mechanically, electrically or by heating.

30. Mechanically, electrically and by heating.
31. Energy is transferred mechanically when work is done.
32. Energy is transferred electrically when moving charge does work.
33. Energy is transferred by heating from a hotter object to a colder object.
34. Energy cannot be created or destroyed, only transferred from one store to another.
35. It is transferred to the surroundings, usually by heating.
36. Power is the rate of energy transfer or the rate of doing work.
37. $\text{Power} = \text{energy transferred} \div \text{time}$.
38. $\text{Power} = \text{work done} \div \text{time}$.
39. Watts, W.
40. Friction.
41. Oil.
42. Less energy is wasted heating the surroundings.
43. Conduction is energy transfer through a material by vibrating particles colliding.
44. Convection is energy transfer in a liquid or gas due to warmer, less dense fluid rising.
45. Hot water is less dense than cold water.
46. Cold water is denser than hot water.
47. Loft insulation, cavity wall insulation, double glazing or draught proofing.
48. The walls.
49. Loft insulation.
50. Double glazing.
51. Efficiency tells us how much of the input energy is transferred usefully.
52. $\text{Efficiency} = \text{useful output energy transfer} \div \text{total input energy transfer}$.
53. $\text{Efficiency} = \text{useful power output} \div \text{total power input}$.
54. Some energy is always wasted, usually to the surroundings.
55. A renewable energy resource is one that can be replaced as it is used.
56. A non-renewable energy resource will run out because it is used faster than it is replaced.

57. Coal, oil or gas.
58. Solar, wind, hydroelectric, tidal, wave, geothermal or biofuel.
59. Solar power is renewable and does not produce pollution while generating electricity.
60. Solar power only works during the day and depends on sunlight.
61. Wind power is renewable and does not produce pollution while generating electricity.
62. Wind power is unreliable because it depends on the wind.
63. Hydroelectric power is renewable and can increase supply when needed.
64. Hydroelectric dams can damage habitats.
65. Tidal power is renewable and reliable.
66. Tidal barrages can damage habitats and kill fish in turbines.
67. Geothermal energy is renewable and reliable.
68. Geothermal energy is only available in certain places.
69. Biofuels are renewable and can be reliable.
70. Growing biofuels can use land that could be used for food or natural habitats.
71. Fossil fuels are reliable and can meet current demand.
72. Fossil fuels are running out and release polluting gases.
73. Carbon dioxide, CO_2 .
74. Sulfur dioxide, SO_2 .
75. Fossil fuels are running out and renewable resources cause less pollution.
76. They may not want large power plants near their homes or higher energy bills.
77. They reduce the use of petrol and diesel.
78. Building renewable power stations and changing technology costs money.
79. Geothermal energy or tidal power.
80. Solar power or wind power.