1.7 Energy, work and power

01. 0625_m22_qp_22 Q: 11

A child pushes a toy car along a horizontal surface and then releases it.

As the car slows down, what is the main energy transfer?

A from chemical to thermal

B from chemical to kinetic

C from kinetic to gravitational (potential)

D from kinetic to thermal

---

02. 0625_m22_qp_22 Q: 12

At time = 0, a cannonball is stationary inside a cannon. The cannonball is then fired from the cannon.

At time = *t*, the cannonball moves forwards and the cannon moves backwards.

What happens to the total kinetic energy and the total momentum of the cannon and the cannonball between time = 0 and time = *t*?

	total kinetic energy of cannon and cannonball	total momentum of cannon and cannonball
A	changes	changes
B	changes	remains the same
C	remains the same	changes
D	remains the same	remains the same

---

03. 0625_m22_qp_22 Q: 13

In a small hydroelectric power scheme, 800 kg of water drops through a vertical height of 2.2 m every second. The electrical output is 10.6 kW.

What is the efficiency of the scheme?

A 0.60% **B** 17% **C** 60% **D** 75%

---

04. 0625_m21_qp_22 Q: 10

A horizontal force pulls a box along a horizontal surface.

The box gains 30 J of kinetic energy and 10 J of thermal energy is produced by the friction between the box and the surface.

How much work is done by the force?

A 10 J **B** 20 J **C** 30 J **D** 40 J

---

05. 0625_m21_qp_22 Q: 11

A crane is used to lift loads vertically.

The output power of the crane to lift a car is *P*.

The crane then lifts a lorry, which has 3.0 times the weight of the car, through 0.25 of the distance in 0.50 of the time.

What is the output power of the crane now?

A $\frac{3P}{8}$ **B** $\frac{3P}{2}$ **C** $\frac{8P}{3}$ **D** $6P$

---

06. 0625_s21_qp_21 Q: 9

Which situation involves no work being done and no energy being transferred?

A a car skidding to a stop on a road

B a crane lifting a load

C a heavy load hanging from a strong bar

D a student dragging a big box over a rough floor

---

07. 0625_s21_qp_21 Q: 10

A student suggests that there are several ways of transferring energy to a small, stationary block of iron on a smooth table. He makes the following suggestions.

1 Heat it.

2 Shine light on it.

3 Pass a current through it.

Which suggestions are correct?

A 1 and 2 only **B** 1 and 3 only **C** 2 and 3 only **D** 1, 2 and 3

---

08. 0625_s21_qp_21 Q: 11

An engine produces 240 kJ of energy in 2.0 minutes.

What is the power output of the engine?

A 2.0 kW **B** 120 kW **C** 480 kW **D** 28 800 kW

---

09. 0625_s21_qp_22 Q: 9

This question is about four methods used to produce electrical energy.

Which method has a correct description?

	method	energy source is renewable	emits carbon dioxide
A	a hydroelectric power station	yes	no
B	a coal-fired power station	no	no
C	a wind turbine	no	yes
D	a nuclear power station	yes	yes

---

10. 0625_s21_qp_22 Q: 10

A stone is released from rest from a high building on Earth. Air resistance is negligible.

What is its velocity when it has fallen 5 m?

A 7.1 m/s **B** 10 m/s **C** 50 m/s **D** 100 m/s

1.7. ENERGY, WORK AND POWER

11. 0625_s21_qp_22 Q: 11

The power input to an electric motor is 400 W. The efficiency of the motor is 85%.

How much power is wasted?

A 60 W **B** 85 W **C** 340 W **D** 470 W

---

12. 0625_s21_qp_23 Q: 9

A stream flows out of a lake and down the side of a hill.

What best describes the change in energy stores?

A kinetic energy → chemical energy + internal energy

B gravitational potential energy → kinetic energy + internal energy

C gravitational potential energy + kinetic energy → internal energy

D kinetic energy → internal energy + gravitational potential energy

---

13. 0625_s21_qp_23 Q: 10

The energy input to a device is E.

The amount of energy wasted by the device is W.

Which expression gives the efficiency of the device?

A $\frac{W-E}{W} \times 100\%$

B $\frac{W}{E} \times 100\%$

C $\frac{E-W}{E} \times 100\%$

D $\frac{E-W}{W} \times 100\%$

---

14. 0625_s21_qp_23 Q: 11

A builder lifts 30 bricks from the ground onto a platform 2.0 m high.

Each brick has a mass of 4.0 kg.

What is the work done against gravity by the builder in lifting the bricks onto the platform?

A 80 J **B** 120 J **C** 240 J **D** 2400 J

---

15. 0625_w21_qp_21 Q: 8

Electrical energy may be obtained from nuclear fission.

In which order is the energy transferred in this process?

A nuclear fuel → generator → reactor and boiler → turbines

B nuclear fuel → generator → turbines → reactor and boiler

C nuclear fuel → reactor and boiler → generator → turbines

D nuclear fuel → reactor and boiler → turbines → generator

---

16. 0625_w21_qp_21 Q: 9

A motor of power *P* exerts a force *F* on an object. The object moves a distance *d* during the time *t* that the force acts.

Which equation is used to calculate the time *t*?

A $t = \frac{F}{Pd}$ **B** $t = \frac{Fd}{P}$ **C** $t = \frac{Pd}{F}$ **D** $t = \frac{P}{Fd}$

---

17. 0625_w21_qp_21 Q: 10

A scientist uses an electric motor to lift a load through a vertical distance of 2.0 m.

He then increases the input power to the motor and repeats the experiment. The efficiency of the motor does not change.

Which row correctly describes the effect that this has on the useful work done lifting the load and the time taken to lift it?

	work done	time taken
A	decreases	decreases
B	stays the same	decreases
C	decreases	stays the same
D	stays the same	stays the same

---

18. 0625_w21_qp_22 Q: 8

Electrical energy may be obtained from nuclear fission.

In which order is the energy transferred in this process?

A nuclear fuel → generator → reactor and boiler → turbines

B nuclear fuel → generator → turbines → reactor and boiler

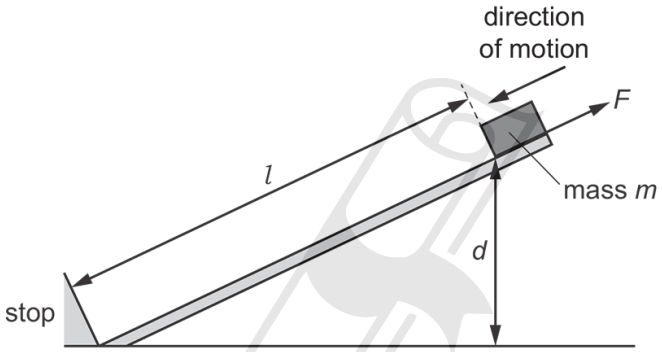
C nuclear fuel → reactor and boiler → generator → turbines

D nuclear fuel → reactor and boiler → turbines → generator

---

19. 0625_w21_qp_22 Q: 9

A box of mass *m* slides down a slope of length *l* against a frictional force *F*. It descends a vertical height *d*.



As the box slides down the slope, it loses gravitational potential energy and it does work against the friction.

Which row gives the loss in gravitational potential energy and the work done against friction?

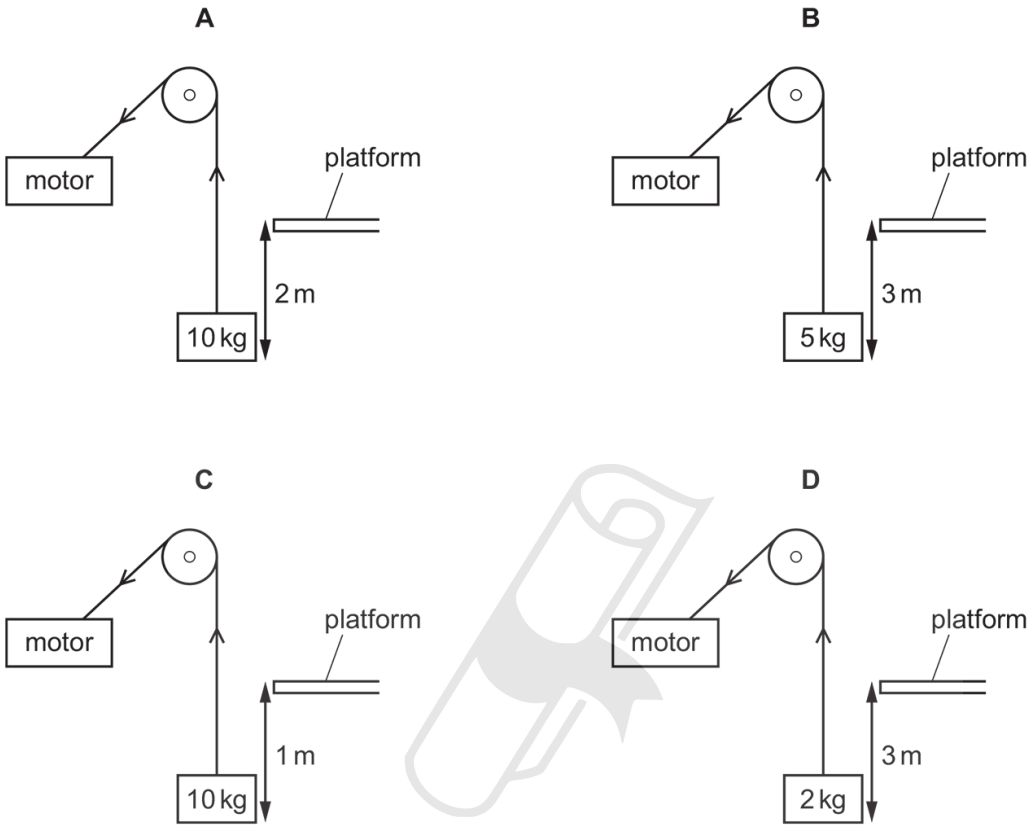
	loss in gravitational potential energy	work done against friction
A	*mgd*	*Fl*
B	*mgd*	*Fd*
C	*mgl*	*Fl*
D	*mgl*	*Fd*

---

20. 0625_w21_qp_22 Q: 10

A rope, connected to a pulley system and motor, is used to lift different objects through different distances. The time taken to lift each object is the same. The diagrams are not to scale.

Which motor requires the greatest power?



---

21. 0625_w21_qp_23 Q: 8

Electrical energy may be obtained from nuclear fission.

In which order is the energy transferred in this process?

A nuclear fuel → generator → reactor and boiler → turbines

B nuclear fuel → generator → turbines → reactor and boiler

C nuclear fuel → reactor and boiler → generator → turbines

D nuclear fuel → reactor and boiler → turbines → generator

---

22. 0625_w21_qp_23 Q: 9

Which energy resource has the Sun as its only source of energy?

A geothermal

B nuclear

C oil

D tidal

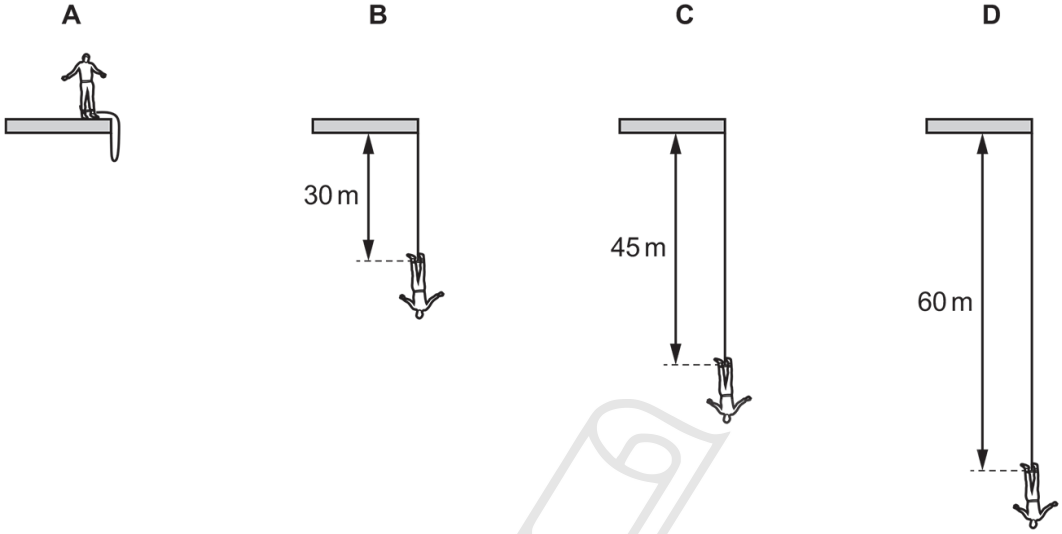
---

23. 0625_w21_qp_23 Q: 10

A man, attached to an elastic cord, jumps from a platform. He falls 60 m before starting to rise. The length of the unextended cord is 30 m.

The diagrams show four successive stages in his fall.

In which position is elastic (strain) energy and kinetic energy present?



24. 0625_m20_qp_22 Q: 10

An air pistol fires a pellet forwards.

What is the motion of the air pistol?

A The air pistol moves backwards with speed greater than the pellet.

B The air pistol moves backwards with speed less than the pellet.

C The air pistol moves forward with speed greater than the pellet.

D The air pistol moves forward with speed less than the pellet.

---

25. 0625_m20_qp_22 Q: 11

Which row describes an advantage and a disadvantage of wind turbines?

	advantage	disadvantage
A	no fuel needed	harmful gases released
B	variable supply	fuel needed
C	no harmful gases released	variable supply
D	constant supply	noisy

---

26. 0625_m20_qp_22 Q: 12

An electric motor provides 900 J of useful output energy. The efficiency of the motor is 60 %.

How much electrical energy is supplied to the motor?

A 15 J **B** 540 J **C** 1500 J **D** 5400 J

---

27. 0625_m20_qp_22 Q: 13

A crane takes 2.0 minutes to lift a 500 kg load to the top of a building that is 12 m high.

What is the useful power developed against gravity by the crane?

A 21 W **B** 50 W **C** 500 W **D** 30 000 W

---

28. 0625_p20_qp_20 Q: 10

A car has a mass of 1000 kg and a momentum of 12000 kg m/s.

What is its kinetic energy?

A 6 kJ

B 12 kJ

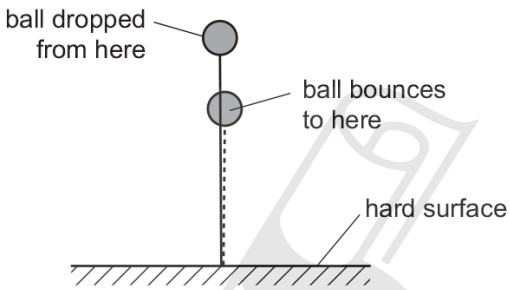
C 72 kJ

D 144 kJ

---

29. 0625_p20_qp_20 Q: 12

A ball is dropped on to a hard surface and bounces. It does not bounce all the way back to where it started, and so has not regained all of its original gravitational potential energy.



Which statement accounts for the loss of gravitational potential energy?

A Energy was destroyed as the ball hit the ground.

B Energy was destroyed as the ball travelled through the air.

C The chemical energy and elastic energy of the ball have increased.

D The internal (heat) energy of the ball and its surroundings has increased.

---

30. 0625_p20_qp_20 Q: 13

The Sun is the original source of energy for many of our energy resources.

Which energy resource **does not** originate from the Sun?

A geothermal

B hydroelectric

C waves

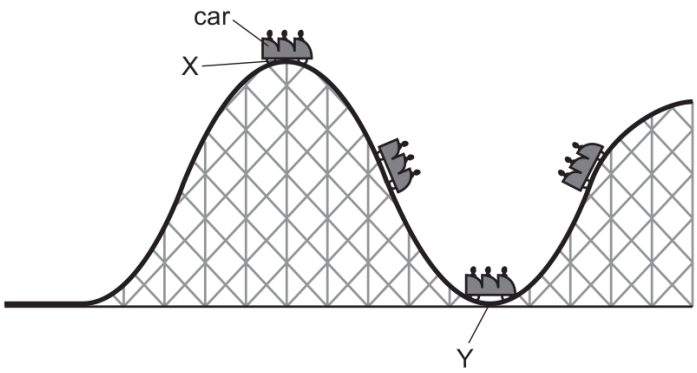
D wind

---

31. 0625_s20_qp_21 Q: 10

The diagram shows part of a rollercoaster ride with the car at different positions.

The car runs freely down from position X to position Y and up the hill on the other side.



What happens to the kinetic energy and to the gravitational potential energy of the car as it moves from position X to position Y?

	kinetic energy	gravitational potential energy
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

---

32. 0625_s20_qp_21 Q: 11

Which energy resource does **not** have the Sun as the original source?

A coal

B geothermal

C hydroelectric

D wind

---

33. 0625_s20_qp_22 Q: 10

Which energy resource is **not** renewable?

A geothermal

B nuclear fission

C solar

D wind

---

34. 0625_s20_qp_22 Q: 11

A car of mass 500 kg is moving at 10 m/s. The engine does work on the car and the speed increases to 16 m/s.

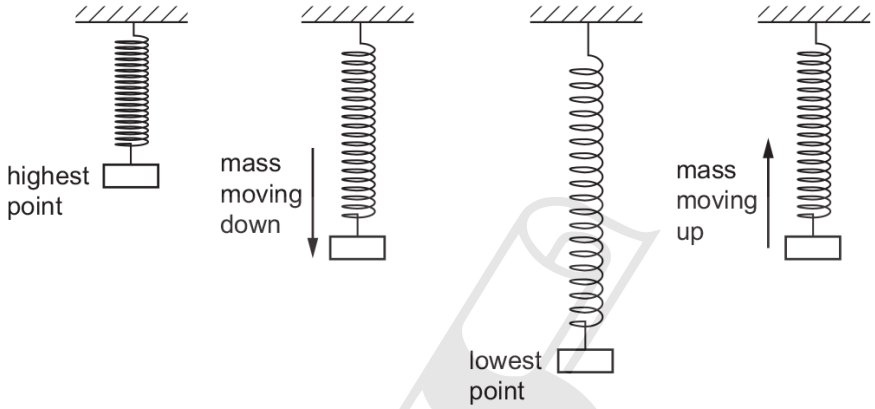
How much work is done by the engine to increase the speed of the car?

A 3000 J **B** 9000 J **C** 39 000 J **D** 78 000 J

---

35. 0625_s20_qp_23 Q: 10

A mass bounces up and down on a steel spring. The diagram shows the mass and the spring at different points during the motion.



At which point does the mass have the least gravitational potential energy and at which point is the most elastic energy stored in the spring?

	least amount of gravitational potential energy	most elastic energy stored in spring
A	mass moving down	mass moving up
B	mass moving down	lowest point
C	lowest point	mass moving up
D	lowest point	lowest point

---

36. 0625_s20_qp_23 Q: 11

The velocity v of an object increases as it falls towards the ground.

Which quantity is directly proportional to v^2?

A the speed of the object

B the gravitational potential energy of the object

C the kinetic energy of the object

D the momentum of the object

---

37. 0625_w20_qp_21 Q: 11

An electric motor uses 1000 J of electrical energy. It provides 450 J of useful output energy.

What is the efficiency of the motor?

A 4.5% **B** 5.5% **C** 45% **D** 55%

---

38. 0625_w20_qp_21 Q: 12

To calculate the power produced by a force, the size of the force must be known.

What else needs to be known to calculate the power?

	the distance that the force moves the object	the time for which the force acts on the object
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = needed

✗ = not needed

---

39. 0625_w20_qp_22 Q: 10

A woman of mass 50 kg has 81 J of kinetic energy.

What is her speed?

A 1.3 m/s **B** 1.6 m/s **C** 1.8 m/s **D** 3.2 m/s

---

40. 0625_w20_qp_22 Q: 11

What is the source of the Sun's energy?

A chemical reactions in the Sun's core

B γ-emissions in the Sun's core

C nuclear fission in the Sun's core

D nuclear fusion in the Sun's core

---

41. 0625_w20_qp_22 Q: 12

To calculate the power produced by a force, the size of the force must be known.

What else needs to be known to calculate the power?

	the distance that the force moves the object	the time for which the force acts on the object
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = needed

✗ = not needed

---

42. 0625_w20_qp_23 Q: 10

An object of mass 4.5 kg is travelling at 7.0 m/s.

How much kinetic energy does the object have?

A 16 J **B** 32 J **C** 110 J **D** 220 J

---

43. 0625_w20_qp_23 Q: 11

A number of ways in which we use energy are listed.

In which is the ultimate source of energy **not** the Sun?

A Energy is provided by a horse to pull a cart.

B Energy is provided by hydroelectric generators to heat a house.

C Energy is provided by a nuclear power station.

D Energy is provided by a windmill to pump water to a fountain.

---

44. 0625_w20_qp_23 Q: 12

To calculate the power produced by a force, the size of the force must be known.

What else needs to be known to calculate the power?

	the distance that the force moves the object	the time for which the force acts on the object
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = needed

✗ = not needed

---

45. 0625_m19_qp_22 Q: 4

The gravitational field strength on the Moon is less than on the Earth.

Which of these is **different** when done on the Moon compared with when done on the Earth?

A the gravitational potential energy gained by a stone lifted through the same vertical height

B the kinetic energy gained by a ball when hit with the same force for the same period of time

C the momentum gained by a bullet when fired from the same gun

D the work done in accelerating a stone from rest to the same speed

---

46. 0625_m19_qp_22 Q: 11

A car of mass 1500 kg has a speed of 20 m/s. It accelerates until its speed is 25 m/s.

What is the increase in the kinetic energy of the car?

A 19 kJ **B** 38 kJ **C** 170 kJ **D** 340 kJ

---

47. 0625_m19_qp_22 Q: 12

Which source of energy uses the production of steam to generate electrical energy?

A hydroelectric

B nuclear

C tides

D waves

---

48. 0625_m19_qp_22 Q: 13

A car, travelling on a straight horizontal road, has 1.6 MJ of kinetic energy. It accelerates for 20 s until it has 2.5 MJ of kinetic energy.

What is the average power output used to increase the kinetic energy of the car?

A 45 W **B** 205 W **C** 45 kW **D** 205 kW

---

49. 0625_s19_qp_21 Q: 11

A machine is very efficient.

What does this mean?

A It produces a large amount of power.

B It uses very little energy.

C It wastes very little energy.

D It works very quickly.

---

50. 0625_s19_qp_21 Q: 12

A crane takes 2.0 minutes to lift a load to the top of a building. The change in gravitational potential energy of the load is 360 kJ.

What is the useful power output of the crane?

A 3.0 kW **B** 180 kW **C** 720 kW **D** 43 200 kW

---

51. 0625_s19_qp_22 Q: 11

A force F acts on a body and the body moves a distance d in the direction of the force.

Which expression for the work done W is correct?

A $W = Fd$ **B** $W = Fd^2$ **C** $W = \frac{1}{2}Fd$ **D** $W = \frac{1}{2}Fd^2$

---

52. 0625_s19_qp_22 Q: 12

A boy produces an average power output of 60 W as he rides his bicycle for 2.0 minutes.

How much useful energy does he expend?

A 0.50 J **B** 30 J **C** 120 J **D** 7200 J

---

53. 0625_s19_qp_23 Q: 10

An object is in free fall. The change in gravitational potential energy of the body depends upon its mass m, the change in height Δh and the gravitational field strength g.

What is the correct expression for the change in gravitational potential energy?

A $gm\Delta h$ **B** $\frac{gm}{\Delta h}$ **C** $\frac{g\Delta h}{m}$ **D** $\frac{m\Delta h}{g}$

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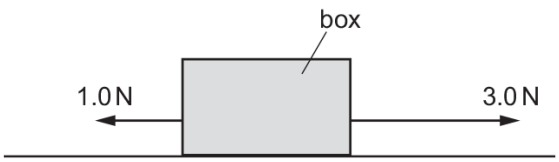
54. 0625_s19_qp_23 Q: 12

A box is pulled along a floor by a force of 3.0 N.

The friction acting on the box is 1.0 N, as shown.



How much kinetic energy does the box gain in moving 2.0 m?

A 2.0 J **B** 4.0 J **C** 6.0 J **D** 8.0 J

---

55. 0625_w19_qp_21 Q: 10

Brakes are used to slow down a moving car.

Into which form of energy is most of the kinetic energy converted as the car slows down?

A chemical

B elastic

C thermal

D sound

---

56. 0625_w19_qp_21 Q: 11

A man carries 20 tiles from the ground to the roof of a house. Each tile has a mass of 1.2 kg. The roof of the house is 15 m above the ground.

How much work does the man do against gravity on the tiles in carrying them to the roof?

A 36 J **B** 180 J **C** 360 J **D** 3600 J

---

57. 0625_w19_qp_22 Q: 11

Brakes are used to slow down a moving car.

Into which form of energy is most of the kinetic energy converted as the car slows down?

A chemical

B elastic

C thermal

D sound

---

58. 0625_w19_qp_22 Q: 12

A box of mass 8.0 kg is lifted from the ground and placed on a shelf. The box gains 100 J of potential energy.

The box falls off the shelf. Air resistance can be ignored.

At what speed does the box hit the ground?

A 3.5 m/s **B** 5.0 m/s **C** 25 m/s **D** 28 m/s

---

59. 0625_w19_qp_23 Q: 12

A force of 25 N acts on an object. The work done by the force is 400 J.

How far does the object move in the direction of the force?

A 6.3 cm **B** 16 cm **C** 16 m **D** 10 km

---

60. 0625_w19_qp_23 Q: 13

A car is moving along a straight horizontal road. The car has 1.6 MJ of kinetic energy. The car accelerates for 20 s until the kinetic energy of the car increases to 2.5 MJ.

What is the minimum average power developed by the car engine for this acceleration?

A 45 W **B** 205 W **C** 45 kW **D** 205 kW

---

61. 0625_m18_qp_22 Q: 11

A ball is at rest at the top of a hill. It rolls down the hill. At the bottom of the hill the ball hits a wall and stops.

Which energy changes occur?

A gravitational potential energy → internal energy → kinetic energy

B gravitational potential energy → kinetic energy → internal energy

C kinetic energy → gravitational potential energy → internal energy

D kinetic energy → internal energy → gravitational potential energy

---

62. 0625_m18_qp_22 Q: 12

A student cycles along a level road at a speed of 5.0 m/s.

The total mass of the student and bicycle is 120 kg.

The student applies the brakes and stops. The braking distance is 10 m.

What is the average braking force?

A 150 N **B** 300 N **C** 15 000 N **D** 30 000 N

---

63. 0625_s18_qp_21 Q: 10

As energy is transferred into different forms, it eventually becomes dissipated.

What does this mean?

A All the energy disappears.

B The energy finally changes into every possible form of energy.

C The energy spreads out among the objects and their surroundings.

D The total amount of energy becomes less.

---

64. 0625_s18_qp_21 Q: 11

A ball of mass 1.2 kg is dropped from a height of 30 m. As it falls, 25% of its initial gravitational potential energy is transferred to thermal energy.

What is the kinetic energy of the ball just before it hits the ground?

A 27 J **B** 90 J **C** 270 J **D** 360 J

---

65. 0625_s18_qp_21 Q: 12

A girl hangs by her hands from a bar in the gymnasium. She pulls herself up until her chin is level with the bar.

The mass of the girl is 48 kg.

She pulls herself up through a distance of 0.25 m.

She does this in 2.0 s.

What is the useful power she uses to pull herself up?

A 6.0 W **B** 24 W **C** 60 W **D** 240 W

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66. 0625_s18_qp_22 Q: 10

What is the main process by which energy is released in the Sun?

A α-decay

B β-decay

C nuclear fission

D nuclear fusion

---

67. 0625_s18_qp_22 Q: 11

The work done W by a force is related to the magnitude F of the force and the distance d moved in the direction of the force.

Which equation for W is correct?

A $W = d \div F$

B $W = d + F$

C $W = F \div d$

D $W = F \times d$

---

68. 0625_s18_qp_22 Q: 12

A crane on a construction site lifts concrete beams.

The useful work done by the crane is 4000 kJ in a time of 160 s.

What is the useful output power of the crane?

A 0.04 kW **B** 25 W **C** 25 kW **D** 640 kW

---

69. 0625_s18_qp_23 Q: 10

An aircraft with a mass of 300 000 kg is flying at an altitude of 2000 m with a speed of 100 m/s.

What is the kinetic energy of the aircraft?

A 1.5×10^4 kJ **B** 1.5×10^6 kJ **C** 3.0×10^6 kJ **D** 6.0×10^6 kJ

---

70. 0625_s18_qp_23 Q: 11

Which method of drying clothes has the least impact on the environment?

A Evaporate the water in them in an electrically heated tumble dryer.

B Hang them on a washing line in direct sunlight.

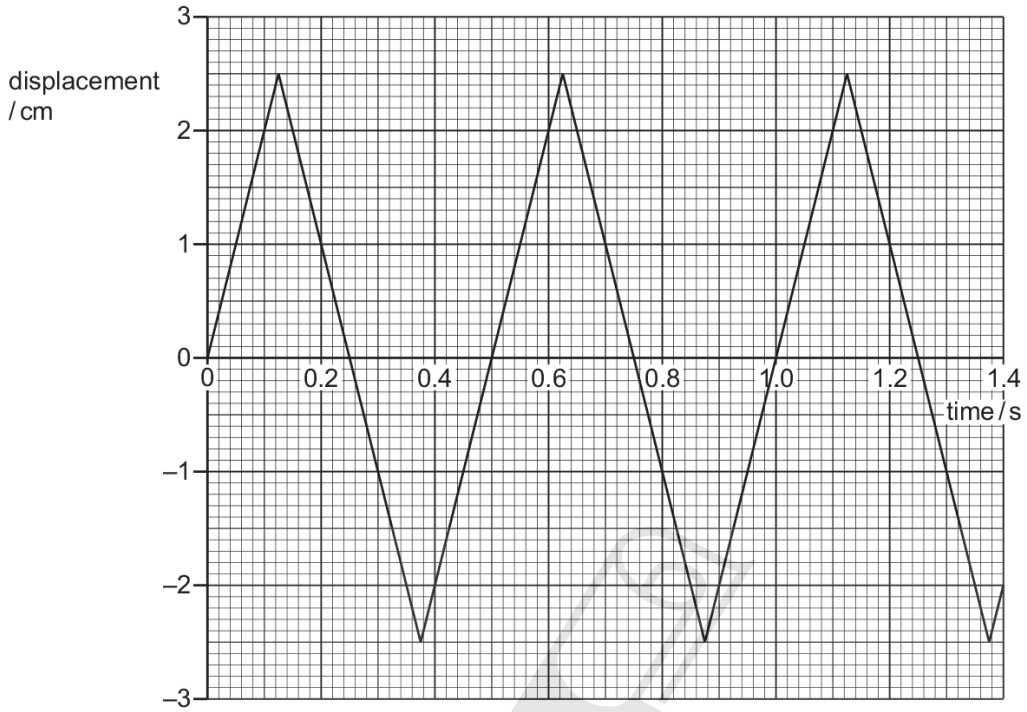
C Remove the water from them in an electric spin dryer.

D Suspend them close to a coal fire.

---

71. 0625_s18_qp_23 Q: 12

The vertical displacement of a mass of 0.20 kg changes with time. The graph shows how this displacement changes.



At which rate does it gain gravitational potential energy as it moves upwards?

A 0.025 W **B** 0.050 W **C** 0.20 W **D** 0.40 W

---

72. 0625_w18_qp_21 Q: 9

Which device is designed to convert chemical energy into kinetic energy?

A an a.c. generator

B a battery-powered torch

C a car engine

D a wind-up mechanical clock

---

73. 0625_w18_qp_21 Q: 10

An object, initially at rest, is dropped from a height of 12.0 m. The change in gravitational potential energy when it falls to the ground is 565 J.

The frictional forces are negligible.

What is its speed when it hits the ground?

A 4.71 m/s **B** 15.5 m/s **C** 47.1 m/s **D** 240 m/s

---

74. 0625_w18_qp_21 Q: 11

A man climbs a ladder.

Which two quantities can be used to calculate the useful power of the man?

A the weight of the man and the time taken only

B the weight of the man and the vertical distance moved only

C the work done by the man and the time taken only

D the work done by the man and the vertical distance moved only

---

75. 0625_w18_qp_22 Q: 9

Which device is designed to convert chemical energy into kinetic energy?

A an a.c. generator

B a battery-powered torch

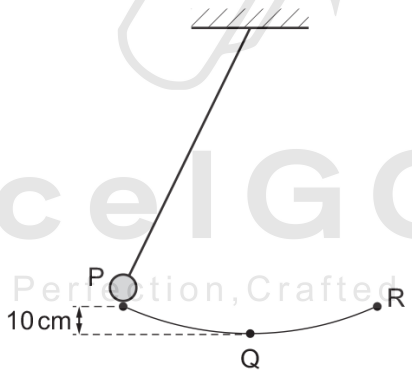
C a car engine

D a wind-up mechanical clock

---

76. 0625_w18_qp_22 Q: 10

The diagram shows a pendulum.



The pendulum swings from P to Q to R and back to P.

P is 10 cm higher than Q.

At which speed does the pendulum bob pass through Q?

A 0.44 m/s **B** 1.0 m/s **C** 1.4 m/s **D** 2.0 m/s

---

77. 0625_w18_qp_22 Q: 11

A crane on a building site lifts bricks of total mass 200 kg, initially at rest on the ground, with uniform acceleration.

When the bricks are 5.0 m from the ground, they have a speed of 5.0 m/s.

How much work is done during this process?

A 2.5 kJ **B** 10.0 kJ **C** 12.5 kJ **D** 35 kJ

---

78. 0625_w18_qp_23 Q: 8

An electron is moving at a speed of 5×10^6 m/s.
A neutron is moving at a speed of 5×10^4 m/s.

The mass of the electron is *m*.
The mass of the neutron is 2000*m*.

Which row is correct?

	greater momentum	greater kinetic energy
A	electron	electron
B	electron	neutron
C	neutron	electron
D	neutron	neutron

---

79. 0625_w18_qp_23 Q: 9

Which device is designed to convert chemical energy into kinetic energy?

A an a.c. generator

B a battery-powered torch

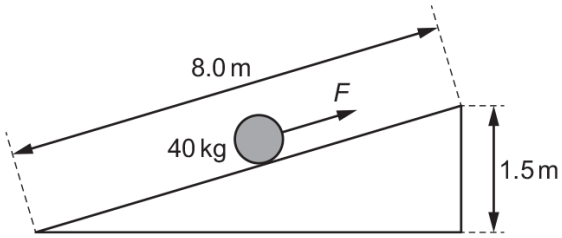
C a car engine

D a wind-up mechanical clock

---

80. 0625_w18_qp_23 Q: 10

A barrel of mass 40 kg is raised to a height of 1.5 m by rolling it up a ramp. The length of the ramp is 8.0 m. The force *F* applied to the barrel acts parallel to the ramp. The frictional force is negligible.



Which row is correct?

	gain in gravitational potential energy / J	force *F* / N
A	60	7.5
B	60	40
C	600	75
D	600	400

---

81. 0625_w18_qp_23 Q: 11

What is the main process by which energy is produced in the Sun?

A combustion

B nuclear fission

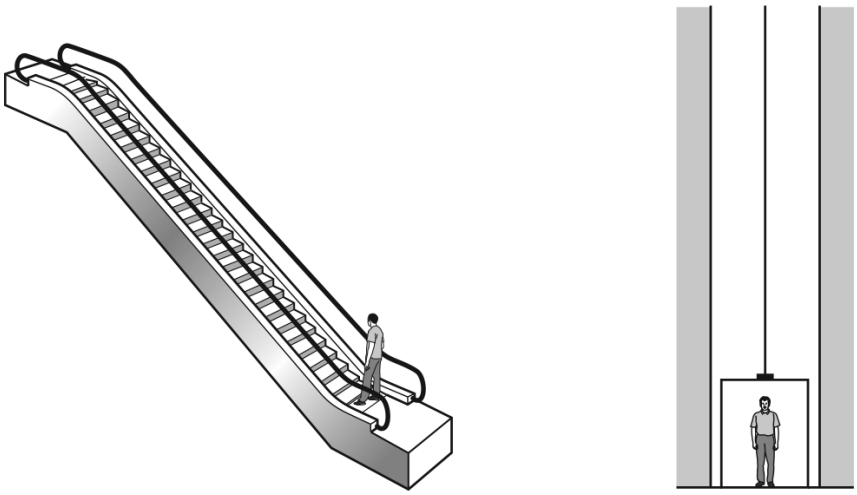
C nuclear fusion

D radioactive decay

---

82. 0625_m17_qp_22 Q: 9

A man can either take an escalator or a lift to travel up between two floors in a hotel.



escalator lift

The escalator takes 20 seconds to carry the man between the two floors. The useful work done against gravity is *W*. The useful power developed is *P*.

The lift takes 30 seconds to carry the same man between the same two floors.

How much useful work against gravity is done by the lift, and how much useful power is developed by the lift?

	useful work done against gravity by lift	useful power developed by lift
A	more than *W*	less than *P*
B	more than *W*	*P*
C	*W*	less than *P*
D	*W*	*P*

---

83. 0625_m17_qp_22 Q: 10

A 40 W lamp wastes 34 J of energy every second by heating its surroundings.

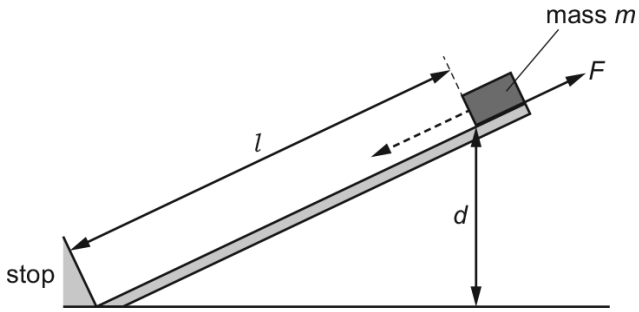
What is the efficiency of the lamp?

A 0.15% **B** 15% **C** 18% **D** 85%

---

84. 0625_s17_qp_21 Q: 10

A box of mass *m* slides down a slope of length l and vertical height *d* against a frictional force *F*.



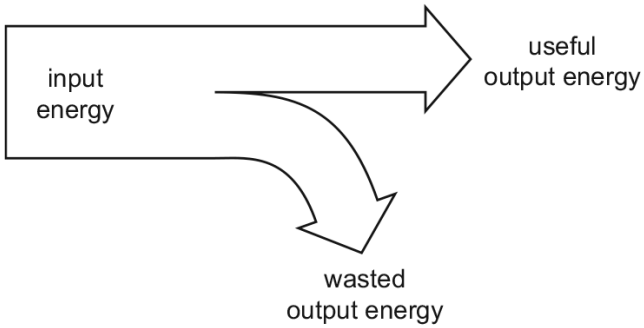
As the box slides down the slope, it loses gravitational potential energy and it does work against the friction.

Which row gives the loss in gravitational potential energy and the work done against friction?

	loss in gravitational potential energy	work done against friction
A	*mgd*	*Fl*
B	*mgd*	*Fd*
C	*mgl*	*Fl*
D	*mgl*	*Fd*

85. 0625_s17_qp_21 Q: 11

The diagram represents the energy transfers for a device.



The device is 50% efficient.

Which equation is correct?

A input energy = useful output energy ÷ 2

B useful output energy = wasted output energy ÷ 2

C wasted output energy = useful output energy

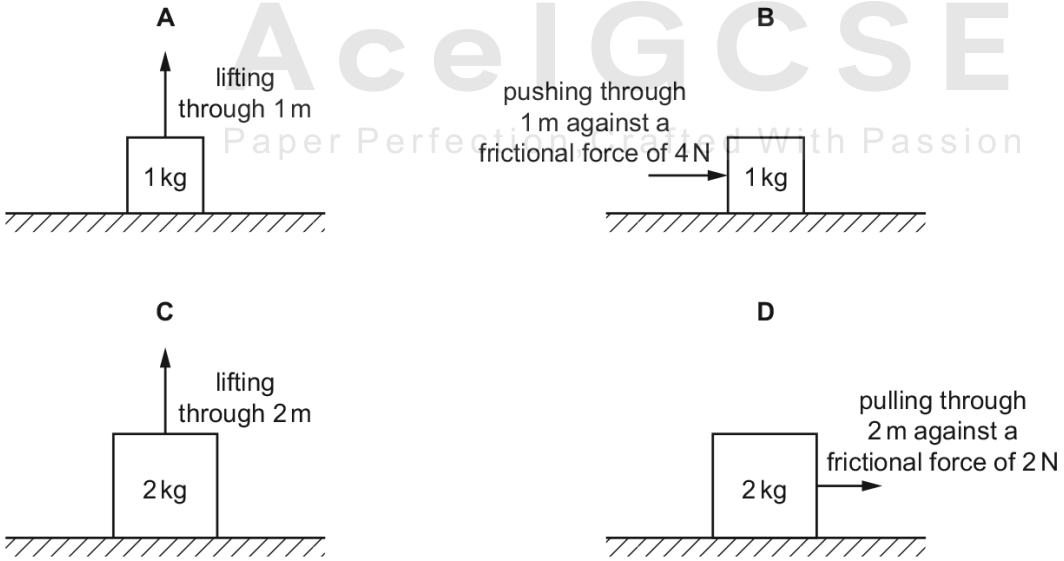
D wasted output energy = useful output energy ÷ 2

---

86. 0625_s17_qp_21 Q: 12

A student carries out some simple exercises.

In which exercise is the most work done?



---

87. 0625_s17_qp_22 Q: 10

An object falls from a height of 5.0 m.

Air resistance can be ignored.

As it hits the ground the object has 750 J of kinetic energy.

What is its mass?

A 15 kg **B** 50 kg **C** 75 kg **D** 150 kg

---

88. 0625_s17_qp_22 Q: 11

An electric generator produces an electromotive force (e.m.f.) of 200 V and produces a current of 3.0 A in a circuit. The generator is driven by an engine with a power of 2.4 kW.

What is the efficiency of the generator?

A 2.8% **B** 25% **C** 28% **D** 36%

---

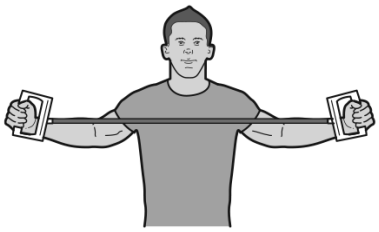
89. 0625_s17_qp_22 Q: 12

The diagrams show athletes training by stretching springs.

Each spring has the same stiffness.

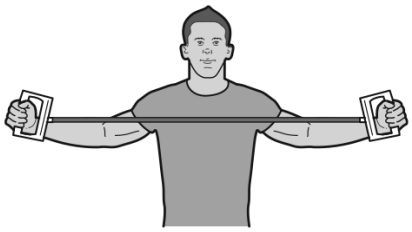
Which athlete does the most work?

A



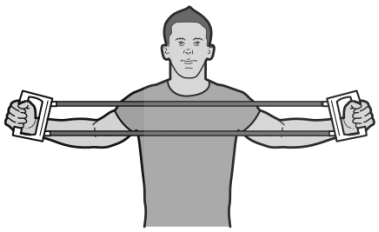
one spring stretched by 0.60 m

B



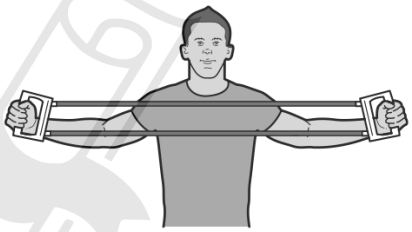
one spring stretched by 0.80 m

C



two springs stretched by 0.60 m

D

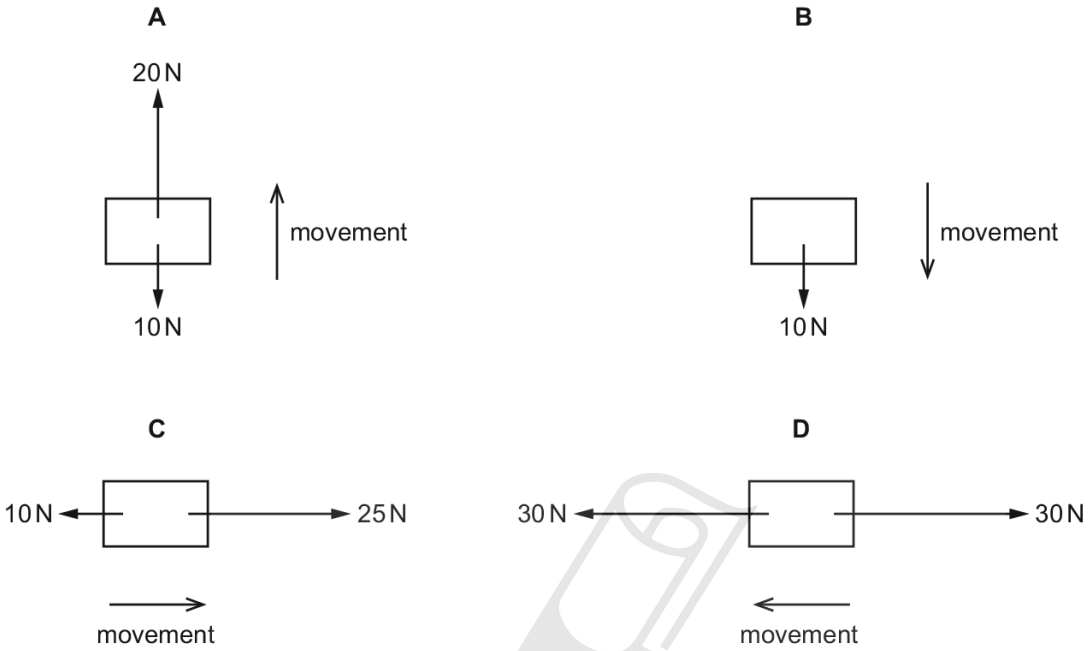


two springs stretched by 0.80 m

90. 0625_s17_qp_23 Q: 9

The diagrams show four bodies moving in the directions shown. The only forces acting on the bodies are shown in each diagram.

Which body gains the most kinetic energy when moving a distance of 1.0 m?



---

91. 0625_s17_qp_23 Q: 10

A steel ball is fired vertically upwards with a velocity v. The ball reaches a height h.

The same ball is now fired vertically upwards from the same position with a velocity $2v$.

Air resistance can be ignored.

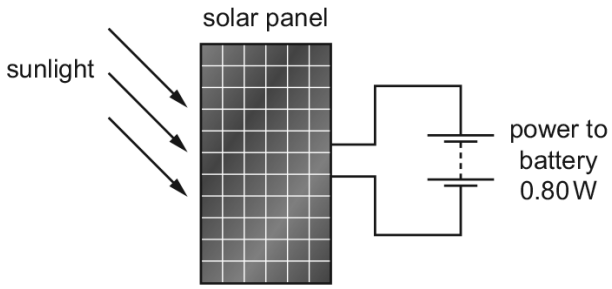
What is the new height reached by the ball?

A h **B** $2h$ **C** $4h$ **D** $8h$

---

92. 0625_s17_qp_23 Q: 11

A solar panel is used to recharge a battery. The solar panel produces 0.80 W of electrical power. The panel is 20% efficient.



What is the power input of the sunlight onto the solar panel?

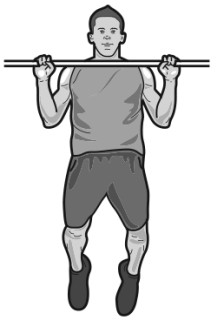
A 0.16 W **B** 4.0 W **C** 8.0 W **D** 16 W

93. 0625_s17_qp_23 Q: 12

The diagrams show four different athletes training by doing pull-ups.

Which athlete does the most work?

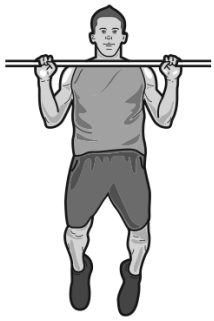
A



weight of athlete = 700 N

distance lifted = 0.50 m

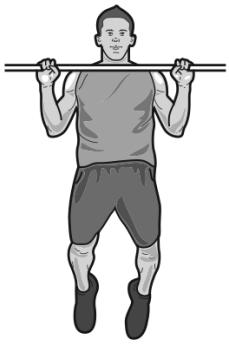
B



weight of athlete = 700 N

distance lifted = 0.55 m

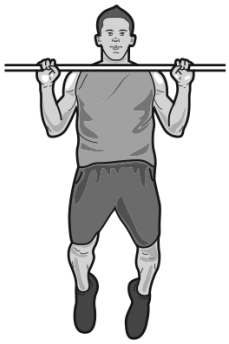
C



weight of athlete = 800 N

distance lifted = 0.50 m

D

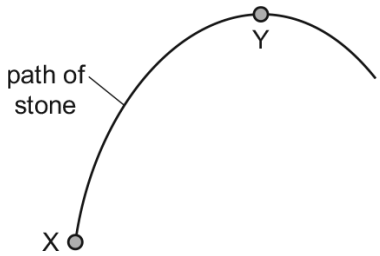


weight of athlete = 800 N

distance lifted = 0.55 m

94. 0625_w17_qp_21 Q: 10

The diagram shows the path of a stone that is thrown from X and reaches its maximum height at Y.



The stone gains 10 J of gravitational potential energy as it moves from X to Y.

The stone has 2.0 J of kinetic energy at Y.

Air resistance can be ignored.

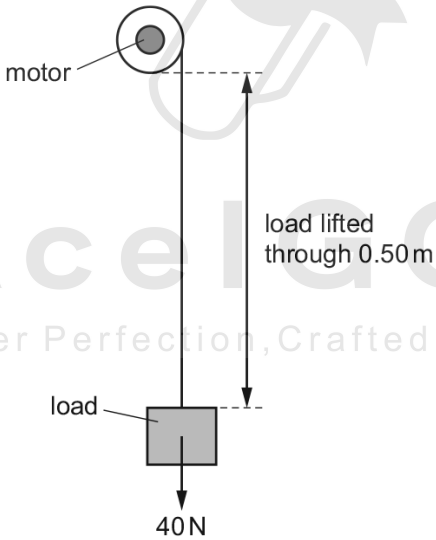
How much kinetic energy did the stone have immediately after it was thrown at X?

A 2.0 J **B** 8.0 J **C** 10 J **D** 12 J

---

95. 0625_w17_qp_21 Q: 11

A motor is used to lift a load of 40 N.



The power of the motor is 40 W and the system is 20% efficient.

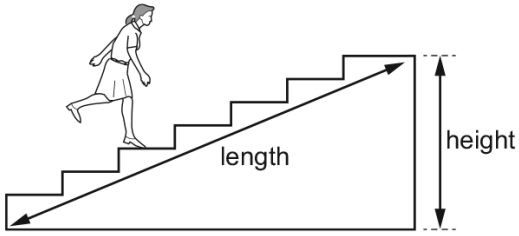
How long does it take the motor to lift the load through 0.50 m?

A 0.50 s **B** 2.5 s **C** 5.0 s **D** 25 s

---

96. 0625_w17_qp_21 Q: 12

A student runs up a flight of stairs.



Which information is **not** needed to calculate the rate at which the student is doing work against gravity?

A the height of the flight of stairs

B the length of the flight of stairs

C the time taken to run up the stairs

D the weight of the student

---

97. 0625_w17_qp_22 Q: 10

An object has a mass of 500 kg.

It moves with a speed of 30 m/s.

What is its kinetic energy?

A 7.5 kJ **B** 15 kJ **C** 225 kJ **D** 450 kJ

---

98. 0625_w17_qp_22 Q: 11

Different processes have different efficiencies.

Which row shows the most efficient process?

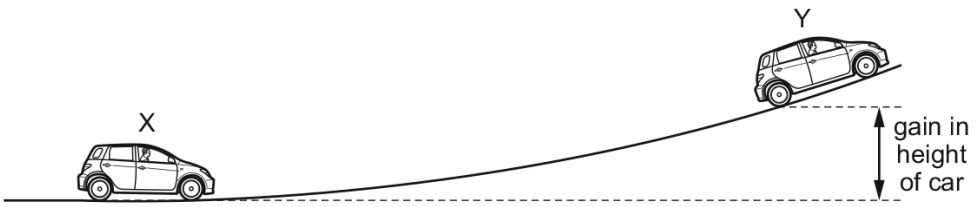
	energy input / J	useful energy output / J
A	10	3
B	40	10
C	100	25
D	2000	250

---

99. 0625_w17_qp_23 Q: 10

A car, starting from rest at position X, accelerates up a hill. The car reaches a speed of 10 m/s at position Y.

The kinetic energy of the car at position Y is equal to its gain in gravitational potential energy from X to Y.



Take the gravitational field strength *g* to be 10 N/kg.

What is the gain in height of the car between X and Y?

A 0.50 m **B** 5.0 m **C** 10 m **D** 50 m

---

100. 0625_w17_qp_23 Q: 11

A 150 W filament lamp has an efficiency of 10%. A 40 W compact fluorescent lamp (CFL) has an efficiency of 30%.

Each lamp is switched on for the same amount of time.

Which lamp produces more light and which lamp converts more energy into other forms of energy?

	produces more light	converts more energy into other forms
A	CFL lamp	CFL lamp
B	CFL lamp	filament lamp
C	filament lamp	CFL lamp
D	filament lamp	filament lamp

---

101. 0625_m16_qp_22 Q: 9

The table gives four energy sources and states whether the energy of the source is derived from the Sun.

Which row is correct?

	source of energy	derived from the Sun
A	geothermal	yes
B	oil	no
C	water held behind a dam	yes
D	wind	no

---

102. 0625_m16_qp_22 Q: 10

A weight-lifter raises a 2000 N weight through a vertical height of 2.0 m in 0.80 s.

What useful power does he develop in doing this?

A 800 W **B** 3200 W **C** 4000 W **D** 5000 W

---

103. 0625_m16_qp_22 Q: 11

A wind turbine generates 54 kW of useful power from an input of 180 kW of wind power.

Which calculation gives the percentage efficiency of the turbine?

A $\frac{54000}{180000 \times 100}$ %

B $\frac{180000}{54000 \times 100}$ %

C $\frac{54000 \times 100}{180000}$ %

D $\frac{180000 \times 100}{54000}$ %

---

104. 0625_p16_qp_20 Q:10

A car has a mass of 1000 kg and a momentum of 12000 kg m/s.

What is its kinetic energy?

A 6 kJ

B 12 kJ

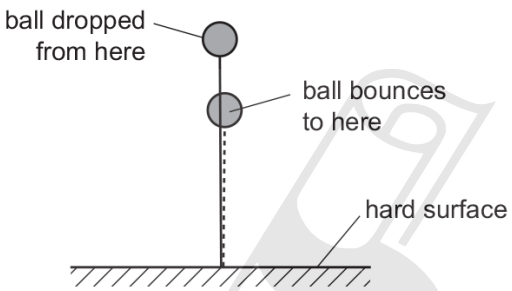
C 72 kJ

D 144 kJ

---

105. 0625_p16_qp_20 Q:12

A ball is dropped on to a hard surface and bounces. It does not bounce all the way back to where it started, and so has not regained all of its original gravitational potential energy.



Which statement accounts for the loss of gravitational potential energy?

A Energy was destroyed as the ball hit the ground.

B Energy was destroyed as the ball travelled through the air.

C The chemical energy and elastic energy of the ball have increased.

D The internal (heat) energy of the ball and its surroundings has increased.

---

106. 0625_p16_qp_20 Q:13

The Sun is the original source of energy for many of our energy resources.

Which energy resource **does not** originate from the Sun?

A geothermal

B hydroelectric

C waves

D wind

---

107. 0625_s16_qp_21 Q:9

Energy is released in some nuclear reactions.

Which nuclear reaction takes place in a nuclear power station, and which nuclear reaction takes place in the Sun?

	nuclear power station	the Sun
A	fission	fission
B	fission	fusion
C	fusion	fission
D	fusion	fusion

---

108. 0625_s16_qp_21 Q:10

A lorry of mass 4000 kg is travelling at a speed of 4.0 m/s.

A car has a mass of 1000 kg. The kinetic energy of the car is equal to the kinetic energy of the lorry.

What is the speed of the car?

A 2.0 m/s **B** 4.0 m/s **C** 8.0 m/s **D** 16.0 m/s

---

109. 0625_s16_qp_21 Q:11

A force acts on an object and causes the object to move a certain distance, in the same direction as the force.

Which row represents a situation in which the largest amount of work is done on the object by the force?

	force / N	distance moved / m
A	2.0	40.0
B	10.0	2.0
C	20.0	6.0
D	100.0	1.0

---

110. 0625_s16_qp_22 Q:9

A stone of mass *m* is held at rest in water. The stone is released and falls vertically a distance *h*. The stone reaches a speed *v*.

Some of the original energy of the stone is transferred to the water. As it falls, resistive forces cause the temperature of the water and stone to increase.

Which expression gives the work done against the resistive forces?

A $\frac{1}{2}mv^2$

B $mgh - \frac{1}{2}mv^2$

C mgh

D $mgh + \frac{1}{2}mv^2$

---

111. 0625_s16_qp_22 Q:10

Which energy resource does **not** derive its energy from the Sun?

A geothermal

B hydroelectric

C oil

D waves

---

112. 0625_s16_qp_22 Q:11

Some processes are more efficient than others.

Which expression gives the efficiency of a process?

A $\frac{\text{total energy output}}{\text{total energy input}} \times 100\%$

B $\frac{\text{useful energy output}}{\text{total energy input}} \times 100\%$

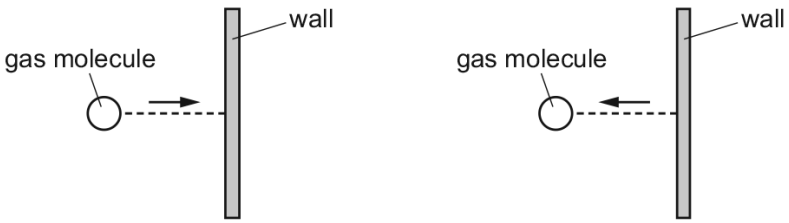
C $\frac{\text{wasted energy output}}{\text{total energy input}} \times 100\%$

D $\frac{\text{wasted energy output}}{\text{useful energy output}} \times 100\%$

---

113. 0625_s16_qp_23 Q: 8

A gas molecule strikes the wall of a container. The molecule rebounds with the same speed.



before hitting the wall

after hitting the wall

What happens to the kinetic energy and what happens to the momentum of the molecule?

	kinetic energy	momentum
A	changes	changes
B	changes	stays the same
C	stays the same	changes
D	stays the same	stays the same

---

114. 0625_s16_qp_23 Q: 9

Which energy resource does **not** derive its energy from the Sun?

A hydroelectric

B nuclear fission

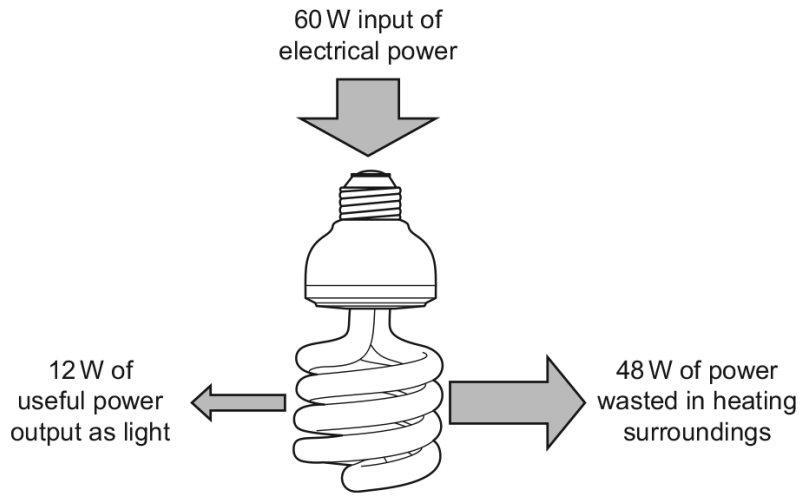
C waves

D wind

---

115. 0625_s16_qp_23 Q:10

The diagram shows the energy used by a modern lamp.



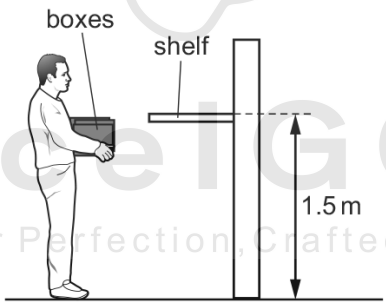
Which expression gives the efficiency of the lamp?

A $\frac{12}{60} \times 100\%$ **B** $\frac{12}{48} \times 100\%$ **C** $\frac{48}{60} \times 100\%$ **D** $\frac{48}{12} \times 100\%$

---

116. 0625_s16_qp_23 Q:11

Three boxes each weigh 100 N. A man lifts all the boxes together from the ground on to a shelf that is 1.5 m above the ground. The man takes 2.0 s to do this.



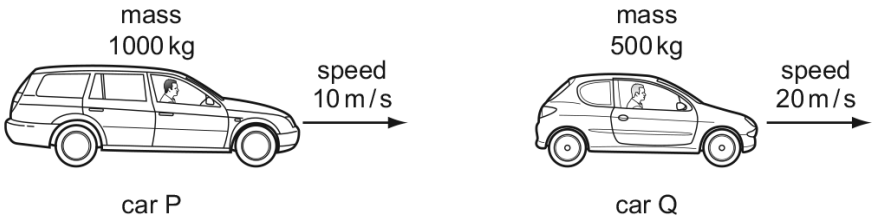
How much useful power does the man produce to lift the boxes?

A 75 W **B** 225 W **C** 300 W **D** 900 W

---

117. 0625_w16_qp_21 Q: 8

Two cars, P and Q, have different masses and different speeds as shown.



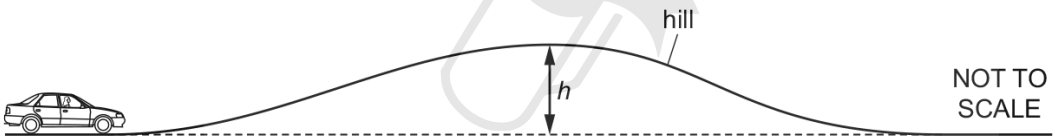
Which row correctly compares the momentum and the kinetic energy of P with the momentum and the kinetic energy of Q?

	momentum	kinetic energy
A	P greater than Q	P equal to Q
B	P equal to Q	P equal to Q
C	P equal to Q	P less than Q
D	P less than Q	P greater than Q

---

118. 0625_w16_qp_21 Q: 9

A car of mass 800 kg travels over a hill of height *h*.



By travelling to the top of the hill, the car gains 40 000 J of gravitational potential energy.

The gravitational field strength *g* is 10 N/kg.

What is the height *h* of the hill?

A 5.0 m **B** 20 m **C** 50 m **D** 500 m

---

119. 0625_w16_qp_21 Q: 10

A lamp has a power input of 5.0 W. It wastes 1.0 W of power heating the surroundings.

What is the efficiency of the lamp?

A 20% **B** 50% **C** 80% **D** 120%

---

120. 0625_w16_qp_21 Q: 11

The box contains the names of eight different energy resources.

natural gas	geothermal	solar	waves
hydroelectric	oil	wind	coal

How many of these energy resources are renewable?

A 3 **B** 4 **C** 5 **D** 6

---

121. 0625_w16_qp_22 Q : 10

Electricity can be generated using different energy resources.

Which energy resource is used to generate electricity without needing any moving parts?

A geothermal

B hydroelectric

C solar

D water waves

---

122. 0625_w16_qp_22 Q: 11

A lamp has a power input of 5.0 W. It wastes 1.0 W of power heating the surroundings.

What is the efficiency of the lamp?

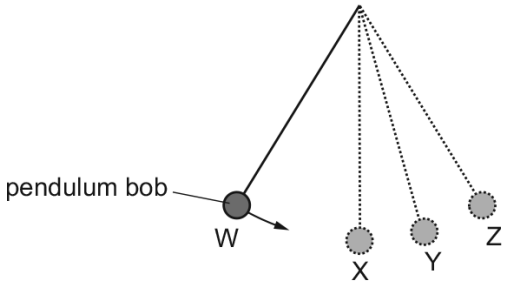
A 20% **B** 50% **C** 80% **D** 120%

---

123. 0625_w16_qp_22 Q: 12

A pendulum bob swings along the path WXYZ and back again.

Resistive forces can be ignored.



Which statement describes the total energy of the bob?

A It has a maximum value at X.

B It has a maximum value at Y.

C It has a maximum value at Z.

D It has the same value at W, X, Y and Z.

---

124. 0625_w16_qp_23 Q: 10

A ball is dropped onto a floor.

Its speed just before hitting the floor is 3.0 m / s.

Which change would result in a speed of 6.0 m / s just before hitting the floor?

Ignore any effects due to air resistance.

A Drop the ball from double the height above the floor.

B Drop the ball from four times the height above the floor.

C Use a ball with double the mass.

D Use a ball with four times the mass.

---

125. 0625_w16_qp_23 Q: 11

Which list contains only energy resources that derive their energy from the Sun?

A geothermal, nuclear, tidal

B hydroelectric, water waves, wind

C geothermal, hydroelectric, solar

D nuclear, solar, water waves

---

126. 0625_m15_qp_12 Q: 8

A helicopter takes off from the ground and rises vertically. It then hovers at a constant height above the ground.

Which sequence of energy changes takes place during the gain in height?

A chemical → gravitational potential → kinetic

B chemical → kinetic → gravitational potential

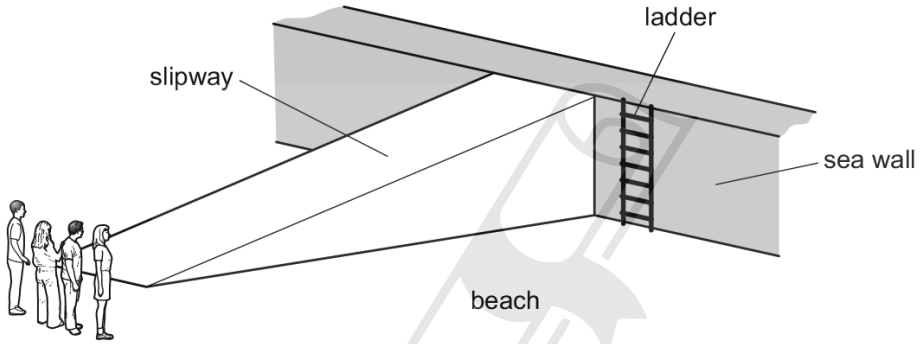
C gravitational potential → chemical → kinetic

D kinetic → chemical → gravitational potential

---

127. 0625_m15_qp_12 Q: 9

Four people of equal weight on a beach use different routes to get to the top of a sea wall.



Which person produces the greatest average power?

person	route	time taken / s
A	runs across the beach, then climbs the ladder	8
B	walks across the beach, then climbs the ladder	16
C	runs up the slipway	5
D	walks up the slipway	10

---

128. 0625_s15_qp_11 Q: 8

Which energy resource is used to generate electricity without using any moving parts?

A geothermal

B hydroelectric

C nuclear

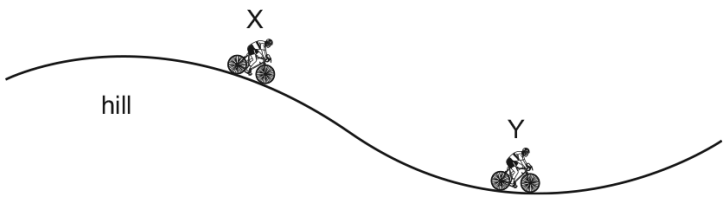
D solar

---

129. 0625_s15_qp_11 Q: 9

A cyclist travels down a hill from rest at point X, without pedalling.

The cyclist applies his brakes and the cycle stops at point Y.



Which energy changes have taken place between X and Y?

A gravitational potential → kinetic → thermal (heat)

B gravitational potential → thermal (heat) → kinetic

C kinetic → gravitational potential → thermal (heat)

D kinetic → thermal (heat) → gravitational potential

---

130. 0625_s15_qp_12 Q: 8

Which source of energy involves the splitting of heavy atoms?

A chemical energy

B geothermal energy

C hydroelectric energy

D nuclear energy

---

131. 0625_s15_qp_13 Q: 8

To calculate the power produced by a force, the size of the force must be known.

What else needs to be known to calculate the power?

	the distance the force moves the object	the time for which the force acts on the object
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = needed

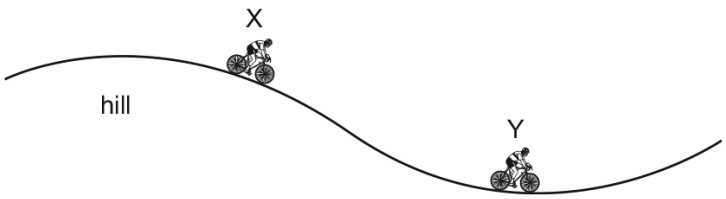
✗ = not needed

---

132. 0625_s15_qp_13 Q: 9

A cyclist travels down a hill from rest at point X, without pedalling.

The cyclist applies his brakes and the cycle stops at point Y.



Which energy changes have taken place between X and Y?

A gravitational potential → kinetic → thermal (heat)

B gravitational potential → thermal (heat) → kinetic

C kinetic → gravitational potential → thermal (heat)

D kinetic → thermal (heat) → gravitational potential

---

133. 0625_w15_qp_11 Q: 8

What needs to be known to calculate the work done by a force acting on an object?

	the size of the force	the distance the force moves the object	the time for which the force acts
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✓	✗	✗

key

✓ = needed

✗ = not needed

---

134. 0625_w15_qp_11 Q: 9

Electrical energy may be obtained from nuclear fission.

In which order is the energy transferred in this process?

A nuclear fuel → generator → reactor and boiler → turbines

B nuclear fuel → generator → turbines → reactor and boiler

C nuclear fuel → reactor and boiler → generator → turbines

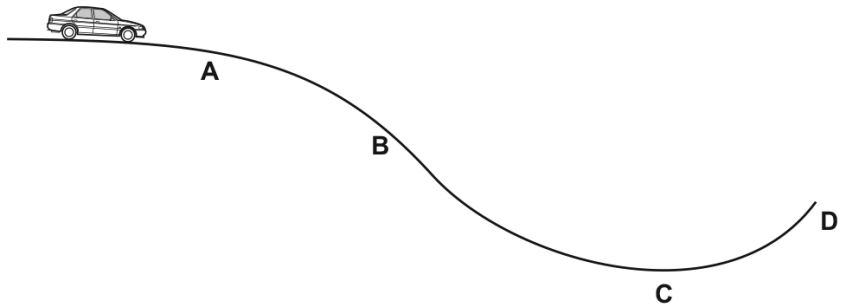
D nuclear fuel → reactor and boiler → turbines → generator

---

135. 0625_w15_qp_12 Q: 8

A car is stationary at the top of a hill with the engine switched off. The brakes are released and the car rolls down the hill.

At which labelled point does the car have the greatest kinetic energy? Ignore friction.



---

136. 0625_w15_qp_12 Q: 9

Electrical energy may be obtained from nuclear fission.

In which order is the energy transferred in this process?

A nuclear fuel → generator → reactor and boiler → turbines

B nuclear fuel → generator → turbines → reactor and boiler

C nuclear fuel → reactor and boiler → generator → turbines

D nuclear fuel → reactor and boiler → turbines → generator

---

137. 0625_w15_qp_13 Q: 8

Which row gives the energy change in a battery and the energy change in a solar cell?

	battery	solar cell
A	chemical to electrical	electrical to light
B	chemical to electrical	light to electrical
C	electrical to chemical	electrical to light
D	electrical to chemical	light to electrical

---

138. 0625_w15_qp_13 Q: 9

Electrical energy may be obtained from nuclear fission.

In which order is the energy transferred in this process?

A nuclear fuel → generator → reactor and boiler → turbines

B nuclear fuel → generator → turbines → reactor and boiler

C nuclear fuel → reactor and boiler → generator → turbines

D nuclear fuel → reactor and boiler → turbines → generator

---

139. 0625_s14_qp_11 Q: 8

Which energy transfer takes place when a matchstick burns?

A chemical to thermal

B chemical to nuclear

C nuclear to chemical

D thermal to chemical

---

140. 0625_s14_qp_11 Q: 9

Four cars are driven along a road.

The table shows the work done by the engine in each car and the time taken by each car.

Which engine produces the most power?

	work done by engine / J	time taken / s
A	50 000	20
B	50 000	40
C	100 000	20
D	100 000	40

---

141. 0625_s14_qp_12 Q: 8

In a hydroelectric power station, one form of energy is stored in a lake or reservoir. This energy is then transferred in stages to another useful form, which is the output.

Which row gives the name of the stored energy and the name of the output energy?

	stored energy	output energy
A	electrical	thermal (heat)
B	electrical	kinetic
C	gravitational	electrical
D	kinetic	electrical

---

142. 0625_s14_qp_12 Q: 9

A certain machine is very efficient.

What does this mean?

A It produces a large amount of power.

B It uses very little energy.

C It wastes very little energy.

D It works very quickly.

---

143. 0625_s14_qp_13 Q: 10

Four cars are driven along a road.

The table shows the work done by the engine in each car and the time taken by each car.

Which engine produces the most power?

	work done by engine / J	time taken / s
A	50 000	20
B	50 000	40
C	100 000	20
D	100 000	40

---

144. 0625_s14_qp_13 Q: 11

Which energy transfer takes place when a matchstick burns?

A chemical to thermal

B chemical to nuclear

C nuclear to chemical

D thermal to chemical

---

145. 0625_w14_qp_11 Q: 9

The list contains three energy resources P, Q and R.

P geothermal energy from hot rocks

Q nuclear fission in reactors

R sunlight on solar panels

Which of these resources are renewable?

A P and Q only

B P and R only

C Q and R only

D P, Q and R

---

146. 0625_w14_qp_11 Q: 11

Which movement will require the greatest amount of work to be done?

A a force of 10 N moving an object a distance of 3.0 m

B a force of 10 N moving an object a distance of 5.0 m

C a force of 15 N moving an object a distance of 3.0 m

D a force of 15 N moving an object a distance of 5.0 m

---

147. 0625_w14_qp_13 Q: 9

When a bicycle lamp is switched on, what is the useful energy change **within the battery**?

A chemical energy to electrical energy

B electrical energy to chemical energy

C electrical energy to light energy

D light energy to chemical energy

---

148. 0625_w14_qp_13 Q: 10

A student does some work by pulling a suitcase along a corridor.

She now pulls a second suitcase along the corridor.

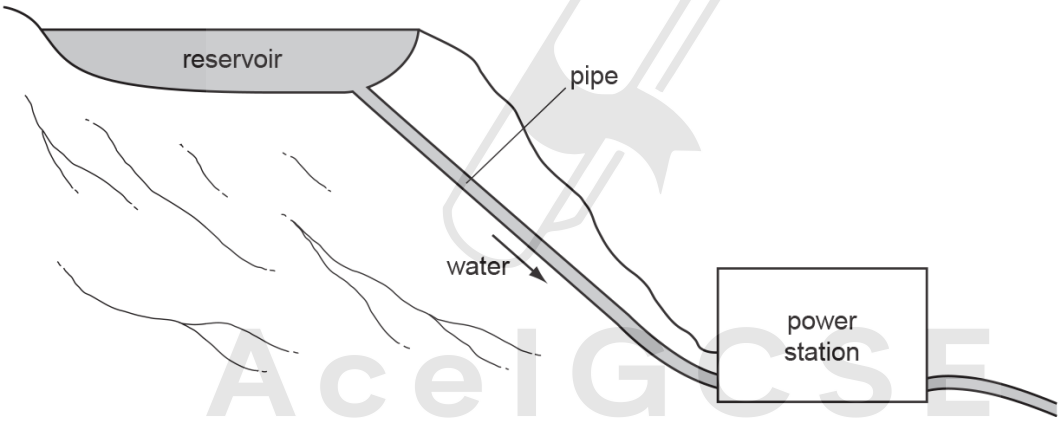
Which row indicates that the student is now doing twice as much work?

	the force used to pull suitcase	the distance the suitcase is pulled
A	is doubled	is doubled
B	is doubled	is halved
C	stays the same	is doubled
D	stays the same	is halved

---

149. 0625_s13_qp_11 Q: 9

The diagram shows a hydroelectric system.



What are the main energy changes taking place?

A chemical energy → kinetic energy → electrical energy

B electrical energy → gravitational energy → kinetic energy

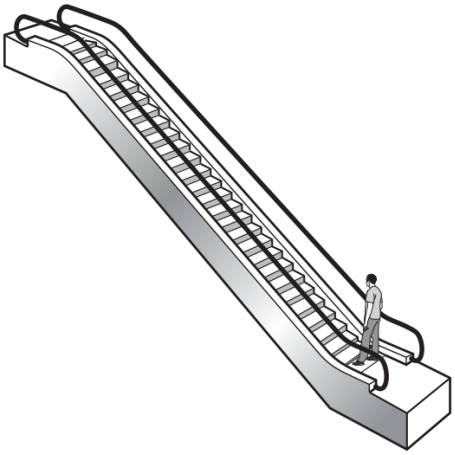
C gravitational energy → kinetic energy → electrical energy

D kinetic energy → electrical energy → gravitational energy

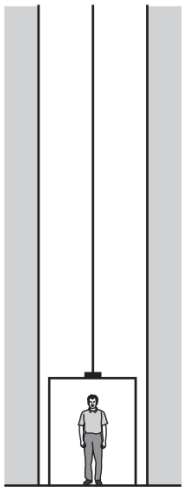
---

150. 0625_s13_qp_11 Q: 10

An escalator (moving stairs) and a lift (elevator) are both used to carry passengers from the same underground railway platform up to street level.



escalator



lift

The escalator takes 20 seconds to carry a man to street level. The useful work done is *W.* The useful power developed is *P.* The lift takes 30 seconds to carry the same man to street level.

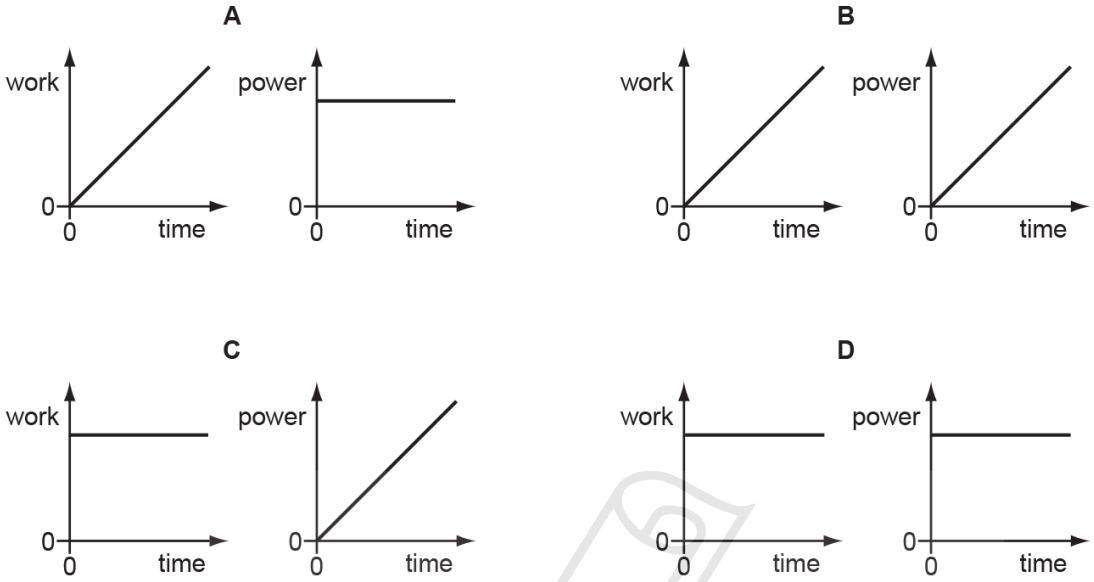
How much useful work is done by the lift, and how much useful power is developed by the lift?

	useful work done by lift	useful power developed by lift
A	more than *W*	less than *P*
B	more than *W*	*P*
C	*W*	less than *P*
D	*W*	*P*

151. 0625_s13_qp_12 Q: 10

A car moves along a level road at constant speed. Work is done by the engine and power is developed by the engine.

Which pair of graphs shows how the work done and the power developed vary with time?



---

152. 0625_w13_qp_11 Q: 9

Some energy sources are reliably available at all times, and some are not.

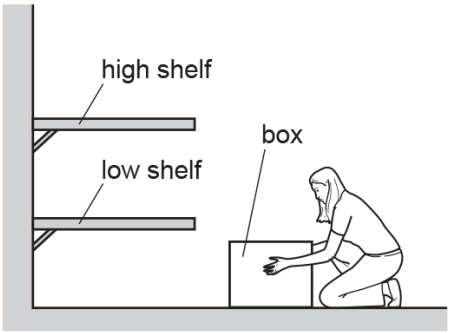
Which row shows three sources all in their correct columns?

	available at all times	not available at all times
A	geothermal	nuclear fission, solar
B	geothermal, nuclear fission	solar
C	solar, nuclear fission	geothermal
D	solar	nuclear fission, geothermal

---

153. 0625_w13_qp_11 Q: 10

A woman in a factory has to lift a box on to a shelf.



Which action involves the woman in doing the **least** amount of work?

A lifting the box quickly to the high shelf

B lifting the box slowly to the high shelf

C lifting the box to the low shelf first then lifting it to the high shelf

D lifting the box to the low shelf instead of to the high shelf

---

154. 0625_w13_qp_13 Q: 9

An aeroplane is landing. As it descends towards the runway, its speed reduces.

What are the energy changes that take place during the descent?

A kinetic + gravitational → thermal (heat)

B kinetic → gravitational + thermal (heat)

C kinetic + thermal (heat) → gravitational

D thermal (heat) → kinetic + gravitational

---

155. 0625_w13_qp_13 Q: 10

Energy from uranium is transferred to electrical energy in a nuclear power station.

What is the correct order of the stages of this process?

A boiler → generator → reactor → turbine

B generator → boiler → turbine → reactor

C reactor → boiler → turbine → generator

D reactor → turbine → boiler → generator

---

156. 0625_s12_qp_11 Q: 9

In which pair of energy sources are both sources renewable?

A oil and coal

B oil and tidal

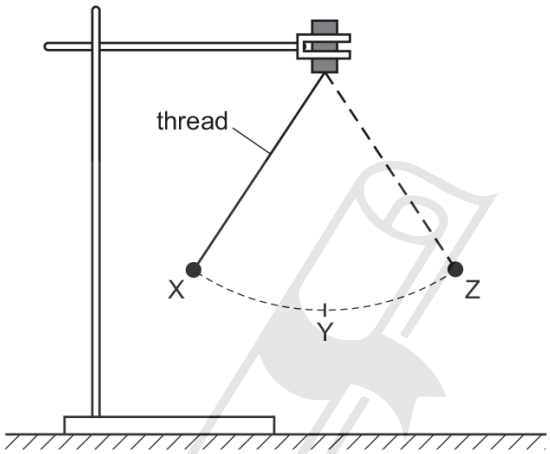
C tidal and geothermal

D tidal and nuclear fission

---

157. 0625_s12_qp_11 Q: 10

An object on a thread is swinging between X and Z, as shown in the diagram. It is momentarily at rest at X and at Z.



An incomplete word equation about the energy of the object is shown below.

gravitational potential energy at X = kinetic energy at Y + ... energy at Y + energy losses

Which form of energy is needed to complete the word equation?

A chemical

B gravitational potential

C internal

D strain

---

158. 0625_s12_qp_12 Q: 9

Electricity can be obtained from different energy resources.

Which energy resource is used to obtain electricity without producing heat to boil water?

A coal

B gas

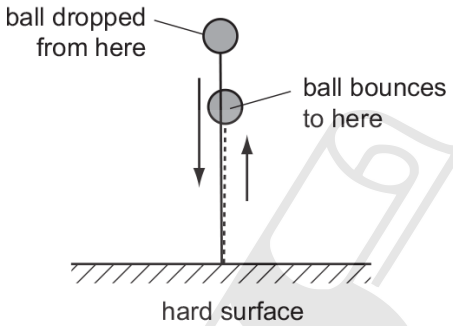
C hydroelectric

D nuclear

---

159. 0625_s12_qp_12 Q: 10

A ball is dropped on to a hard surface and bounces. It does not bounce all the way back to where it started, so it has less gravitational potential energy than when it started.



What happens to the 'lost' energy?

A It is converted into chemical and strain energy.

B It is converted into internal (heat) energy and sound.

C It is destroyed as the ball rises upwards after hitting the ground.

D It is destroyed when the ball hits the ground.

---

160. 0625_w12_qp_11 Q: 9

A power station uses nuclear fission to obtain energy.

In this process, nuclear energy is **first** changed into

A chemical energy.

B electrical energy.

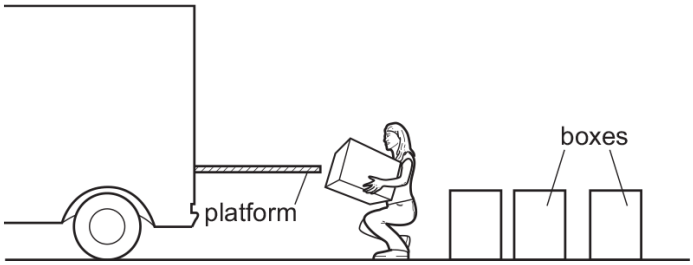
C gravitational energy.

D thermal (heat) energy.

---

161. 0625_w12_qp_11 Q: 10

A person lifts boxes of equal weight on to a platform.



Which quantity will **not** affect the work done by the person?

A the height of the platform above the ground

B the number of boxes lifted

C the time taken to lift the boxes

D the weight of the boxes

---

162. 0625_w12_qp_12 Q: 12

A skier walks from the bottom of a ski slope to the top and gains 10 000 J of gravitational potential energy.

She skis down the slope. At the bottom of the slope, her kinetic energy is 2000 J.

How much energy was converted into thermal energy and sound energy as the skier moved down the slope?

A 2000 J **B** 8000 J **C** 10 000 J **D** 12 000 J

SN	Paper	Q. No.	Answer
01	0625_m22_qp_22	11	D
02	0625_m22_qp_22	12	B
03	0625_m22_qp_22	13	C
04	0625_m21_qp_22	10	D
05	0625_m21_qp_22	11	B
06	0625_s21_qp_21	9	C
07	0625_s21_qp_21	10	D
08	0625_s21_qp_21	11	A
09	0625_s21_qp_22	9	A
10	0625_s21_qp_22	10	B
11	0625_s21_qp_22	11	A
12	0625_s21_qp_23	9	B
13	0625_s21_qp_23	10	C
14	0625_s21_qp_23	11	D
15	0625_w21_qp_21	8	D
16	0625_w21_qp_21	9	B
17	0625_w21_qp_21	10	B
18	0625_w21_qp_22	8	D
19	0625_w21_qp_22	9	A
20	0625_w21_qp_22	10	A
21	0625_w21_qp_23	8	D
22	0625_w21_qp_23	9	C
23	0625_w21_qp_23	10	C
24	0625_m20_qp_22	10	B
25	0625_m20_qp_22	11	C
26	0625_m20_qp_22	12	C
27	0625_m20_qp_22	13	C
28	0625_p20_qp_20	10	C
29	0625_p20_qp_20	12	D
30	0625_p20_qp_20	13	A
31	0625_s20_qp_21	10	C
32	0625_s20_qp_21	11	B
33	0625_s20_qp_22	10	B
34	0625_s20_qp_22	11	C
35	0625_s20_qp_23	10	D
36	0625_s20_qp_23	11	C
37	0625_w20_qp_21	11	C
38	0625_w20_qp_21	12	A
39	0625_w20_qp_22	10	C
40	0625_w20_qp_22	11	D
41	0625_w20_qp_22	12	A
42	0625_w20_qp_23	10	C
43	0625_w20_qp_23	11	C
44	0625_w20_qp_23	12	A
45	0625_m19_qp_22	4	A
46	0625_m19_qp_22	11	C
47	0625_m19_qp_22	12	B
48	0625_m19_qp_22	13	C
49	0625_s19_qp_21	11	C
50	0625_s19_qp_21	12	B
51	0625_s19_qp_22	11	A
52	0625_s19_qp_22	12	D
53	0625_s19_qp_23	10	A
54	0625_s19_qp_23	12	B
55	0625_w19_qp_21	10	C
56	0625_w19_qp_21	11	D
57	0625_w19_qp_22	11	C
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59	0625_w19_qp_23	12	C
60	0625_w19_qp_23	13	C
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62	0625_m18_qp_22	12	A
63	0625_s18_qp_21	10	C
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65	0625_s18_qp_21	12	C
66	0625_s18_qp_22	10	D
67	0625_s18_qp_22	11	D
68	0625_s18_qp_22	12	C
69	0625_s18_qp_23	10	B
70	0625_s18_qp_23	11	B
71	0625_s18_qp_23	12	D
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78	0625_w18_qp_23	8	C
79	0625_w18_qp_23	9	C
80	0625_w18_qp_23	10	C
81	0625_w18_qp_23	11	C
82	0625_m17_qp_22	9	C
83	0625_m17_qp_22	10	B
84	0625_s17_qp_21	10	A
85	0625_s17_qp_21	11	C
86	0625_s17_qp_21	12	C
87	0625_s17_qp_22	10	A
88	0625_s17_qp_22	11	B
89	0625_s17_qp_22	12	D
90	0625_s17_qp_23	9	C
91	0625_s17_qp_23	10	C
92	0625_s17_qp_23	11	B
93	0625_s17_qp_23	12	D
94	0625_w17_qp_21	10	D
95	0625_w17_qp_21	11	B
96	0625_w17_qp_21	12	B
97	0625_w17_qp_22	10	C
98	0625_w17_qp_22	11	A

SN	Paper	Q. No.	Answer
99	0625_w17_qp_23	10	B
100	0625_w17_qp_23	11	D
101	0625_m16_qp_22	9	C
102	0625_m16_qp_22	10	D
103	0625_m16_qp_22	11	C
104	0625_p16_qp_20	10	C
105	0625_p16_qp_20	12	D
106	0625_p16_qp_20	13	A
107	0625_s16_qp_21	9	B
108	0625_s16_qp_21	10	C
109	0625_s16_qp_21	11	C
110	0625_s16_qp_22	9	B
111	0625_s16_qp_22	10	A
112	0625_s16_qp_22	11	B
113	0625_s16_qp_23	8	C
114	0625_s16_qp_23	9	B
115	0625_s16_qp_23	10	A
116	0625_s16_qp_23	11	B
117	0625_w16_qp_21	8	C
118	0625_w16_qp_21	9	A
119	0625_w16_qp_21	10	C
120	0625_w16_qp_21	11	C
121	0625_w16_qp_22	10	C
122	0625_w16_qp_22	11	C
123	0625_w16_qp_22	12	D
124	0625_w16_qp_23	10	B
125	0625_w16_qp_23	11	B
126	0625_m15_qp_12	8	B
127	0625_m15_qp_12	9	C
128	0625_s15_qp_11	8	D
129	0625_s15_qp_11	9	A
130	0625_s15_qp_12	8	D
131	0625_s15_qp_13	8	A
132	0625_s15_qp_13	9	A
133	0625_w15_qp_11	8	B
134	0625_w15_qp_11	9	D
135	0625_w15_qp_12	8	C
136	0625_w15_qp_12	9	D
137	0625_w15_qp_13	8	B
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139	0625_s14_qp_11	8	A
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143	0625_s14_qp_13	10	C
144	0625_s14_qp_13	11	A
145	0625_w14_qp_11	9	B
146	0625_w14_qp_11	11	D
147	0625_w14_qp_13	9	A
148	0625_w14_qp_13	10	C
149	0625_s13_qp_11	9	C
150	0625_s13_qp_11	10	C
151	0625_s13_qp_12	10	A
152	0625_w13_qp_11	9	B
153	0625_w13_qp_11	10	D
154	0625_w13_qp_13	9	A
155	0625_w13_qp_13	10	C
156	0625_s12_qp_11	9	C
157	0625_s12_qp_11	10	B
158	0625_s12_qp_12	9	C
159	0625_s12_qp_12	10	B
160	0625_w12_qp_11	9	D
161	0625_w12_qp_11	10	C
162	0625_w12_qp_12	12	B