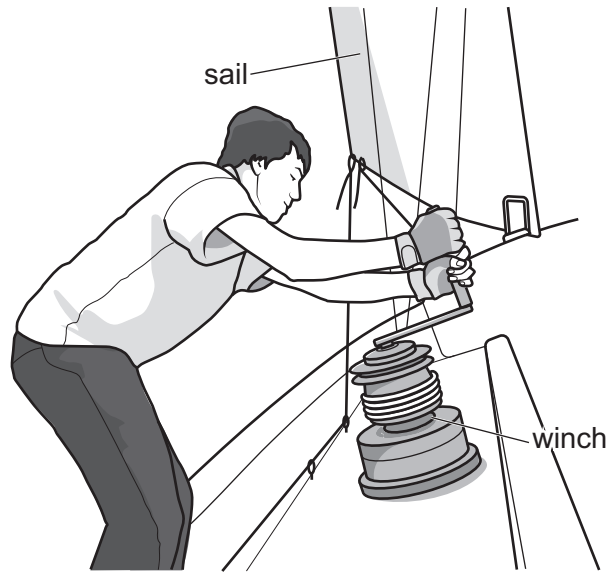


1 A sailor uses a winch to raise a sail on a boat. The diagram shows the sailor turning the winch.



Describe **one** non-useful energy transfer when the sailor uses the winch to raise the sail.

..... [1]

[Total: 1]

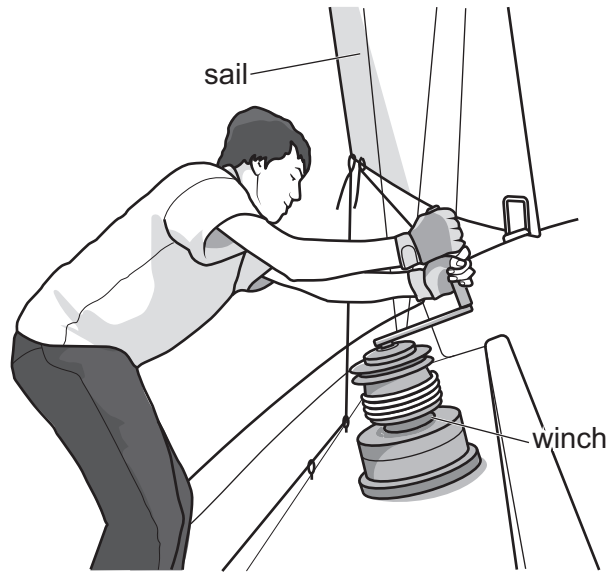
2 A student lifts a 5.0 kg object from the floor onto a table. He does 75 J of work on the object in lifting it onto the table.

State the amount of gravitational potential energy gained by the object due to being lifted onto the table.

gravitational potential energy gained by object = ..... J [1]

[Total: 1]

3 A sailor uses a winch to raise a sail on a boat. The diagram shows the sailor turning the winch.



Describe **two** useful energy transfers when the sailor uses the winch to raise the sail.

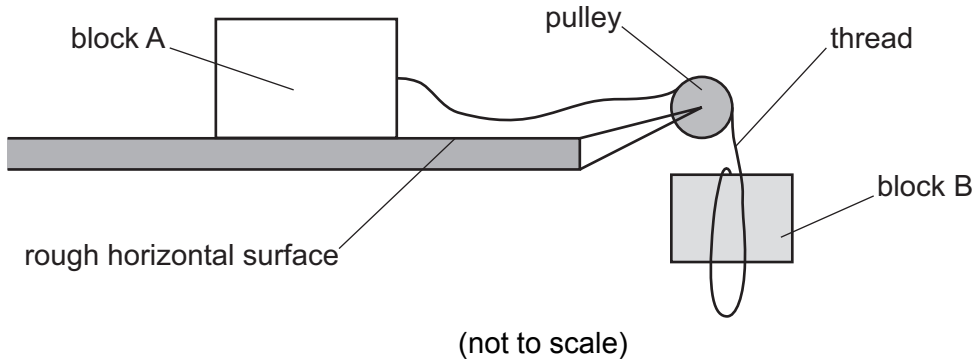
1 .....

2 ..... [2]

[Total: 2]

- 4 Two blocks, A and B, are joined by a thin thread that passes over a frictionless pulley. Block A is at rest on a rough horizontal surface and block B is held at rest, just below the pulley.

The diagram shows the thread hanging loose.



Block B is released and it falls vertically. The thread remains loose until block B has fallen a distance of 0.45 m.

The mass of block B is 0.50 kg.

Calculate the change in the gravitational potential energy (g.p.e.) of block B as it falls through 0.45 m.

change in g.p.e. .... [2]

[Total: 2]

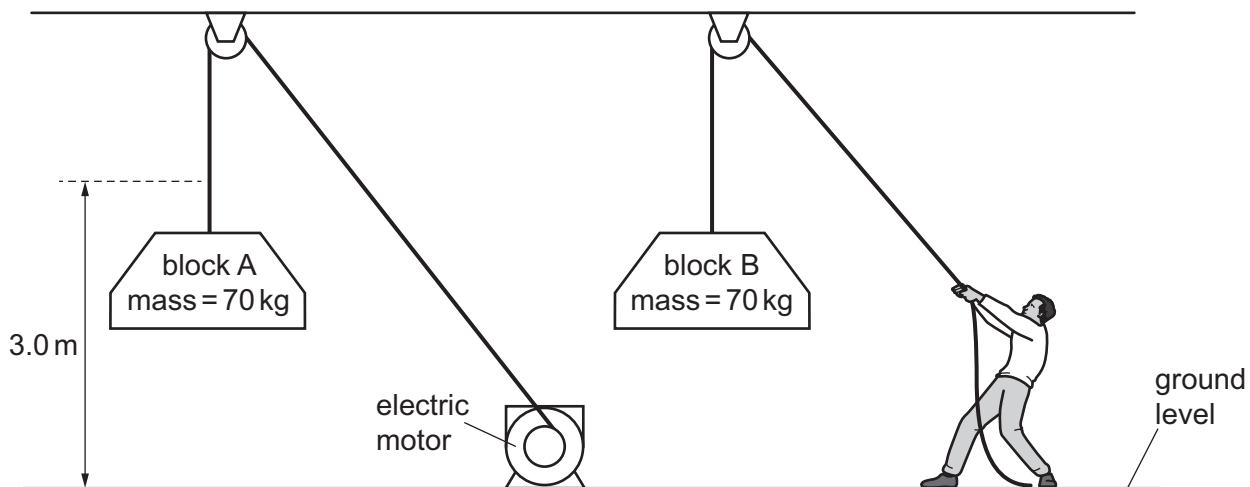
- 5 Apart from cost, state **two disadvantages** of generating electricity using wind turbines compared with using a power station that burns coal.

1. ....

2. .... [2]

[Total: 2]

- 6 The diagram shows two identical metal blocks, A and B, being lifted 3.0 m from ground level. Block A is lifted by a motor. Block B is lifted by a person.



Both blocks are lifted at the same steady speed. The blocks are then held at a height of 3.0 m.

- (a) Compare the energy gained by block A with the energy gained by block B.

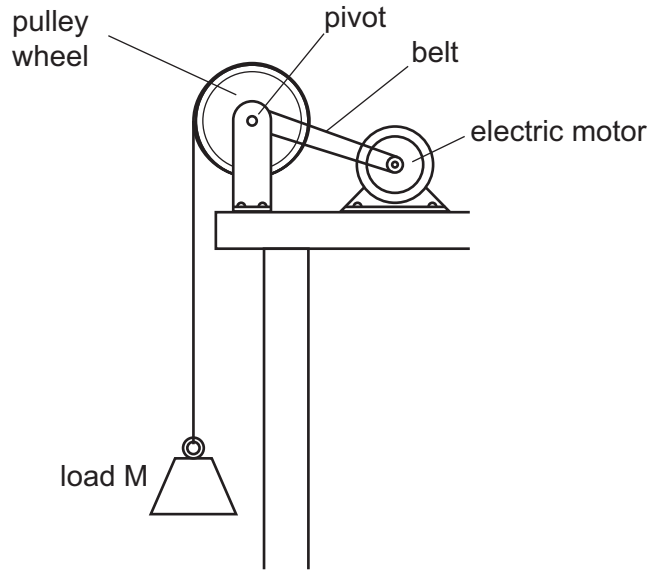
..... [1]

- (b) Explain why the energy input to the motor is more than the energy gained by block A.

.....  
 .....  
 ..... [2]

[Total: 3]

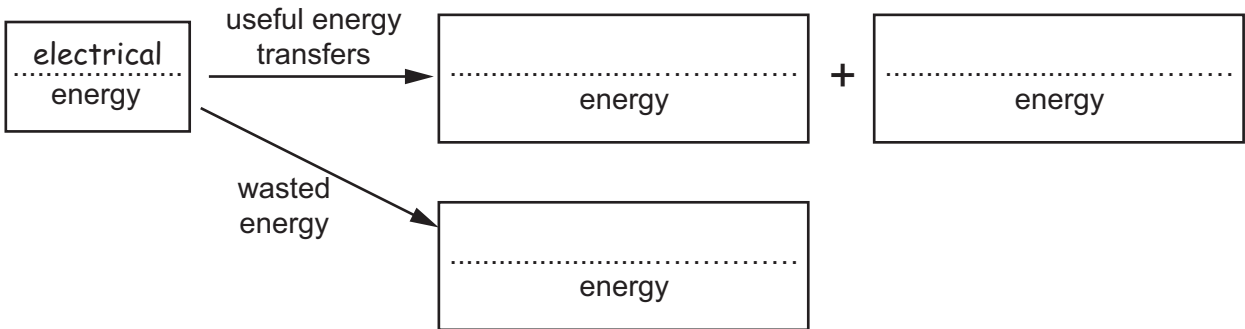
- 7 Diagram A shows an electric motor and pulley wheel being used to raise a load M. The electric motor uses a belt to turn the pulley wheel.



**Diagram A**

When the electric motor lifts the load, it transfers energy. Diagram B shows the energy transfers.

Write on Diagram B to complete the label in each box. The first label is done for you.



**Diagram B**

[3]

[Total: 3]

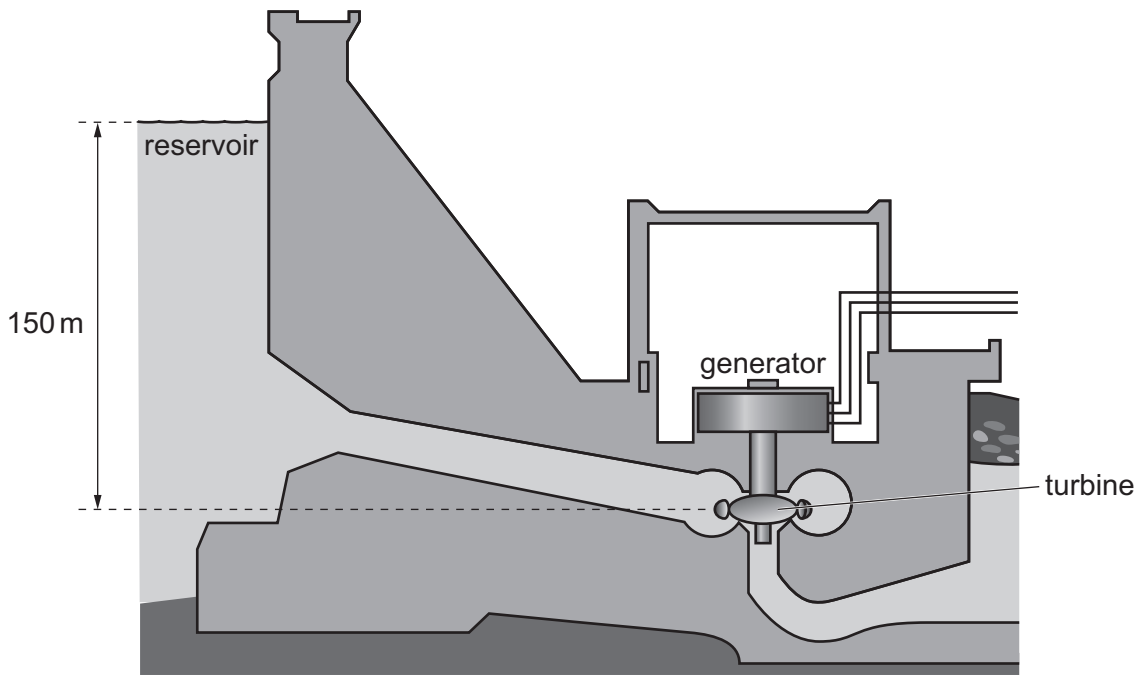
8 The mass of a canoeist is 65 kg.

Calculate her kinetic energy when travelling on still water at 2.5 m/s.

energy = ..... [2]

[Total: 2]

9 The diagram shows water stored in a reservoir behind a hydroelectric dam.



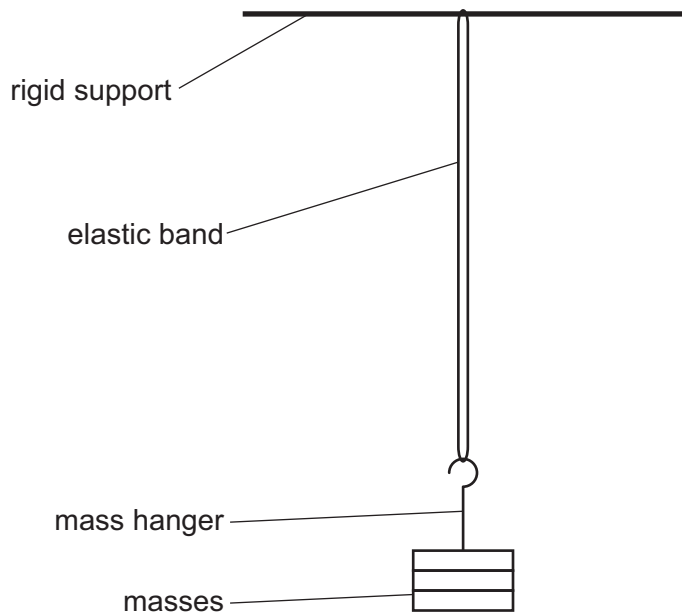
(not to scale)

State the form of the energy stored in the water in the reservoir that is used to generate electricity.

..... [1]

[Total: 1]

- 10 The diagram shows some masses on a mass hanger attached to an elastic band. The elastic band is stretched by the masses.



When the student pulls the mass hanger down, energy is stored in the elastic band as elastic potential energy.

Describe what happens to this energy store when the student releases the mass hanger and it moves upwards.

.....  
 .....

[2]

[Total: 2]

- 11 A baby has a mass of 8.0 kg The baby is carried from the ground floor to the bedroom. The vertical height of the bedroom above the ground floor is 3.5 m.

Calculate the change in gravitational potential energy of the baby when it is carried from the ground floor to the bedroom.

change in gravitational potential energy = ..... [2]

[Total: 2]

12 Electrical appliances transfer energy. Some of the energy transferred is useful.

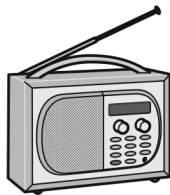
Draw a line from each electrical appliance to the correct useful energy output.

Only draw **three** lines.

electrical appliance



torch



radio



electric fan

useful energy output

sound

light

chemical

kinetic

[3]

[Total: 3]