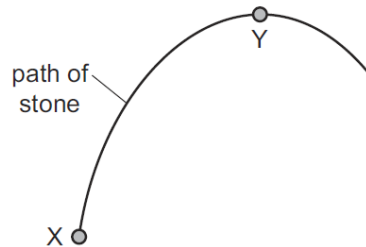


WORK-ENERGY-POWER NUMERICALS-SET-2

1

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.

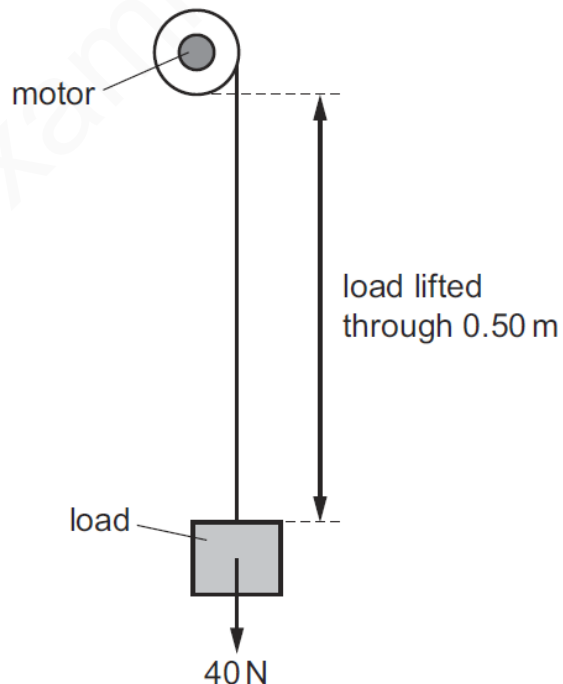
Air resistance can be ignored.

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

2

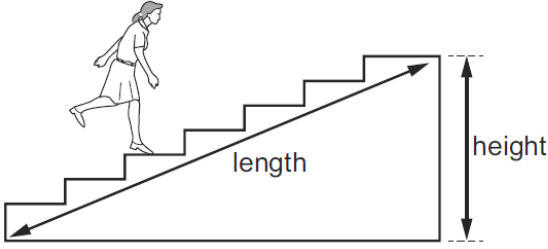
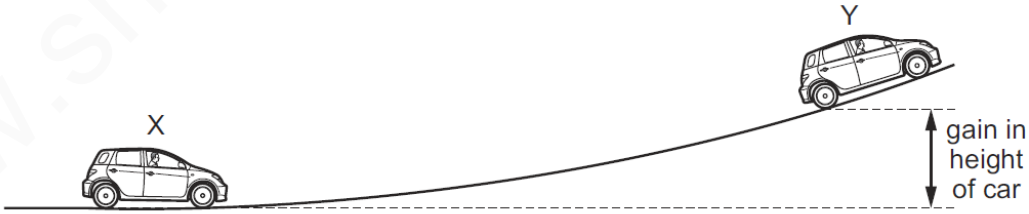
A motor is used to lift a load of 40 N.

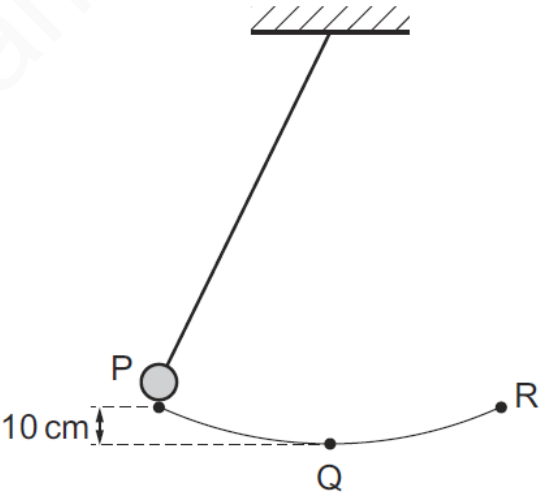


The power of the motor is 40 W and the system is 20% efficient.

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

3	<p>A student runs up a flight of stairs.</p>  <p>Which information is not needed to calculate the rate at which the student is doing work against gravity?</p> <p>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</p>
4	<p>An object has a mass of 500 kg.</p> <p>It moves with a speed of 30 m/s.</p> <p>What is its kinetic energy?</p> <p>A 7.5 kJ B 15 kJ C 225 kJ D 450 kJ</p>
5	<p>A car, starting from rest at position X, accelerates up a hill. The car reaches a speed of 10 m/s at position Y.</p> <p>The kinetic energy of the car at position Y is equal to its gain in gravitational potential energy from X to Y.</p>  <p>Take the gravitational field strength g to be 10 N/kg.</p> <p>What is the gain in height of the car between X and Y?</p> <p>A 0.50 m B 5.0 m C 10 m D 50 m</p>

6	<p>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.</p> <p>The frictional forces are negligible.</p> <p>What is its speed when it hits the ground?</p> <p>A 4.71 m/s B 15.5 m/s C 47.1 m/s D 240 m/s</p>
7	<p>A man climbs a ladder.</p> <p>Which two quantities can be used to calculate the useful power of the man?</p> <p>A the weight of the man and the time taken only</p> <p>B the weight of the man and the vertical distance moved only</p> <p>C the work done by the man and the time taken only</p> <p>D the work done by the man and the vertical distance moved only</p>
8	<p>The diagram shows a pendulum.</p>  <p>The pendulum swings from P to Q to R and back to P.</p> <p>P is 10 cm higher than Q.</p> <p>At which speed does the pendulum bob pass through Q?</p> <p>A 0.44 m/s B 1.0 m/s C 1.4 m/s D 2.0 m/s</p>

9	<p>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.</p> <p>How much work does the man do against gravity on the tiles in carrying them to the roof?</p> <p>A 36 J B 180 J C 360 J D 3600 J</p>
10	<p>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.</p> <p>What is the minimum average power developed by the car engine for this acceleration?</p> <p>A 45 W B 205 W C 45 kW D 205 kW</p>