

WORK-SET-1

1 A labourer on a building site lifts heavy concrete blocks onto a lorry. Lighter blocks are now lifted the same distance in the same time.

What happens to the work done in lifting each block and the power exerted by the labourer?

	work done in lifting each block	power exerted by labourer
A	decreases	decreases
B	decreases	remains the same
C	increases	increases
D	remains the same	increases

2 A labourer on a building site lifts a heavy concrete block onto a lorry. He then lifts a light block the same distance in the same time.

Which of the following is true?

	work done in lifting the blocks	power exerted by labourer
A	less for the light block	less for the light block
B	less for the light block	the same for both blocks
C	more for the light block	more for the light block
D	the same for both blocks	more for the light block

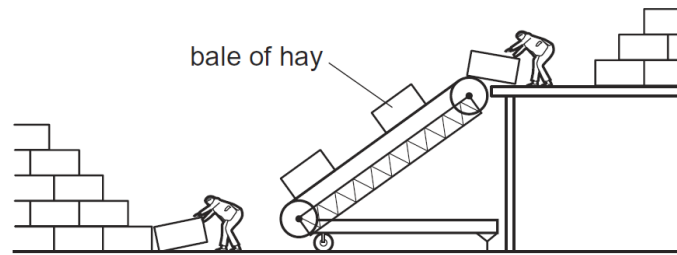
3 A man lifts 20 bricks, each of weight 6 N.

What other information is needed to calculate the useful work done in lifting the bricks?

- A** the distance he lifts the bricks
- B** the mass of the bricks
- C** the time taken to lift the bricks
- D** the volume of the bricks

4

Two farmers use an electrically powered elevator to lift bales of hay. All the bales of hay have the same mass.



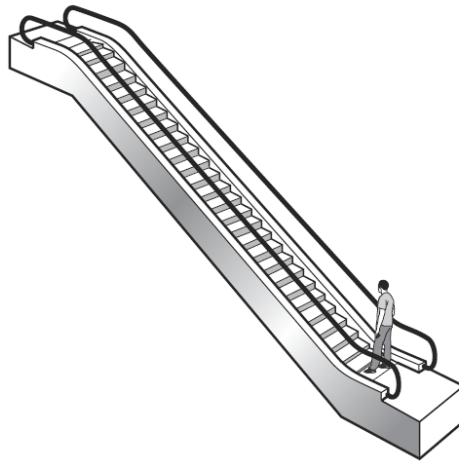
As sunset approaches, they increase the speed of the motor so that more bales are lifted up in a given time.

How does this affect the work done in lifting each bale and the useful output power of the motor?

	work done in lifting each bale	useful output power of the motor
A	increases	decreases
B	increases	increases
C	no change	decreases
D	no change	increases

5

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

6

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

7

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

8

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

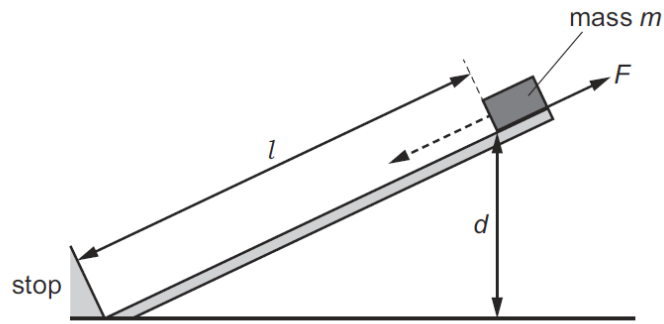
B $mgh - \frac{1}{2}mv^2$

C mgh

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

9

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.

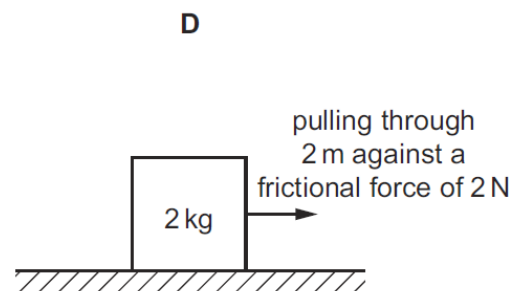
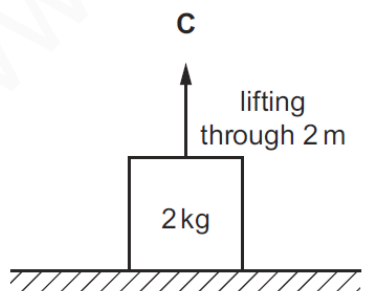
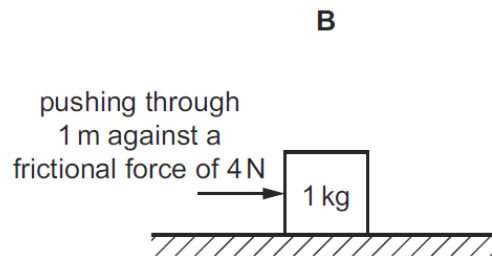
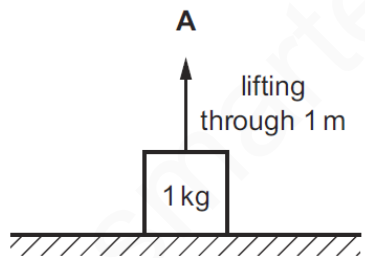
Which row gives the loss in gravitational potential energy and the work done against friction?

	loss in gravitational potential energy	work done against friction
A	mgd	Fl
B	mgd	Fd
C	$mg l$	Fl
D	$mg l$	Fd

10

A student carries out some simple exercises.

In which exercise is the most work done?



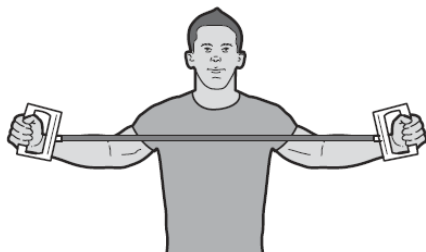
11

The diagrams show athletes training by stretching springs.

Each spring has the same stiffness.

Which athlete does the most work?

A



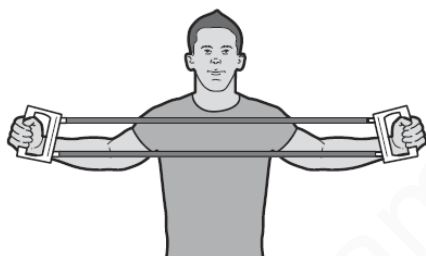
one spring stretched
by 0.60 m

B



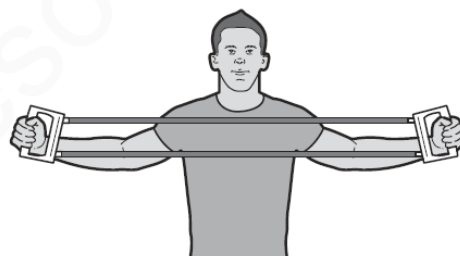
one spring stretched
by 0.80 m

C



two springs stretched
by 0.60 m

D



two springs stretched
by 0.80 m