

POWER-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.

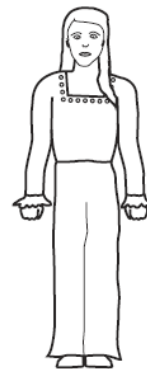
What happens to the work done in lifting each block and the power exerted by the labourer?

	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 boy and a girl run up a hill in the same time.



boy weighs 600 N



girl weighs 500 N

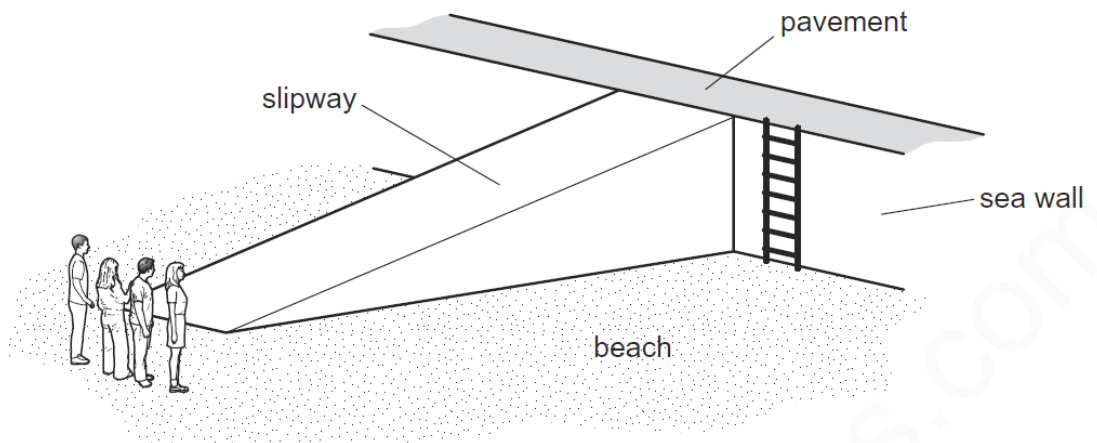
The boy weighs more than the girl.

Which statement is true about the power produced?

- A** The boy produces more power.
- B** The girl produces more power.
- C** They both produce the same power.
- D** It is impossible to tell who produces more power.

3	<p>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.</p> <p>Which of the following is true?</p> <table border="1"> <thead> <tr> <th></th> <th>work done in lifting the blocks</th> <th>power exerted by labourer</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>less for the light block</td> <td>less for the light block</td> </tr> <tr> <td>B</td> <td>less for the light block</td> <td>the same for both blocks</td> </tr> <tr> <td>C</td> <td>more for the light block</td> <td>more for the light block</td> </tr> <tr> <td>D</td> <td>the same for both blocks</td> <td>more for the light block</td> </tr> </tbody> </table>		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
	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														
4	<p>A worker is lifting boxes of identical weight from the ground onto a moving belt.</p> <p>At first, it takes him 2 s to lift each box. Later in the day, it takes him 3 s.</p> <p>Which statement is correct?</p> <p>A Later in the day, less work is done in lifting each box.</p> <p>B Later in the day, more work is done in lifting each box.</p> <p>C Later in the day, less power is developed in lifting each box.</p> <p>D Later in the day, more power is developed in lifting each box.</p>															

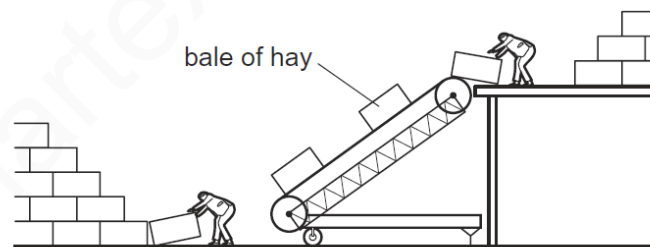
5 Four people of equal weight on a beach use different routes to get to the top of a sea wall.



Which person produces the **greatest** average power?

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

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



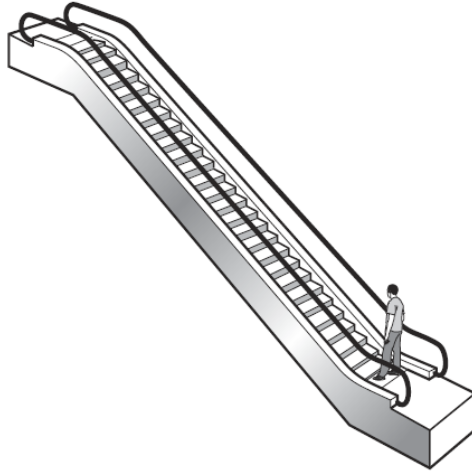
As sunset approaches, they increase the speed of the motor so that more bales are lifted up in a given time.

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

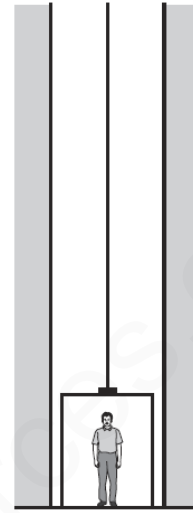
	work done in lifting each bale	useful output power of the motor
A	increases	decreases
B	increases	increases
C	no change	decreases
D	no change	increases

7

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.

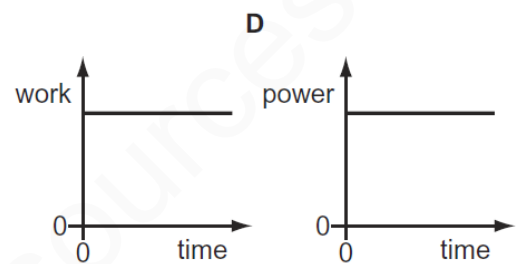
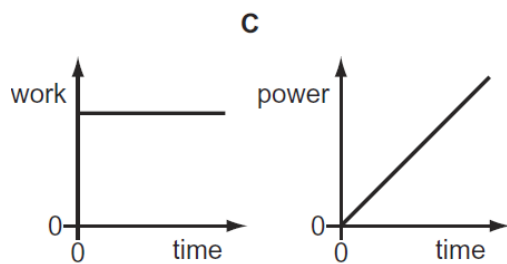
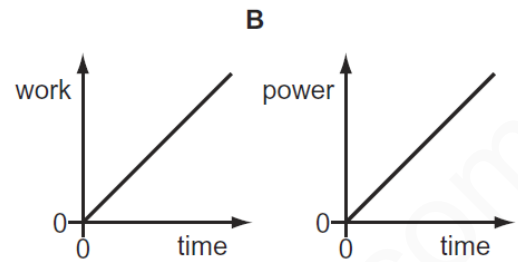
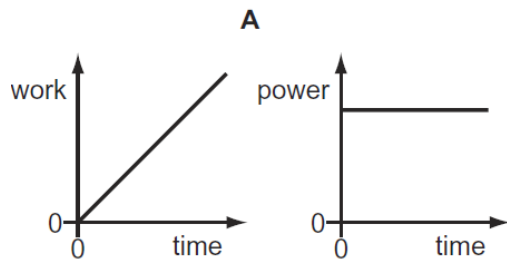
How much useful work is done by the lift, and how much useful power is developed by the lift?

	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

8

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?



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

10

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	✗	✗

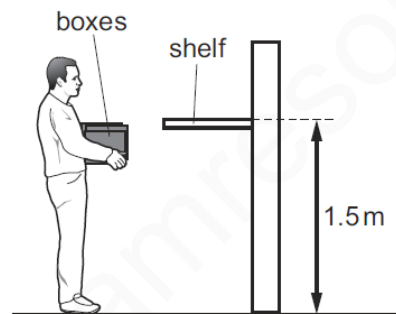
key

✓ = needed

✗ = not needed

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