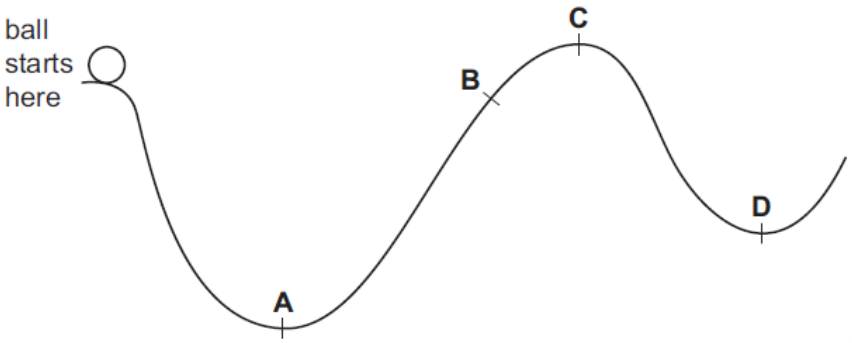
Work, Energy and Power – 2020 IGCSE 0625

1. March/2020/Paper_12/No.9

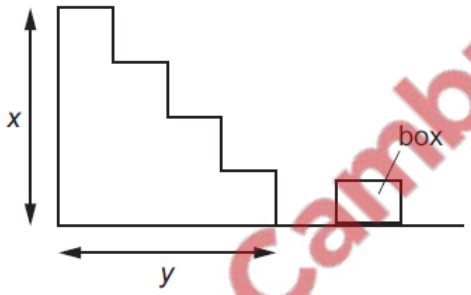
A ball is released from rest and rolls down a track from the position shown.

What is the furthest position that it is possible for the ball to reach?



2. March/2020/Paper_12/No.11

A box of mass *m* and weight *W* is carried up some stairs of total height *x* and total width *y*.



On which quantities does the work done against gravity on the box depend?

A *m* and *y** **B** *W* and *x** **C** *W* and *y** **D** *x* and *y*

3. March/2020/Paper_22/No.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

4. March/2020/Paper_22/No.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

5. March/2020/Paper_32/No.4

Fig. 4.1 shows an electric circuit.

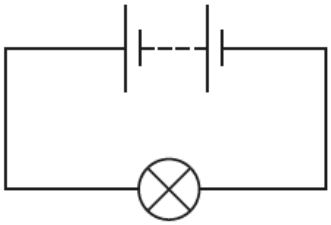


Fig. 4.1

An electric current transfers energy from the battery to the filament lamp.

(a) State the **two** forms of energy emitted by the filament lamp.

1. .....

2. .....

[2]

(b) State which form of energy in the battery is decreasing.

..... [1]

(c) Explain how the principle of conservation of energy applies to this circuit.

.....

.....

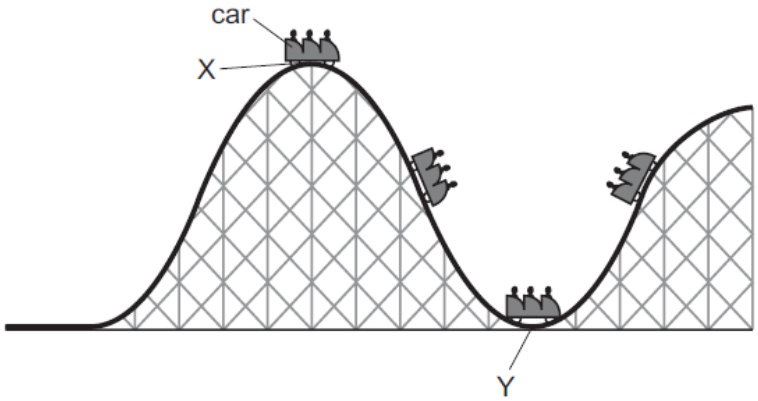
..... [1]

[Total: 4]

6. June/2020/Paper_11/No.**9**

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.

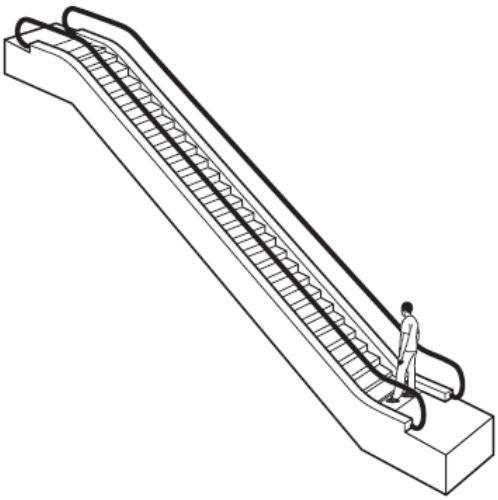


What happens to the kinetic energy and to the gravitational potential energy of the car as it moves from position X to position Y?

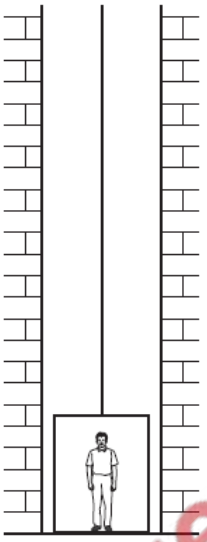
	kinetic energy	gravitational potential energy
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

7. June/2020/Paper_11/No.**11**

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*

8. June/2020/Paper_12/No.**10**

Two motors X and Y lift loads of the same weight through the same vertical distance.

Motor X is more efficient than motor Y.

Which statement about the motors is correct?

A The useful energy output of motor X is larger than that of motor Y.

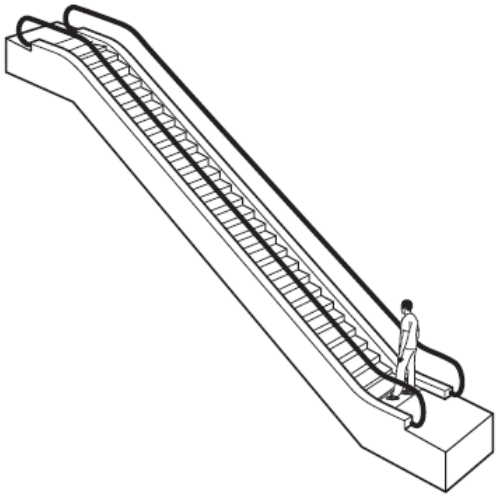
B The useful energy output of motor X is smaller than that of motor Y.

C The energy input of motor X is larger than that of motor Y.

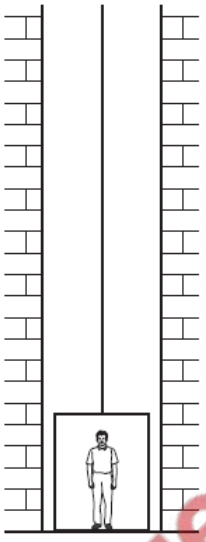
D The energy input of motor X is smaller than that of motor Y.

9. June/2020/Paper_12/No.**11**

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



escalator



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

10. June/2020/Paper_13/No.**11**

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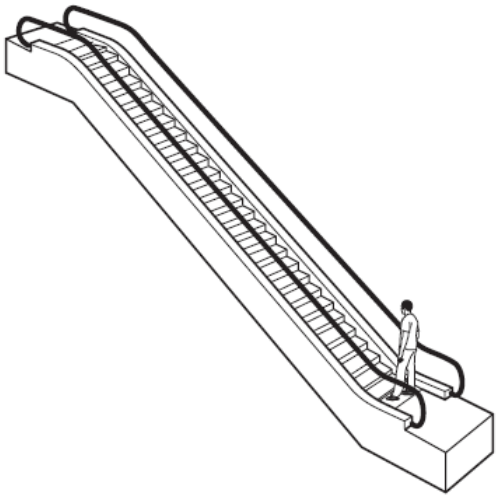
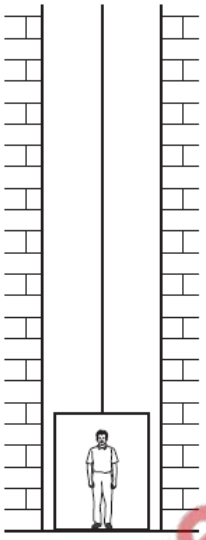


escalator



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B	more than *W*	*P*
C	*W*	less than *P*
D	*W*	*P*

11. June/2020/Paper_21/No.**10**

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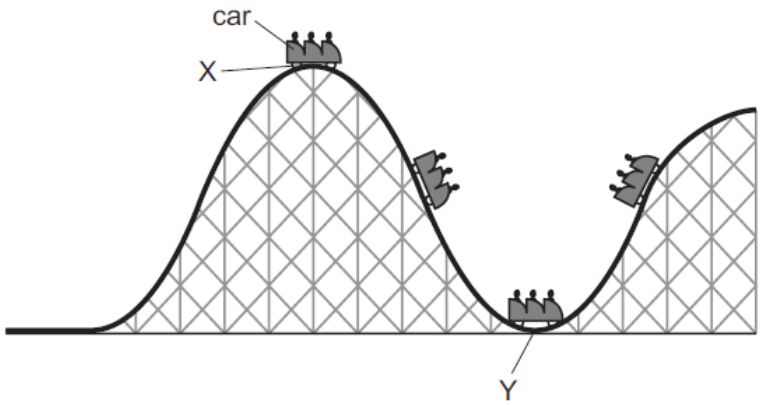
The car runs freely down from position X to position Y and up the hill on the other side.



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

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B	decreases	increases
C	increases	decreases
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12. June/2020/Paper_22/No.**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

13. June/2020/Paper_23/No.**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