

IGCSE Cambridge Topical Past Papers

PHYSICS 9-1

0972 Paper 1

2020 — 2025

Chapter 1	General Physics	Page 1
Chapter 2	Thermal Physics	Page 92
Chapter 3	Properties of Waves, Including Light and Sound	Page 135
Chapter 4	Electricity and Magnetism	Page 186
Chapter 5	Atomic Physics	Page 263



1 - (0972/11_Summer_2020_Q1)

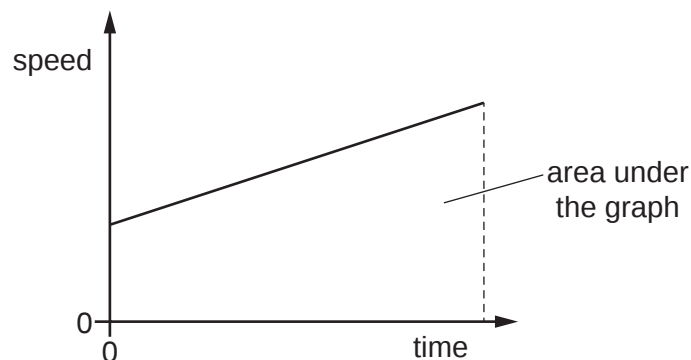
A pendulum makes 50 complete swings in 2 min 40 s.

What is the time period for 1 complete swing?

- A** 1.6 s **B** 3.2 s **C** 4.8 s **D** 6.4 s

2 - (0972/11_Summer_2020_Q2)

The motion of an object is represented by the speed–time graph shown.



Which quantity is equal to the area under the graph?

- A** acceleration
B average speed
C distance travelled
D kinetic energy

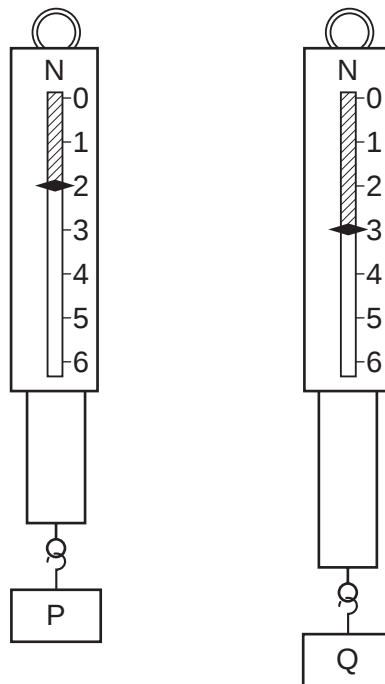
3 - (0972/11_Summer_2020_Q3)

Which statement about acceleration is correct?

- A** It is related to the changing speed of an object.
B It is the distance an object travels in one second.
C It is the force acting on an object divided by the distance it travels in one second.
D It is the force acting on an object when it is near to the Earth.

4 - (0972/11_Summer_2020_Q4)

Two metal blocks P and Q have identical dimensions. They hang on identical spring balances.



Which statement about P and Q is correct?

- A** They have different volumes and different weights.
- B** They have different volumes and equal weights.
- C** They have equal volumes and equal weights.
- D** They have equal volumes and different weights.

5 - (0972/11_Summer_2020_Q5)

A mass of 6.0 kg rests on the surface of a planet.

On this planet, $g = 20 \text{ N/kg}$.

What is the weight of the object?

- A** 0.30 N **B** 0.60 N **C** 60 N **D** 120 N

6 - (0972/11_Summer_2020_Q6)

The mass of a measuring cylinder is 190 g.

400 cm³ of liquid is put into the measuring cylinder.

The total mass of the measuring cylinder and the liquid is 560 g.

Four solid objects are lowered in turn into the liquid. The densities of the objects are shown.

1 0.40 g/cm³

2 0.90 g/cm³

3 1.2 g/cm³

4 2.7 g/cm³

Which objects will float in the liquid?

A 1 only

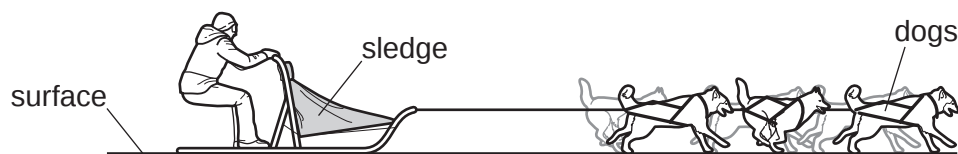
B 1 and 2 only

C 1, 2 and 3

D 3 and 4 only

7 - (0972/11_Summer_2020_Q7)

A sledge is pulled in a straight line by dogs, as shown.



The dogs produce a total horizontal driving force of 600 N.

The frictional force between the sledge and the surface is 150 N and the air resistance on the sledge is 450 N.

What is the resultant force acting on the sledge?

A 0 N

B 300 N

C 900 N

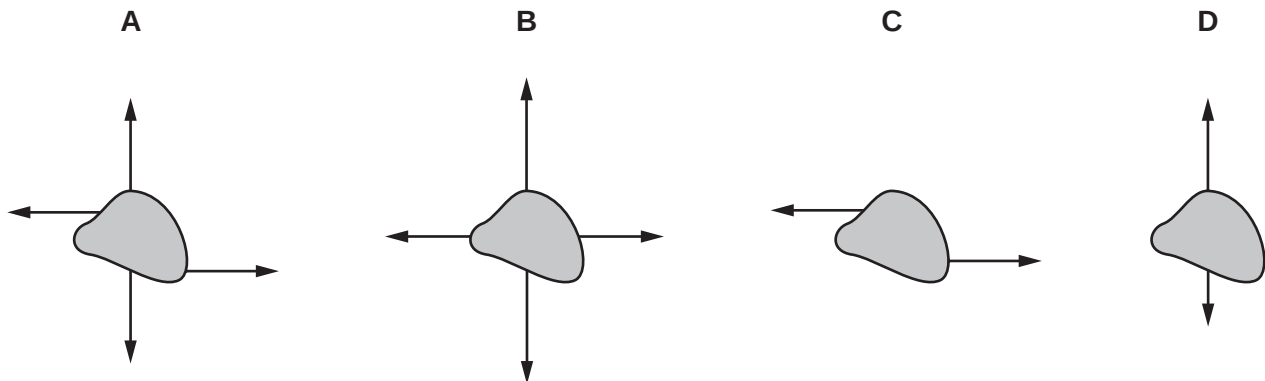
D 1200 N

8 - (0972/11_Summer_2020_Q8)

Forces are applied to four identical objects.

The lengths of the arrows indicate the magnitude of each force.

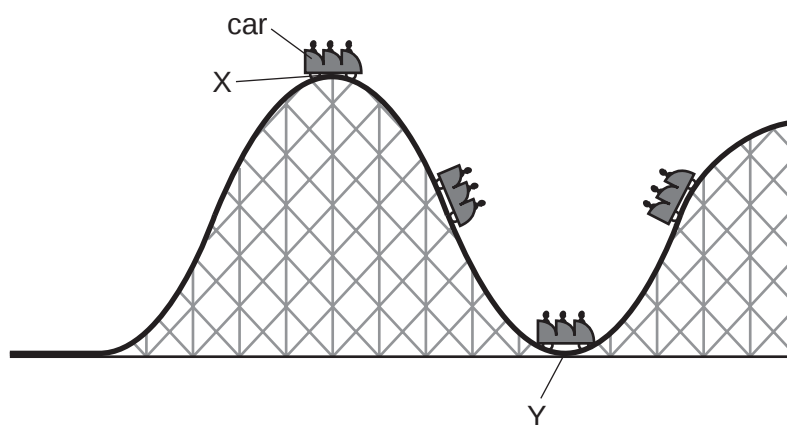
Which object is in equilibrium?



9 - (0972/11_Summer_2020_Q9)

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

10 - (0972/11_Summer_2020_Q10)

Student P uses a force of 35 N to push a box 3.0 m across the floor.

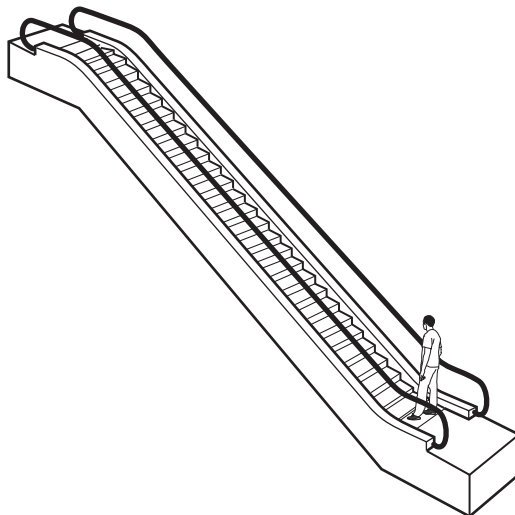
Student Q uses a force of 22 N to push another box 1.8 m across the floor.

Which statement gives a full explanation why student P uses more energy than student Q?

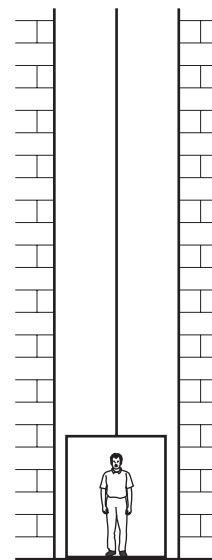
- A** Student P pushes his box a greater distance than student Q.
- B** Student P pushes his box a greater distance and uses a bigger force than student Q.
- C** Student P uses a bigger force than student Q.
- D** Student P pushes a heavier box than student Q.

11 - (0972/11_Summer_2020_Q11)

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 .

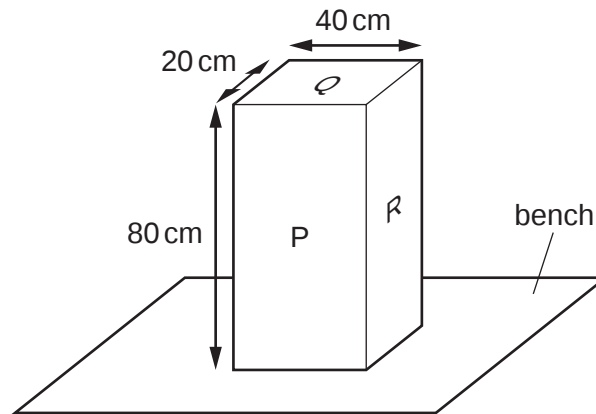
The lift takes 30 seconds to carry the same man between the same two floors.

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

12 - (0972/11_Summer_2020_Q12)

The diagram shows a solid block resting on a bench. The dimensions of the block are shown.



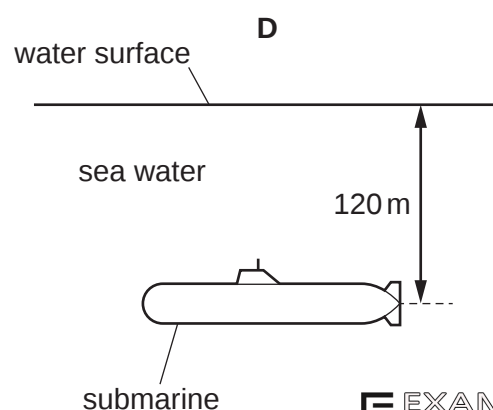
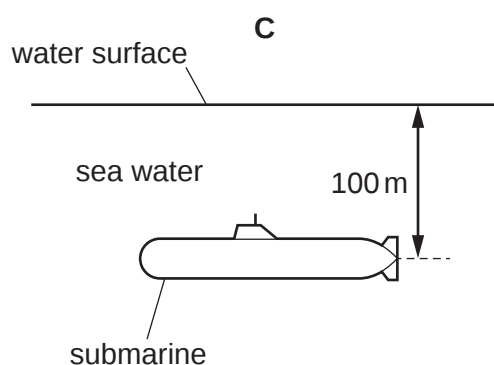
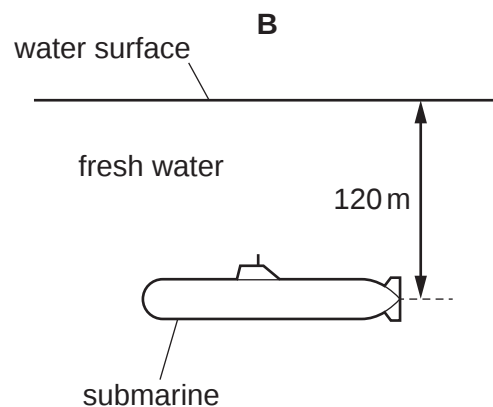
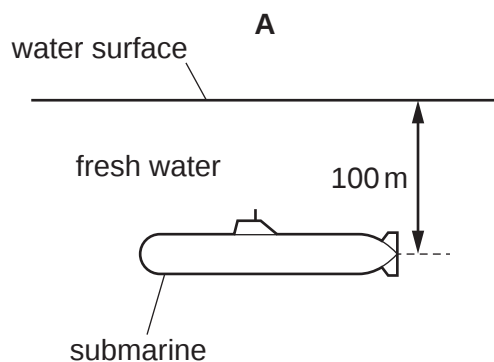
On which labelled surface should the block rest to produce the smallest pressure on the bench?

- A P
- B Q
- C R
- D P, Q and R produce the same pressure

13 - (0972/11_Summer_2020_Q13)

Four submarines are submerged. The density of fresh water is 1000 kg/m^3 and the density of sea water is 1020 kg/m^3 .

Which submarine experiences the greatest pressure due to the water?



14 - (0972/12_Summer_2020_Q1)

Five athletes P, Q, R, S and T compete in a race. The table shows the finishing times for the athletes.

athlete	P	Q	R	S	T
finishing time / s	22.50	24.40	25.20	26.50	23.20

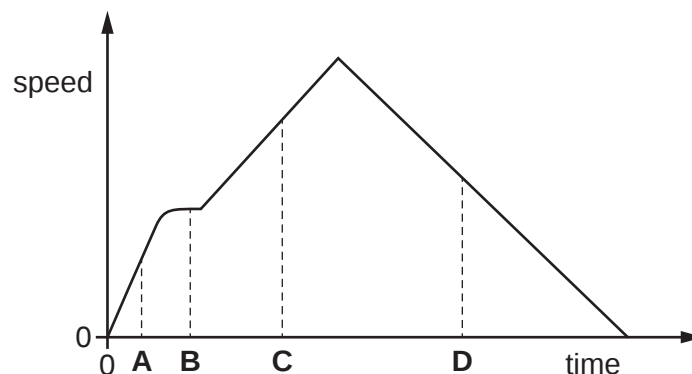
Which statement is correct?

- A** Athlete P won the race and was 0.70 s ahead of the athlete in second place.
- B** Athlete P won the race and was 1.90 s ahead of the athlete in second place.
- C** Athlete S won the race and was 1.30 s ahead of the athlete in second place.
- D** Athlete S won the race and was 2.10 s ahead of the athlete in second place.

15 - (0972/12_Summer_2020_Q2)

The graph shows how the speed of an object varies with time.

At which labelled time is the acceleration greatest?



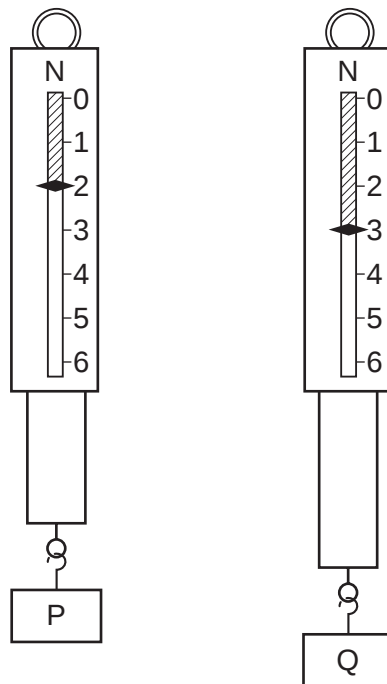
16 - (0972/12_Summer_2020_Q3)

Which statement about acceleration is correct?

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- D** It is the force acting on an object when it is near to the Earth.

17 - (0972/12_Summer_2020_Q4)

Two metal blocks P and Q have identical dimensions. They hang on identical spring balances.



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- C** They have equal volumes and equal weights.
- D** They have equal volumes and different weights.

18 - (0972/12_Summer_2020_Q5)

A space probe is taken from the Earth to Mars.

The force of gravity on the surface of Mars is less than the force of gravity on the surface of the Earth.

How do the weight and the mass of a space probe on the surface of Mars compare to their values when the probe is on the surface of the Earth?

	weight on Mars	mass on Mars
A	decreased	decreased
B	decreased	unchanged
C	unchanged	decreased
D	unchanged	unchanged

19 - (0972/12_Summer_2020_Q6)

Water has a density of 1000 kg/m^3 .

A rectangular swimming pool has an average depth of 1.6 m.

The length of the pool is 25 m.

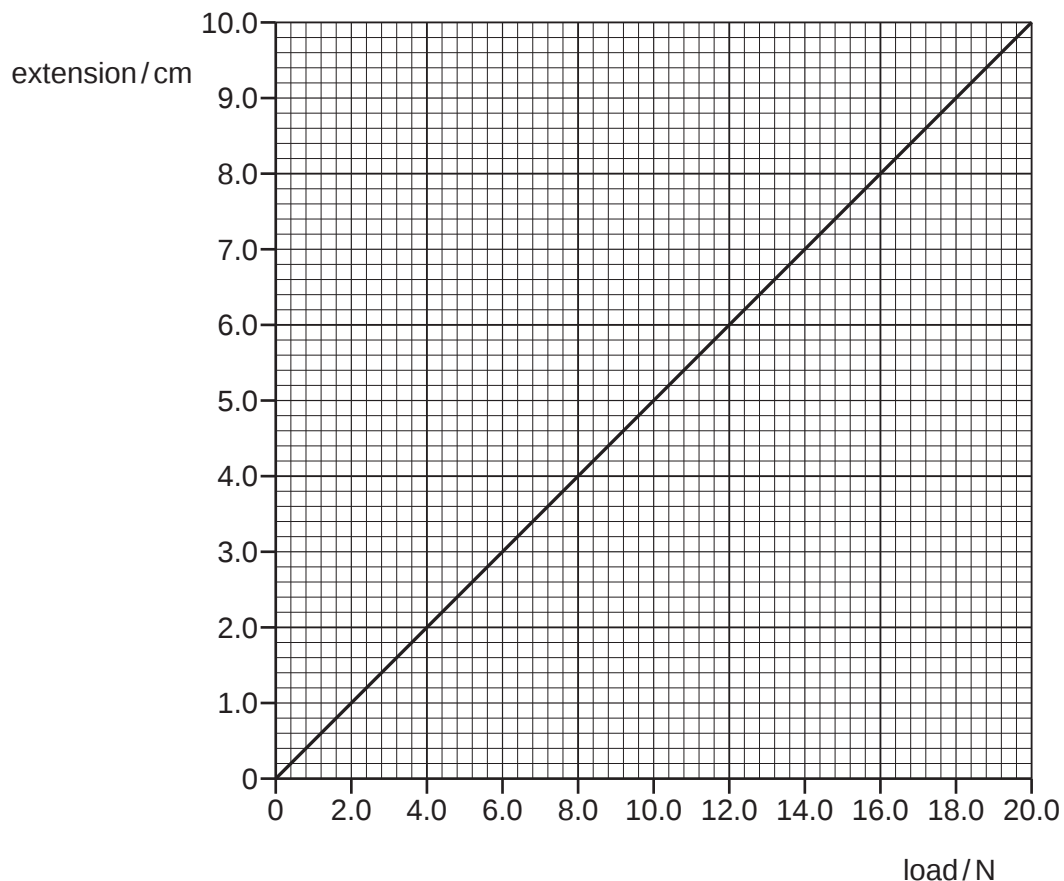
The width of the pool is 10 m.

What is the mass of the water in the swimming pool?

- A** 2.5 kg **B** 400 kg **C** 400 000 kg **D** 800 000 kg

20 - (0972/12_Summer_2020_Q7)

The diagram shows an extension–load graph for a spring.



An empty can of weight 3.0 N is suspended from the spring.

Liquid is poured into the can until the extension is 8.0 cm.

What is the weight of the liquid?

- A** 4.0 N **B** 10.0 N **C** 13.0 N **D** 16.0 N

21 - (0972/12_Summer_2020_Q8)

What is meant by the moment of a force on an object?

- A** the magnitude of the force on the object
- B** the direction of the force on the object
- C** the time for which the force acts on the object
- D** the turning effect of the force on the object

22 - (0972/12_Summer_2020_Q9)

Which energy resource is **not** renewable?

- A** geothermal
- B** nuclear fission
- C** solar
- D** wind

23 - (0972/12_Summer_2020_Q10)

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

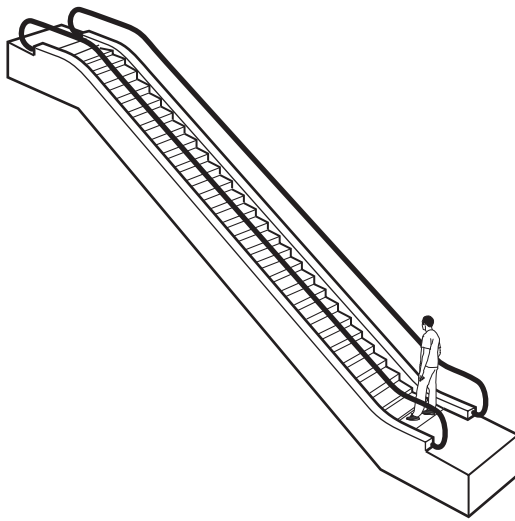
Motor X is more efficient than motor Y.

Which statement about the motors is correct?

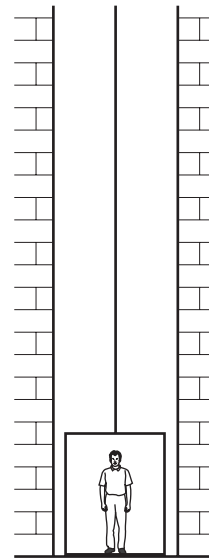
- A** The useful energy output of motor X is larger than that of motor Y.
- B** The useful energy output of motor X is smaller than that of motor Y.
- C** The energy input of motor X is larger than that of motor Y.
- D** The energy input of motor X is smaller than that of motor Y.

24 - (0972/12_Summer_2020_Q11)

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escalator



lift

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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

1 – B	21 – D	41 –	61 –	81 –
2 – C	22 – B	42 –	62 –	82 –
3 – A	23 – D	43 –	63 –	83 –
4 – D	24 – C	44 –	64 –	84 –
5 – D	25 –	45 –	65 –	85 –
6 – B	26 –	46 –	66 –	86 –
7 – A	27 –	47 –	67 –	87 –
8 – B	28 –	48 –	68 –	88 –
9 – C	29 –	49 –	69 –	89 –
10 – B	30 –	50 –	70 –	90 –
11 – C	31 –	51 –	71 –	91 –
12 – A	32 –	52 –	72 –	92 –
13 – D	33 –	53 –	73 –	93 –
14 – A	34 –	54 –	74 –	94 –
15 – A	35 –	55 –	75 –	95 –
16 – A	36 –	56 –	76 –	96 –
17 – D	37 –	57 –	77 –	97 –
18 – B	38 –	58 –	78 –	98 –
19 – C	39 –	59 –	79 –	99 –
20 – C	40 –	60 –	80 –	100 –

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