

Candidate Name	Form Class	Index Number
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**ANG MO KIO SECONDARY SCHOOL
END OF YEAR EXAMINATION 2025
SECONDARY THREE EXPRESS**

SCIENCE(PHYSICS/CHEMISTRY)

Paper 1 Multiple Choice

5086/01

8 October 2025

1 hour

Setter: Mr Chow Yan Bin
Mrs Joselyn Luei

Candidates answer on the OTAS Paper.

Additional Materials: OTAS Paper

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Write your Name, Class and Index Number in the spaces provided.

Do not use staples, paper clips, highlighters, glue or correction fluid/tape.

There are **forty** questions on this paper. Answer **all** questions.

For each question there are four possible answers **A, B, C** and **D**.

Choose the one you consider correct and record your choice in soft pencil on the OTAS

Read the instructions on the OTAS very carefully.

Each correct answer will score one mark. No marks will be deducted for a wrong answer.
Any rough working should be done in this booklet.

A copy of the Periodic Table is printed on page 18.

The use of an approved scientific calculator is expected, where appropriate.

This document consists of **18** pages

[Turn Over

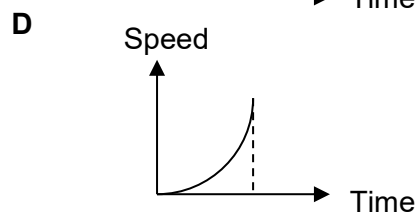
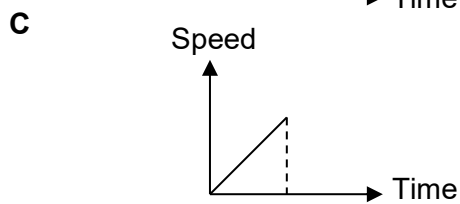
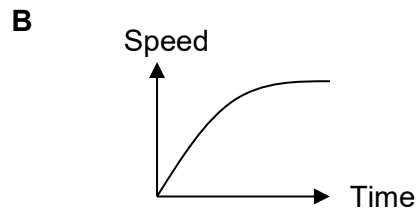
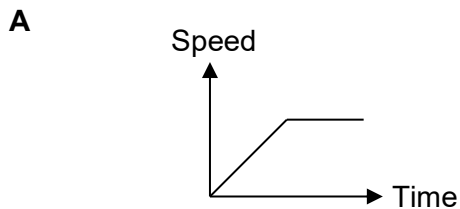
- 1 A student wishes to measure the circumference of a baseball. Which is the most suitable instrument to use?

A digital micrometer screw gauge
B digital calipers
C measuring tape
D metre ruler

- 2 Which of the following is a base unit?

A gram
B mole
C newton
D coulomb

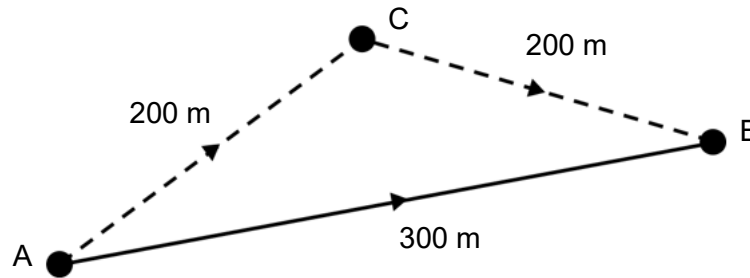
- 3 A small stone is dropped from the top of a ladder and falls to the ground. Which of the following graphs shows how the speed of the stone varies with time? Assume there is no air resistance.



- 4 Which of the following statement about weight and mass is true?

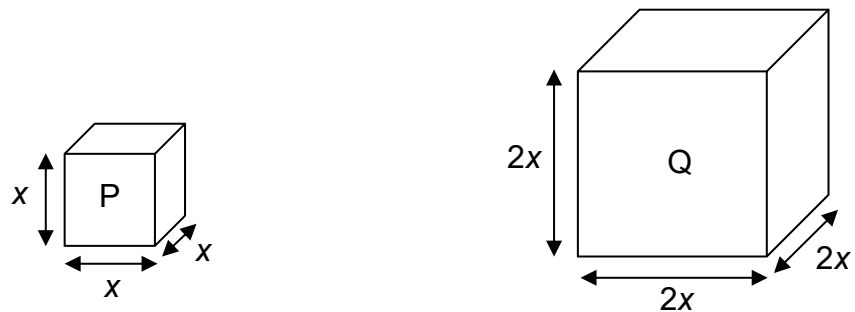
A Mass is the force due to gravity whilst weight is the amount of particles in the body.
B Mass is measured with a beam balance whilst weight is measured with a spring balance.
C Mass has both magnitude and direction whilst weight has only magnitude.
D Mass depends on gravitational field strength whilst weight is constant.

- 5 Student P walks from point A to point B in a straight line while student Q walks from point A to point B by first passing through point C.



Both students take 5 minutes to get from point A to point B. Considering their journeys from points A to B, which statement about the students P and Q is true?

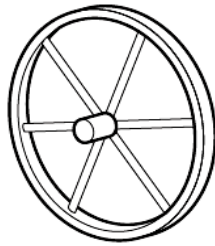
- A Student P has a higher average speed.
 - B Student P has a higher average velocity.
 - C Student Q has a higher average speed.
 - D Student Q has a higher average velocity.
- 6 The diagram shows two cubes P and Q. The density of cube P is eight times that of cube Q.



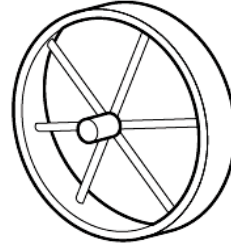
Which one of the following is true about the mass of cube Q?

- A The mass of cube Q is $\frac{3}{4}$ times that of P.
- B The mass of cube Q is 8 times that of P.
- C The mass of cube Q is 16 times that of P.
- D The mass of cube Q is the same as that of P.

- 7 A farmer has two carts. The carts have the same weight, but one has four narrow wheels and the other has four wide wheels.



narrow wheel

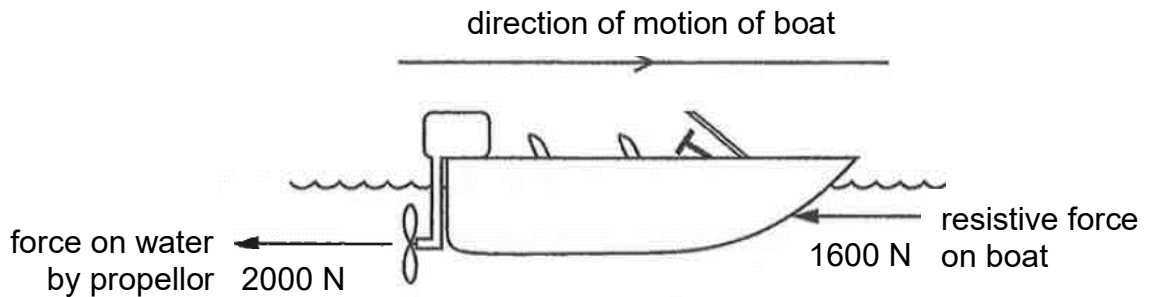


wide wheel

Which cart wheels should be used on a soft and muddy ground, and what is the reason?

	cart wheels	reason
A	wide	less pressure on the ground
B	wide	greater pressure on the ground
C	narrow	greater pressure on the ground
D	narrow	less pressure on the ground

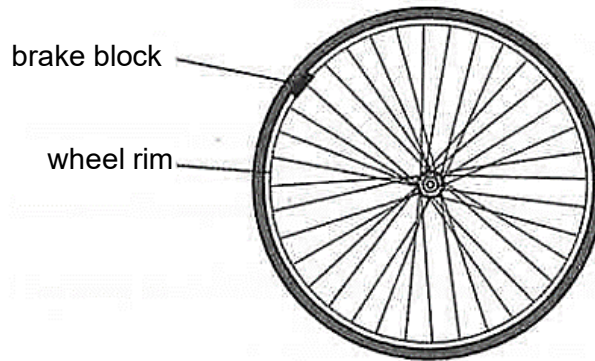
- 8 A boat moves through water against a resistive force of 1600 N. The propeller on the boat pushes water backwards with a force of 2000 N.



What is the forward force on the propeller due to the water?

- A** 400 N **B** 1600 N **C** 2000 N **D** 3600 N

- 9 A cyclist cleans his bicycle wheel before he goes on a road trip. The wheel is made up of a wheel rim and a brake block that rubs on the wheel rim when the brake is applied.



Which action makes the brakes work more efficiently?

- A drying the wheel rim
 - B polishing the wheel rim
 - C oiling the wheel rim
 - D wetting the wheel rim
- 10 A box of mass 5.0 kg moves at a constant speed while it is being pushed horizontally on a rough surface by a 10 N force.

What is the acceleration of the box if the applied force is now increased to 15 N?

- A 0.50 m/s²
 - B 1.00 m/s²
 - C 2.00 m/s²
 - D 3.00 m/s²
- 11 A block of wood is placed on a table. External forces act on the block but the block remains stationary.

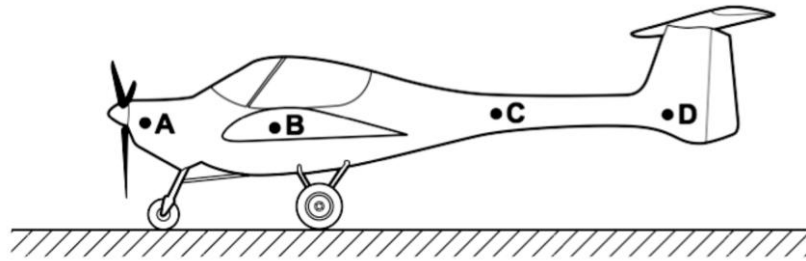
A student suggests three conditions for the block to remain stationary.

- condition 1 : The external forces must act through the centre of gravity of the block.
- condition 2 : The resultant force on the block must be zero.
- condition 3 : The resultant moment of the block must be zero.

Which conditions are necessary for the block to remain stationary?

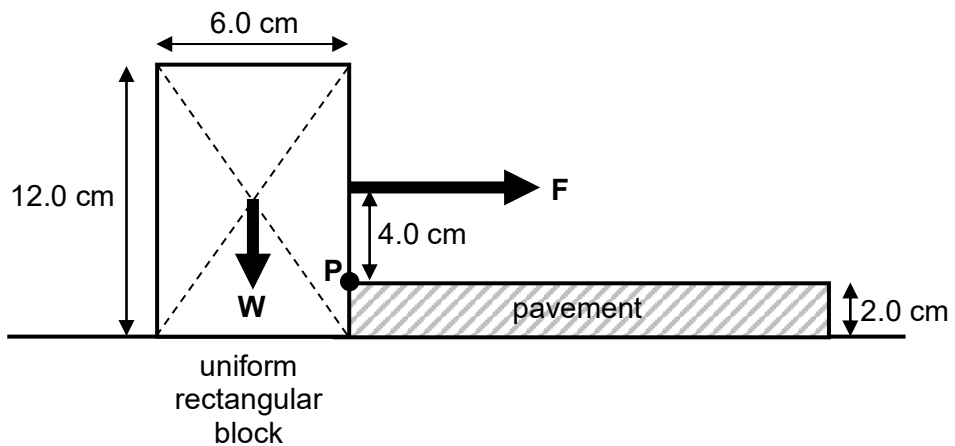
- A 1 and 2 only
- B 1 and 3 only
- C 2 and 3 only
- D 1, 2 and 3

- 12 A light aircraft stands at rest on the ground. It stands on three wheels, one at the front and two further back.



Which point could be the centre of gravity of the aircraft?

- 13 The diagram below shows a uniform rectangular block of weight, **W**, resting on a floor next to a pavement. It is 12.0 cm high and 6.0 cm wide, and is pulled by a force **F**.



What are the moments produced by **W** and **F** and their directions as the block is tilted about point **P** of the pavement?

	anti-clockwise moment / Ncm	clockwise moment / Ncm
A	$F \times 3.0$	$W \times 12.0$
B	$F \times 6.0$	$W \times 6.0$
C	$W \times 3.0$	$F \times 4.0$
D	$W \times 6.0$	$F \times 12.0$

- 14 A man does work by pulling a suitcase across a rough ground.

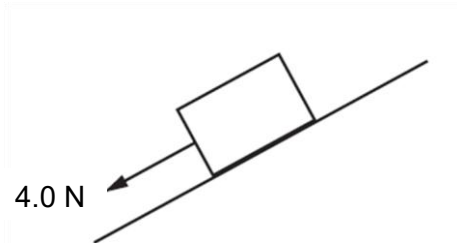
How can he do twice as much work?

- A** by pulling with the same force for half the distance
- B** by pulling with the same force for twice the distance
- C** by pulling with twice the force for half the distance
- D** by pulling with twice the force for twice the distance

- 15** A load is pulled by a rope attached to a motor. The resultant force exerted by the rope on the load is shown in the diagrams. In each diagram, the load moves in the direction of the force shown and takes 10 s to travel 1.0 m.

In which diagram does the motor work with the greatest power?

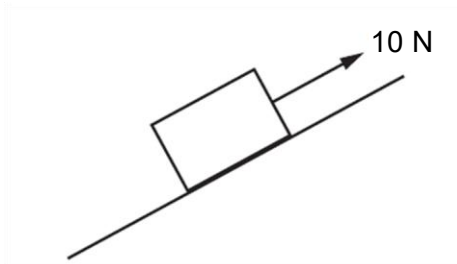
A



B



C



D

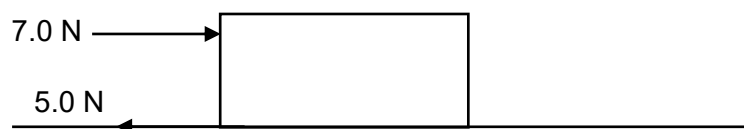


- 16** A student investigates changes that may take place as liquid sulphur solidifies.

Which of the following statements explains these changes?

- A** A transfer of energy and a change in temperature.
- B** A transfer of energy and no change in temperature.
- C** No transfer of energy and no change in temperature.
- D** No transfer of energy and a change in temperature.

- 17 A box is pushed 10 m along a horizontal floor by a force of 7.0 N. The frictional force opposing the motion is 5.0 N, and causes the floor to heat up.



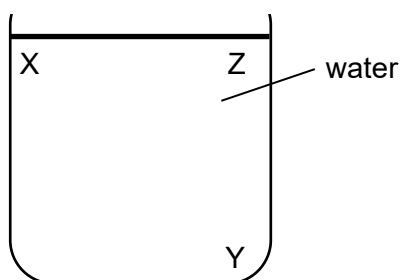
How much energy is transferred to the internal and kinetic store mechanically?

	energy in internal store of floor / J	energy in kinetic store of box / J
A	20	50
B	20	70
C	50	20
D	50	70

- 18 Which of the following increases when a liquid becomes gas at its boiling point?

- A** the molecular spacing
- B** the molecular size
- C** the average kinetic energy of the molecules
- D** the total number of molecules

- 19 The beaker shown below contains water at room temperature.

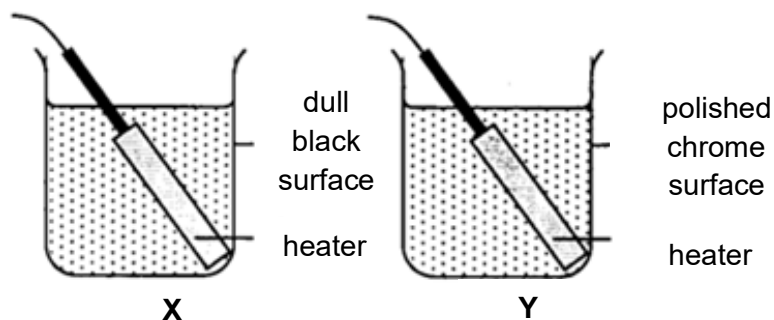


How could a convection current be set up in the water?

- A** cool the water at X
- B** cool the water at Y
- C** heat the water at X
- D** heat the water at Z

20

In the diagram below, two copper cans of the same size **X** and **Y** with outer surfaces of different textures and colours are filled with the same amount of water at room temperature. They are heated by heaters with the same power.



Which of the following statements is **true**?

- A** Water in **X** boils faster because the dull black surface is a good absorber of heat.
- B** Water in **X** boils faster because the dull black surface is a better insulator of heat.
- C** Water in **Y** boils faster because the polished chrome surface is a poor emitter of heat.
- D** Water in both cans take same length of time to boil because the colour and texture of the outer surface will not affect the rate of energy absorbed by the water.

Answers for Paper 1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	B	C	B	C	D	A	C	A	B
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
C	B	C	B	D	B	C	A	A	C

