



Thebes International school

American Section

2020/2021

Science Department

Subject: Physics

Grade 12

Quarter 2

Revision Sheet

1. 0.45 kg orange falls from a tree. What is the force of gravity on the orange?

- A. 4.5 N
- B. 45 N
- C. 4.5 Kg
- D. 45 kg

2. A 400g ball rests on a flat table. What is the normal force exerted on the ball by the table?

- A. 3920 N
- B. 40.82 N
- C. 4 N
- D. 4082 N

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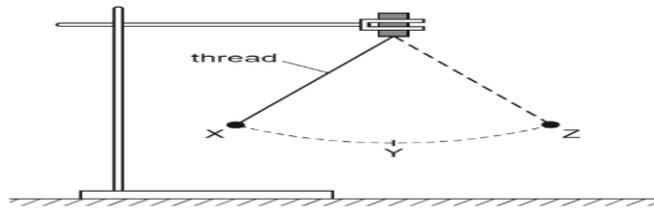
4. Which quantities are measured in the same unit?

- A. energy, power and work
- B. energy and power, but not work
- C. energy and work, but not power
- D. power and work, but not energy

5. Two dogs pull on a 0.07kg bone in opposite directions. If the first dog pulls with a force of 17N to the left and the other pulls with a force of 22N in the opposite direction, what will be the acceleration on the bone?

- A. 0.35m/s^2
- B. 2.8m/s^2
- C. 71.4m/s^2
- D. We need to know the masses of the dogs in order to solve

6. An object on a thread is swinging between X and Z, as shown in the diagram. It is momentarily at rest at X and at Z.



An incomplete word equation about the energy of the object is shown below.
 gravitational potential energy = kinetic energy + energy + energy losses
 at X at Y at Y

Which form of energy is needed to complete the word equation?

- A. chemical
- B. gravitational potential
- C. internal
- D. strain

7. Which statement is correct about the circular motion?

- A. acceleration and force are opposite and velocity is perpendicular to the force
- B. Velocity is constant
- C. Speed is constant and acceleration equals zero.
- D. Acceleration is toward the center; V is tangential to the motion.

8. A skier walks from the bottom of a ski slope to the top and gains 15000 J of gravittional potential energy.

She skis down the slope. At the bottom of the slope, her kinetic energy is 2000 J.



How much energy is dissipated in overcoming friction and air resistance as the skier moves down the slope?

- A 2000 J
- B 8000 J
- C 10000 J
- D 13000 J

9. Four different children run up the same set of stairs.

For which child is the useful power to climb the stairs the greatest?

	mass of child / kg	time taken / s
A	40	15
B	50	25
C	60	25
D	70	15

10. Two workers are stacking cans on to a shelf in a shop. The workers lift the same number of identical cans on to the same shelf from the same level.

Worker P takes 3.0 minutes to lift the cans. Worker Q takes 4.0 minutes to lift the cans.

Which statement about the workers is correct?

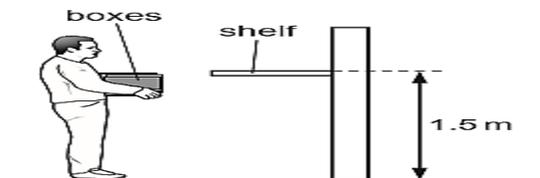
- A. Worker P develops less useful power than worker Q.
- B. Worker P develops more useful power than worker Q.
- C. Worker P does less useful work than worker Q.
- D. Worker P does more useful work than worker Q.

11. 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
<input checked="" type="radio"/> C	20.0	6.0
D	100.0	1.0

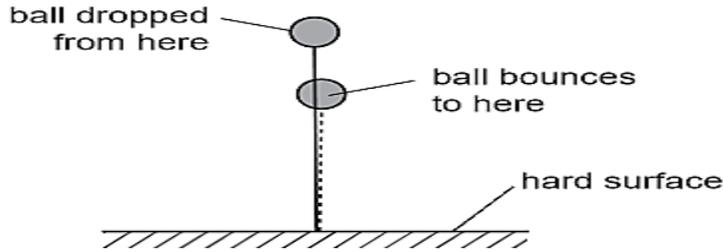
12. Three boxes each weigh 100 N. A man lifts all the boxes together from the ground on to a shelf that is 1.5 m above the ground. The man takes 2.0 s to do this.



How much useful power does the man produce to lift the boxes?

- A 75W
- B 225W
- C 300W
- D 900W

13. A ball is dropped on to a hard surface and bounces. It does not bounce all the way back to where it started, and so has not regained all of its original gravitational potential energy.



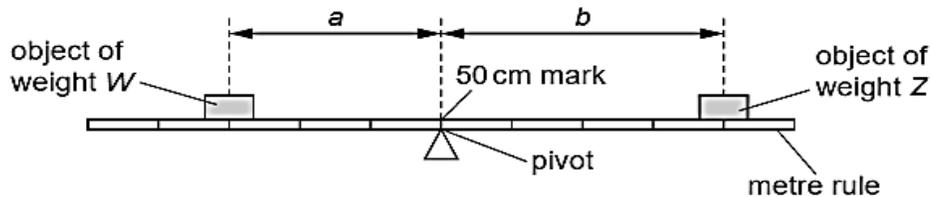
Which statement accounts for the loss of gravitational potential energy?

- A. Energy was destroyed as the ball hit the ground.
- B. Energy was destroyed as the ball travelled through the air.
- C. The chemical energy and elastic energy of the ball have increased.
- D.** The internal (heat) energy of the ball and its surroundings has increased.

14. A 400g ball rests on a flat table. What is the normal force exerted on the ball by the table?

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- B. 40.82N
- C.** 4 N
- D. 4082N

15. The diagram shows an object of weight W and an object of Weight Z balanced on a uniform meter rule

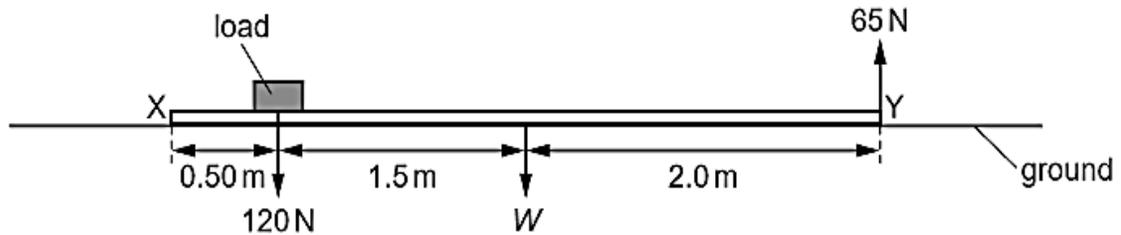


Which equation relating to W , Z , a and b is correct?

- A $\frac{W}{a} = \frac{Z}{b}$
- B $W \times Z = a \times b$
- C** $W \times a = Z \times b$
- D $W \times (a + b) = Z$

16. A long plank XY lies on the ground. A load of 120 N is placed on it, at a distance of 0.50 m from end X, as shown.

End Y is lifted off the ground. The upward force needed to do this is 65 N.



In the diagram, W is the weight of the plank, acting at its mid-point.

What is the value of W ?

A 35 N

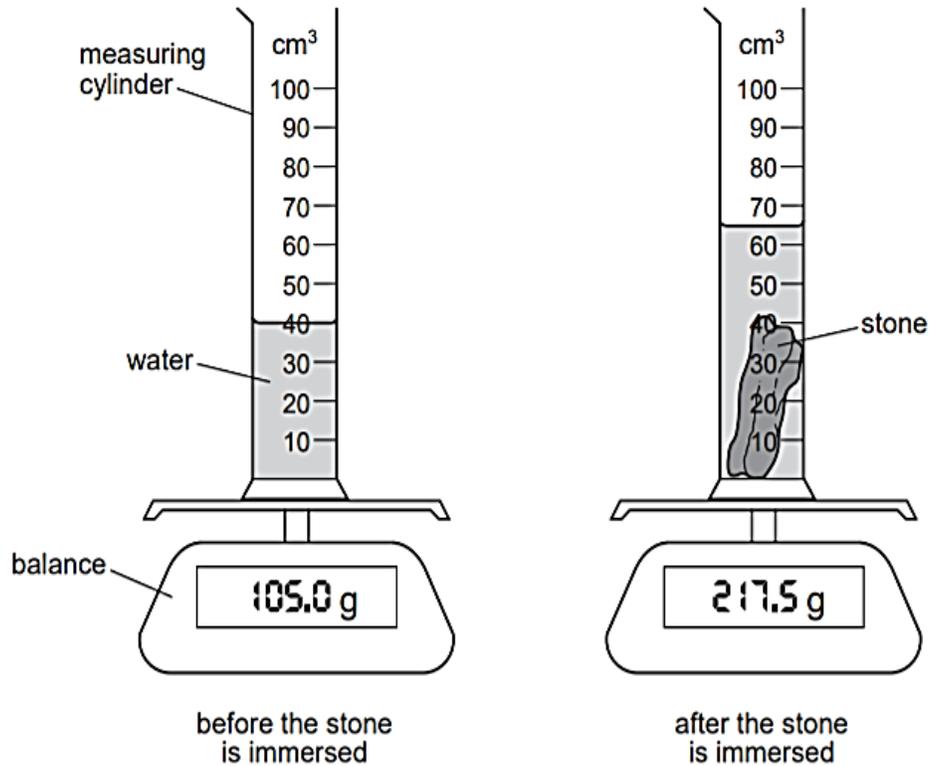
B 47 N

C 100 N

D 133 N

17. A measuring cylinder containing only water is placed on an electronic balance. A small, irregularly shaped stone is now completely immersed in the water.

The diagrams show the equipment before and after the stone is immersed.

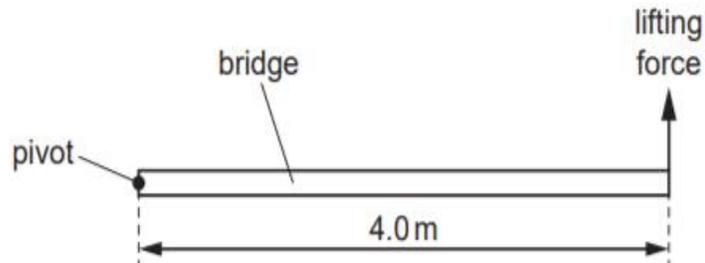


What is the density of the material of the stone?

- A 1.7g/cm³ B 3.3g/cm³ **C 4.5g/cm³** D 8.7g/cm³
18. A boat is travelling at a steady speed in a straight line across the surface of a lake.
- Which statement about the boat is correct?
- A The resultant force on the boat is in the direction of motion.
- B The resultant force on the boat is in the opposite direction to its motion.
- C The resultant force on the boat is vertically downwards.
- D The resultant force on the boat is zero.**

19. The diagram shows a uniform bridge, 4.0 m long and weighing 10 000 N.

The bridge is pivoted at one end. A force at the other end gradually increases until the bridge begins to lift.



What is the lifting force as the bridge starts to move upwards?

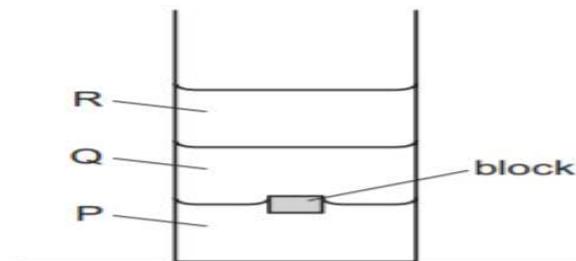
- A 2500 N **B** 5000 N C 10 000 N D 20 000 N
20. A bullet of mass 0.10 kg travels horizontally at a speed of 600 m/s. It strikes a stationary wooden block of mass 1.90 kg resting on a frictionless, horizontal surface.

The bullet stays in the block.

What is the speed of the bullet and the block immediately after the impact?

- A** 30 m/s B 32 m/s C 60 m/s D 134 m/s

21. Three liquids P, Q and R have different densities and do not mix. The liquids are placed in a measuring cylinder and allowed to settle. A small block is then dropped into the measuring cylinder and comes to rest, as shown.



Which statement about the density of the block is correct?

- A It is equal to the density of Q.
B It is greater than the density of P.
C It is greater than the density of R.
D It is less than the density of Q.

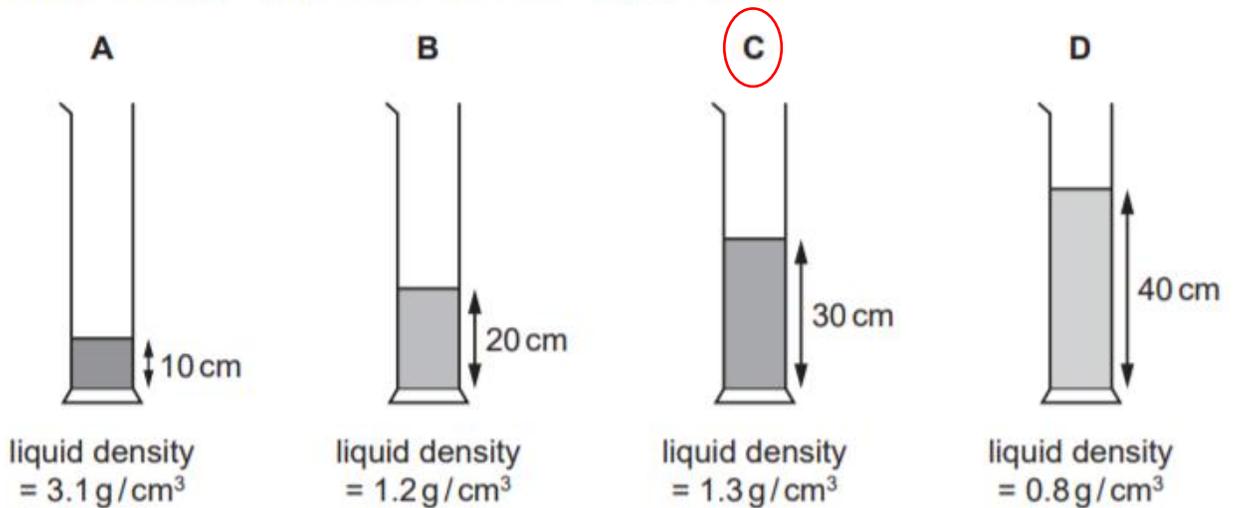
22. Which list contains only vector quantities?

- A energy, force, velocity
- B speed, acceleration, force
- C velocity, energy, acceleration
- D** velocity, force, acceleration

23. Four different liquids are poured into four containers.

The diagrams show the depth and the density of liquid in each container.

In which container is the pressure on its base the greatest?



24. An object moves in a circle at constant speed.

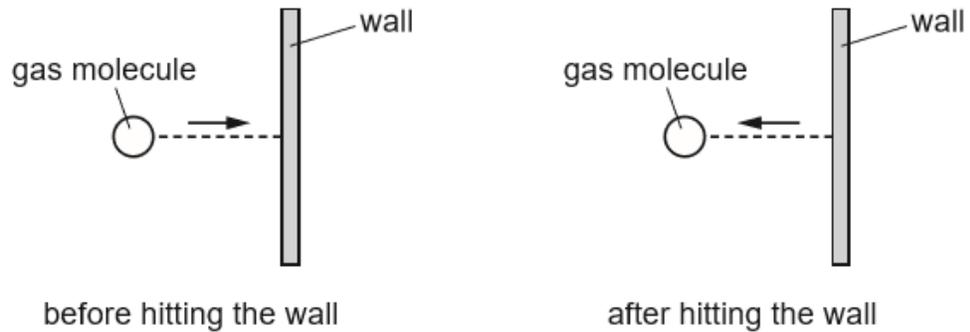
Which statement about the force needed on the object is correct?

- A A force away from the centre of the circle keeps the object moving in the circle.
- B A force in the direction of motion of the object keeps it moving in the circle.
- C** A force towards the centre of the circle keeps the object moving in the circle.
- D No force is needed to keep the object moving at constant speed in the circle.

25. If the moment of inertia of an isolated system is halved. What happens to its angular velocity?

- A** doubled.
- B halved
- C quadrable.
- D Keeps the same.

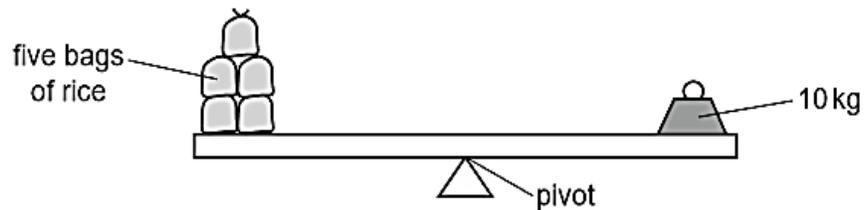
26. A gas molecule strikes the wall of a container. The molecule rebounds with the same speed.



What happens to the kinetic energy and what happens to the momentum of the molecule?

	kinetic energy	momentum
A	changes	changes
B	changes	stays the same
C	stays the same	changes
D	stays the same	stays the same

27. Five identical bags of rice are balanced on a uniform beam by an object of mass 10 kg.

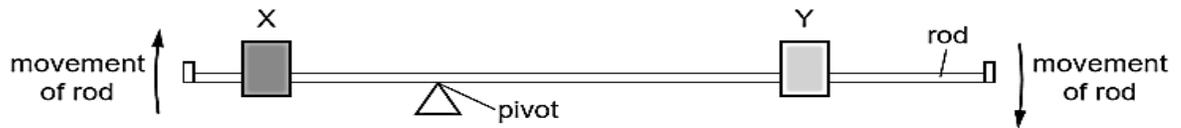


Two more identical bags of rice are added to the other five. The average position of the bags on the beam does not change.

What mass now balances the bags?

- A** 3.5 kg **B** 7.0 kg **C** 12 kg **D** 14 kg

28. The diagram shows an unbalanced rod. Two loads X and Y can be moved along the rod.



The rod turns in a clockwise direction as shown.

Which action could make the rod balance?

- A moving X to the left
 - B moving X to the right
 - C moving Y to the right
 - D moving the pivot to the left
29. Which of the following is not a part of Newton's second law?
- A. Acceleration
 - B. Mass
 - C. Force
 - D. Displacement
30. A block is pushed with F newtons of force. What other information do we need in order to find the acceleration of the block?

- A. Initial velocity
- B. Work done on the block
- C. Acceleration due to gravity
- D. Mass

Answer the following questions

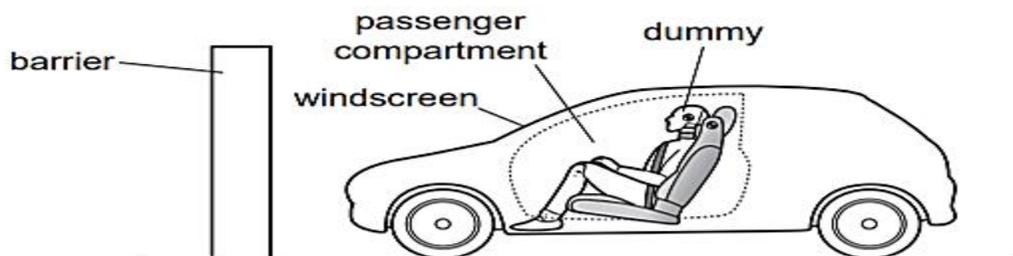
1. A 900-kg car moving at 12 m/s takes a turn around a circle with a radius of 20.0 m. Determine the acceleration and the net force acting upon the car.

A. What is the acceleration? **7.2 m/s²**

B. What is the net force? **6480 N**

2. A lorry of mass 4000 kg is travelling at a speed of 10.0 m /s. A car has a mass of 1000 kg. The kinetic energy of the car is equal to the kinetic energy of the lorry. What is the speed of the car? **20 m/s**

3. The figure below shows a dummy of mass 70 kg used in a crash test to investigate the safety of a new car.



The car approaches a solid barrier at 20 m/s. It crashes into the barrier and stops suddenly.

Calculate the momentum of the dummy immediately before the crash.

$$\text{momentum} = \mathbf{1400 \text{ kg m/s}}$$

Determine the impulse that must be applied to the dummy to bring it to rest.

$$\text{impulse} = 1400 \text{ kg m/s}$$

In the crash test, the passenger compartment comes to rest in 0.20 s. Calculate the deceleration of the passenger compartment.

$$\text{deceleration} = 60 \text{ m/s}^2$$

The seat belt and air bag bring the dummy to rest so that it does not hit the windscreen. The dummy has an average deceleration of 80 m/s^2 .

Calculate the average resultant force applied to the dummy, of mass 70 kg.

$$\text{force} = 5600 \text{ Newton}$$

4. The figure below shows two railway trucks on a track.



Truck A mass 6000 kg is moving at 5.0 m/s. It is approaching truck B of mass 5000 Kg, which is stationary.

Calculate the momentum of truck A

$$\text{Momentum} = 30000 \text{ Kg m/s}$$

The trucks collide, their buffers compress and then they bounce off each other, remaining undamaged. After the collision, truck B has a momentum of 27000kgm/s.

Calculate the final speed of truck A.

$$\text{Speed} = 0.5 \text{ m/s}$$

5. Calculate the angular momentum of the object. When an object with the moment of inertia $I = 5 \text{ kg}\cdot\text{m}^2$ is made to rotate 1 rad/sec speed.

$$\text{Angular momentum} = 5 \text{ Kg m/s}$$

6. A woman has a weight of 600N. She stands on a horizontal floor. The area of her feet in contact with the floor is 0.050 m^2 . What is the pressure she exerts on the floor?

$$\text{Pressure} = 12000 \text{ Pascal}$$

7. The density of steel is 7850 kg m^{-3} . Calculate the mass of a steel sphere of radius 0.15 m.

$$\text{Mass} = 110.9 \text{ Kg}$$