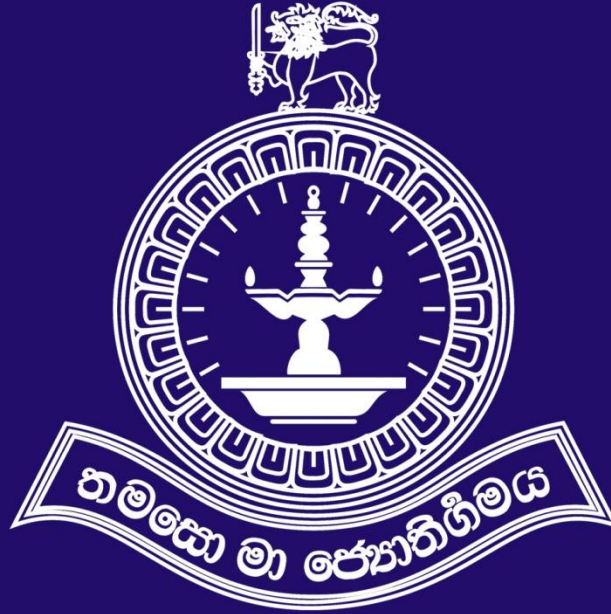


*“Thurstan College, being unshaken amidst the COVID 19 challenges”*

## ***Series of Supportive Activities***



# Grade 9 - Science

**THURSTAN COLLEGE**  
**COLOMBO 07**

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## Grade 9

### Unit: 4 – Basic concepts Associated with Forces

01. Underline the correct answer.

1) A force be applied to move an object A point where the force is applied is known as

- i) centre of gravity
- ii) A point of application
- iii) Line of action
- iv) Resultant force

2. The point of application of a force is;

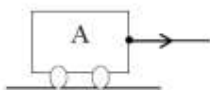
- (i). The point on which the force is acting on the object.
- (ii). The rotating point on which the force is acting on the object.
- (iii). The point which is in the middle of the object.
- (iv). The point which is directed towards to the moving direction of the object.

3. The correct statement regarding the force is,

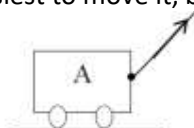
- (1) Force is a scalar quantity.
- (2) Newton balance is used to measure the force.
- (3) Movement can be observed each and every instance of applying a force.
- (4) It's only the direction of a force can be represent graphically.

4. A is a loaded cart which instance is the easiest to move it, by applying an equal force?

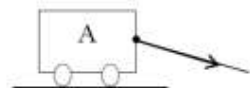
(i).



(ii).



(iii).



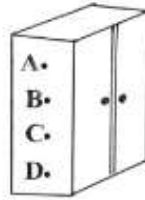
(iv).



5. A force means a pull or a push. What is the Standard International unit of measuring force?

- (i). Kilograms      (ii). Newton meter      (iii). Meter      (iv). Newton

6. This diagram shows a steel cupboard placed in a classroom. The most suitable point to apply the force to push it to another place in the classroom is

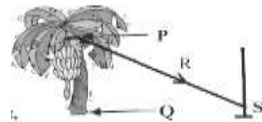


1. A      2. B  
3. C      4. D

7. A feature of a vector quantity is,  
 (i). With a specific direction  
 (ii). With a magnitude and without a direction  
 (iii). With a direction and magnitude.  
 (iv). With a specific direction without a magnitude

8. Following diagram shows a banana tree tighted to the pole with rope to prevent it fallen by the wind what is the point of application of a force,

1. P  
2. Q  
3. R  
4. S



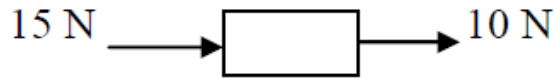
Part 2  
answer all questions

01. A push or pull is called a force.  
 i) Is it a vector or scalar quantity?  
 ii) Write 3 changes that can be made to an object by applying a force.  
 iii) What is the SI unit of force.  
 iv) What are known as vector quantity



v) The above X is 5N force represent the force by showing 3X force that acts to the opposite direction.

vi) Two forces apply on an object has shown in following diagram. Find the magnitude and the direction of resultant force



vii) Find the force exerted by a student with the mass of 35 kg who carrying a bag with 5N.

02. This diagram shows a ball which is moving towards A - B due to applying a force. Changes of the movement as given below can be done by applying forces from the direction B.



- (a) Making the ball motionless.
- (b) Moving the ball towards A.
- (c) Decreasing the speed of the movement towards B.

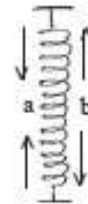
(i) Write the magnitude of the forces that should be applied to do the changes shown above as a, b, c, in their ascending order.

(ii) The above activity shows that force has a magnitude and a direction. As what type of quantities are these quantities known?

(iii) What is the international standard unit of measuring force?

(iv) Mention an instrument that can be used for measuring force.

(v) A spiral is shown in this diagram.



Write the changes taken place in the spiral when the force is applied as shown below.

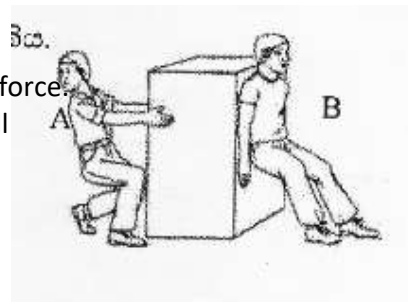
- (a) When the force is applied to the center of the spiral.
- (b) When the force is applied to either sides of the spiral from the center.

03. A pull or a push can be defined as a force.

(i) The diagram shows that two instances of applying force

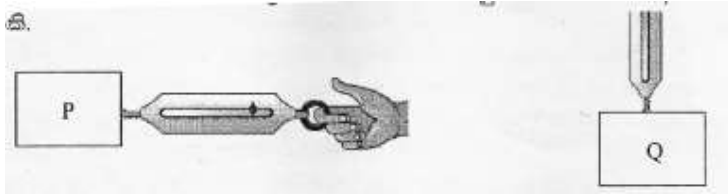
a. State the nature of force indicated by A and B a pull or a push.

b. State the direction of movement of the object, is it to the direction of A or B ?



(ii) Write the standard unit of measuring force by word and by symbol.

(iii) P and Q are two blocks of wood which have the same size but different mass.



If the wooden block P can be moved by a horizontal force of 12N and wooden block Q can be moved by a 4 N of vertical force. Represent the magnitude of the force, direction of force and the point of action of the force at the two instances.

(iv) State whether the force is vector quantity or a scalar quantity. Briefly explain the reason for your answer

# Grade 9



## unit 06 . The human circulatory system

1. Right and left pulmonary arteries are opened to the
  - i). Right ventricle ii). Right atrium iii). Left ventricle iv). Left atrium
  
2. Chamber of the heart with the thickest wall
  - (1). Left atrium
  - (2). Right atrium
  - (3). Left ventricle
  - (4). Right ventricle
  
3. What is the name used to denote the liquid part of the blood.
  - i). Blood plasma ii). Red blood cells iii). White blood cells iv). Platelets
  
4. . Not a type of blood cells
  - (1). Neutrophils
  - (2). Lymphocytes
  - (3). Platelets
  - (4). Erythrocytes
  
5. . Not a feature which helps to separate an artery from a vein.
  - (1). The artery walls are thick
  - (2). The artery walls are elastic
  - (3). Valves contain inside artery
  - (4). The blood vessels that take blood away from the heart are known as arteries
  
6. . Component of the blood which help in the blood clotting process
  - (1). Red blood cells
  - (2). Platelets
  - (3). Leukocytes
  - (4). Plasma protein
  
7. . The chamber of the heart that the superior vena cave is connected,
  - (1). Left atrium
  - (2). Right atrium
  - (3). Left ventricle
  - (4). Right ventricle
  
8. Location of the tricuspid valve
  - (1). Between left atrium and left ventricle

- (2). Between right atrium and right ventricle
- (3). Between left ventricle and left aorta
- (4). Between right ventricle and pulmonary artery

9. Veins from the organs above the heart join with

- (1). Inferior vena cava
- (2). Superior vena cava
- (3). Pulmonary artery
- (4). Aorta

10. . Component of the blood which help in the blood clotting process

- (1). Red blood cells
- (2). Platelets
- (3). Leukocytes
- (4). Plasma protein

11.. Type of valves at the starting point of aorta

- (1). semi lunar valves
- (2). Tricuspid valve
- (3). Bicuspid valve
- (4). Mitral valve

12. Universal recipient is,

- (1). A
- (2). B
- (3). AB
- (4). O

13. Person with blood group B can donate blood to the person with blood group,

- (1). only B
- (2). only B and AB
- (3). only O
- (4). only AB

14. Vitamin which helps to the blood clotting mechanism.

- (1). Vitamin A
- (2). Vitamin B
- (3). Vitamin K
- (4). Vitamin D

15. Main function of blood plasma

- (1). Transport Oxygen
- (2). Help in the clotting process of blood
- (3). Transport substances
- (4). Destroy pathogens

16. . The chamber of the heart that the superior vena cave is connected,

- (1). Left atrium
- (2). Right atrium
- (3). Left ventricle
- (4). Right ventricle

17.

This should not be followed for the well - being of the blood circulatory system.

1. maintaining a mentally less stressful life-style
2. engaging in physical exercises daily
3. consuming more salty food
4. educing consumption of fatty foods

18. . Pulmonary veins start from

- (1). Left ventricle
- (2). Left atrium
- (3). Lungs
- (4). Right atrium

19. A function of erythrocytes

- (1). Transport Oxygen
- (2). Transport Carbon dioxide
- (3). Produce antibodies
- (4). Help for the blood clotting mechanism

20. Consider following statements.

A - The recipients who are Rh<sup>+</sup> can receive only Rh<sup>+</sup> blood.

B - The Rh<sup>-</sup> recipients can receive Rh<sup>-</sup> blood only.

Correct statement/s.

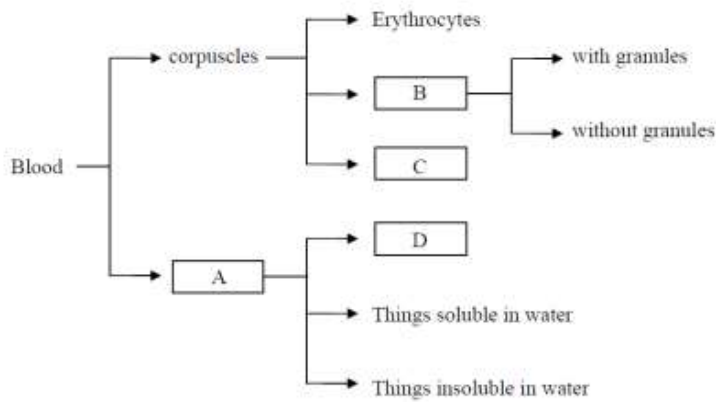
- (1). only A
- (2). only B
- (3). A and B
- (4). Both A and B statements are incorrect

21. There is a prominent place for a universal donor in transfusion of blood. The blood group that should be present in the person to be a universal donor is,

- (1) O
- (2) AB
- (3) A
- (4) B

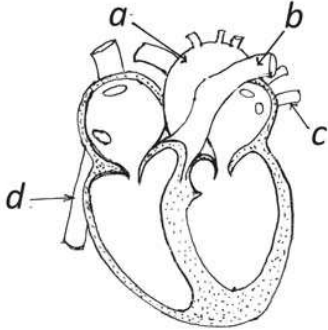
Part 2  
Answer all questions

01. Consider the following concept map about components of blood.



- i (i). Name A, B, C and D.
- ii (ii). State 02 differences between erythrocytes and B cells.
- iii (iii). State each function of erythrocytes, B and C.
- iv (iv). Mention 02 infections cause to rapid decline in C cells.
- v (v). Write 02 water soluble and 02 water insoluble substances in A.

02.



- (i) Classify the vessels a,b,c,d as mentioned below.
  - (a) The vessels which carry blood towards the heart.
  - (b) The vessels which carry blood away from the heart.
- (ii) As what form can these vessels be seen in the body organs?
  - (a) In which two cavities does the tricuspid valve locate?
    - (c) Mention the function done by this valve.
- (iv) Show how the blood vessels that carry blood away from the heart are adapted to bear the high pressure.

03.

- (i). What is known as blood transfusion?
- (ii). State 02 factors want to consider in blood transfusion.
- (iii). Draw the chart to show compatibility of
  - a). blood group
  - b). Rhesus factor in the blood transfusion
- (iv). Explain the difference between blood clotting and blood agglutination.
- (v). List down 03 favourable habits to maintain healthy blood circulation system.

04. A worker injured when transport soil using wheelbarrow after short time stop blending at a bleeding site

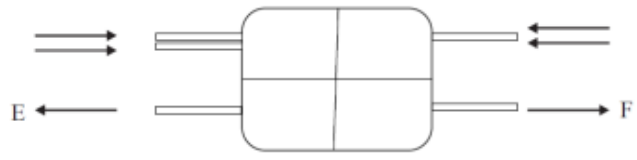
i' What is the reason that the stop bleeding naturally

.....

ii' Name the type of corpuscles helps to stop bleeding

.....

Following diagram shows structure of heart. Flowing direction of blood shows by arrows.



iii' a. Name part C

.....

b. Name the organ which received blood from E

.....

C. Name the valve in between B and D

.....

.....

.....

.....



## Grade 9

### Unit: 5 – Pressure

1. The standard unit of measuring the pressure is,

- (1) N                      (2) kg                      (3)  $\text{Nm}^{-1}$                       (4)  $\text{Nm}^{-2}$

2. Select the incorrect statement from the statements given below.

1. The perpendicular force act on a unit area is known as the pressure.
2. The pressure decreases when the surface area that force acts increases.
3. The nature of the surface dose not affect pressure.
4. The pressure decreases when the force act on the object increases

3. concrete cube which weighs of 7000 N is placed on the floor. It touches  $14 \text{ m}^2$  area of the floor. What is the pressure exerted by the concrete cube ?

(1)  $\frac{7000 \text{ N}}{14 \text{ m}^2}$

(2)  $\frac{14 \text{ m}^2 \times 6}{7000 \text{ N}}$

(3)  $7000 \text{ N} \times 14 \text{ m}^2$

(4)  $7000 \text{ N} \times 14 \text{ m}^2 \times 6$

4. In which of following instance is used to increase of pressure.

- (i). Increase the number of wheels in heavily loaded trucks.
- (ii). Sharpening of the knife.
- (iii). Use of broad tyres in heavily loaded trucks.
- (iv). Use of broad wooden plank to walk from a muddy ditch

5. Following are some instances related to use of

A - It's easy to cut something by using a sharp knife blade.

B - There are large number of tyres are used in a container than in a bus.

C - It's easy to cut a piece of soap by using a thin thread.

What are the instances of increasing the pressure ?

- (1) A and B (2) B and C (3) A and C (4) A, B and C all

6. An object with the weight of 6000 N is kept touching a surface with the surface area  $3 \text{ m}^2$  on the earth. The pressure created by this object on the earth is

(1)  $\left(\frac{3}{6000}\right) \text{ pa}$  .

(2)  $\left(\frac{6000}{3}\right) \text{ pa}$  .

(3)  $(6000 \times 3) \text{ pa}$  .

(4)  $\left(\frac{1}{6000 \times 3}\right) \text{ pa}$  .

7. Select the correct statement.

- (i). Pressure is high when the contact area is less.
- (ii). Pressure is less when the contact area is high.
- (iii). Pressure is less when the contact area is less.
- (iv). Pressure is not depending on the surface area on the force is acting.

8. What is the pressure exerted on a surface of 5, when a force of 80 N is acting on it?

(i).  $\frac{80 \text{ N}}{5 \times 5 \text{ m}^2}$

(ii).  $\frac{5 \text{ m}^2}{80 \text{ N}}$

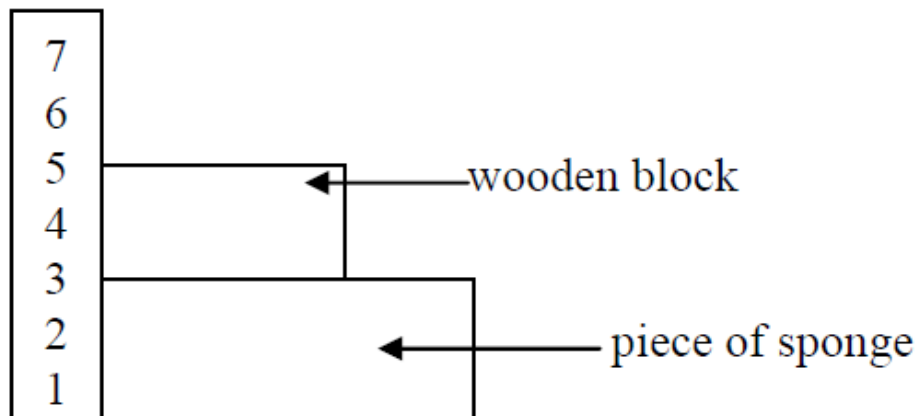
(iii).  $80 \text{ N} \times 5 \text{ m}^2$

(iv).  $\frac{80 \text{ N}}{5 \text{ m}^2}$

Part 2

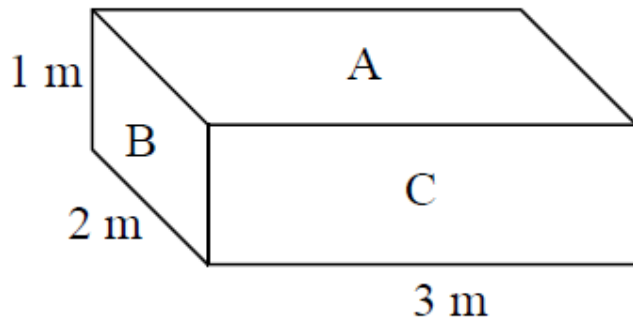
Answer all questions

01. Following diagram shows the place of a wooden block on the piece of the sponge. The reading of scale at the upper edge of the piece of sponge is noted



- i) If 1 kg is placed on the wooden block, what will happen to the reading.
- ii) State the reason for it.
- iii) The effect of which factor on solid pressure can be tested from the above activity.
- iv) Mention an instance where
  - a) increase of pressure.
  - b) decrease of pressure is used in day today life.

v) Weight of the cuboid is 600 N. It has kept on a table

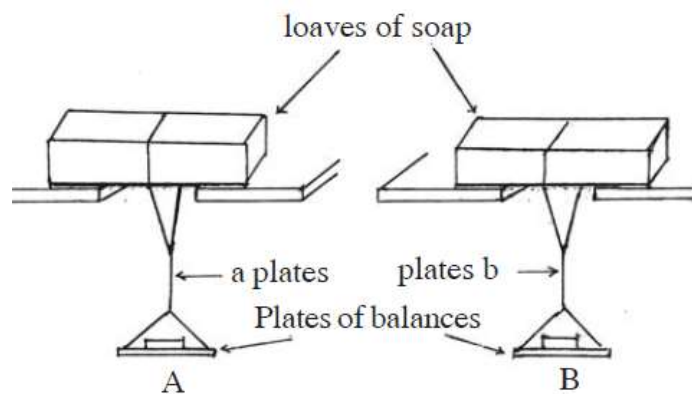


i) Find the pressure created by A, B and C surfaces.

ii) If another cube kept on A surface, with weight of 500 g what is the pressure created on the table.

iii) Write 2 factors affecting on pressure.

02. Liquids as well as solids create a pressure. This diagram shows how two loaves of soap are prepared to cut by two wires (a) and (b). These two wires are made out of same metal but with different cross sectional areas.



The activity was started by keeping 10 g weights one by one on equal size of balance plates.

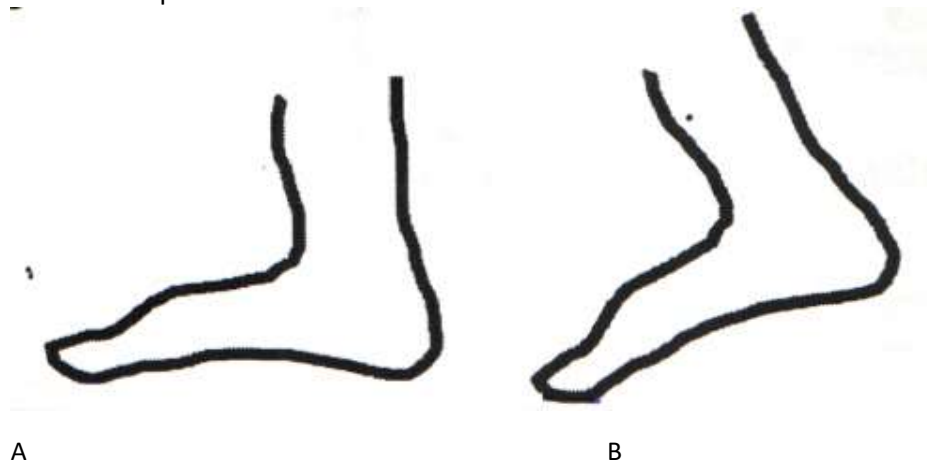
ρ The loaf of soap in the set up A began to cut when 50 g weight was placed.

ρ The loaf of soap in the set up B began to cut when 30 g weight was placed.

- (i) Which factor that affect pressure is increased by increasing the balance weights?
- (ii) According to the above activity, which wire has the highest cross sectional area?
- (iii) What are the factors that affect pressure?

(iv) Build up an equation for pressure using the above mentioned factors.

03. A child is standing on the sea-shore sees a ship at distance. He some times stands on his tips of toes.



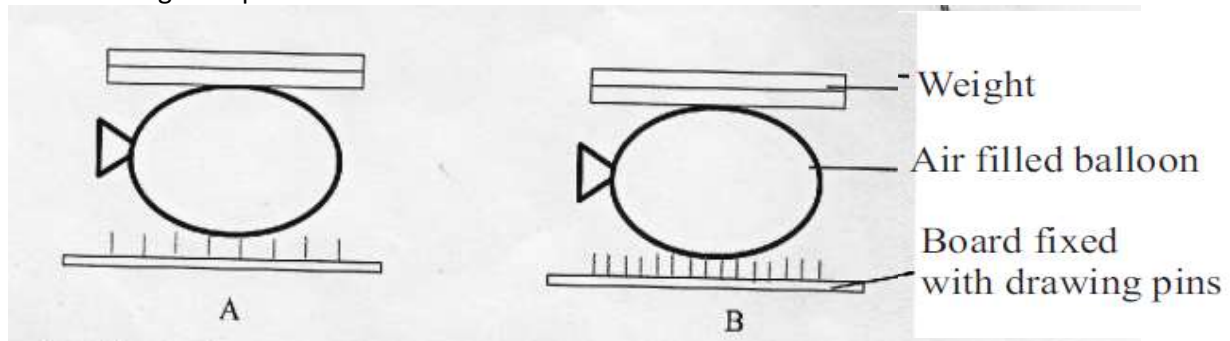
A

B

- (i) On which situation the pressure occurs most on the sand ?
- (ii) Which factor affects the pressure in A and B differently ?
- (iii) Name another factor that affects the pressure in addition to the factor mentioned above (i).
- (iv) Write the relationship that is used to calculate the pressure.

(v) State the standard international unit of measuring pressure accurately.

04. The weight acts downward due to the mass of the body. A and B are two setup to demonstrate the affection of the weight and the area of the contacting surface to change the pressure.



(i) State the setup from A and B which has the small area of contacting and large area of contacting respectively

(ii) If above two setup have used to demonstrate the affection of area of contacting for pressure, which balloon out of A and B burst at first ?

(iv) Briefly explain the reason for bursting a one balloon above.

(iv) If it is tested the affection of force to change the pressure, state whether the following factors should be equal or not equal.

- Number of drawing pins fixed on the board.
- The weight keep on the balloon.

(v) State the way of increasing the force applied by a hammer to fix a nail and the way of changing the area of contacting.

(vi) An object with a mass of 500 N was kept on a flat surface. If the area which is contacted the object is  $4 \text{ m}^2$  calculate the pressure exerted by the object on the floor.