Worksheet 3 |
Lower Secondary
Stage (6-8)

1st Semester | 2023-2024

Name: **Key**

Subject: Science

Objectives:

Garde 7 A

- Calculate the weight of different objects on Earth and on different planets.
- To differentiate between mass and weight.

Question 1 :

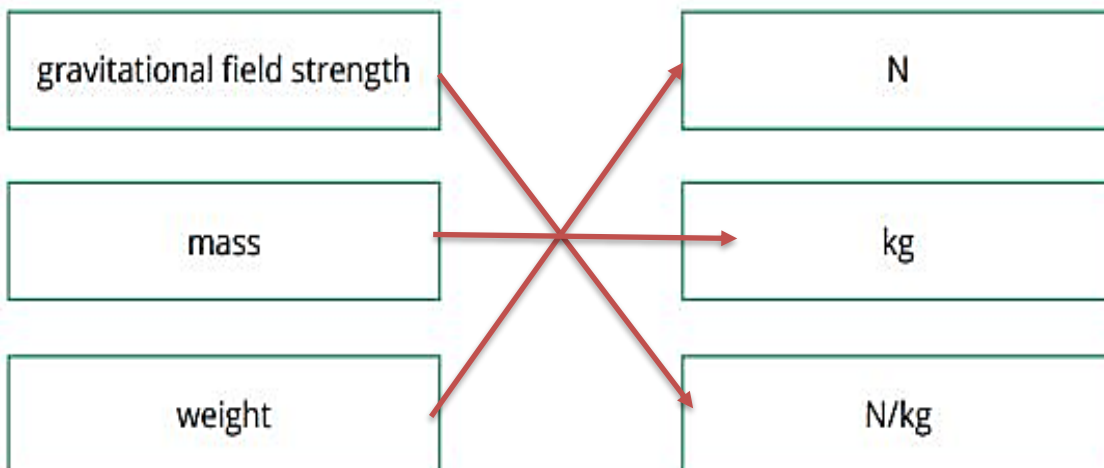The mass of the Moon is smaller than the mass of Earth.

a) Choose **two** answers from the box below to complete the sentences below.

greater than	equal to	smaller than

The gravitational field strength on Earth is ___greater than___ the gravitational field strength on the Moon.

If an astronaut travelled to the Moon, their weight would be ___Smaller than___ their weight on Earth.

b) Draw **one** line from each variable to the correct unit of measurement.

gravitational field strength		N
mass		kg
weight		N/kg

Question 2:

 The mass of the moon is smaller than the mass of Earth.

a) Suggest how the weight of the astronaut would be affected if they traveled to the Moon.

_____The weight of the astronaut would be less on the moon _____.

b) Explain your answer:

__Because the gravitational field strength on the moon is less than on Earth___.

Question 3 :

An astronaut has a mass of 70 Kg on Earth. He is planning to have a tour in the space.

Weight (N) = Mass (kg) X Gravitational field strength (N/kg)

Knowing that: the gravitational field strength on the moon is 1.6 N/ Kg. and the gravitational field strength on Jupiter is 25 N/Kg.

Calculate the following:

a. The astronaut's weight on Earth? Include the unit and show your work.

_____70 X 10 =700 N_____.

b. The astronaut's weight on the moon? Include the unit and show your work.

___70 X 1.6 = 112 N_____.

c. The astronaut's mass on Jupiter? Include the unit.

_____70 kg_____.

Question 4:

Fill in the table with the correct values of the Weight/ mass of the following objects on Earth, knowing that the **gravitational field strength of Earth is 10 N/Kg**:

Weight (N) = Mass (kg) X Gravitational field strength (N/kg)

Object	Mass	Weight on Earth
A boy	50 kg	50 x 10 =500 N
A pencil case	250 g ÷1000=0.25kg	.25 x 10 =2.5 N
A Laptop	30/10= 3 Kg	30 N
A Book	750g÷ 1000=0.75kg	0.75 x10 =7.5 N
A Desk	200 /10=20 Kg	200 N
A toy train	8/10= 0.8 kg	8 N
A bag of rice	1200 g ÷1000=1.2 kg	1.2 x 10=12 N
A table	75/10=7.5 Kg	75 N
A Car	1000/10=100 kg	1000 N

Question 5:

a) what is the reading shown in the device below?

-------------3 N ----------------------------------.

b) Calculate the mass of this object on Earth knowing that the gravitational field strength on Earth is 10 N/kg.

----------3 / 10 = 0.3 kg-------------------------------------.

Question 6:

The ball has mass and weight.

a) Circle the correct statement about the **mass** of the ball.

the mass is 0.45 cm^2

the mass is 0.45 kg

the mass is 0.45 m

the mass is 4.5 N

the mass is 4.5 s

b) complete the following table to calculate the mass and weight for the same ball on different planets:

Planet	Mass (kg)	Gravitational field strength(N/kg)	Weight (N)
Earth	0.45 kg	10	0.45 x 10= 4.5 N
Moon	0.45 kg	1.6	0.45 x 1.6= 0.72 N
Jupiter	0.45 kg	25	0.45 x 25=11.25 N

Question 7:

Priya investigates forces.

measuring equipment

bucket

(a) Name the measuring equipment used to measure forces.

Forcemeter

(b) Priya adds water to the bucket and measures the force.

She writes her results in a table.

volume of water added to bucket in ml	force in N
0	2
100	3
200	4
300	5
400	6
500	7

a) Name the **independent variable** in this investigation.

----Volume of water added to the bucket in ml -------------------------.

b) Name the **dependent variable** in this investigation.

------------Force (N) --.

c) Name one controlled variable in this investigation.

1. The same measuring device.   2. The same bucket.

d) Suggest a way that she can make sure that her results are accurate:

She can repeat the investigation more than once ------.