HAWKER COLLEGE
Engage | Inspire | Achieve

Goals

Goals for this week:
- use metric units of mass, their abbreviations, conversions between them, and appropriate choice of units
- estimate the mass of different objects
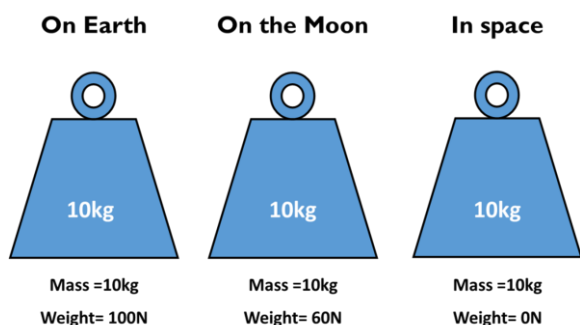
Theoretical Components

STEP 1

Resources:
PDF file: Week 11 Notes and Exercises
YouTube videos: Linked in the PDF file

This Week:
We will be looking at:
- Units of mass
- Estimating mass
- Converting between units of mass

On Earth

10kg

Mass =10kg
Weight= 100N

On the Moon

10kg

Mass =10kg
Weight= 60N

In space

10kg

Mass =10kg
Weight= 0N

Practical Components

STEP 2
Read through Week 11 Notes and Exercises for instructions on what to do.

There are 2 Exercises in this booklet. Read any worked examples before you begin.

Remember to regularly check Google Classroom for messages.

Portfolio Task

STEP 3

Complete the task at the end of the brief and submit your weekly work. 😊

Other

Remember to check Google Classroom or hawkermaths.com for each week's learning brief

Make sure you have joined the Google Classroom. If you have not, see your teacher.

Measuring Instruments

ESSENTIAL MATHEMATICS 1

WEEK 11 – MASS

How are we ever going to use this?

- When we compare the quantities inside different sizes of food containers
- To assess the ingredients in packaged foods
- When we are calculating the amount to soil or mulch we need in our garden

MEASURING MASS

In everyday language we talk about how much things weigh when we really mean mass. Weight depends on gravity and thus changes depending on how far you are from the centre of the Earth. – you have much less weight on the moon, hence those giant 'moon steps'. When Louise said she weighed 85 kg, she should have said she has a mass of 85 kg.

Metric Units of Mass

In the metric system, the gram is the basic unit for mass and all other units are based on grams. This table shows the common mass units in the metric system.

Unit	Abbreviation	
milligram	mg	one-thousandth of a gram
gram	g	
kilogram	kg	1 kg is equivalent to 1,000 g
tonne	t	1 tonne is equivalent to 1,000 kg

Estimating Mass

This table shows some common items and their approximate mass.

Mass	Items with approximate mass
1 mg	A grain of sand A tiny insect like a sand fly
2 g	A 5 cent coin
100 g	An iPhone without a case
1 kg	A litre of milk 5 medium sized oranges
50 kg	A Year 6 or 7 student
100 kg	A tall person

1. Which unit of mass would be most appropriate for:
    a. a pencil   b. your Maths folder   c. a postage stamp

    d. a car   e. your shoe   f. a Big Mac

    g. a hair from your head   h. a full bag of groceries   i. a newborn baby

2. Estimate the mass of four of the items above. Then try and find the actual mass (research online). Was your estimate accurate? Calculate the difference.
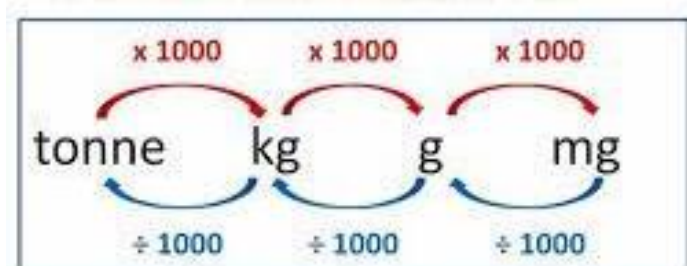
Item	Estimate	Actual	Difference

CONVERTING UNITS OF MASS

Larger to smaller

t to kg   multiply by 1000
kg to g   multiply by 1000
g to mg   multiply by 1000

Smaller to larger

mg to g   divide by 1000
g to kg   divide by 1000
kg to t   divide by 1000

1. Convert these units

    a. 3 kg = _____ = _____ g

    b. 12 t = _____ = _____ kg

    c. 1,500 g = _____ = _____ kg

    d. 2,400 kg = _____ = _____ t

    e. 2.5 g = _____ = _____ mg

    f. 500 mg = _____ = _____ g

2. A hospital pharmacist ordered 2,000 tablets. Each tablet has a mass of 5 mg
    a. Calculate the total mass of the tablets in mg?

    b. What is the total mass in grams?

3. Vitamin C powder contains $\frac{9}{10}$ ascorbic acid and $\frac{1}{10}$ calcium.
    a. How many milligrams of calcium are in 40 milligrams of Vitamin C?

    b. How many milligrams of ascorbic acid are in 60 milligrams of Vitamin C?

4. A standard house brick has a mass of 2.7 kg.
    a. A pallet of standard house bricks contains 500 bricks. Calculate the mass of 1 pallet of normal house bricks. Express your answer in kilograms.

    b. A truck has a load of 8 pallets of standard house bricks. Calculate the weight of the load in tonnes.

5. List three items whose mass you would measure in:
    a. tonnes   b. kilograms

    c. grams   d. milligrams

6. Germany has the highest rate of chocolate consumption in the world. The population of 83 million eat an average of 3.05 kg of chocolate each per year. How many tonnes of chocolate are eaten in Germany per year?

1. Have you heard the expression "You're worth your weight in gold"? In this investigation, you are going to calculate the monetary value of your friend, maths teacher or even yourself to see if they are 'worth their weight in gold'.

   a. Measure the mass (in kg) of the person you are going to value. Alternatively, you can estimate the mass. Note: the average weight range is 58-73 kg for a 16-17 year old boy and 50-65 kg for a 16-17 year old girl.
   b. Multiply the person's mass by 32.15 to convert their mass to troy ounces.
   c. Research today's price for 1 troy ounce of gold.
   d. Multiply the person's mass in troy ounces by the price of 1 troy ounce of gold.

2. When a mother was weighed holding her baby, the scale read **78 kg**
   When the nurse was weighed holding the baby, the scale read **69 kg**
   When the nurse and the mother stood on the scales together, the scales read **137 kg**

   What was the weight of the baby?

CRITERIA	EXPECTATIONS	POSS	MULT	GIVEN	TOTAL
Practical	Student completes practical work, including exercises of the brief to an acceptable standard set by the teacher.	2	3		/6
Portfolio Task	Student completes the portfolio task of the week to an acceptable standard set by the teacher.	2	2		/4
Reasoning and Communications	Student responses are **accurate** and appropriate in presentation of mathematical ideas, with **clear** and logical **working out** shown.	4	-		/4
Concepts and Techniques	Student submitted work selects and applies **appropriate** mathematical modelling and **problem solving techniques** to solve practical problems, and demonstrates **proficiency** in the use of **mathematical facts, techniques** and **formulae**	4	-		/4
	Submission Guidelines				
Timeliness	Student submits the exercises and portfolio tasks by the set deadline. See scoring guidelines for specific details.	2	-		/2
		FINAL			/20

Student Reflection:
How did you go with this week's work?

What was interesting?

What did you find easy?

What do you need to work on?