East Renfrewshire Council: Education Department
Practitioner Moderation Template

Prior to the moderation exercise, please complete the following information and submit it to your facilitator with assessment evidence from one learner that you judge to have successfully attained the Es' and Os'.

Experiences and Outcomes:

I have collaborated in investigations into the effect of gravity on object and I can predict what might happen to their weight in different situations on Earth and in Space.
SCN-3.08a

Learning Intentions:

We are learning about the effect of gravity on objects
We are will be able to predict what will happen to a person's weight in different situations on Earth and in Space

Success Criteria:

You will be successful if you

- Can state the difference between mass and weight, including their units
- Can use the formula W=mg correctly
- Can predict what might happen to the weight of an object in different situations.

Briefly outline the context and range of quality learning experiences that have been provided making reference to the chosen design principles.

Breadth –

Challenge and Enjoyment – pupils are challenged by having the opportunity to rearrange the formula. Enjoyment through the experimental activities

Depth – Pupils had the opportunity to add additional success criteria to their homework task.

Personalisation and Choice –

Progression – Developing on from ideas about forces at level 2. Pupils will use this understanding in National 5 Physics.

Coherence – Lessons flowed well, becoming more challenging. The following lesson moved on to discuss life on other planets.

Relevance – Pupils used their understanding to make predictions about real life situations.

Record the range of assessment evidence that was gathered to meet the success criteria (Say, Write, Make, and Do) considering breadth, challenge and application.

- Initially the class were questioned on what they could remember about forces.
- Class were questioned about the term mass and weight and asked to use them in sentences on show me boards. From this the correct definitions were provided to the pupils and they were able to check their sentences to make sure they had the correct understanding (Evidence 1).
- Pupils carried out an activity where they measured the weight of different masses (Evidence 2.1). The results were recorded in their jotters (Evidence 3). Pupils used this to extract a formula from it.
- Pupils carried out calculations involving the formula W=mx10 (Evidence 2.2 and 4)
- Pupils discussed what would happen if the mass was put in water (Evidence 2.3 and 2.4). Pupils then carried this out and seen there was a difference. Discussion was had about buoyancy (Evidence 5). Links to real life science with the NASA Neutral Buoyancy Lab.
- The question was then poised to the pupils about what would happen if you were at high and low altitudes (Evidence 2.5). A class answer was developed (Evidence 6).
- Pupils then though about weight on other planets. Gravitational field strength was discussed
- Pupils carried out calculations involving the formula W=mxg (Evidence 2.6 and 7)

Briefly outline the oral/written feedback given to the pupil on progress and next steps, referring to the learning intention and success criteria.

Evidence 1 – Pupils were able to give verbal peer feedback on the correctness of their sentences.

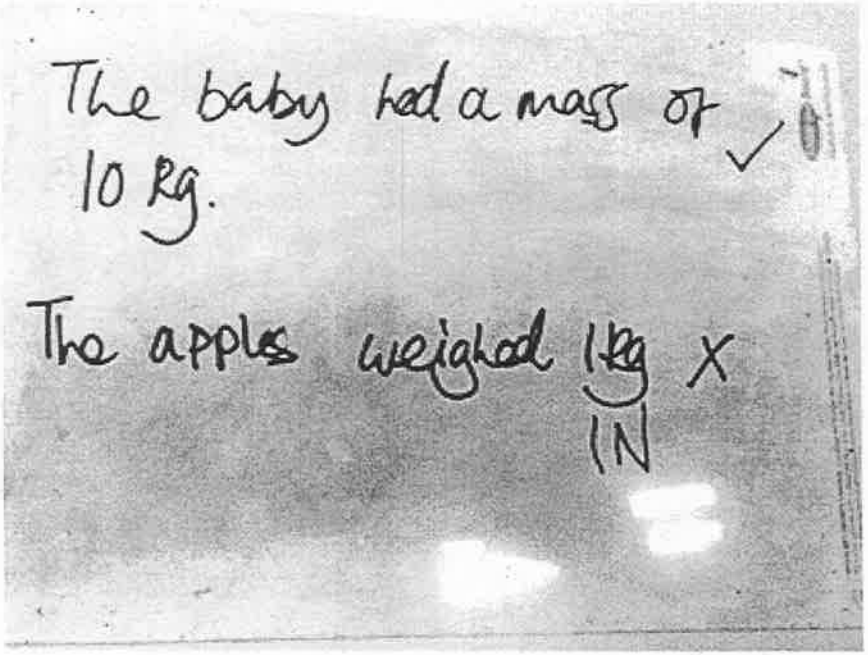
Evidence 3,4,5,6,7 – Pupils were issued with written feedback on their jotter work

Pupil Voice:
What have you learned? How did you learn? What skills have you developed?

At the end of the topic (which included more than just this E&O), pupils were asked to evaluate their learning for entry into their E-portfolios. (Evidence 8)

Did the learner successfully attain the outcomes? YES/NO

Didn't



1

Measuring The Effect of Gravity

- Use the Newton balance and supplied masses to investigate this.
- Copy the table to take results.
- What do you notice about the numbers in the last column?
- Can you make up a formula that connects weight and mass?

Mass(Kg)	Weight(N)	Weight ÷ Mass (N/Kg)
0.2		
0.4		
0.6		
0.8		
1.0		

Weight Calculations

- Use the formula Weight = Mass x 10.
  1) Write down formula
  2) Substitute numbers into formula
  3) Solve and report with correct units.

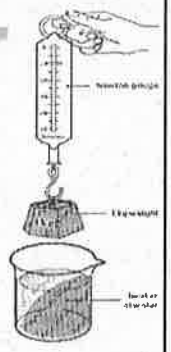
Mass (kg)	Weight (N)
3	
	45
0.9	
	3700

3

Is Gravity Constant?

- Repeat the Activity only this time immerse the masses in water when weighing with Newton balance.
- Can you explain the results?

- Weight out of water = ____
- Weight Under Water = ___



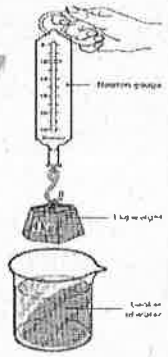
S2 Physics

4

Buoyancy

Water exerts an upward force on any object lowered into it.

This force is called _____ and is why objects are _____ when weighed in water.



https://www.twigscotland.com/film/buoyancy-1511/

S2 Physics

5

Gravity at Altitudes

- How would your weight change if you were on a mountain, or deep under ground?

S2 Physics

6

Weight Calculations

- Calculate the weight of a 50kg person on the following planets, using w=mg

- Earth (g=10)
- Mars (g=3.7)
- Neptune (g=11)

Evidence 3

Mass Measuring the effect of gravity

Mass (kg)	Weight (N)	Weight ÷ Mass (N/kg)
0.2	2	10
0.4	4	10
0.6	6	10
0.8	8	10
1.0	10	10

Gravity 23/08/17

Great Work Keep it up!

Well done getting this!

Weight = Mass x 10

*Gravity is fairly constant on the surface of planet earth

*It causes a weight of around 10 newtons (N)

P1

Evidence 4

Very kilogram of mass

lass and weight are
lated by the formula

xample

he mass of a woman is
0 kg. What is her weight
n Earth?

= mass x10

eight = 60 x10
eight = 600 ~~kg~~ N

well spotted!

Verbal feedback given.

um

just watch your unit
kg (lowercase!)

	Mass (kg)	Weight (N)
1.	3	30
2.	4.5	45
3.	0.9	9
4	370	3700

1) W = m x 10
W = 3 x 10
W = 30N

2) W = m x 10
W = 4.5 x 10
W = 45N

3) W = m x 10
W = 0.9 x 10
W = 9N

4) W = m x 10
W = 370 x 10
W = 3700N

Good working, you are using your formula well. um

evidence 5

Is Gravity Constant?

Weight out of water
= 10N

Weight under water
= 8N

Water exerts an upward force on any object lowered into it.

Thus This force is called bouyancy and is why objects objects are lighter when weighed in water.

evidence 6

25/8/17

Gravity at Altitud

* The closer you are to an objects centre of mass, the larger the effects of gra will be.

* So you would weigh les the top of a mountain

* Mountain - High
* Cave/tunnel - low

Objects with very large m cause gravity.

Since most of space has objects at all there is little gravity.

We can calculate weight b the formula W = mg g = gra tional field strength.

Evidence 7

good explanation, well laid out Jessica!

$W = mg$
$W = 50 \times 10$
$W = 500N$

$W = mg$
$W = 50 \times 3 \cdot 7$
$W = 185N$

$W = mg$
$W = 50 \times 11$
$W = 550N$

My weight is - 600N
My mass is - 60kg

Evidence 8

S2 Physics
Heat, Space and Forces Evaluation

[redacted]

What have you learned?	How did you learn?	What skills have you developed?
about all the ways heat can move the difference of mass and weight how to make things move faster	experiments measuring things watching videos playing games	numeracy cause I use formulas teamwork when doing experiments