Name: Date:

25 total marks

Science Assessment Year 5: Paper A: Forces

Measuring Forces

1. In what units do we measure force?

.....

1 mark

2. What is the name of the force that pulls things towards the centre of the Earth?

.....

1 mark

3. Who discovered this force?

.....

1 mark

4. What piece of equipment do we use to measure force?

.....

1 mark

5. Write **true** or **false** next to each of these statements.

a) Mass is a force. .....

b) Weight is a force. .....

c) Length is a force. .....

d) A force is a push or a pull. .....

3 marks

6. Explain why astronauts move in a bouncy way on the moon.

.....

1 mark

Total for this page

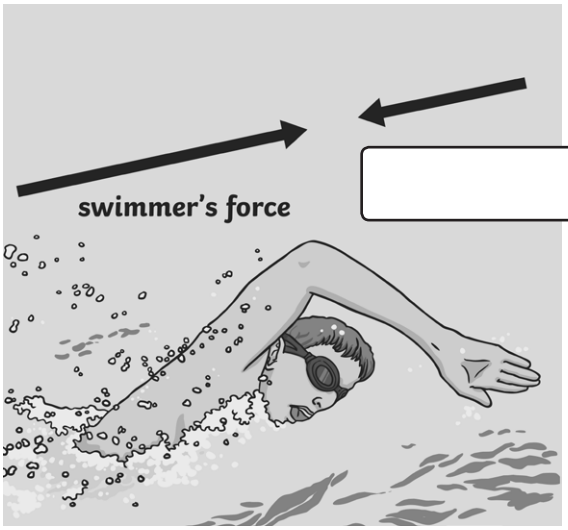
7. Explain why astronauts in space float around.

.....

1 mark

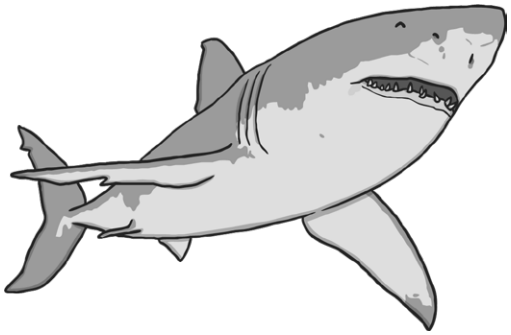
Forces in Water

8. Label the force that is pushing against this swimmer in the water.



1 mark

9. How does the shape of this shark help it to move quickly through the water?



.....

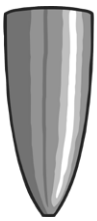
.....

1 mark

Total for this page

10. All these shapes are made from the same material. Circle the shape that would fall the fastest in water and explain why.






This is because... .....

.....

2 marks

Boat Investigation

11. A group of children want to investigate if the shape of a boat affects how much weight it can hold. They all make a boat out of tin kitchen foil and they will float them on a tank of water and fill with weights until the boat sinks.

What is the **one** controlled variable they will change?

.....

1 mark

12. Name a variable that must stay the same.

.....

1 mark

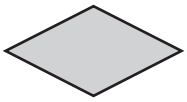
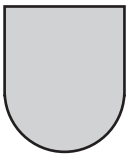
13. What is the variable they will measure and record in their results table?

.....

1 mark

Total for this page

14. Here are the results:

Boat Number		1st Test Weight Held	2nd Test Weight Held	3rd Test Weight Held	
1	 large rectangle	1050g	990g	1100g	
2	 Streamlined and long	890g	768g	845g	
3	 Small, double layered cup shape	445g	430g	25g	
4	 Small rectangle with double layer of tin foil	330g	402g	376g	

a) What should be the title of column 2

.....

1 mark

b) What would go in the empty 5th column at the end?

.....

1 mark

c) Which result looks like an anomaly?

.....

1 mark

d) What could be a reason for this anomaly?

.....

1 mark

Total for this page

e) Why have the group tested each boat 3 times?

.....

.....

2 marks

f) If the large rectangle boat was checked a 4th time, what might the result be?

.....

1 mark

15. What conclusion could you draw from these results?

.....

.....

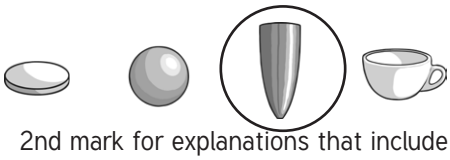
.....

2 marks

Total for this page

Answer Sheet: Science Assessment Year 5: Paper A:
Forces

question	answer	marks	notes
1. In what units do we measure force?			
	1 mark for: • Newtons • Newton	1	Give mark for not using a capital letter or small errors in spelling.
2. What is the name of the force that pulls things towards the centre of the Earth?			
	1 mark for: • Gravity	1	
3. Who discovered this force?			
	1 mark for any of: • Sir Isaac Newton • Isaac Newton • Newton	1	
4. What piece of equipment do we use to measure force?			
	1 mark for either: • Forcemeter • Newton meter	1	
5. Write TRUE or FALSE next to each of these statements.			
a	False	3	1 mark for 2 correct 2 marks for 3 correct 3 marks for 4 correct
b	True		
c	False		
d	True		
6. Explain why astronauts move in a bouncy way on the moon.			
	1 mark for any of: • There is less gravity • There is only 1/6 of the gravity of Earth	1	Answer MUST mention the word gravity. No marks for 'no gravity' No marks for 'they weigh less'
7. Explain why astronauts in space float around.			
	1 mark for 'less gravity'.	1	No marks for 'no gravity' as there is always some gravity in space.
8. Label the force that is pushing against this swimmer in the water.			
	Water resistance	1	1 mark for water resistance labelled on the diagram.

question	answer	marks	notes
9. How does the shape of this shark help it to move quickly through the water?			
	1 mark for mentioning: • streamlined	1	The word streamline/ streamlined **must** be used in the answer.
10. All these shapes are made from the same material. Circle the shape that would fall fastest in water and explain why.			
	 2nd mark for explanations that include the word: • Streamline/streamlined	2	Accept other methods of denoting shape e.g. a tick. Do not give a mark for more than one shape marked as correct.
11. What is the ONE controlled variable they will change?			
	1 mark for: • The shape of the boat	1	
12. Name a variable that must stay the same.			
	1 mark for any of: • Amount of tin foil (best answer) • Depth/amount of water • Same type of weights used (i.e. in 20g pieces rather than 100g pieces)	1	
13. Name a variable that must stay the same.			
	1 mark for: • The amount of weight the boat holds.	1	
14. Here are the results:			
a	1 mark for any of: • Shape of boat • Style of boat • Type of boat	1	
b	1 mark for: • Average/mean • Average/mean weight	1	
c	1 mark for: • 25g	1	
d	1 mark for any of: • The boat broke/sprang a leak. • Wrote it down wrong • Counted wrong	1	
e	2 marks for any of: • To check for anomalies/errors • Make it more accurate • To take an average/mean	2	

question	answer	marks	notes
f	1 mark for answers in the range: • 900g–1200g	1	Accept answers written in kg but equivalent.
15. What conclusion could you draw from these results?			
	2 marks for answers that include **both** a reference to the amount of weight the boat can hold **and** the surface area.	2	
		total 25	