2024 General Maths Weeks 1 and 2 Homework

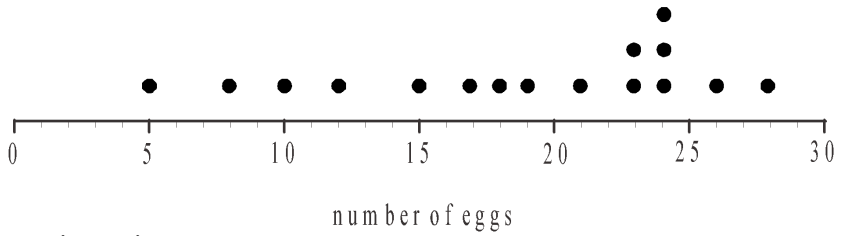
Name: _____

Please submit on 7th Feb

Question 1 (5 marks)

Bess keeps 16 hens on her property.

The dot plot below shows the distribution of the number of eggs laid by these hens during January.



a. Write down the

i. median. 1 mark

_____

ii. third quartile (Q_3). 1 mark

_____

b. Find the percentage of hens which produced less than 15 eggs during January.
1 mark

_____

A free-range egg producer has a large population of hens. The number of eggs produced in January by these hens is normally distributed with a mean of 21 eggs and a standard deviation of 2 eggs.

c. Use the 68 – 95 – 99.7% rule to determine the percentage of these hens which laid more than 25 eggs in January.
1 mark

_____

_____

d. The standardized number of eggs laid by one of the hens in January is given by $z = -1.5$.
How many eggs did this hen lay in January?
1 mark

_____

Question 2 (7 marks)

The *weight*, in grams, and the *collection place* (nesting box or outside) of 35 eggs was recorded by a farm worker.
The back-to-back stem plot below displays the data.

key: $65|2 = 65.2\,\text{g}$

nesting box $(n = 21)$					*weight* (g)		outside $(n = 14)$			
				0	65	2				
					66	0	3			
				1	67	5	7	7	9	
	8	6	4	3	68	1	2	5		
7	6	5	4	4	69	0	3	4		
		7	3	2	70	2				
			9	3	71					
				5	72					

a. Find the modal weight, in grams, of the eggs collected from outside.
1 mark

b. The five-number summary for the distribution of the weight of eggs collected from the nesting box is displayed in the table below.
The table is incomplete.

	weight (g)
Minimum	65.0
Q_1	68.5
Median	69.5
Q_3	70.5
Maximum	

Write down the

i. range.
1 mark

ii. interquartile range.
1 mark

c. Show that the egg collected from the nesting box with a weight of 65.0 g is an outlier.
2 marks

d. Explain why the *weight* of the collected eggs is associated with the *collection place* of the eggs. Use an appropriate statistic to support your explanation.
2 marks