

APOLLO

Experimentation Skills (PBA Skills) FBISE Physics Class 10 (SSC-II)

Domain N: Experimentation Skills (PBA Skills)

17 questions | questions

Original FBISE question crops. National Curriculum 2022-23 topic.

Q.2 Recall the experiment “motion of a ball rolling down an angle iron” and answer the following questions:

3	160	3.9	3.3		
4	140	3.2	3.1		
5	120	2.8	2.6		
6	100	2.5	2.0		

i. Why is the angle of inclination kept constant throughout the experiment? (01)

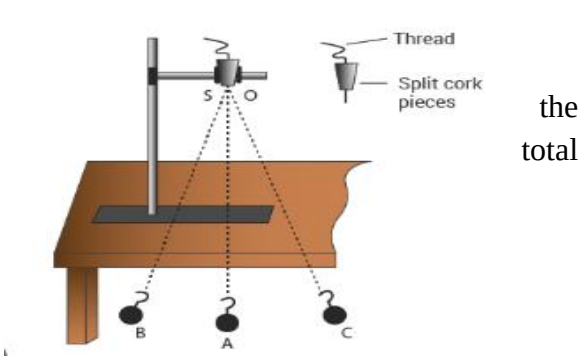
Q.2 Recall the experiment “motion of a ball rolling down an angle iron” and answer the following questions:

3	160	3.9	3.3		
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ii. Copy and complete the given table. (02)

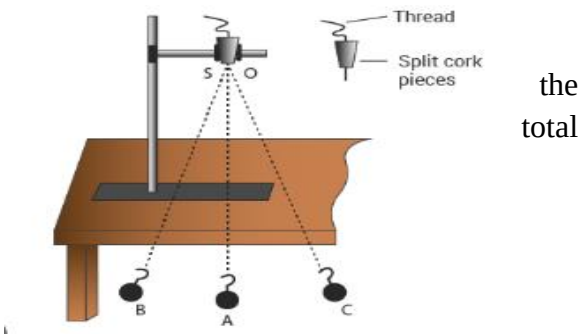
	Distance (cm)	Time (s)			Velocity (cm/s)
		t ₁	t ₂	Mean time t	
1	200	4.4	4.6		
2	180	4.1	4.0		

Q.3 A student is investigating the relationship between length of a simple pendulum and its time period. The diameter of the bob of pendulum is **1.6 cm**. He displaces bob slightly to set it into a steady swing and records the the time **t** taken for 20 complete oscillations. The experiment is repeated for different lengths of the pendulum.



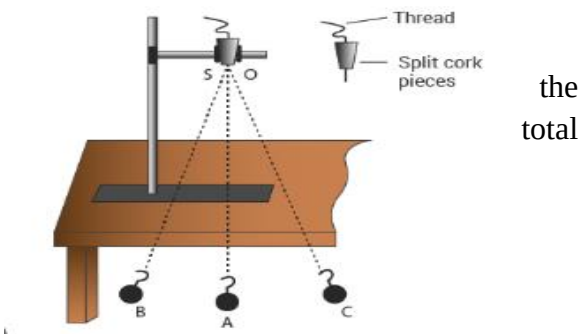
i. Copy and complete the following table. (03)

Q.3 A student is investigating the relationship between length of a simple pendulum and its time period. The diameter of the bob of pendulum is **1.6 cm**. He displaces bob slightly to set it into a steady swing and records the the time **t** taken for 20 complete oscillations. The experiment is repeated for different lengths of the pendulum.



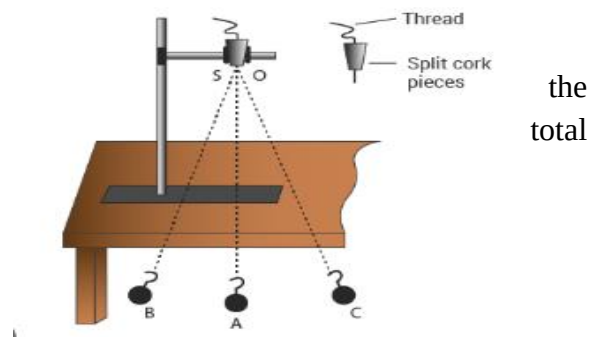
ii. Name one control variable that must be kept constant in this experiment? (01)

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iii. What should be the shape of the graph between L and T²? (01)

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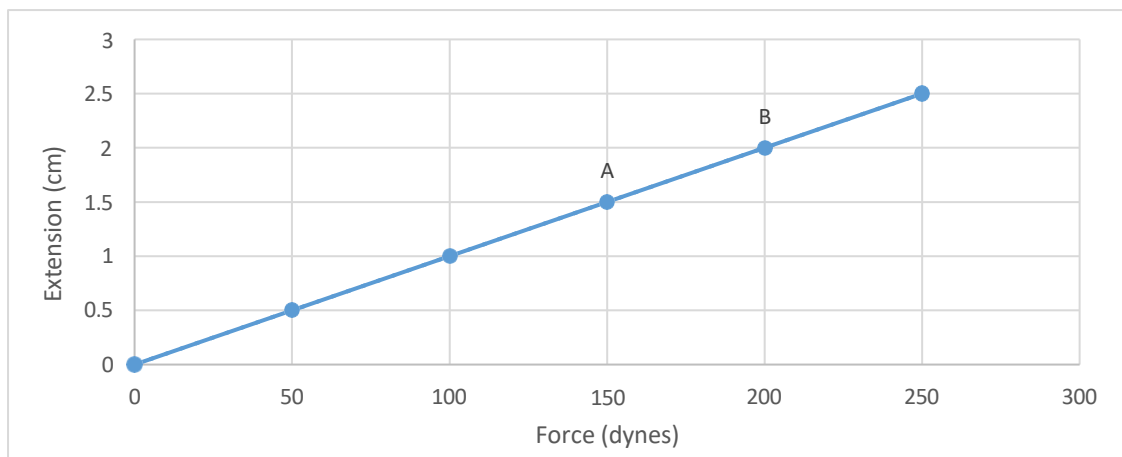


the
total

iv. How can the value of g be determined from the graph?

(01)

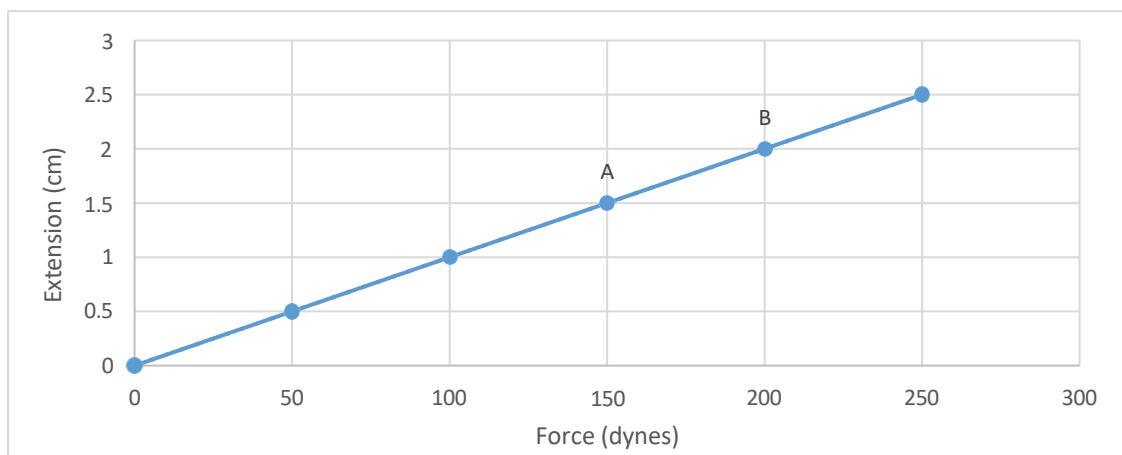
Q.5 The given graph shows the extension in the helical spring by increasing the attached load.



i. Name the dependent variable and independent variable used in above graph.

(01)

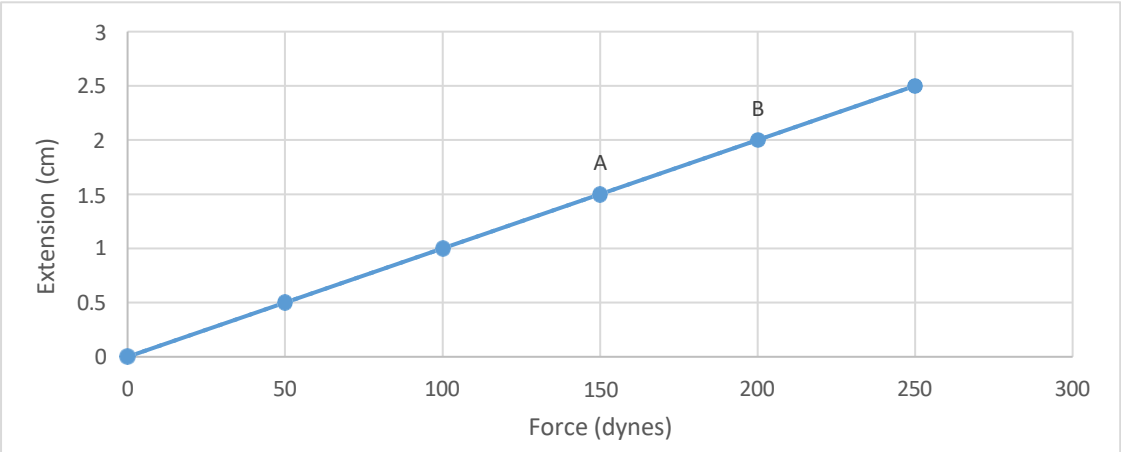
Q.5 The given graph shows the extension in the helical spring by increasing the attached load.



ii. Calculate the slope from force-extension graph by taking points A and B.

(02)

Q.5 The given graph shows the extension in the helical spring by increasing the attached load.



iii. Which quantity is represented by the slope of force-extension graph? (01)

Q.2 Recall the experiment “motion of a ball rolling down an angle iron” and answer the following questions:

3	160	3.9	3.3		
4	140	3.2	3.1		
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i. Write down apparatus which is required to study the motion of a ball rolling down an angle iron? (01)

Q.2 Recall the experiment “motion of a ball rolling down an angle iron” and answer the following questions:

3	160	3.9	3.3		
4	140	3.2	3.1		
5	120	2.8	2.6		
6	100	2.5	2.0		

ii. Copy and complete the given table. (02)

No. of Obs	Distance (cm)	Time (s)			Velocity (cms^{-1})
		t_1	t_2	Mean time t	
1	200	4.4	4.6		
2	180	4.1	4.0		

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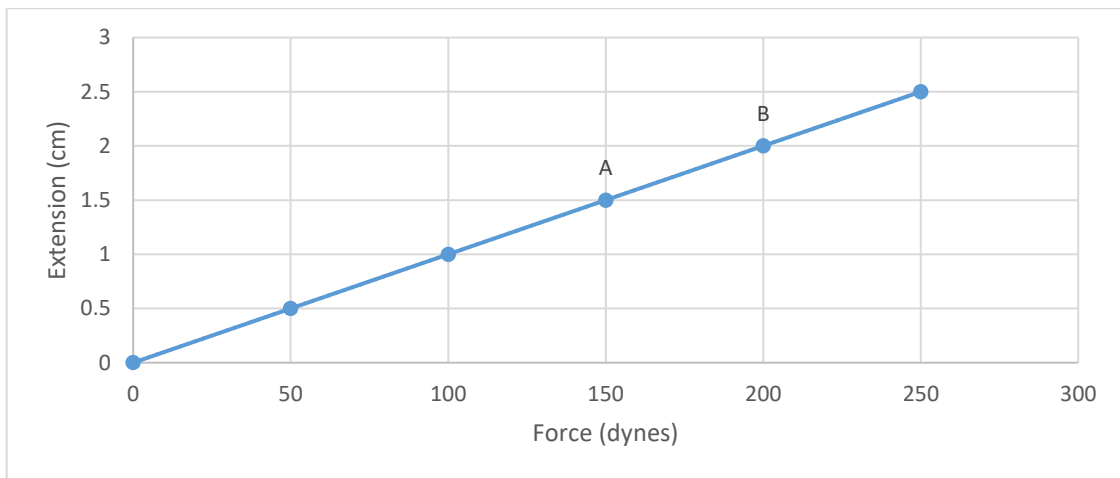
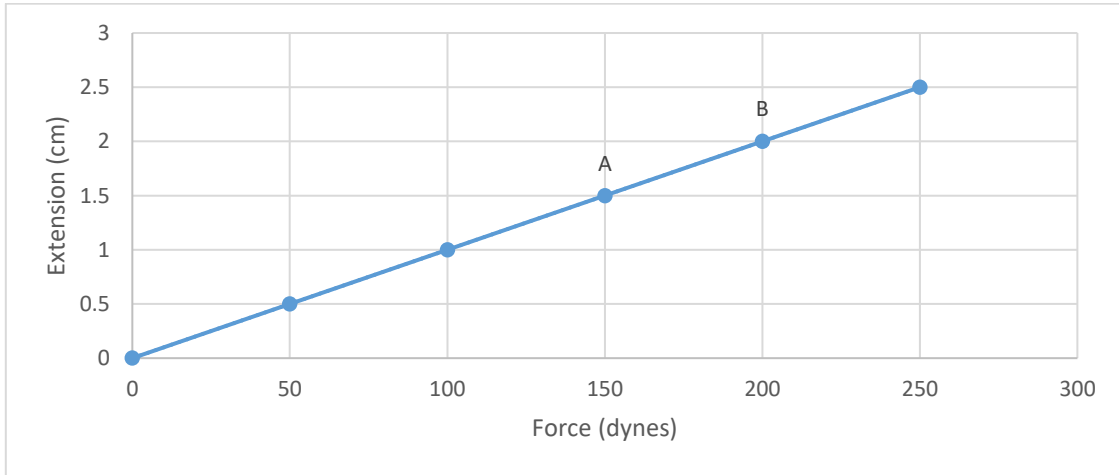
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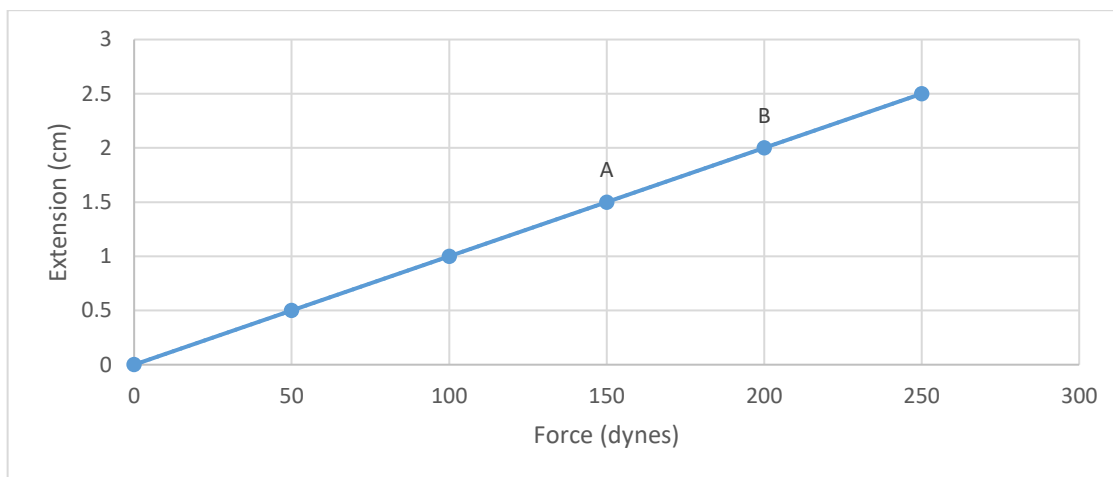
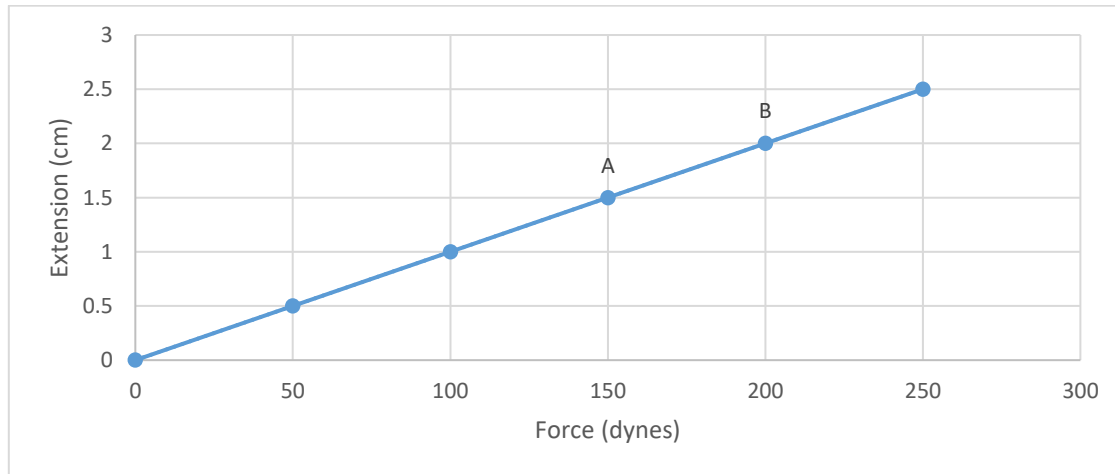
iii. Draw distance-time graph by using values from above table. (02)

Q.4 The given graph shows the extension in the helical spring by increasing load.



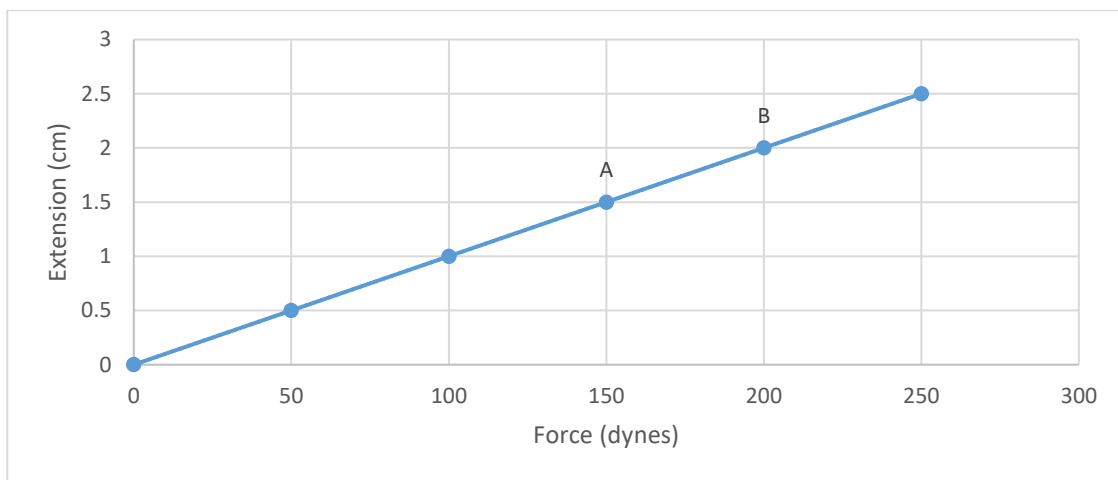
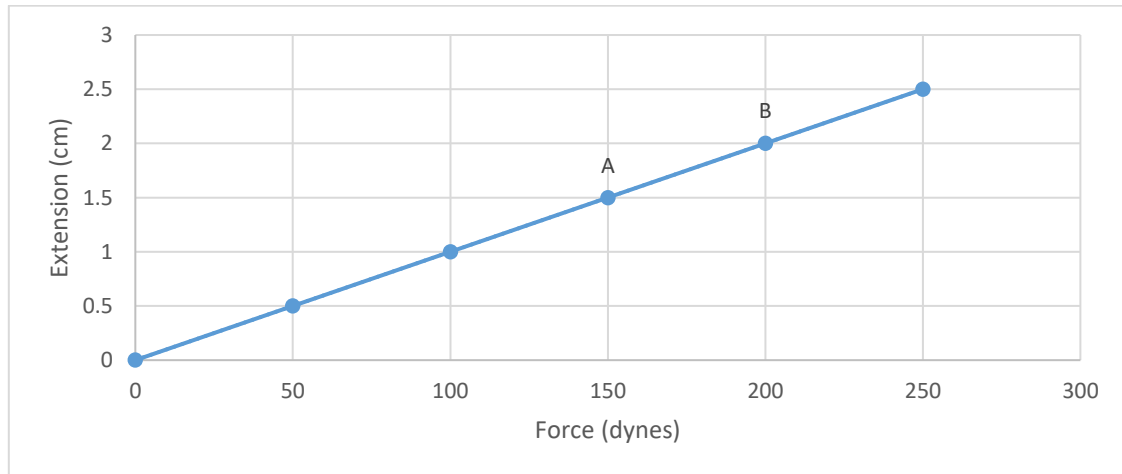
- i. Name the dependent variable and independent variable used in above graph. (01)

Q.4 The given graph shows the extension in the helical spring by increasing load.



- i. Name the dependent variable and independent variable used in above graph. (01)
- ii. Calculate the slope from force-extension graph by taking points A and B. (02)

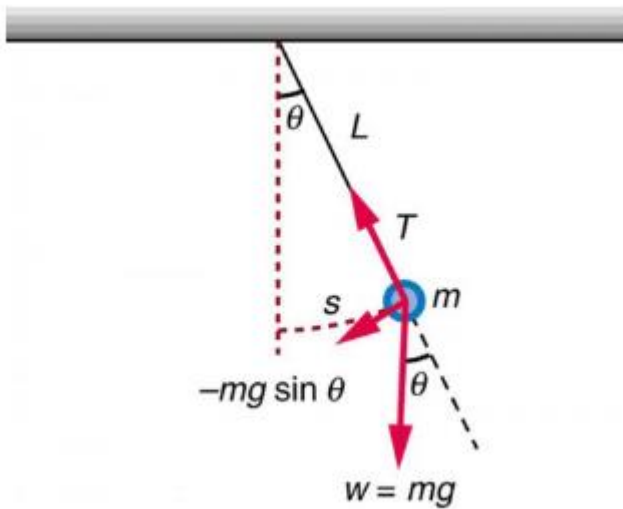
Q.4 The given graph shows the extension in the helical spring by increasing load.



- i. Name the dependent variable and independent variable used in above graph. (01)
- ii. Calculate the slope from force-extension graph by taking points A and B. (02)
- iii. Which quantity is represented by the slope of force-extension graph? (01)

Q. NO. 1

A student investigates the time period of a simple pendulum for calculation of value of 'g' (gravitational acceleration). Figure shows the apparatus.



- i. Student measured the time of 10 vibrations of different lengths of thread and recorded the observations in the following table. Complete the table. (4 marks)

Radius of metallic bob = $r = 2.26 \text{ cm}$

- ii. Calculate the mean value of 'g'? (1 mark)

Serial #	Length of thread l (cm)	Length of Simple Pendulum L = l + r (cm)	Time for 10 vibrations		Mean Time t (s)	Time Period T = t/10 (s)	$g = \frac{4\pi^2}{T^2} L$ (cms ⁻²)
			t ₁ (s)	t ₂ (s)			
1	80 cm		18.23	18.22			
2	90 cm		19.17	19.15			
3	100 cm		20.01	20.11			

iii. Find the percentage error in the calculated value of 'g' (from the table) (1 mark)
