

Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

## Question 1

There are four versions of question 1; you will be answering one version.

Bluebook will indicate which version to answer (J, K, L, or M) and the page number in the booklet.

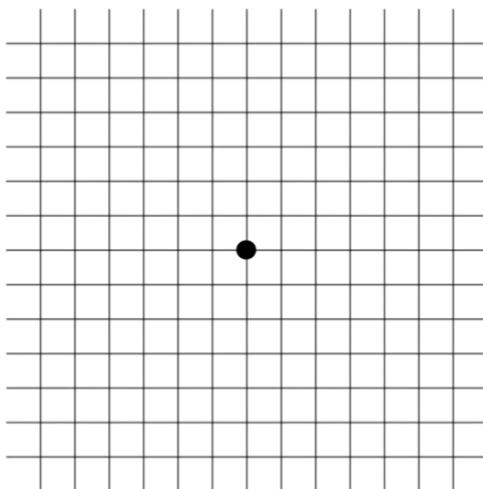
Make sure to respond in the correct space in the booklet.

Considering this is a practice exam, I have only included one version of the exam, the “FP” version, and I have not included references to booklet page numbers in the exam, however, I have included this page to help you prepare for the real exam. Also, I am not going to include multiple versions of this page because you get the point, right?

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**Question 1: Version FP**

**PART A**



**PART B**



Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

**Question 1: Version FP**

**PART C**

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**PART D**

\_\_\_\_\_  $\Delta t_1 > \Delta t_2$

\_\_\_\_\_  $\Delta t_1 < \Delta t_2$

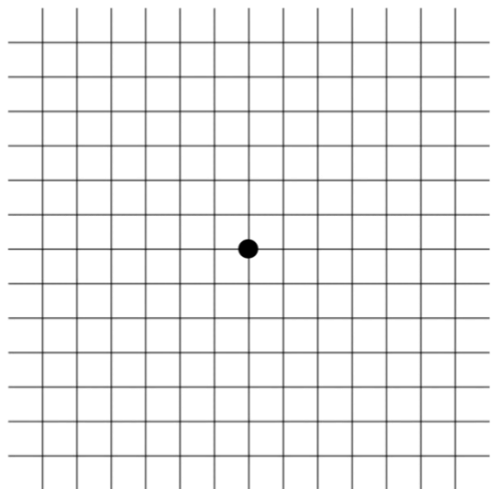
\_\_\_\_\_  $\Delta t_1 = \Delta t_2$



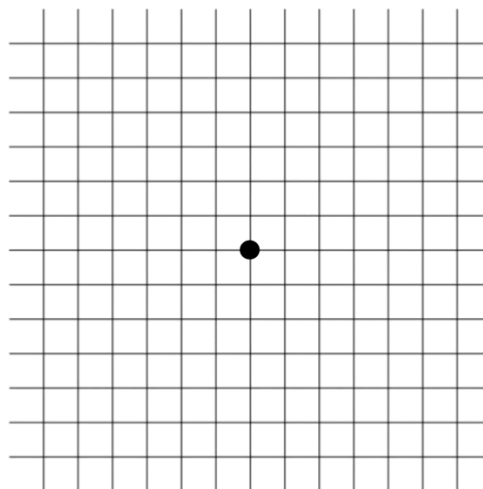
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**Question 2: Version FP**

**PART A i**



**PART A ii**



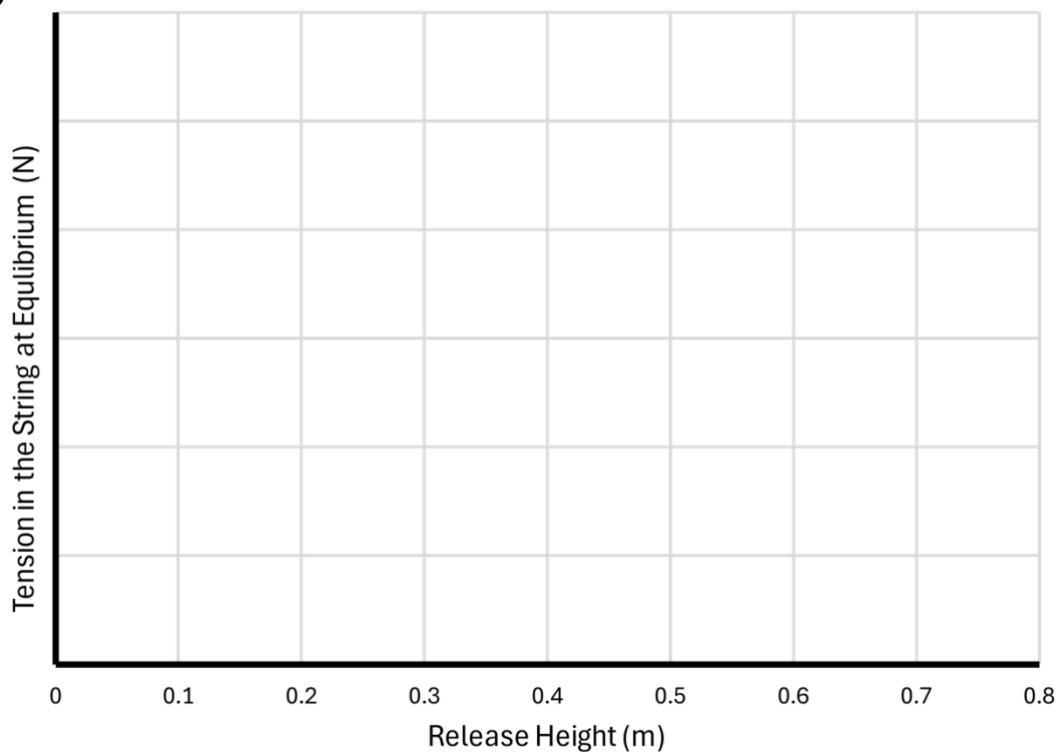
**PART B**

Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

**Question 2: Version FP**

**PART C**

**PART D**





Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

**Question 2: Version FP**

**PART E**



Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

**Question 3: Version FP**

**PART A**

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**PART B**

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**Question 3: Version FP**

	B (meters)	$\omega_f$ (rad/s)	
	0.1	56.2	
	0.15	38.1	
	0.2	27.7	
	0.25	22.8	
	0.3	19	
	0.4	13.6	
	0.5	11.1	
	0.65	8.9	
	0.7	7.8	
	0.85	7.1	
	0.9	5.8	

**PART C**

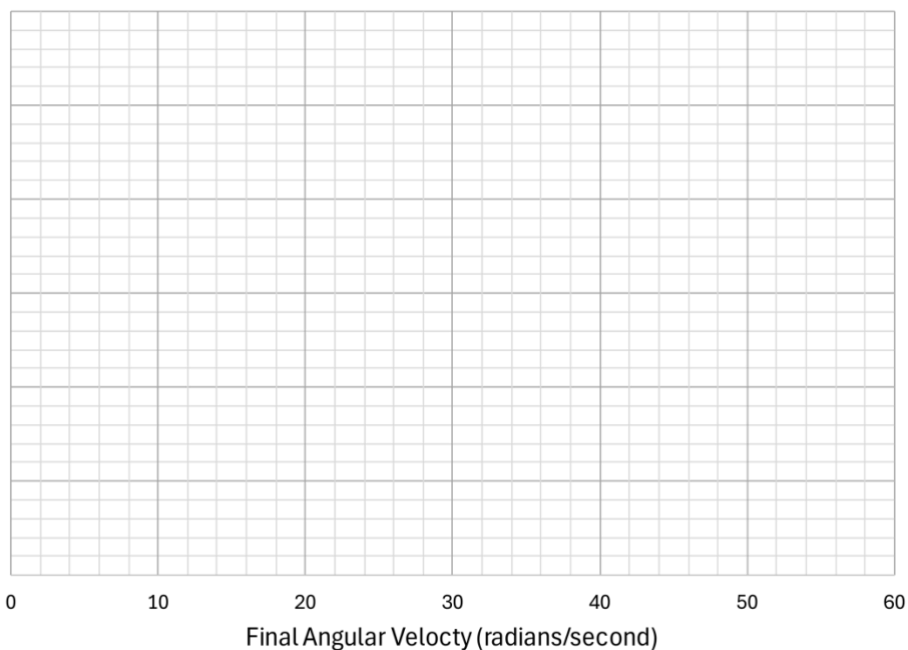


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**Question 3: Version FP**

**PART D**

\_\_\_\_\_ Vertical Axis      \_\_\_\_\_  $\omega_f$  \_\_\_\_\_ Horizontal Axis



**PART E**



Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

**Question 4: Version FP**

**PART A**

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**PART B**

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**PART C**

Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

**Extra Paper**

From the AP Exam Instructions Booklet:

“Free-response booklets are designed to include sufficient space for student responses. However, if students need additional space to complete their responses, provide paper.”

In other words, if you need extra paper, definitely ask for it!