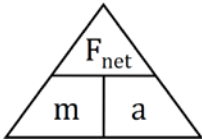
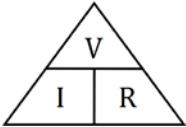



## MCAS High School Introductory Physics Sample Reference Sheet for Students with this Accommodation

**ONLY** for use by students on the MCAS Physics test who have this accommodation listed in their IEP or 504 plan

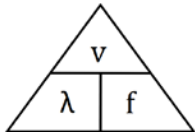
**Note:** Students may NOT use a reference sheet that has already been filled out prior to the beginning of the test administration, and test administrators MUST check to confirm that they are providing students with blank sheets.

Problem Solving Steps		
1. Unknown: What do you want to find? 2. Given: What do you know? 3. Relationship / equation / formula	4. Substitute givens into equation 5. Solve: Rearrange equation if needed 6. Answer: Include units	
Nuclear Processes		
Nuclear Fission: nuclei of atoms _____; Nuclear Fusion: nuclei of atoms _____		
Motion		
$v_{\text{average}} = \frac{\Delta x}{\Delta t}$	average velocity = _____	a = acceleration $\Delta t$ = change in time v = velocity $v_i$ = initial velocity $v_f$ = final velocity $\Delta x$ = change in position (displacement)
$a_{\text{average}} = \frac{\Delta v}{\Delta t}$	average acceleration = _____	
Speeding up: Direction of acceleration is _____ the direction of velocity. Slowing down: Direction of acceleration is _____ the direction of velocity.		
Force		
$F_{\text{net}} = ma$		a = acceleration $F_{\text{net}}$ = net force $F_g$ = gravitational force/weight m = mass $g \approx 10 \text{ m/s}^2$ on Earth
$F_g = mg$	$F_{\text{net}} =$ _____	
The force exerted by object A on B is _____ to the force exerted by object ____ on ____. As mass increases, inertia _____.		

Momentum		
$p = mv$		$F\Delta t = \Delta p$
Before	After	
Energy		
$KE = \frac{1}{2}mv^2$		<p>c = specific heat d = distance <math>\Delta E</math> = change in energy F = force <math>g \approx 10 \text{ m/s}^2</math> on Earth <math>\Delta h</math> = change in height KE = kinetic energy m = mass <math>\Delta PE</math> = change in gravitational potential energy Q = heat added or removed <math>\Delta T</math> = change in temperature v = velocity/speed W = work</p>
$\Delta PE = mg\Delta h$		
$W = \Delta E$	$W = Fd$	
$Q = mc\Delta T$	$\Delta T = T_f - T_i$	
Higher KE of the molecules = higher _____		
Electricity and Magnetism		
$V = IR$		<p>I = current R = resistance V = potential difference (voltage)</p>
Series Circuit	Parallel Circuit	
V _____	V _____	
I _____	I _____	
R _____	R _____	

## Waves

$$v = \lambda f$$



f = frequency  
λ = wavelength  
v = velocity



Mechanical waves travel fastest through \_\_\_\_\_, then \_\_\_\_\_, then \_\_\_\_\_

Electromagnetic waves travel faster through \_\_\_\_\_ than \_\_\_\_\_.

Transverse waves move \_\_\_\_\_, longitudinal waves move \_\_\_\_\_

## Science Practices

What is the Claim?

What is the Evidence?

What is the Reasoning?

Was data asked for in the question? Did you include it in your answer?

If asked to provide a question, is it a testable question?

\* If this sample reference sheet is used as is, or if text is *removed*, additional Department approval is NOT necessary. If information is *added*, or if a different reference sheet is created, the reference sheet must be submitted for Department approval.