

**Force Diagrams – Annotated Sketches
of Important Moments in Time**

Names: _____

Snapshot 1. On the Launcher, 1 second Before Launch

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	

Snapshot 2. Approximately half of the water has been expelled [assume that the thrust at this time is the average water thrust]

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	

Snapshot 3. Beginning of Coasting -- All thrust has just ended

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	

Snapshot 4. Half-way (by distance) between the ground and apogee

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	

Snapshot 5. Apogee

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	

Snapshot 6. The point during descent when the rocket has the highest (most positive) acceleration. **If, for your rocket, this is the same as terminal velocity, explain why at the bottom of this page.

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	

Snapshot 7. Rocket has just reached terminal velocity

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	

Snapshot 8. Approximately midway through impact -- after contact with the ground, but before coming completely to rest

Current Mass	
Net Force	
Acceleration	
Velocity	
Height	
Time	