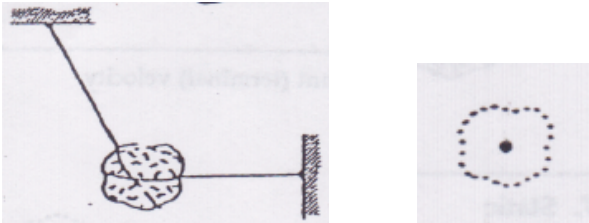
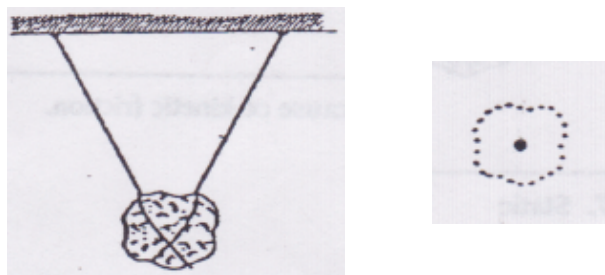
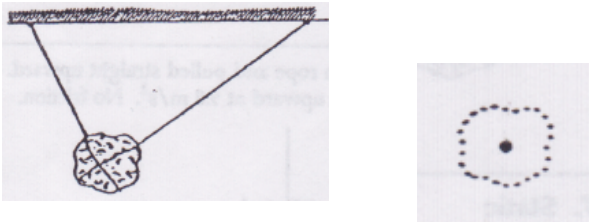
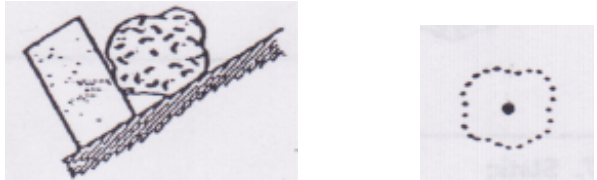
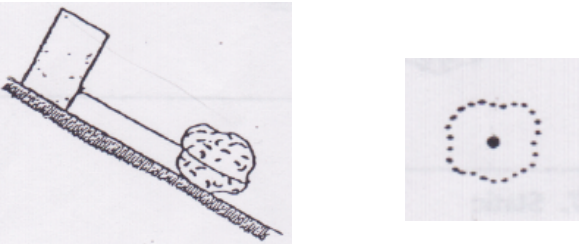
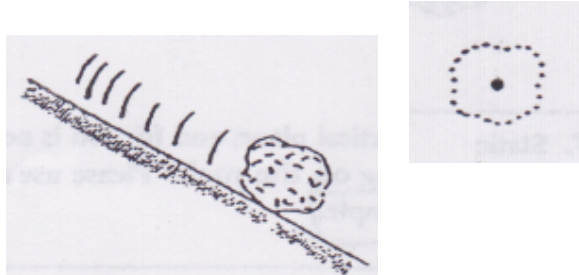


In each case, a **ROCK** is acted on by one or more forces. All drawings are in a vertical plane, and friction is negligible except where noted. Draw accurate free-body diagrams showing all forces (Using Agent-Object Notation) acting on the rock. Make sure you circle your system. **Do it in pencil so you can correct your mistakes. Resolve all forces that are at a non-right angle. You may use abbreviations like T = Tension and G = Gravity. Make sure you write out what the abbreviations mean at the start.**

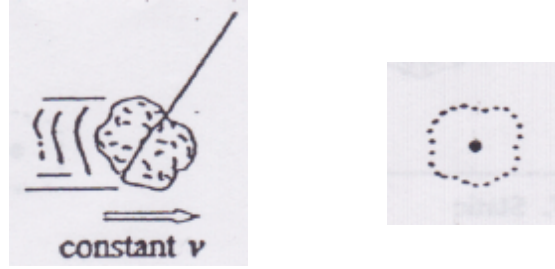
Remember the questions to ask yourself. *Is the force to be split on a hill?* If yes then split up the Force of Gravity

Abbreviations used for this worksheet.	What are the questions you are suppose to ask when making Free-Body Diagrams? List them below.
1. Static 	4. Static 
5. Static 	8. <i>Static*</i> 
7. <i>Static*</i> 	9. <i>Sliding without friction.*</i> 

10. *Static friction prevents sliding.* *



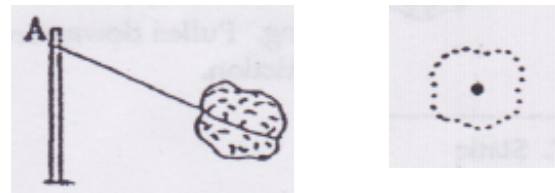
18. Tied to a rope and pulled so that the rock moves horizontally at a constant velocity. Note: there must be air friction in this case.



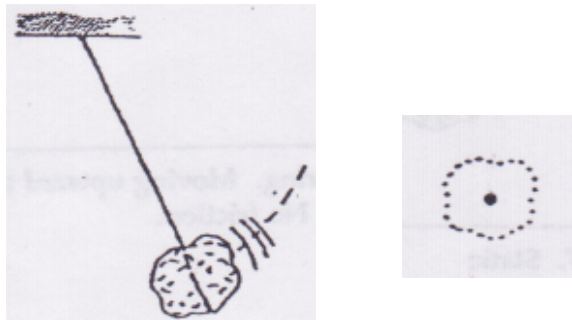
19. Tied to a rope and pulled so that the rock accelerates horizontally at $2g$. No air friction.



22. Tied to point A by a rope. Moving in a horizontal circle at constant speed. Not resting on a solid surface. Coming straight out of the paper.



23. Swinging on a rope. No friction.



27. Resting against the frictionless inside wall of a cone rotating about a vertical axis at constant speed. Not accelerating vertically. Moving straight out of the paper. *

