d. You slide down a steep hill.

\[ V = \frac{W}{m} \]

\[ W = 0 \]

\[ \text{Direction of motion} \]

e. A ball is thrown straight up. Consider the ball from one microsecond after it leaves your hand until the highest point of its trajectory.

\[ \text{Ball trajectory} \]

f. A car turns a corner at constant speed.

\[ \text{Car turning} \]

\[ \text{Diagram of forces} \]

12.5 **Gravitational Potential Energy**

7. Explain why the gravitational potential energy of two masses is negative. Note that saying "because that's what the formula gives" is not an explanation. An explanation makes use of the basic ideas of force and potential energy.

\[ U_g = -\frac{G m_1 m_2}{r} \]

This is because when two masses move towards each other due to gravity, they gain \( 0 \) ft \( + \) \( KE \). Therefore potential energy had to be negative.