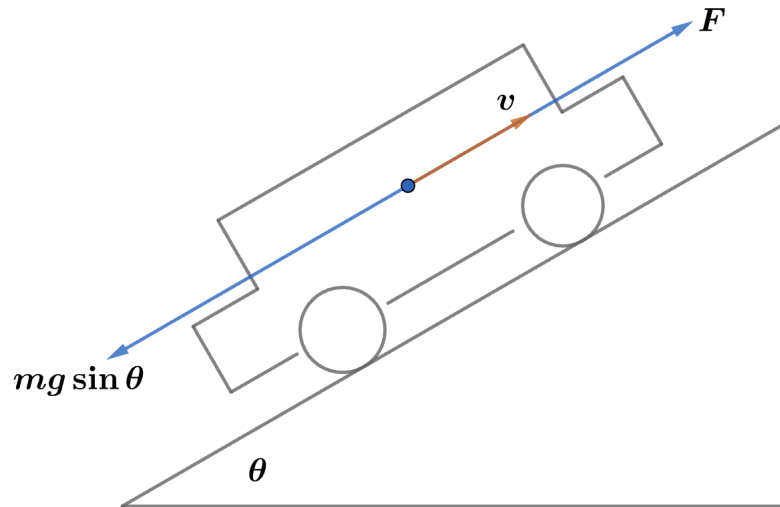# 2012 F=ma Exam: Problem 15

Kevin S. Huang

To drive up with constant velocity v, the car needs to be pushed with force F balancing gravity,

$$F = mg \sin \theta$$

The power needed to travel at velocity v is Fv. If the engine provides power P and we assume no dissipation, the maximum speed is

$$P = Fv_{\max} = (mg \sin \theta) v_{\max}$$

$$v_{\max} = \frac{P}{mg \sin \theta}$$

so the answer is $\boxed{A}$.