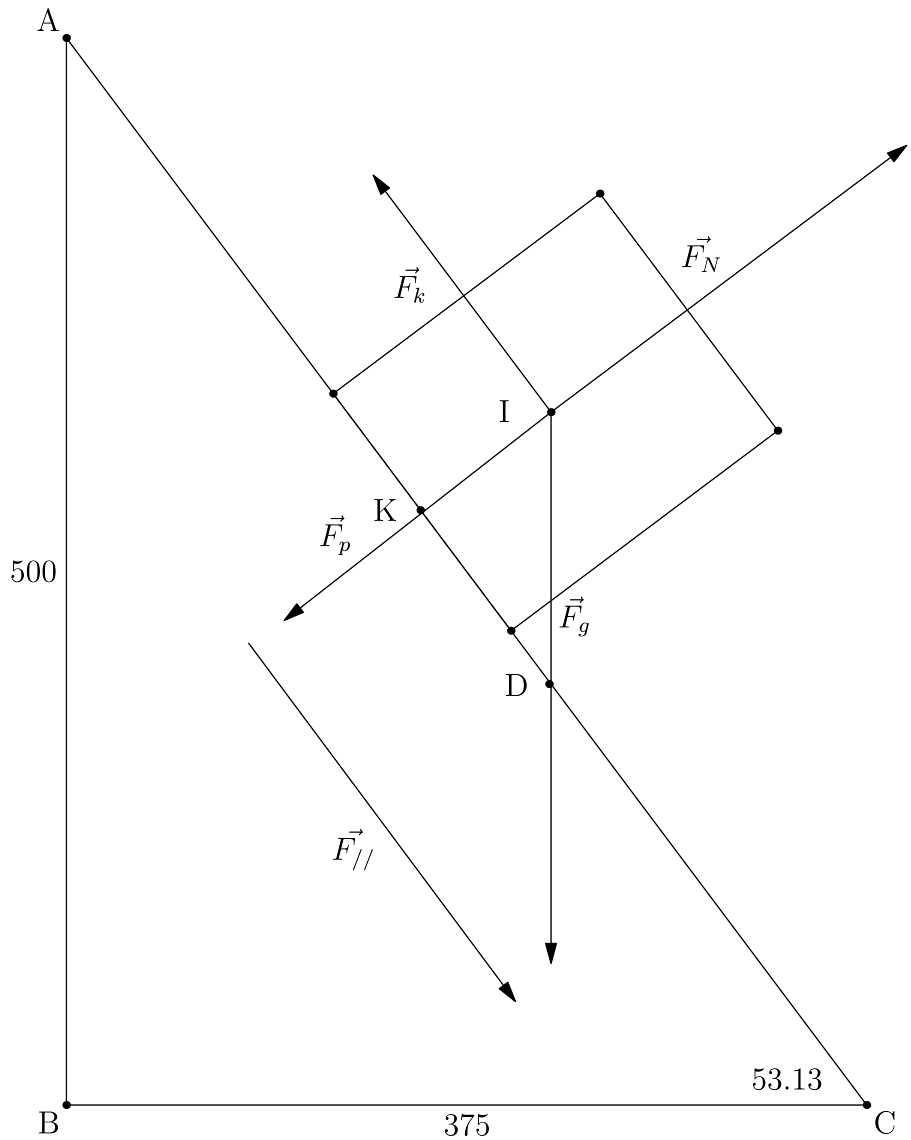

By Pythagoras, $BC = 625$, so using law of sines we have (for $\theta = m\angle BCA$)

$$\frac{\sin 90}{625} = \frac{\sin(\theta)}{500} \to 625\sin\theta = 500\sin 90 \to \sin\theta = \frac{500}{625} \to \theta = \sin^{-1}\frac{500}{625} = 53.13...$$

If we extend vectors $\vec{F_p}$ and $\vec{F_g}$ to intercept AB and BC at M and N, respectively, then we get $m\angle CDN = 36.87 = m\angle ADI$. Since $BC \perp \vec{F_p}$, $m\angle KID = 53.13$.
By Newton's second law of motion, $\vec{F_g} = m\vec{a} = 140\text{kg} \cdot 9.81\frac{m}{s^2} \to \boxed{\vec{F_g} = 1373.4\text{N}}$. Now that we know $\vec{F_g}$, we can find $F_{//}$.

$$\sin 53.13 = \frac{\vec{F_{//}}}{\vec{F_g}} \to \vec{F_{//}} = \vec{F_g}\sin 53.13 = 1373.4\sin 53.13 \to \boxed{\vec{F_{//}} = 1098.72\text{N}}$$

To compute $\vec{F_p}$ we apply a similar process.

$$\cos 53.13 = \frac{\vec{F_p}}{\vec{F_g}} \rightarrow \vec{F_p} = \vec{F_g}\cos 53.13 = 1373.4\cos 53.13 \rightarrow \boxed{\vec{F_p} = 824.042\text{N}}$$

By Newton's third law of motion, the object I exerts a force $\vec{F_p}$ on the inclined plane BC, so the normal force $\vec{F_N}$ exerted back onto the object by BC, is equal to $\vec{F_p}$. Thus $\boxed{\vec{F_N} = 824.042}$.
The coefficient of kinetic friction μ_k is equal to the ratio of the force of kinetic friction to the force of the normal force. More explicitly, $\mu_k = \frac{\vec{F_k}}{\vec{F_N}}$. In our case, $\mu_k = 0.6$ since we have wood on metal, so we can solve for the force of kinetic friction. $\mu_k \cdot \vec{F_N} = \vec{F_k} = 0.6 \cdot 824.042 \rightarrow \boxed{\vec{F_k} = 494.4252}$.
Now we determine the net force $\vec{F_{NET}}$ acting on the object.
$\vec{F_{NET}} = \vec{F_{//}} - \vec{F_k} = 1098.72 - 494.4252 \rightarrow \boxed{\vec{F_{NET}} = 604.2948}$. Finally, we compute the acceleration of object I through Newton's second law of motion.
$\vec{F_{NET}} = m\vec{a} = 140\vec{a} \rightarrow \boxed{\boxed{\vec{a} = 4.31639143\frac{m}{s^2}}}$