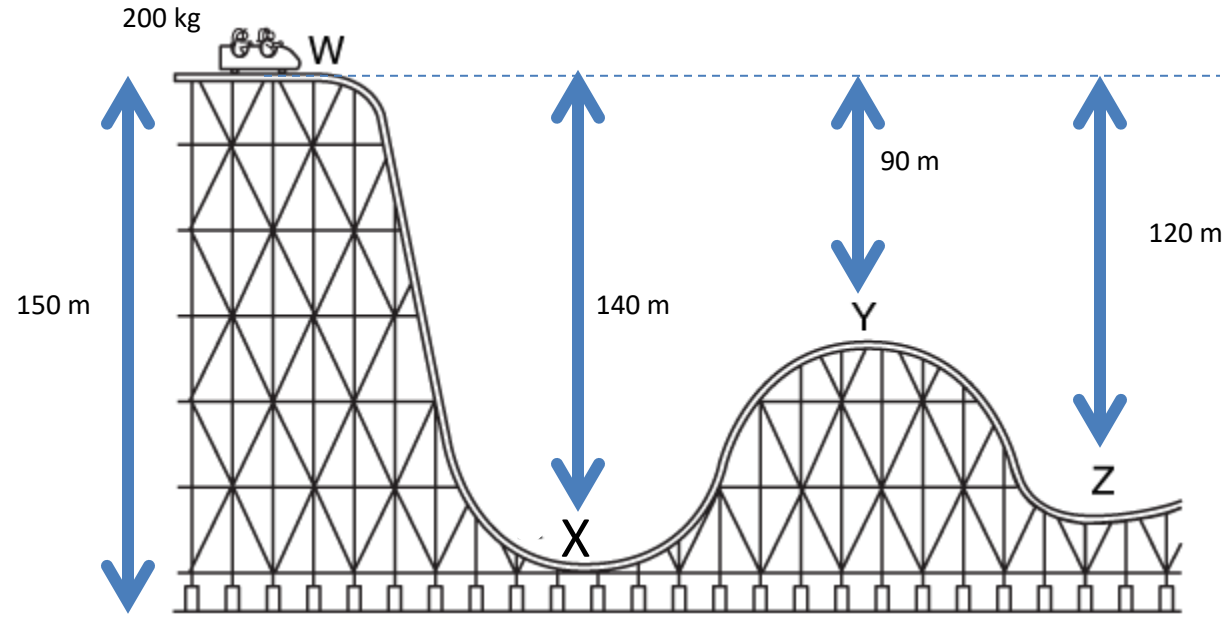
UCONN Physics 1201Q
Roller Coaster Energy Wkst I
Practice Quiz A-D / 29

Name:_____
Date: _____ Period _____



Part I: Calculations without Friction

Formula's: Work = F D cosθ Work = ½ kx^2 PE = mgh KE = ½ mv^2 Power = work/time $F_{fr} = \mu F_N$

Energy gained/lost at Point "W" = Energy gained/lost @ point "X", "Y", or "Z" + [Frictional work]

$\Delta[mgh + ½ mv^2] = \Delta[mgh + ½ mv^2] + [F_{fr} \bullet D]$

1. Calculate the PE at all points: *Answers:* *[W=294,000J; X=19,600J; Y=117,600J; Z=58,800J] (2 pt. each)*

   W: Ans: _____

   X: Ans: _____

   Y: Ans: _____

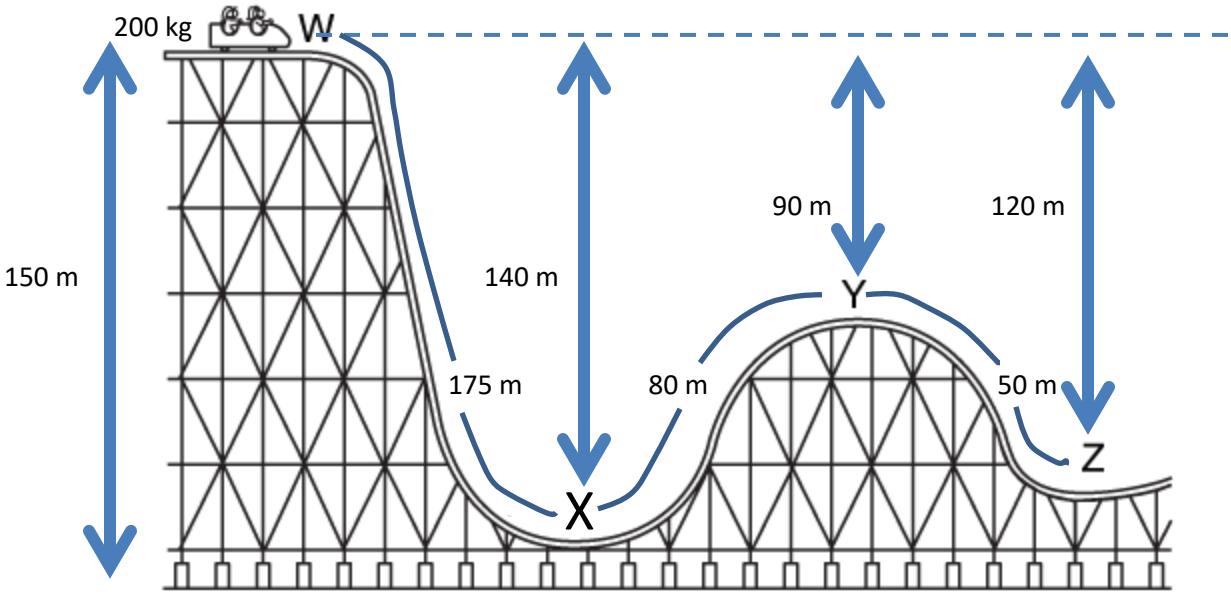
   Z: Ans: _____

2. Calculate the Velocity at all points: *Answers:* *[X=52.38 m/s; Y=42 m/s; Z=48.5 m/s] (3 pts. each)*

   X: Ans: _____

   Y: Ans: _____

   Z: Ans: _____



Part II: Calculation <u>with</u> Friction: Force of Friction is 350 N.

3. Calculate the Velocity at all points: *<u>Answers:</u> [X=46.17 m/s; Y=29.52 m/s; Z=35.84 m/s*] (4 pts. Each)

X: Ans: _____

Y: Ans: _____

Z: Ans: _____