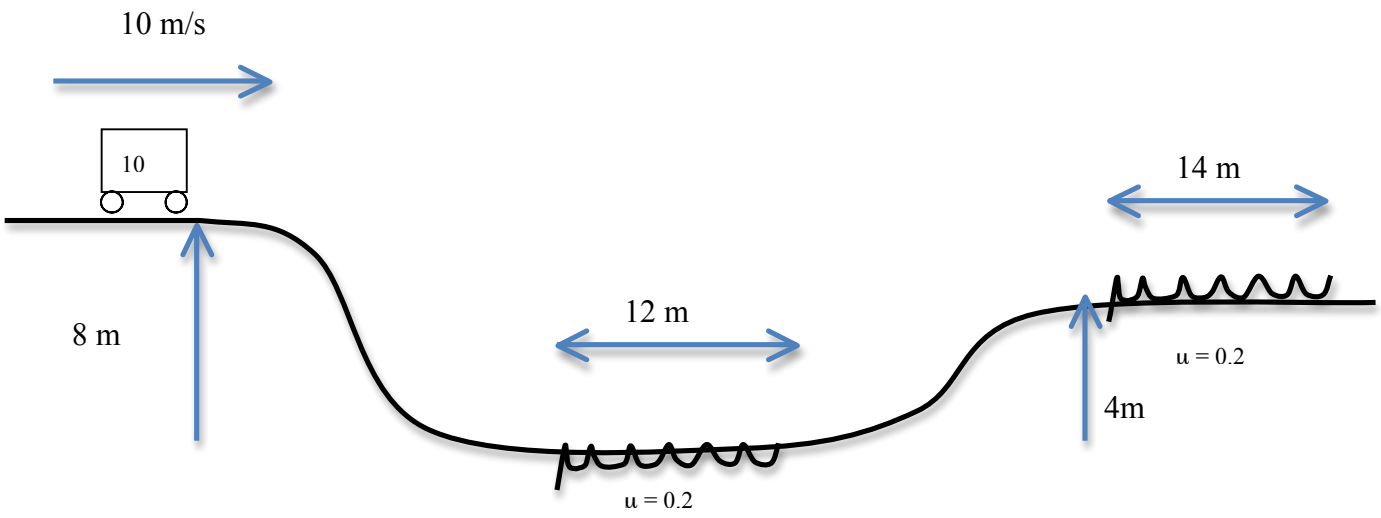
More Energy Homework

1. A 10 g dart is thrown horizontally into a dartboard. The thrower applies a 40 N force over a distance of 50 cm in order to propel the dart.
    a. Find the work done by the dart thrower.
    b. Find the velocity of the dart.
    c. If the dart went 1 cm into the board, find the force of the dartboard on the dart.

2. The cart shown in the picture below starts at a speed of 10m/s. Find the speed at the end of the path.



3. A hunter pulls back the bow a distance of 40 cm. The bow applies a 250 N force to a 0.1 kg arrow and sends it flying towards a bird. The arrow contacts the bird at a height of 10 m above the ground.
    a. Find the speed of the arrow as it leaves the bow.
    b. Find the speed of the arrow as it hits the bird.

4. A car, mass 1000 kg, is speeding along at 50 m/s when the driver slams on the brakes and locks up the tires until the car stops. An observer measures the skid marks of the car to be 150 m long.
    a. What must be the force of friction between the tires and the road?
    b. Find μ.

5. Now the same car tries the stunt again on the same road, but this time it takes the driver 180 m to stop. How fast was he driving? (same coefficient of friction)

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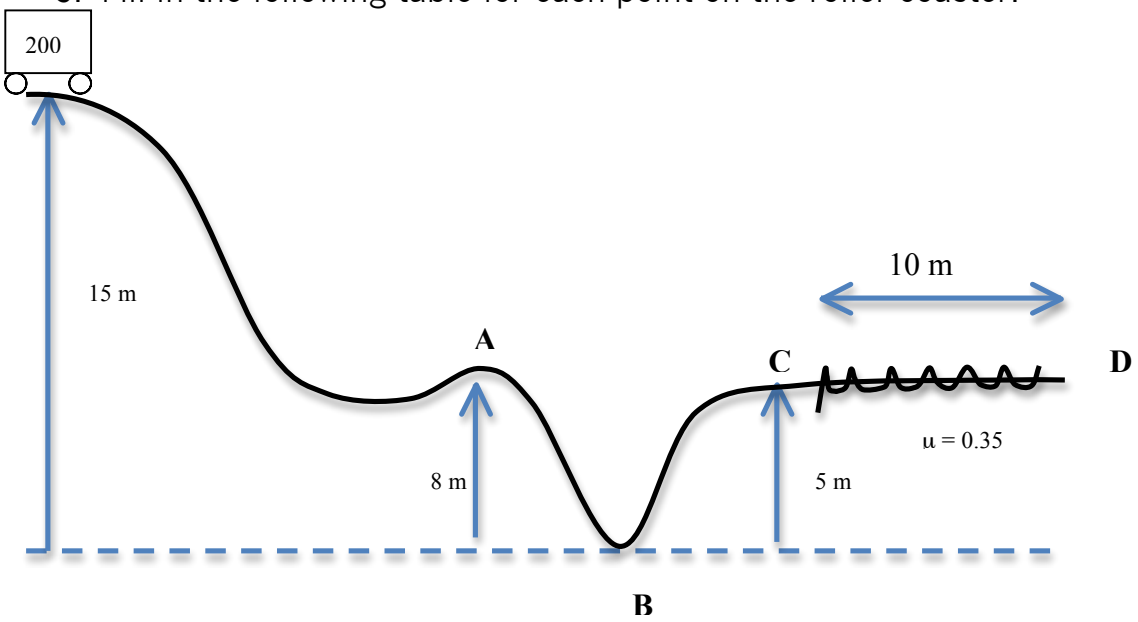
6. Fill in the following table for each point on the roller coaster.



Point	KE	PE	TE
Start			
A			
B			
C			
D			