



A 2 kg block (initially at rest) is pushed by a constant 20 N force over a distance of 2 meters. Assuming that all surfaces are frictionless (unless otherwise indicated) find (by energy methods)

- A. the KE and speed of the block at Pts. A–E;
- B. the centripetal force on the block at Pt. C;
- C. the normal force acting on the block at Pt. C;
- D. the maximum compression of the spring.

PHYSICS 1
ANSWERS

AN ALL-IN-ONE ENERGY PROBLEM

A.

Pt.	KE (J)	v (m/s)
A	40	6.32
B	240	15.5
C	160	12.6
D	220	14.8
E	140	11.8

B. 160 N

C. 140 N

D. KE(@E) → all EPE @ max compression
 $140 \text{ J} = (1/2)ks^2$... solving for $s = 1.18 \text{ m}$