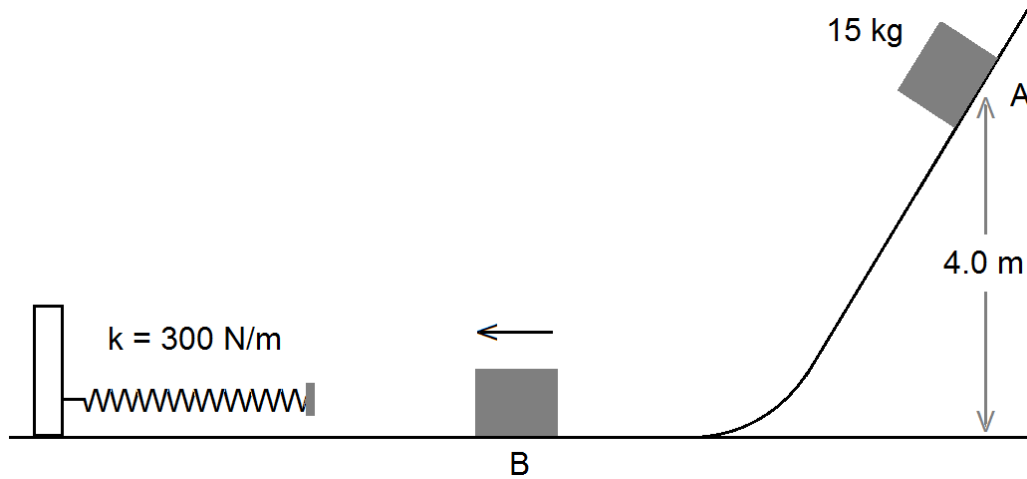


Aim # 39: Conservation of Energy Problems

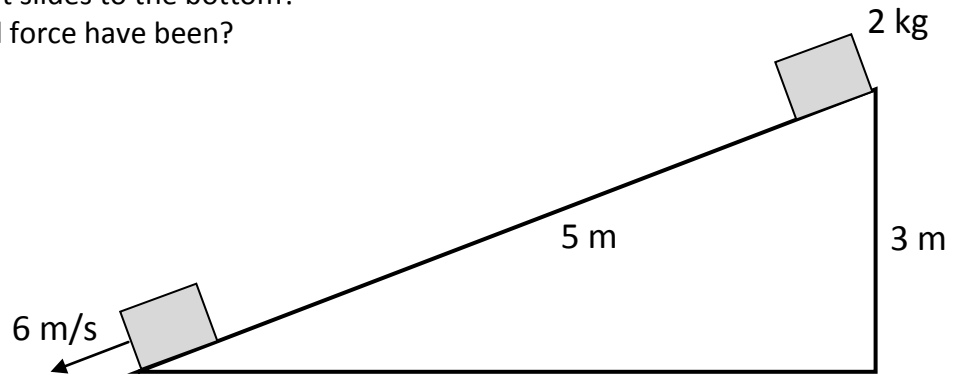
1. A 0.3 kg stone is thrown straight up at a speed of 20 m/s. Assuming no frictional losses, how high will it go before coming back down?

A 15 kg block slides down a frictionless incline from a height of 4.0 m, and then compresses a spring with spring constant of 300 N/m as shown below.



2. What is the block's total mechanical energy?
3. How fast will the block be moving at point B?
4. By how much will the block compress the spring?

5. A 2-kg block is placed at the top of a ramp as shown, and slides down. How much mechanical energy does it lose by the time it slides to the bottom?
6. What must the frictional force have been?



7. A 0.5-kg basketball is thrown directly up with a speed of 40 m/s from the top of a 50 meter building. How high above the ground does the ball go? [Neglect friction]
8. Assuming the basketball just misses the roof on its way down and falls all the way to the ground then what will its speed be just before hitting the ground?
9. How would your answer to the previous question change if the ball were thrown with the same speed of 40 m/s from the roof, but this time horizontally instead of upwards?

