

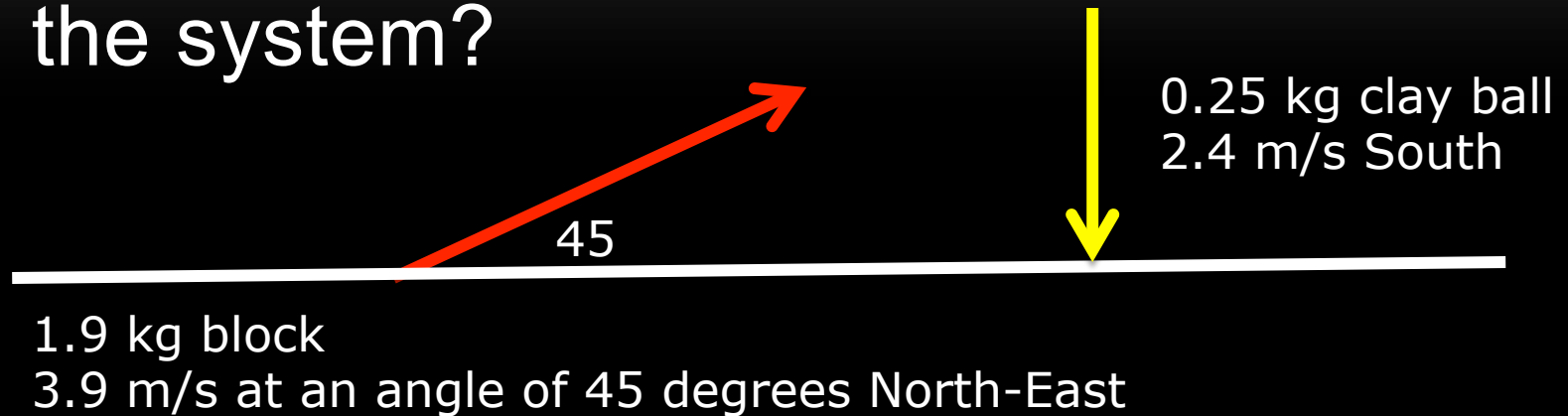
1. A 3.4 kg cat is lifted from the floor to a height of 1.6 m. How much work is done in lifting the box?

2 min

3. A ball is dropped from 8 meters above the ground. The ball has a mass of 0.39 kg. How fast it will be traveling when it hits the ground?

2 min

4. The block and clay ball collide and stick together. What is the final velocity of the system?



7 min

9. A skater is initially spinning at a rate of 1 rev/s with her arms outstretched. She brings her arms in to her chest, reducing her rotational inertia by 35%. What is her new rate of rotation?

2 min

5. A bolt must be tightened to 90 N m .
You have a 25 cm long wrench and
can exert a maximum force of 150 N .
You put a pipe over the end of the
wrench to make it longer. How long
must the pipe be?

2 min

6. A wheel has a moment of inertia of $2.75 \times 10^{-6} \text{ kg m}^2$ and is rotating at a speed of 15,000 rad/s. How much work is done in bringing the wheel to rest?

2 min

8. A 1200 kg car moving at 73 mph strikes a 950 kg at rest. Their bumpers join and the two cars are stuck together. What is the final speed of the cars?

2 min

11. A motorcycle has a speed of 13.0 m/s . If the diameter of one of the tires is 67.0 cm , what is the angular speed of that wheel?

2 min

2. An object with a mass of 125 kg is moving at a velocity of 7.3 m/s. What is its momentum?

2 min

7. When a pitcher throws a ball, their arm rotates $\frac{1}{4}$ of a revolution in 0.05 s. What is the angular velocity of the arm?

2 min

10. A motorist drives a 1200 kg car on level ground. They accelerate from 20.0 m/s to 30.0 m/s in 7 seconds. What is the mechanical power supplied by the engine during this time?

2 min