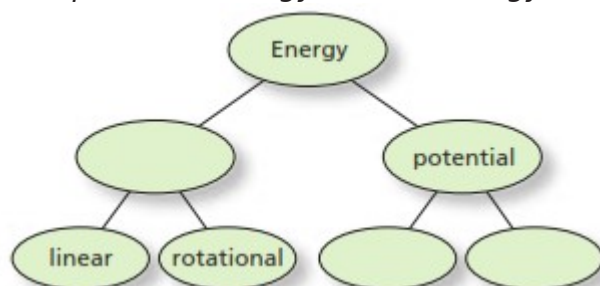


**Grade 11****March 2019/20**

***The following activities will be done after reading properly your centralized note about work, energy, and power.***

1. Read your centralized note about work, energy, and power then prepare a summary note that covers the unit.
2. Prepare a mind map about work, energy, and power.
3. A mover loads a 185-kg refrigerator into a moving van by pushing it up a 10.0-m, friction free ramp at an angle of inclination of  $11.0^\circ$ . How much work is done by the mover?
4. Does the work required to lift a book to a high shelf depend on how fast you raise it? Does the power required to lift the book depend on how fast you raise it? Explain.
5. An elevator lifts a total mass of  $1.1 \times 10^3$  kg a distance of 40.0 m in 12.5 s. How much power does the elevator generate?
6. A 0.180-kg ball falls 2.5 m. How much work does the force of gravity do on the ball?
7. You and a friend each carry identical boxes from the first floor of a building to a room located on the second floor, farther down the hall. You choose to carry the box first up the stairs, and then down the hall to the room. Your friend carries it down the hall on the first floor, then up a different stairwell to the second floor. Who does more work?
8. If the work done on an object doubles its kinetic energy, does it double its velocity? If not, by what ratio does it change the velocity?
9. You get a spring-loaded toy pistol ready to fire by compressing the spring. The elastic potential energy of the spring pushes the rubber dart out of the pistol. You use the toy pistol to shoot the dart straight up. Draw bar graphs that describe the forms of energy present in the following instances.
  - a. The dart is pushed into the gun barrel, thereby compressing the spring.
  - b. The spring expands and the dart leaves the gun barrel after the trigger is pulled.
  - c. The dart reaches the top of its flight.
10. Complete the concept map using the following terms: *gravitational potential energy, elastic potential energy, kinetic energy.*

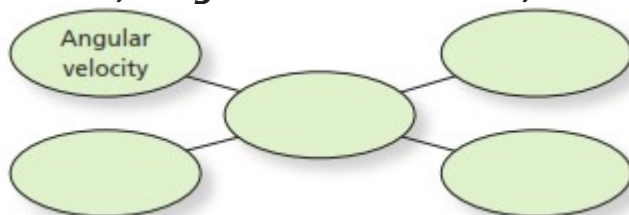


## Grade 11

March 2019/20

**The following activities will be done after reading properly your centralized note about rotational dynamics.**

1. Read your centralized note about rotational dynamics then prepare a summary note that covers the unit.
2. Prepare a mind map about rotational dynamics.
3. Do different objects of similar size and mass roll at the same rate on an incline? Explain.
4. What is the angular displacement of each of the following hands of a clock in 1 h? State your answer in three significant digits.
  - a. the second hand
  - b. the minute hand
  - c. the hour hand
5. The ball in a computer mouse is 2.0 cm in diameter. If you move the mouse 12 cm, what is the angular displacement of the ball?
6. If a truck has a linear acceleration of  $1.85 \text{ m/s}^2$  and the wheels have an angular acceleration of  $5.23 \text{ rad/s}^2$ , what is the diameter of the truck's wheels?
7. Do all parts of the minute hand on a watch have the same angular displacement? Do they move the same linear distance? Explain.
8. The Moon rotates once on its axis in 27.3 days. Its radius is  $1.74 \times 10^6 \text{ m}$ .
  - a. What is the period of the Moon's rotation in seconds?
  - b. What is the frequency of the Moon's rotation in  $\text{rad/s}$ ?
  - c. What is the linear speed of a rock on the Moon's equator due only to the Moon's rotation?
  - d. Compare this speed with the speed of a person on Earth's equator due to Earth's rotation.
9. Give an example of an object for each of the following conditions.
  - a. rotational equilibrium, but not translational equilibrium
  - b. translational equilibrium, but not rotational equilibrium
10. A penny is placed on a rotating, old-fashioned record turntable. At the highest speed, the penny starts sliding outward. What are the forces acting on the penny?
11. Complete the following concept map using the following terms: **angular acceleration, radius, tangential acceleration, centripetal acceleration.**



12. Why is a vehicle with wheels that have a large diameter more likely to roll over than a vehicle with wheels that have a smaller diameter?