

Physics Semester One Review

1. Three forces act on a 34.0 kg object. One force is 77.0 N at 12° , the second is 88 N at 250.0° , and the third is 99.0 N at 50.0° a) What is the resulting force? B) What acceleration does it give the object? ... c) What is the equilibrant force?
2. What is " μ " for a 37 kg sled being pulled across a frozen pond with a rope that an angle of 37° with the horizontal if the force is 157 N and the sled is being pulled at a constant velocity?
3. A 2500 kg car attains a speed of 89 km/hr in 9.05s. What is the acceleration?...What is the size or the force that caused this?
4. know the 7 fundamental units, the acceleration formulas, the rules of vector addition, centripetal force formulas
5. A rock is dropped off a cliff that is 145 m high. A) How long does it take to hit the ground? B) What velocity does it hit at? C) If the stone is 50.0g and stops in 9.50 cm after it hits, what force stopped it?
6. A 50.0 g bullet is shot horizontally from a 90.0 cm barrel of a gun. A) What is the acceleration of the bullet in the barrel if an average force of 250.0 N is applied to the bullet? B) If the gun is 1.40 m off the ground how far will the bullet go?... c) The bullet hits a tree and stops in 1.23 cm. d) What force did the tree apply to the bullet?
7. A soccer ball is kicked at 34.8 m/s at an angle of 33.0° . a) How long is it in the air? B) How high does it go? C) How far does it go?
8. Three forces act on a single point. What is the resultant graphically, and using the Sum of the x's and y's if the first force is 76N at 24° , the second 55N at 190° , and the third 68N at 350° ?
9. a) What velocity does a 23 g coin strike the water in a wishing well at if it takes 2.3 s to go "ker-splach"?...b) How deep is the well? C) What is the force of gravity applied to the coin? D) What force does the water apply to stop the coin in 1.2 m? e) What acceleration did the water give the coin?
10. A 65 kg runner falls and hits the ground at 2.3 m/s and comes to rest in 1.2 m. What is μ ?
11. Where does a boat have to head if it can travel at 6.5 m/s and wants to end up at 23° upstream? The stream flows at 2.1 m/s.
14. A 74 kg student is accelerated upward at 6.75 m/s^2 for 0.450 s. a) What force was applied to him to accomplish this? B) How high did the student go?

15. A 15 kg box slides down a 19° ramp at a constant velocity. What is μ ?
16. What would the acceleration of the box be in #15 if μ was 0.19?
17. What force would it take to accelerate the box up the ramp in #15 at 2.2 m/s^2 if μ was 0.44?
18. What is the tension on a 55.0 kg box if two wires hold it up and the left wire is 35° above the horizontal and the right wire is 75° above the horizontal?
19. A 355 g ball is kicked at 23.0° at 23.0 m/s. How far does it go? How high does it go?
20. I pull back my bow 75 cm and hold it. When I release it, it pushes on my 65 g arrow the same 75 cm and bring it to 355 ft/s when it leaves the bow. A) What is the acceleration of the arrow? B) What is the force the bow pushes on the arrow with? C) My arrow misses and I hit a tree instead and it sinks into the tree 1.5 cm. What force does the tree apply to my arrow?
21. Perform the following operations:
- a) $3.45 \text{ kg} \times 4.5 \text{ m/s}^2 = \underline{\hspace{2cm}}$ b) $6.754 \text{ N} - 0.55 \text{ N} = \underline{\hspace{2cm}}$
- c) $4.5 \times 10^{-3} \text{ m} / 2.30 \times 10^0 \text{ s} = \underline{\hspace{2cm}}$ d) $3.44 \text{ mg} = \underline{\hspace{2cm}} \text{ Mg}$
- e) $2.4 \times 10^{-3} \text{ kg} = \underline{\hspace{2cm}} \text{ cg}$ f) 0.000200 μm has how many Sig. Figs?
22. You drop a rock for 1.50 m and it hits .550 s later. What is the E_A and E_R of your event? (A for acceleration due to gravity is 9.807 m/s^2)