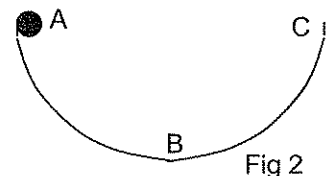
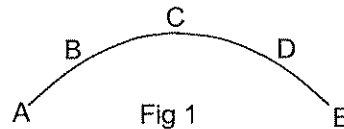


# Reviewing Honors in 70+ Questions

Put your answers on a separate piece of paper

1. What two entities comprise a vector?
2. What do you do with any vector that is not on either the  $x$  or  $y$  axis?
3. How are velocity and speed different?
4. What is the slope of the distance time graph?
5. What is acceleration?
6. What is the area under the velocity time graph?
7. What is the slope of the velocity time graph?
8. What is the  $y$  intercept of the velocity time graph?
9. What is the area under the acceleration time graph?
10. What is the horizontal acceleration of projectiles?
11. What dimension controls time in falling body and projectile motion problems?
12. What equation describes the distance that a dropped object falls  $t$  seconds after it started moving?
13. What equation describes the distance that a horizontally launched projectile falls  $t$  seconds after it started moving?
14. What equation describes the speed of a dropped object  $t$  seconds after it started moving?
15. What equation describes the speed in the  $x$  direction of a projectile  $t$  seconds after it started moving?
16. What equation describes the speed in the  $y$  direction of a projectile  $t$  seconds after it started moving?
17. A projectile follows the path in Fig. 1.  
At what points does it have the same speed?
18. A projectile follows the path in Fig. 1.  
At what point is its horizontal speed the greatest?
19. A projectile follows the path in Fig. 1.  
What is the direction of acceleration at points A, B, C, D, and E? (Zero, up, down, right, left?)
20. A projectile follows the path in Fig. 1. What is the direction of the vertical speed at point C?
21. What is implied when an object is not accelerating in the  $x$  direction?
22. What is implied when an object is not accelerating in the  $y$  direction?
23. When is sum of force (net force) zero, and when is it non-zero?
24. How is sum of force (net force) depicted in a FBD?
25. When is a normal force present, what is its direction?
26. What is the component of  $F_g$  down a slope?
27. What is the general equation for motion down a slope and how does it change if the object is going up the slope?
28. In circular motion, how is tangential velocity calculated?
29. What is centripetal acceleration and force?
30. What is the direction of acceleration of the object, in Fig. 2,  
at points A, B, C? (Zero, up, down, right, left?)
31. What is the direction of velocity of the object, in Fig. 2,  
at points A, B, C? (Zero, up, down, right, left?)
32. How is  $F_c$  represented in a FBD?
33. Mathematically what does  $F_c$  represent and how is  $F_c$  calculated?
34. What are some possibilities that can create  $F_c$ ?
35. What is the work done on an object moving in a circle? Why?
36. If you double the mass of one planet, triple the mass of another, and move them twice as far apart, what happens to the force of attraction between them?
37. What is the derived equation for the acceleration of gravity in terms of  $m$  and  $r^2$ ?
38. How can total momentum be calculated?
39. What is the difference between elastic and inelastic collisions? State the relevant equations for each.
40. What is impulse, and how does it relate to both momentum and force?



41. What is a key requirement in order for work to be done?
42. Work is the area under which curve?
43. What is work energy theorem and what is its significance?
44. What is conservation of energy and what is its significance?
45. What is the energy equation if you see a height difference between two points in the problem?
46. What is the energy equation if you see a particle accelerated perpendicular to two charged plates, or the problem states that the particle is accelerated through a potential difference?
47. What is Kinetic Energy lost and how is it calculated?
48. What is the energy equation for the change in temperature if it results from a loss in KE?
49. What is the relationship that describes the rate that work is done, or that energy is used?
50. In a pendulum or spring, what are the displacement, velocity,  $U_s$  and K at the equilibrium position?
51. In a pendulum or spring, what are the displacement, velocity,  $U_s$ , and K at maximum displacement?
52. What do the period of pendulums and springs each depend on?
53. What are the differences and similarities between transverse and longitudinal waves? Give examples of each type.
54. What is the relationship between speed, frequency, and wavelength?
55. What is the relationship between energy, frequency, and wavelength in any wave?
56. How are wavelength and amplitude measured on a sinusoidal wave?
57. What are the wavelengths for strings, open tubes, and closed tubes?
58. What cause an electromagnetic wave, and what makes the wave propagate indefinitely even in a vacuum?
59. What is the order of the electromagnetic spectrum, including the order of the color composing visible light?
60. What is the difference between reflection, refraction, and diffraction?
61. What is the law of reflection?
62. What is Snell's Law?
63. What happens at the critical angle?
64. When light goes from a less to a more dense medium what changes and how does it change?
65. What doesn't change (speed, frequency, or wavelength), when light moves from one medium to another?
66. What shapes are converging in lenses and in mirrors?
67. What shapes are diverging in lenses and in mirrors?
68. What are two rules for ray tracing in lenses?
69. What are the three rules needed for mirrors?
70. What do you do if your forward ray traces are diverging?
71. When are  $f$ ,  $d_o$ ,  $d_i$ ,  $h_o$ ,  $h_i$ , and  $M$  positive.
72. When are  $f$ ,  $d_o$ ,  $d_i$ ,  $h_o$ ,  $h_i$ , and  $M$  negative.
73. What is the difference between a real and virtual image, and how is each formed?

### **When you get stuck: Think**