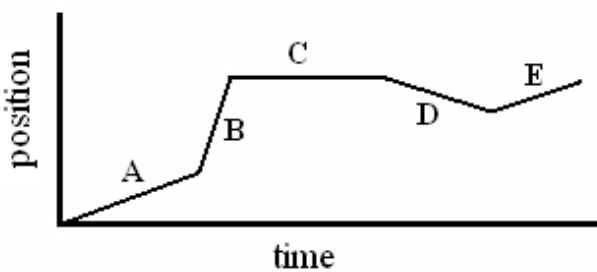


Physics Formative Final – Answer all questions. Use the results to help focus your preparations for the final exam.

1. Are you moving? What is your frame of reference?

2. Ashton just took a trip that covered 200 km in 5 hours. What was her average speed?

3. Where on the graph does the object have the greatest speed?



4. What is the acceleration of a car that speeds up from 10 m/s to 40 m/s in about 5 seconds?

5. A ball is thrown straight up here at Hillgrove. What is its instantaneous speed at the top of its flight?

6. For the same ball, what is its acceleration at the top of its flight?

7. How fast would your physics textbook be going 7 seconds after being dropped out the window of a tall building? *Not that you would.* Please treat this as a free fall situation.

8. A plane flies North at 125 mi/hr and encounters a 20 mi/hr wind directed South. What's the resultant velocity of the plane?

9. Draw the resultant of a 1 cm vector pointing right and a 2 cm vector also pointing right.

10. A cannonball is shot from a cannon horizontally with a speed of 40 m/s. An identical cannonball is dropped from the same height at the same time. Which, if either, hits the ground first?

11. _____ is an object's tendency to stay in its current state of motion.

12. One of your classmates stood on a scale and exerted 138 pounds of force on it. How much force did the scale exert on her?
13. How much net force would it take to for a 2 kg hockey puck to be accelerated at a rate of 5 m/s^2 ?
14. Jessie and Kat are riding on a merry-go-round. Jessie is near the center and Kat is on the outer edge. Who has the greater linear speed?
15. What is the name of the force that holds any object in circular motion?
16. What two factors determine the amount of gravitational force an object experiences?
17. How fast is a 1000 kg car traveling if it has a momentum of $20,000 \text{ kg}\cdot\text{m/s}$?
18. A 5 kg box is traveling at 10 m/s just before it hits the ground and it takes 2 s for the box to stop. What is the force of impact on the ground?
19. A 3 kg cart is rolling down a track at a speed of 2 m/s and strikes another 3 kg cart at rest. After the collision, the two carts stick together and roll away together. What is their speed after the collision?
20. How much power is necessary to do 60 joules of work in 6 seconds?
21. In order for work to be done the applied force and the distance the object moves must be in the _____ direction.
22. A rock with 20 J of potential energy is dropped from 2 meters above the ground. About how much kinetic energy will it have when it has fallen 1 meter?

23. A positive charge and a negative charge are held one meter apart. Describe what happens to the force they experience after they are released.
24. Sketch the electric force field surrounding a negatively charged ping pong ball.
25. Why are people inside a car normally safe even though it is struck by lightning?
26. How much voltage is required to produce a 2 ampere current through a 10 ohm resistor?
27. A _____ electric circuit provides multiple pathways for current to flow.
28. Draw the circuit diagram of circuit with a two cell battery and two resistors in parallel.
29. Sketch a bar magnet. Include and label: magnetic domains, magnetic poles, and magnetic field lines.
30. What three things do you need to make an electromagnet?
31. An electric _____ converts mechanical energy into electrical energy.
32. A pendulum swings back and forth 20 times in 40 seconds. What is its period?
33. In which type of wave does the energy moves perpendicular to the vibration of the medium.
34. A water wave has a frequency of 0.5 Hz and a wavelength of 2 m. How fast does it travel through the water?

35. The speed of sound is faster when the temperature is _____.
36. True or False: Sound waves can travel from the earth to the moon.
37. The Doppler Effect results in the increase of the _____ of a sound wave as its source approaches you.
38. Electromagnetic radiation is the result of _____ moving from higher to lower energy levels in an atom.
39. Which region of the electromagnetic spectrum has the highest energy waves?
40. List the primary colors of light.
41. You can tell the difference between a virtual and a real image because a real image is always
42. When light passes from water into air it will speed up and bend _____ the normal.
43. Which curved mirrors produce similar images to
(a) concave lenses?
(b) convex lenses?