

# Electric Fields Classwork 1

1. Which of the following means the electrons are not moving? Static electricity or current electricity.
2. There is a race that is 30km long. Two cars race, a red car and a blue car. The red car travels at 20m/s the entire race. The blue car travels at 15m/s for 20 minutes and then travels at 28m/s for the remainder of the race. Who wins the race? (hint: the only equation you'll need to solve this is  $v=d/t$ )
3. A ball falls 10m on Earth. How long will it take to travel those 10m?
4. What sub-atomic particle is positive?
5. What sub-atomic particle is negative?
6. Which has more momentum? A 1200kg car traveling at 4.0m/s, or a 2.0 kg bowling ball traveling at 4000m/s?
7. A 0.050kg bullet is traveling at 600m/s. What is the kinetic energy of the bullet?
8. You have an electron and a proton next to each other, do they attract each other or repel?
9. If you place a proton next to another proton, they will attract or repel?
10. An electron is 2.0mm from another electron. What is the force of repulsion between the two?
11. What two sub-atomic particles are found in the nucleus?
12. You triple the distance between the two particles in problem 6, how much does the force decrease?
13. A 15kg block of steel is being whirled in circles by a cable. If the cable can only provide 1000N of Tension before it breaks and the cable is 2.0m long. What is the fastest the block of steel can travel?
14. A heat engine does 500J of work when 600J of energy was added to it. What is the change in internal energy of the heat engine?

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15. A roller coaster is traveling over a 20m high hill traveling at 3.0m/s. It rolls down the frictionless hill and up a second hill that is only 12m high. At what speed is the roller coaster traveling over the second hill?
16. What is the SI unit for Charge?
17. A 3.0kg toy that is originally at rest has a rocket that applies 5.0N of thrust for 2.0s. What is the final speed of the toy?
18. A 12kg cart is traveling to the East at 5.0m/s while at the same time a 20kg cart is traveling to the West at 6.0m/s. After the collision, the 12kg cart is traveling to the West at 2.0m/s. What is the final velocity of the 20kg cart?
19. What particle would best fill in the unknown particle below?

