



6) How far apart are two electrons that exert a force of 1.0 Newtons on each other? Show work.

Sources: \_\_\_\_\_

7) What is the relationship between electric force and electric field?

Sources: \_\_\_\_\_

8) What is the formula for the magnitude of the electric field due to a point charge?

Sources: \_\_\_\_\_

9) Sketch the electric field vectors around a

A) positive point charge?

B) negative point charge?

Sources: \_\_\_\_\_

10) Sketch the electric field lines around a

A) Positive point charge?

B) Negative point charge?

Sources: \_\_\_\_\_

11) When examining the electric field lines how can you determine the electric field's

A) Direction?

B) Magnitude?

Sources: \_\_\_\_\_

12) What is the relationship between electric potential (voltage) and electric potential energy? What is the equation that relates these two physical quantities? What is the MKS unit of electric potential?

Sources: \_\_\_\_\_

13) What is the equation that relates electric potential (voltage) to electric field?

Sources: \_\_\_\_\_

14) What is the electric potential between two points 5.0 centimeters apart if the electric field between those points is a constant 250 Newtons/meter? Show work.

Sources: \_\_\_\_\_

15) What are the equipotential curves (or surfaces) in an electric field? Sketch an example of the electric field lines and the equipotential curves in the same picture. Label the field lines and equipotential curves in your sketch.

Sources: \_\_\_\_\_

16) Under what condition does a charged particle experience a force in a magnetic field?

Sources: \_\_\_\_\_

17) What are the units of magnetic field in the MKS system?

Sources: \_\_\_\_\_

18) Describe how to determine the direction of the magnetic force on a moving charged particle. What is the direction of the magnetic force on a positively charged particle moving to the right if the magnetic field is pointed towards the top of this page?

Sources: \_\_\_\_\_

19) What is the formula that gives the magnitude of the magnetic force on a moving charged particle?

Sources: \_\_\_\_\_

20) What minimum magnetic field is necessary to exert a 15 Newton force on a charge equal to a mole of electrons moving at 25 meters/second through the field? Show work.

Sources: \_\_\_\_\_

21) Sketch the magnetic field lines around a bar magnet. Label the North and South magnetic poles. If there is a magnetic field inside the bar magnet show those lines as well.

Sources: \_\_\_\_\_

22) Electric field lines generated by charges begin at positive charges and end at negative charges. Where do magnetic field lines start and end (include the interior of a magnet if you frame your answer in the context of magnetic materials)?

Sources: \_\_\_\_\_