Skill 34-Calculating Charge

16. A particle could have a charge of

    A) 0.8×10^{-19} C   B) 1.2×10^{-19} C

    C) 3.2×10^{-19} C   D) 4.1×10^{-19} C

    must be a multiple of 1.6×10^{-19}C
    or a whole # of e

17. If an object has a net negative charge of 4.0 coulombs, the object possesses

    A) 6.3×10^{18} more electrons than protons

    B) 2.5×10^{19} more electrons than protons

    C) 6.3×10^{18} more protons than electrons

    D) 2.5×10^{19} more protons than electrons

    $4C \times \dfrac{1}{1.6 \times 10^{-19}C} = 2.5 \times 10^{19} e$

    negative means more electrons

18. Which fundamental force is primarily responsible for the attraction between protons and electrons?

    A) strong   B) weak

    C) gravitational   D) electromagnetic

19. Which quantity of excess electric charge could be found on an object?

    A) 6.25×10^{-19} C

    B) 4.80×10^{-19} C

    C) 6.25 elementary charges *can't be part of*

    D) 1.60 elementary charges *an'e n'*

20. Oil droplets may gain electrical charges as they are projected through a nozzle. Which quantity of charge is *not* possible on an oil droplet?

    A) 8.0×10^{-19} C *(5e)*   B) 4.8×10^{-19} C *(3e)*

    C) 3.2×10^{-19} C *(2e)*   D) 2.6×10^{-19} C *1.625e*

21. An alpha particle consists of two protons and two neutrons. The alpha particle's charge of +2 elementary charges is equivalent to

    A) 8.0×10^{-20} C   B) 3.2×10^{-19} C

    C) 1.2×10^{19} C   D) 3.2×10^{19} C

    $\dfrac{2e \times 1.6 \times 10^{-19}C}{1e} = 3.2 \times 10^{-19}C$

22. Compared to the charge on a proton, the charge on an electron has the

    A) opposite sign and a smaller magnitude

    B) opposite sign and same magnitude

    C) same sign and a smaller magnitude

    D) same sign and the same magnitude

23. The coulomb is a unit of

    A) resistance   B) power

    C) charge   D) force

24. Two metal spheres having charges of $+4.0 \times 10^{-6}$ coulomb and $+2.0 \times 10^{-5}$ coulomb, respectively, are brought into contact and then separated. After separation, the charge on each sphere is

    A) 8.0×10^{-11} C   B) 8.0×10^{-6} C

    C) 2.1×10^{-6} C   D) 1.2×10^{-5} C

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25. After a neutral object loses 2 electrons, it will have a net charge of

    A) -2 elementary charges
    B) $+2$ elementary charges
    C) -3.2×10^{-19} elementary charge
    D) $+3.2 \times 10^{-19}$ elementary charge

26. Metal sphere A has a charge of $+12$ elementary charges and identical sphere B has a charge of $+16$ elementary charges. After the two spheres are brought into contact, the charge on sphere A is

    A) -2 elementary charges
    B) $+2$ elementary charges
    C) $+14$ elementary charges
    D) $+28$ elementary charges

27. A neutral rubber rod is rubbed with fur and acquires a charge of -2×10^{-6} coulomb. The charge on the fur is

    A) $+1 \times 10^{-6}$ C
    B) $+2 \times 10^{-6}$ C
    C) -1×10^{-6} C
    D) -2×10^{-6} C

28. Two identical spheres carry charges of $+0.6$ coulomb and -0.2 coulomb, respectively. If these spheres touch, the resulting charge on the first sphere will be

    A) $+0.8$ C
    B) $+0.2$ C
    C) -0.3 C
    D) $+0.4$ C

29. An object with $+10$ elementary charges is grounded and becomes neutral. What is the best explanation for this occurrence?

    A) The object gained 10 electrons from the ground.
    B) The object lost 10 electrons to the ground
    C) The object gained 10 protons from the ground.
    D) The object lost 10 protons to the ground.