

$$40) m = 4.0 \text{ kg}$$

$$2 \text{ kg} = m_2$$

$$a = 3.0 \text{ m/s}^2$$

$$a =$$

$\frac{1}{2}$ the mass \Rightarrow $2 \times$ the acceleration

$$3 \text{ m/s}^2 \times 2 = 6 \text{ m/s}^2$$

41) an electron

$$E = \frac{F_e}{q}$$

$$E = 600 \frac{\text{N}}{\text{C}}$$

$$F_e = ?$$

$$F_e = E q$$

$$= \frac{600 \text{ N}}{\cancel{\text{C}}} \cdot 1.6 \times 10^{-19} \cancel{\text{C}}$$

$$= 9.6 \times 10^{-17} \text{ N}$$

42) $I = 4 \text{ A}$

$$t = ?$$

$$2.5 \times 10^{-19} \text{ e} = q$$

convert q to C

$$2.5 \times 10^{-19} \cancel{\text{e}} \times \frac{\cancel{\text{BUT NOT}} 1.6 \times 10^{-19} \text{ C}}{1 \cancel{\text{e}}}$$

$$4 \text{ C}$$

$$I = \frac{\Delta q}{t} \Rightarrow t = \frac{\Delta q}{I} = \frac{4 \cancel{\text{C}}}{4 \frac{\cancel{\text{C}}}{\text{s}}} = 1 \text{ s}$$

$$43) F_e = \frac{kq_1q_2}{r^2}$$

$$F_e = k \frac{2q_1 4q_2}{2r^2}$$

$$= \frac{8}{4} = 2x$$

44) Mesons are a quark and an antiquark

⇒ choices 2 & 4 can be eliminated because they are made up of 3 quarks

Choice 1) $s \bar{c}$

strange and an anticharm

$$-\frac{1}{3} + -\frac{2}{3} = -1$$

3) $u \bar{b}$

up and an antibottom

$$\frac{2}{3} + \frac{1}{3} = +1$$

$$45) KE = \frac{1}{2} m v^2$$

\Rightarrow AS SPEED INCREASES KE WILL INCREASE BUT v IS SQUARED

\Rightarrow WE GET A DIRECT TO THE SQUARE GRAPH

46) ELECTRIC FIELD LINES ARE OUT OF THE POSITIVE AND INTO THE NEGATIVE

$$47) \downarrow F_g = \frac{G m_1 m_2}{r^2} \uparrow$$

~~As~~ As r increases F_g will decrease

\Rightarrow r IS SQUARED SO

WE ~~GET~~ GET AN INVERSE TO THE SQUARE GRAPH

48) THE WAVES ARE IN PHASE

\Rightarrow WE GET CONSTRUCTIVE INTERFERENCE

49) THE WAVELENGTH WILL STAY THE SAME
BUT WILL BEND WHEN THEY PASS
THROUGH THE OPENING DUE TO DIFFRACTION

$$50) E = mc^2$$

$$c^2 = \frac{E}{m}$$