32) $W = 6 \times 10^6 J$

$V = 220 V$

$t = 1.8 \times 10^3 s$

$I = ?$

$W = VIt$

$I = \frac{W}{Vt}$

$I = \frac{6 \times 10^6 J}{(220V)(1.8 \times 10^3 s)}$

$I = 15 A$

---

33) Convert to e $\Rightarrow$ can't have fraction of an e

1) $4.8 \times 10^{-19} \not{C} \times \frac{6.25 \times 10^{18} e}{1 \not{C}} = 3e$ YES

2) $2.4 \times 10^{-19} \not{C} \times \frac{6.25 \times 10^{18} e}{1 \not{C}} = 1.5e$ NO

3) IT THE NEGATIVE OF #2 $-1.5e$ NO

4) $-5.60 \times 10^{-19} \not{C} \times \frac{6.25 \times 10^{18} e}{1 \not{C}} = -3.5e$ NO

34) $n=5$ $-0.54\ eV$ Hydrogen

$\downarrow$

$n=3$ $-1.51\ eV$

$\Rightarrow -0.54eV - (-1.51\ eV)$

$\Rightarrow .97\ eV$

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35) CHARGE MUST BE CONSERVED

2 electrons would have charge of -2

1 electron & 1 positron have a charge of 0

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36) Convert choices

1) $2 \times 10^{-2}\ m = .02\ m$ TOO SHORT @ 1 inch

2) $2 \times 10^{-1}\ m = .2\ m$ ✓

3) $2 \times 10^{0}\ m = 2\ m$ TOO LONG @ 6 feet

4) $2 \times 10^{1}\ m = 20\ m$ TOO LONG @ 60 feet

37) CART 1 CART 2

Before: 8 kg = m, 4 m/s = V | 4 kg = m, −6 m/s = V

after: 8 kg = m, ? = V | 4 kg = m, 3 m/s = V

$$P_{before} = P_{after}$$

$$m_1 v_1 + m_2 v_2 = m_1 v_1' + m_2 v_2'$$

$$8\,kg(4\,m/s) + 4\,kg(-6\,m/s) = 8\,kg(v_1') + 4\,kg(3\,m/s)$$

$$32\,kg\,m/s + (-24\,kg\,m/s) = 8\,kg(v_1') + 12\,kg\,m/s$$

$$8\,kg\,m/s = 8\,kg(v_1') + 12\,kg\,m/s$$

$$-12 \qquad\qquad -12$$

$$\frac{-4\,kg\,m/s}{8\,kg} = \frac{8\,kg(v_1')}{8\,kg}$$

$$-.5\,m/s = v_1' \quad \text{Left}$$

38) Forces are balanced up & down

$\Rightarrow F_{NET} = 0 \Rightarrow$ no motion up or down

Forces are unbalanced in X direction

120 N LEFT
100 N RIGHT $\Rightarrow F_{NET}$ of 20 N LEFT

$\Rightarrow$ Box moves LEFT

$F_{NET} = Ma \Rightarrow$ Box accelerates

---

39) $m = 400\ kg$
$d = 10\ m$
$t = 8.0\ s$
$P = ?$

$$P = \frac{W}{t} = \frac{Fd}{t} = F\bar{v}$$

$$P = \frac{Fd}{t} = \frac{(3924\ N)(10\ m)}{8\ s}$$

$$= 4905\ W$$

$$4.905 \times 10^3\ W$$

$F_g = mg$

$= (400\ kg)(9.81\ m/s^2)$

$= 3924\ kg\ m/s^2$ or N