1.

a because it is slightly closer to the source thus the force is higher

2.

a because it is closer to the source

3.

to the right and as it moves, the potential energy decreases

4. to the left and as it moves, the potential energy decreases

5. $k = k$ $q_1 = +2nC$ $q_2 = -1nC$ $m_1 = 0.0001\ kg$

$d = 0.01\ m$ $m_2 = 0.0002\ kg$

$r = 0.001\ m$

$U = qV$

Solve V_1

$$0 = U_f + \frac{1}{2}m_1v_1^2 + \frac{1}{2}m_2v_2^2$$

$$U = \frac{kq_1q_2}{d}$$

$$0 = \frac{kq_1q_2}{r} + \frac{1}{2}m_1v_1^2 + \frac{1}{2}m_2v_2^2$$

$$V_2 = \frac{m_1v_1}{m_2}$$

$$-\frac{kq_1q_2}{d} - \frac{1}{2}m_2v_2^2 = \frac{1}{2}m_1v_1^2$$

$$\frac{2kq_1q_2}{r} = m_1v_1^2 + m_2\left(\frac{m_1v_1}{m_2}\right)^2$$

$$m_1v_1^2 + \frac{m_1^2v_1^2}{m_2}$$

$$v_1^2\left(m_1 + \frac{m_1}{m_2}\right)$$

$$V_1 = \left(\frac{kq_1q_2}{d} - \frac{1}{2}m_2v_2^2\right)\frac{1}{m_1}$$

$$\sqrt{\frac{-2kq_1q_2}{r\left(m_1 + \frac{m_1}{m_2}\right)}} = V_1 = 7.2E^{-5}\ m/s$$

meals	beverages	prices	names				meals				beverages			
			Chip	Geoffrey	Irene	Samantha	cheeseburger	club sandwich	Italian sub	taco salad	ginger ale	iced tea	root beer	water
		$4.90	X	O	X	X	O	X	X	X	O	X	X	X
		$5.35	X	X	O	X	X	X	X	O	X	O	X	X
		$5.80	X	X	X	O	X	O	X	X	X	X	X	O
		$6.25	O	X	X	X	X	X	O	X	X	X	O	X
	ginger ale		X	O	X	X	O	X	X	X				
	iced tea		X	X	O	X	X	X	X	O				
	root beer		O	X	X	X	X	X	O	X				
	water		X	X	X	O	X	O	X	X				
	cheeseburger		X	O	X	X								
	club sandwich		X	X	X	O								
	Italian sub		O	X	X	X								
	taco salad		X	X	O	X								