7-2)

This is an example of an 'explosion,' the reverse of a totally inelastic collision.
Make 'to the right' be positive
m_A= 1 kg m_B = 3kg $v_{Ai} = v_{Bi} = 0$ v_{Af} = ? v_{Bf} = +1.2 m/s
Make the system be the two blocks. There are no external forces acting horizontally (they all act vertically), so momentum is conserved in the horizontal direction:

a)
$m_A v_{Ai} + m_B v_{Bi} = m_A v_{Af} + m_B v_{Bf}$
$0 + 0 = 1*v_{Af} + 3*1.2$
v_{Af} = -3.6 m/s *i.e.*, to the left
Technically, question asks for the speed:
$|v_{Af}|$ = 3.6 m/s

b)
There are no non-conservative forces doing work (spring is conservative, normal and weight do no work since they are perpendicular to the motion).

$W_{NC} = \Delta K_1 + \Delta K_2 + \Delta U_{SP}$
$0 = {}^1/_2 m_A v_{Af}^2 - {}^1/_2 m_A v_{Ai}^2 + {}^1/_2 m_B v_{Bf}^2 - {}^1/_2 m_B v_{Bi}^2 + U_{SPf} - U_{SPi}$
The initial Ks are zero, since the objects are not moving. The final U_{SP} is zero because the spring ends up relaxed.
$0 = {}^1/_2 m_A v_{Af}^2 + {}^1/_2 m_B v_{Bf}^2 - U_{SPi}$
$U_{SPi} = {}^1/_2 m_A v_{Af}^2 + {}^1/_2 m_B v_{Bf}^2 = {}^1/_2 * 1 * 3.6^2 + {}^1/_2 * 3 * 1.2^2$ = 8.64 J