

4. 15  $\downarrow$  7  $\uparrow\downarrow$   
 14  $\uparrow\downarrow$  6  $\uparrow\downarrow$  4/30  
 13  $\uparrow\downarrow$  5  $\uparrow\downarrow$   
 12  $\uparrow\downarrow$  4  $\uparrow\downarrow$   
 11  $\uparrow\downarrow$  3  $\uparrow\downarrow$   
 10  $\uparrow\downarrow$  2  $\uparrow\downarrow$   
 9  $\uparrow\downarrow$  1  $\uparrow$   
 8  $\uparrow\downarrow$

5. 10 Black 5 Red  
 Hermoine's 1st: Black 10/15 Red 5/15

Random Ball: Black 9/14 Red 5/14 Black 10/14 Red 4/14

H2: B 8/13 R 5/13 B 9/13 R 4/13 B 9/13 R 4/13 B 10/13 R 3/13

$P(H2 \text{ is red}) = 1 + 2 + 3 + 4$

1.  $(10/15) \times (9/14) \times (5/13) = 15/91$

2.  $(10/15) \times (5/14) \times (4/13) = 20/273$

3.  $(5/15) \times (10/14) \times (4/13) = 20/273$

4.  $(5/15) \times (4/14) \times (3/13) = 2/91$

$\boxed{1/3}$