**Walkthrough for Fourth Day of Christmas**

We are told there is a Hen just outside the door of the hen house, which is on the bottom edge of D4 so

**E4 is Hen**

We are told 2 Hens are 4 steps away so

**B5 and D1 are Hens**

Now we are told that the 4 Calling Birds cannot see each other (in the sense of being in the same horizontal, vertical or diagonal line, without the house in the way) and that each is 4 steps from two others. This is the same as forming a ring with 4 steps between each and the possible solutions are:

| | | | | |
|---|---|---|---|---|
| A | B | | C | |
| C | | | A | B |
| | | | | |
| B | A | CVariant | | C |
| | CMain | | B | A |

Items in rings B or C automatically cannot be seen by each other, the hen house allows the CVariant to replace CMain. A only works because of the house. The chain on the other long diagonal is blocked by the house.

The Calling birds are one step from B5 so must be the A case.

Now we are told that the 6 doves are not adjacent this means that 1 must be in the right hand section below, 2 must go in the bottom left and 3 must go in the top. In fact the doves are further restricted to be in one of each of the coloured sections below

| | | | | |
|---|---|---|---|---|
| C Bird | *2 Hen* | | | 5 *Dove* |
| | *3 Me* | | C Bird | Hen |
| | | | | |
| Hen | C Bird | | | |
| *1 Dove* | | | Hen | C Bird |

so (because if E2 were a Dove there could only be one Dove in the bottom left)

**E1 is Dove**

And this tells us that

**A2 is Hen**

Now we are told that Me can see all the Calling Birds, so is on A5 or B2. However if Me was in A5 then the Dove in the purple section would have to be A4 and the Dove in the red section would have to be B2, which would prevent a Dove in the blue section so

**B2 is Me**

Now if the Dove in the purple section was in A4, there could not be a Dove in the red section so

**A5 is Dove**

| | | | | |
|---|---|---|---|---|
| C Bird | *2 Hen* | *4 Dove* | *1 Part'ge* | Dove |
| *2 Part'ge* | *3 Me* | *5 Hen* | C Bird | Hen |
| *3 Dove* | | | | *3 Dove* |
| Hen | C Bird | *6 Part'ge* | | *2 Part'ge* |
| Dove | *7 Hen* | *8 Dove* | Hen | C Bird |

We are told the Dove can see 2 Hens, it already can so this means there are no more Hens in the first row or last column. In particular, A4 cannot be a Hen, Dove or Calling Bird so

**A4 is Partridge**

The tells us that each Partridge is 4 steps from 2 others so this must be the C case above, though we do not yet know whether it uses Main or Variant (but could maybe guess!) so

**B1 and D5 are Partridges**

This defines the Doves that go with them so

**C1 and C5 are Doves**

Also we know that A3 cannot be a Hen and cannot now be a Partridge so

**A3 is a Dove**

And then

**B3 is a Hen**

We are told that Me can only see one Partridge so

D3 is a Partridge

and then

**E2 is a Hen and E3 is a Dove**

AOD 7/12/16