

## Chapter 5: Bonding: How Atoms Join Together

All the following "answers" are for your reference only!

The "best" answers are based on your actual experimental results!

### Experiment 5.1: Colour of ions

1. Ammonium chloride, magnesium sulphate, potassium carbonate, lead(II) chloride and sodium nitrate.
2. Cation: ammonium, magnesium, potassium, lead(II) and sodium ion  
Anion: chloride, sulphate, carbonate and nitrate ion

3.

Compound	Colour	Ion responsible for colour
$K_2CrO_4$	Yellow	$CrO_4^{2-}$
$KMnO_4$	Purple	$MnO_4^-$
$FeSO_4$	Pale green	$Fe^{2+}$
$CoCl_2$	Pale pink	$Co^{2+}$
$K_2Cr_2O_7$	Orange	$Cr_2O_7^{2-}$
$CuSO_4$	Blue	$Cu^{2+}$
$FeCl_3$	Yellow / Pale brown	$Fe^{3+}$
$NiSO_4$	Green	$Ni^{2+}$

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## Experiment 5.2: Seeing ions move

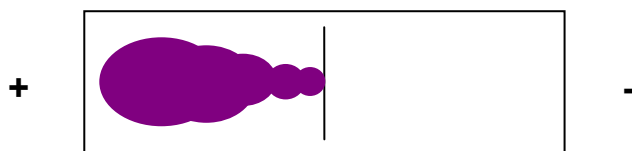
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### Part A:

1. Green.  
No
2. a) Orange.  
b) Dichromate.  
c) Negative.  
d) Blue / green.  
e) Copper.  
f) Positive.

### Part B:

1.



2. Permanganate ion.  
Negative.
3. a) The purple colour moves in the opposite direction.  
b) Since the permanganate ions are negatively charged, they always move towards the positive terminal.

### Part C:

2. Put a few crystals of copper(II) sulphate at the end connected to the positive terminal of the cell.  
Put a few crystals of potassium dichromate at the end connected to the positive terminal of the cell.  
Leave for a few minutes.

3. Brown.

