Slide 1:

- Title, author(s), and aim of your experiment. Your title should identify the specific compound you have produced and examined in your study.

Slide 2:

- A reaction scheme explaining how the Grignard reaction works.
- A description of the appearance of your product.
- The yield (g) and percentage yield of your product as well as an assessment of the purity of your product. *
- How does your yield compare to the theoretical yield? Account for your yield.

If you haven't been able to get a product, please explain possible reasons in your presentation. How would you do it differently next time around?

Slide 3:

- Figures (with appropriate captions) showing pH vs volume of NaOH for the second titration with benzoic acid, and of the first and second derivatives.
- Your calculated pK_a values for your substituted benzoic acids.

Slide 4:

- A table of all the pK_a values from the different acids used in the group.
- You should compare your experimental pK_a with a value from the scientific literature. (In oral presentations, references are presented as a footnote at the bottom of the slide where the information appears.)
- A discussion tying together the various results reported.

Slide 5:

- Your summary and conclusions from this experiment.

Make sure that you pay attention to the number of significant figures which you use.

Possible questions as prompts for your discussion:

- In the experiment you used anhydrous solvents and carefully dried apparatus. Explain why this is necessary.
- Explain the shape of the graph of pH vs volume of NaOH.
- Do the substituents present on the benzene ring influence the pK_a value of an aromatic carboxylic acid?
- How would you rationalise the pK_a values that you observed in this experiment?
- If you were to perform a colorimetric titration of benzoic acid with NaOH, what would be an appropriate indicator to use?
- If you were to perform a colorimetric titration of benzoic acid with NaOH, what would be an appropriate indicator to use?
- Imagine a -I effect (electron withdrawing). Which position would have the least reduction in acidity of phenol? Para, ortho or meta substitution?
- Imagine a +I effect (electron donating). Which position would have the biggest effect of increasing acidity of phenol? Para, ortho or meta substitution?
- How does a pH meter work?
- Why do pH meters need to be calibrated?
- Is the pH affected by concentration of the acid?
- Is the pK_a affected by the concentration of the acid?
- How are pH and pK_a related?