1 A chemist was making some aspirin. She calculated that the maximum yield of aspirin that she could make was 800 g.

The chemist carried out the experiment but only made 500g of aspirin.

Calculate the percentage yield of aspirin for this experiment.

Show clearly how you work out your answer.

500 / 800 x 100 [1 mark]

You can often get full marks for writing just the answer but always better to show your working in case you make a mistake.

Percentage yield of aspirin = 62.5 %

(2 marks)

1 (a) (i) Suggest one possible reason why the percentage yield was not 100%.

Reaction not complete or some of the aspirin lost or reactants reacting in unexpected ways [1 mark]

(1 mark)

(Total 3 marks)

2 (a) Ammonia is a very useful chemical. It is produced from nitrogen and hydrogen. The equation for this reaction is:

$$N_2(g) + 3\ H_2(g) \rightleftharpoons 2\ NH_3(g)$$

A company wants to make 13.6 tonnes of ammonia.

Calculate the mass of nitrogen needed. Relative atomic masses (Ar): H = 1; N = 14

28 34 [1 mark]

28/34 x 13.6 = [1 mark]

Mass of nitrogen = 11.2 [1 mark] tonnes

(3 marks)

Do not write outside the box

2 (a) (i) The company expected to make 13.6 tonnes of ammonia. The yield of ammonia was only 8.4 tonnes.

Calculate the percentage yield of ammonia.

8.4 / 13.6 x 100 [1 mark]

Percentage yield of ammonia = 61.7 [1 mark] %

(2 marks)

2 (a) (ii) Use the equation above to explain why the percentage yield of ammonia was less than expected.

Reaction is reversible [1 mark]

(1 mark)

(Total 6 marks)