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

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

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Calculate the percentage yield of aspirin for this experiment.

[2 marks]

Show clearly how you work out your answer.

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 $500 / 800 \times 100$ [1]

Percentage yield of aspirin = **62.5** % [1]

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Suggest one possible reason why the percentage yield was not 100%.

[1 mark]

**Reaction not complete or
 some of the aspirin lost or
 reactants reacting in unexpected ways/side reactions**

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This question is about atom economy.

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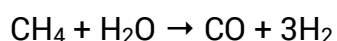
Which reaction has an atom economy of 100%?

[1 mark]

- $C + H_2O \rightarrow CO_2 + 2H_2$
- $Cu + 2HCl \rightarrow CuCl_2 + H_2$
- $2Cu + O_2 \rightarrow 2CuO$

Calculate the atom economy for making hydrogen:

[2 marks]



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atom economy = $\frac{\text{RFM of the desired product} \times 100}{\text{RFM of all the reactants}}$

**RFM of desired product (H_2) = $(3 \times 2) = 6$
 RFM of all the reactants = $(12 + 4) + (2 + 16) = 34$ [1]**

$6/34 \times 100 = 17.65$

Atom economy = **17.65** % [1]

(Total 6 marks)

End of Question