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Mathematics

Paper 3 (Calculator)

Higher Tier

Tuesday 12 June 2018 – Morning

Time: 1 hour 30 minutes

Paper Reference

1MA1/3H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

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Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Answer the questions in the spaces provided – there may be more space than you need.
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 net ionic equation $\text{H}^+ \text{aq} + \text{Cl}^- \text{aq} + \text{Na}^+ \text{aq} + \text{HCO}_3^- \text{aq} + \text{Na}^+ \text{aq} + \text{Cl}^- \text{aq} + \text{H}_2\text{O} \text{l} + \text{CO}_2 \text{g} \rightarrow \text{H}^+ \text{aq} + \text{HCO}_3^- \text{aq} + \text{H}_2\text{O} \text{l} + \text{CO}_2 \text{g}$ here is a video on spectator ions
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web the six NO_3^- ions and the six Na^+ ions that appear on both sides of the equation are spectator ions that can be canceled to give the net ionic equation $3\text{Ba}^{2+} \text{aq} + 2\text{PO}_4^{3-} \text{aq} \rightarrow \text{Ba}_3\text{PO}_4 \text{s}$

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web net ionic equations an equation for a reaction in solution showing only those particles that are directly involved in the chemical change spectator ions an ion that is not directly involved in a chemical reaction an ion that does not change oxidation number or composition during a reaction products

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web the equation below is the final net ionic equation after elimination of the spectator ions which yields water $\text{H}^+ \text{aq} + \text{OH}^- \text{aq} \rightarrow \text{H}_2\text{O} \text{l}$ the spectator ions in $\text{KOH} \text{aq}$ and $\text{HNO}_3 \text{aq}$ are $\text{K}^+ \text{aq}$ and $\text{NO}_3^- \text{aq}$ how to identify and list the

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