Mathematical modelling assessment

Help the coach with the winning strategy!

Learning question

Can I use mathematical modelling to determine whether three-point shots are a winning strategy?

As a budding young mathematician and fan, you decide to send a professional basketball coach an email with a suggested winning strategy. You’ve noticed recently that the team doesn’t shoot many three-pointers, even though most of the players shoot two-pointers with a high degree of accuracy.

Write a convincing email to the coach to persuade him that shooting three-pointers is a **good** idea. The coach is notoriously sceptical and can only be swayed by **strong evidence**. Therefore, your email **must** **include** data, calculations and graphs, and relevant analysis of them. To submit, send this email to your teacher.

Task expectations

This task should be your best effort, your original work and submitted on or before the due date. This task will be graded and returned to you with feedback.

Grading criteria

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| --- | --- | --- |
| Approaching | At standard | Above |
| I can present data, calculations and graphs to the coach with limited supporting analysis.  | I can communicate a reasoned strategy to the coach and support it with mathematical evidence that I produced. | I can pose additional strategic opportunities to the coach and suggest how modelling could be used to assess them. |
| All or some of the ‘at standard’ criteria were not met. | I present my data in an organised manner, my calculations are correct, my graphs are easy to read, and my analysis is relevant and accurate.  | I collected and analysed additional data and/or analysed the available data more deeply. |
| The appropriateness of the model was not adequately considered. | I can identify strengths and limitations of the model. | I can suggest possible improvements to the model. |

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| Student name:Submitted on time: Y / NGrade: |
| Achievement standard Students use mathematical modelling to solve practical problems involving ratios, percentages and rates in measurement and financial contexts. |
| Content descriptor: AC9M8N05 use mathematical modelling to solve practical problems involving rational numbers and percentages, including financial contexts; formulate problems, choosing efficient calculation strategies and using digital tools where appropriate; interpret and communicate solutions in terms of the situation, reviewing the appropriateness of the model.  |

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|  | Approaching standard | At standard | Above standard |
| Your data is presented in an organised manner. |  |  |  |
| Your accuracy percentages are correctly calculated. |  |  |  |
| Your graphs are easy to read and enhance the written analysis. |  |  |  |
| Your written analysis is relevant and accurate. |  |  |  |
| Your strategy is communicated effectively and logically reasoned. |  |  |  |
| Your strategy is supported by mathematical evidence. |  |  |  |
| Your email identifies strengths of the model. |  |  |  |
| Your email identifies limitations of the model. |  |  |  |

Written feedback

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