

Introductory Task – Modelling with Linear Relations

You will work with the Olympic 100 m sprint data. We will provide you with the winning times. You will then use linear relations to model and analyze the results.

(A) Data Analysis Requirements – PART 1 (NO TECHNOLOGY)

- a. Create a graph of the data set.
- b. Graph the line of best fit for your data.
- c. Show how you ALGEBRAICALLY developed the equation of the line of best fit for the data.

(B) Data Analysis Requirement – PART 2 (TECHNOLOGY)

- a. Create a graph of the data set.
- b. Graph YOUR line of best fit on the data.
- c. Comment on the “goodness of fit” of your line and the data.

(C) Interpreting the Results of the Data Analysis – PART 3

- a. What does the slope of the line REPRESENT?
- b. PREDICTIONS: What will be the winner’s time in the 2016 Olympic Games in Rio de Janeiro?
Show/explain how you came up with this time.
- c. LIMITATIONS: What was the winner’s time in the 776BC Olympics held in Athens according to your model? Show/explain how you came up with this time. Is this time reasonable? Explain why/why not?
- d. What would the x- and y-intercepts REPRESENT? Are they reasonable, given the context of the data? Explain/justify your OPINION regarding this reasonableness.

(D) Extension – PART 4

- a. DATA: What does it mean when I say that “the data you have found is RELIABLE”? Is the data that you used reliable? Give 2 reasons why and give 2 reasons why not.
- b. MODELS: You were instructed in this exercise to use LINEAR EQUATIONS to model the data. Are other models possible? Which one(s)?

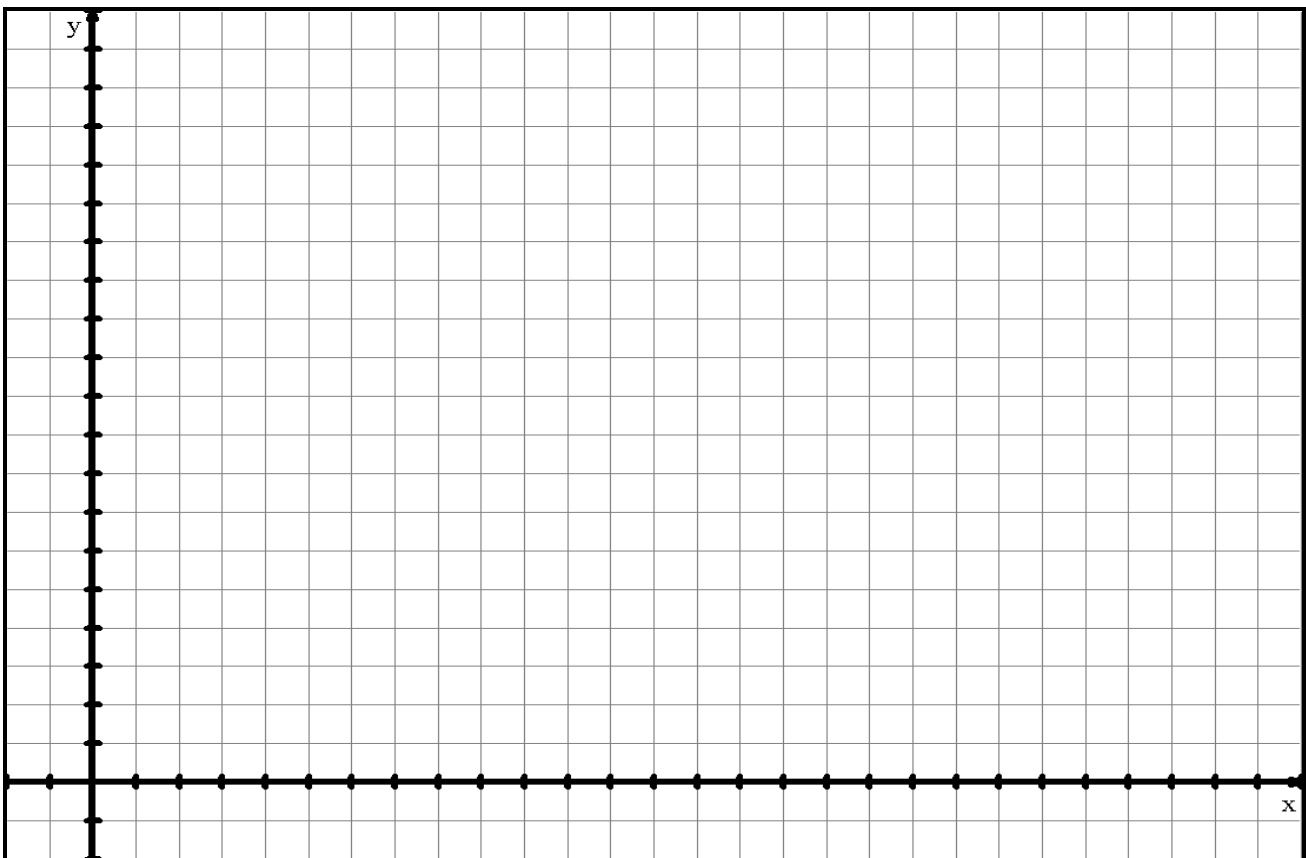
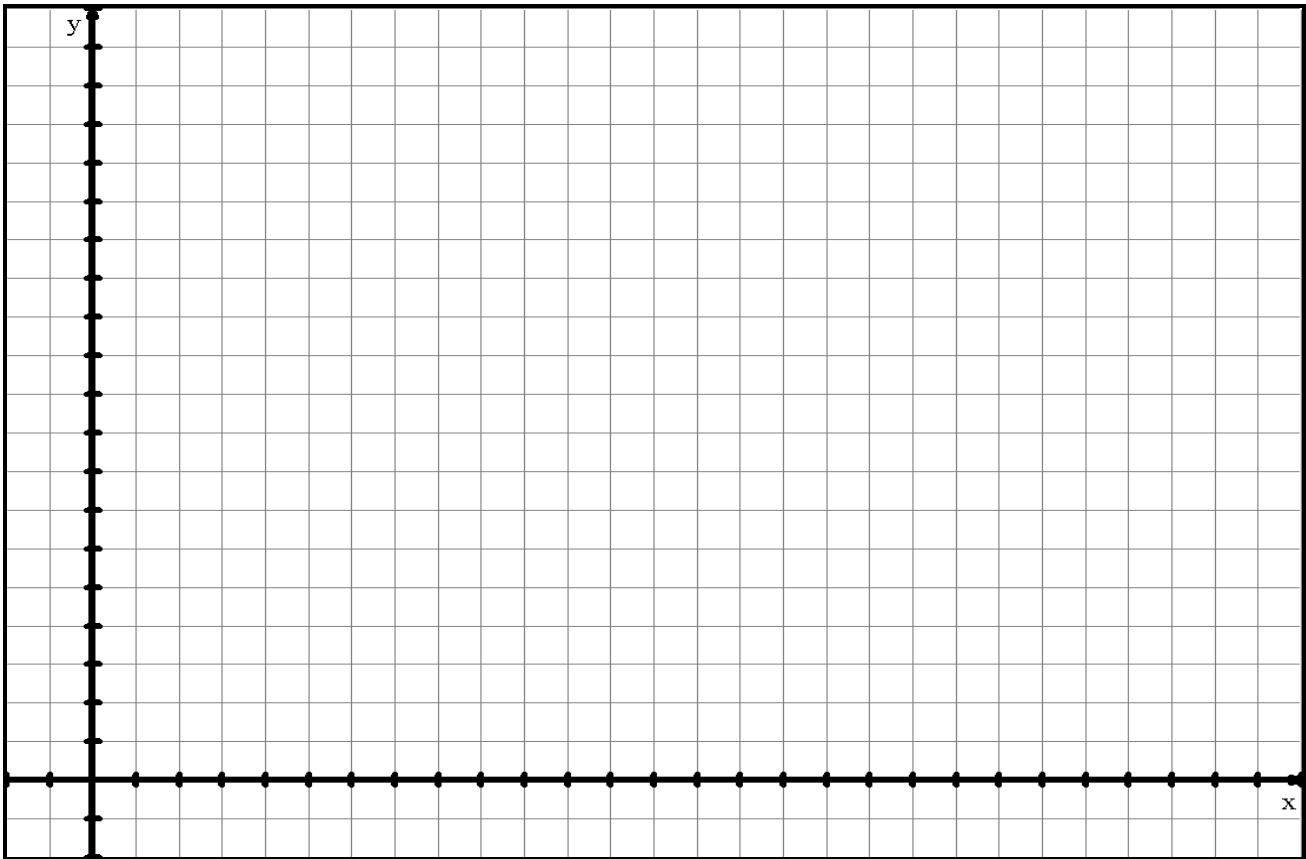
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Olympic Winning Times for Men's & Women's 100m sprint – Complete data

Year	Men's Winning Time	Women's Winning Time
1896	12.0	
1900	11.0	
1904	11.0	
1908	10.8	
1912	10.8	
1920	10.8	
1924	10.6	
1928	10.8	12.2
1932	10.34	11.9
1936	10.3	11.5
1948	10.34	11.9
1952	10.4	11.5
1956	10.5	11.5
1960	10.2	11.0
1964	10.0	11.4
1968	9.9	11.0
1972	10.14	11.07
1976	10.06	11.08
1980	10.25	11.06
1984	9.99	10.97
1988	9.92	10.54
1992	9.96	10.82
1996	9.84	10.94
2000	9.87	10.75
2004	9.85	10.93
2008	9.69	10.78

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