Proportionality and Linearizing Data

⚠ This is a preview of the published version of the quiz

Started: Sep 6 at 7:21am

Quiz Instructions

Intro to Linearizing Data for Physics Labs (IB Physics)   **(https://www.youtube.com/watch?v=O7Xg9LCAS5Q&t=769s)**

▷

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Watch the video before taking the quiz.

Question 1	1 pts

Proportional is when two things (i.e. quantitative phenomena) form a linear pattern on a scatterplot.

○ True

○ False

Question 2	1 pts

If two things form a scatterplot linear pattern without modifying (aka transforming) a variable, then there is no need to linearize the data.

○ True

○ False

Question 3   **1 pts**

Which of the following indicates an inverse relationship between X and Y?

○ y = 1/x

○ y = x

○ y = x^2

○ y = sqrt(x)

Question 4   **1 pts**

The symbol for proportionality looks like a _____.

○ fish

○ cow

○ horse

○ rabbit

○ donkey

○ bird

Question 5

1 pts

If Y is proportional to the inverse of X, what should be the modified variable placed on the horizontal axis in order to linearize the data?

○ 1/X

○ X^-.5

○ Sqrt(X)

○ X^2

○ Y^2

○ Y^-.5

○ Sqrt(Y)

○ 1/Y

Question 6

1 pts

When d and A produced a half parabola opening to the right in the video, the correct transformation to place on the horizontal axis is _____?

- ○ sqrt(A)

- ○ sqrt(d)

- ○ 1/A

- ○ 1/d

- ○ A^2

- ○ d^2

Question 7

1 pts

When I and R were initially graphed without a transformation (aka modification), what type of relationship was discovered between the two quantities?

- ○ inversely proportional

- ○ proportional

- ○ directly proportional

- ○ quadratic

○ no relationship was discovered

Question 8   1 pts

Which transformation (aka modification) was used to linearize the I and R data?

○ 1/R

○ 1/I

○ R^2

○ sqrt(R)

○ I^2

○ sqrt(I)

○ R^-.5

○ I^-.5

Question 9   1 pts

When KE and V were linearized, which variable transformation was used?

○ V^2

○ KE^2

○ sqrt(V)

○ 1/KE

○ 1/V

Question 10

1 pts

After linearizing data, what is the next step?

○ Draw the best fit line

○ Connect all the dots

○ Nothing, you are done

○ Ask your neighbor what to do

Question 11

1 pts

What do you call the slope of the best fit line to linearized data?

*This was mentioned during lecture.

○ the constant of proportionality

○ the y-intercept

○ the inverse

○ the momentum

○ the net force

○ the power to weight ratio

Question 12   1 pts

The purpose of fitting lines to linearized data is to create models that approximate real world phenomena.

*This was mentioned in class.

○ True

○ False

Question 13   1 pts

Stating that one quantity is proportional to another can be a valid hypothesis for a physics experiment.

○ True

○ False

Question 14

1 pts

A data point of (2, 4) was collected along with many other raw data points during an experiment. After graphing the raw data points, it was determined that an inversely proportional relationship existed. What would be the appropriate transformation of the (2,4) data point to achieve linearization?

○ (.5, 4)

○ (2, .25)

○ (2, 16)

○ (4, 4)

○ (2, 2)

○ (4, 16)

○ (.5,.25)

Question 15

1 pts

A data point of (2, 4) was collected along with many other raw data points during an experiment. After graphing the raw data points, it was determined that a quadratic relationship existed. What would be the appropriate transformation of the (2,4) data point to achieve linearization?

○ (4, 4)

○ (.5,.25)

○ (2, 16)

○ (.5,4)

○ (2, .25)

○ (4, 16)

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