TEACHER EXAMPLE Let's Buy Some Houses!

…and let's find out if bigger houses are always more expensive

Step 1 – Pick a town anywhere in the Continental United States.

Write 3-5 sentences about this town and explain why you picked it. (You can't pick the same town as one of your classmates)

Hudson, MA (you need to pick a different town)

Step 2 – Pick 10 houses for sale in this town. Record the prices and square footage of each house. You can use zillow.com (or another real estate website) to find your houses.

Complete this data table and also post a screenshot of each house (the small

$540,000
4 bds | 2 ba | 1,724 sqft - House for sale
19 Brook St, Hudson, MA 01749
MARY FOLEY REAL ESTATE, Mary N. Foley
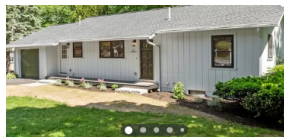
summary post that look like this will do)

$399,999
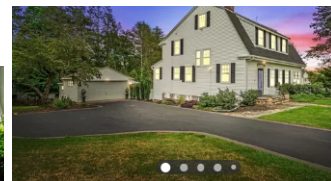3 bds | 2 ba | 1,291 sqft - House for sale
52 High St, Hudson, MA 01749

$539,900
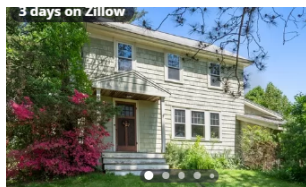3 bds | 3 ba | 2,372 sqft - House for sale
171 Manning St, Hudson, MA 01749

$650,000
3 bds | 2 ba | 1,723 sqft - House for sale
12 Seneca Dr, Hudson, MA 01749

$849,900
4 bds | 3 ba | 2,670 sqft - House for sale
2 Brigham St, Hudson, MA 01749

$599,900
5 bds | 3 ba | 2,482 sqft - House for sale
130 Forest Ave, Hudson, MA 01749

$995,000
4 bds | 4 ba | 3,684 sqft - House for sale
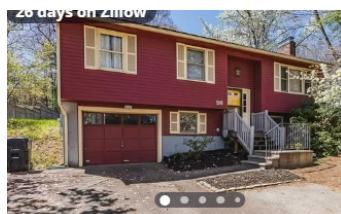275 Chestnut St, Hudson, MA 01749

$540,000
3 bds | 2 ba | 1,724 sqft - House for sale
19 Brook St, Hudson, MA 01749

$179,900
2 bds | 1 ba | **780** sqft - Home for sale
21 Rebecca Ave, Hudson, MA 01749

$640,000
3 bds | 2 ba | **1,508** sqft - House for sale
26 Hunter Ave, Hudson, MA 01749

$500,000
3 bds | 1 ba | **1,986** sqft - House for sale
133 White Pond Rd, Hudson, MA 01749

Square Footage	Price of House	Address
1291	$399,999	52 High St
2372	$539,900	171 Manning St
1723	$650,000	12 Seneca Dr
2670	$849,900	2 Brigham St
2482	$599,900	130 Forest Ave
3684	$995,000	275 Chestnut St
1724	$540,000	19 Brook St
780	$179,900	21 Rebecca Ave
1508	$640,000	26 Hunter Ave
1986	$500,000	133 White Pond Rd

Step 3 – Use Google Sheets to create a scatter plot for your data.

Suggestion:

1) Open up a google spreadsheet and title it "House Price vs Square Footage"
2) Enter your data table (above) into the spreadsheet
3) Highlight your entire data table (including headings) and Insert a "chart" & choose "scatter chart" under chart type
4) Click on your scatter plot, then click "series", click "trendline", type "linear" and click on "show R^2 value"
5) Create a second scatter plot then click "series", click "trendline", type "exponential" and click on "show R^2 value"

Paste the link to your spreadsheet with your data table, both scatterplots, equations & R^2 values here (make sure you have your sharing settings set to "anyone with the link"):

https://docs.google.com/spreadsheets/d/1Vj6FIsgiEYDS543nz2nBJhppBzg4SCWyJqzo4FG7MFs/edit?usp=sharing

Step 4 - Record both of your equations with R^2 values.
    a) Write your linear equation and R^2 value here:

Y = 240x+103366

R^2 = .767

    b) Explain the real-world meaning of your R^2 value here:
Explain in your own words

    c) Explain the real-world meaning of slope of your equation here:
Explain in your own words

    d) Explain the real-world meaning of your y-intercept here:
Explain in your own words

Extrapolation time!
Step 5 - Look at your scatter plot and your linear regression line. Do you think that the line (and equation) provides a reasonable model for predicting the price of a house based on it's size?
Write your answer and explanation here:
Explain in your own words

Step 6 - Use your equation to predict the price of a 1500 square foot house in your chosen town. (Show all of the calculations. It's OK to do Steps 6&7 on paper and to paste a single screenshot for all of your work.)
Show your work here:

Y = 240(1500) + 103366

Y = 360000 + 103366

Y = $463,366

<u>Step 7 - Use your equation to predict the square footage of a $450,000 house in your chosen town.</u> (Show all of the calculations. It's OK to do Steps 6&7 on paper and to paste a single screenshot for all of your work.)
Show your work here:

450000 = 240x + 103366

346634 = 240x

X = 1444 Square feet

<u>Step 8 - Do you think that the line (and equation) provides a reasonable model for predicting the price of a 500 square foot house? Do you think that the line (and equation) provides a reasonable model for predicting the price of a 5000 square foot house?</u>
Write your answer and explanation (for both questions) here:
Explain in your own words

<u>Step 9 - Reflection</u>
How much does the price of a house, in your chosen town, have to do with the size of the house? What other factors do you think influence house prices? Of these different factors, which of them do you think is most important? Are there any factors (in your opinion) that are more influential than the size of the house? (3-5 sentences)
Write your answer and explanation here:
Explain in your own words

<u>Honors Section (Extra-Credit for everyone else)</u>

<u>Step 1 – Pick another town anywhere in the Continental United States.</u>

Write 3-5 sentences about this town and explain why you picked it. (You can't pick the same town as one of your classmates)

Step 2 – Pick 10 houses for sale in this town. Record the prices and square footage of each house. You can use zillow.com (or another real estate website) to find your houses.

Complete this data table and also post a screenshot of each house (the small

8 days on Zillow

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summary post that look like this   will do)

Square Footage	Price of House	Address

Step 3 – Use Google Sheets to create a scatter plot for your data.

Suggestion:

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Paste the link to your spreadsheet with your data table, both scatterplots, equations & R^2 values here (make sure you have your sharing settings set to "anyone with the link"):

Step 4 - Record both of your equations with R^2 values.
   a) **Write your linear equation and R^2 value here:**

   b) **Explain the real-world meaning of your R^2 value here:**

   c) **Explain the real-world meaning of slope of your equation here:**

   d) **Explain the real-world meaning of your y-intercept here:**

Extrapolation time!
Step 5 - Look at your scatter plot and your linear regression line. Do you think that the line (and equation) provides a reasonable model for predicting the price of a house based on it's size?
Write your answer and explanation here:

Step 6 - Use your equation to predict the price of a 1500 square foot house in your chosen town. (Show all of the calculations. It's OK to do Steps 6&7 on paper and to paste a single screenshot for all of your work.)
Show your work here:

Step 7 - <u>Use your equation to predict the square footage of a $450,000 house in your chosen town.</u> (Show all of the calculations. It's OK to do Steps 6&7 on paper and to paste a single screenshot for all of your work.)
Show your work here:

Step 8- <u>Do you think that the line (and equation) provides a reasonable model for predicting the price of a 500 square foot house? Do you think that the line (and equation) provides a reasonable model for predicting the price of a 5000 square foot house?</u>
Write your answer and explanation (for both questions) here:

Step 9 - <u>Reflection</u>
How does the relationship between house price & house size differ between your two towns? What reasons might you contribute to this difference? (3-5 sentences)
Write your answer and explanation here: