

Monopoly



1. Do you play monopoly with friends or family? Do you have notions about how the properties are valued? Please explain.

It is said that properties are more valuable as they get further from GO. We wondered if that proposition is true and whether properties were consistent in their increased values.

Hasbro, the company that publishes Monopoly, has made increasingly larger game boards that take even longer to play. How much should properties be valued at as they are added to the board?

Let's do some figuring.

Original Monopoly has 28 properties. We've listed their values below:

Property	Spaces from Go	Cost of Property	Rent	Rent with 1 House	Rent with 2 Houses	Rent with 3 Houses	Rent with 4 Houses	Rent with Hotel
Mediterranean Ave	1	\$60	\$2	\$10	\$30	\$90	\$160	\$250
Baltic Ave	3	\$60	\$4	\$20	\$60	\$180	\$320	\$450
Oriental Ave	6	\$100	\$6	\$30	\$90	\$270	\$400	\$550
Vermont Ave	8	\$100	\$6	\$30	\$90	\$270	\$400	\$550
Connecticut Ave	9	\$120	\$8	\$40	\$100	\$300	\$450	\$600
St. Charles Place	11	\$140	\$10	\$50	\$150	\$450	\$625	\$750
States Ave	13	\$140	\$10	\$50	\$150	\$450	\$625	\$750
Virginia Ave	14	\$160	\$12	\$60	\$180	\$500	\$700	\$900
St. James Place	16	\$180	\$14	\$70	\$200	\$550	\$750	\$950
Tennessee Ave	18	\$180	\$14	\$70	\$200	\$550	\$750	\$950
New York Ave	19	\$200	\$16	\$80	\$220	\$600	\$800	\$1,000
Kentucky Ave	21	\$220	\$18	\$90	\$250	\$700	\$875	\$1,050
Indiana Ave	23	\$220	\$18	\$90	\$250	\$700	\$875	\$1,050

Illinois Ave	24	\$240	\$20	\$100	\$300	\$750	\$925	\$1,100
Atlantic Ave	26	\$260	\$22	\$110	\$330	\$800	\$975	\$1,150
Ventnor Ave	27	\$260	\$22	\$110	\$330	\$800	\$975	\$1,150
Marvin Gardens	29	\$280	\$24	\$120	\$360	\$850	\$1,025	\$1,200
Pacific Ave	31	\$300	\$26	\$130	\$390	\$900	\$1,100	\$1,275
North Carolina Ave	32	\$300	\$26	\$130	\$390	\$900	\$1,100	\$1,275
Pennsylvania Ave	34	\$320	\$28	\$150	\$450	\$1,000	\$1,200	\$1,400
Park Place	37	\$350	\$35	\$175	\$500	\$1,100	\$1,300	\$1,500
Boardwalk	39	\$400	\$50	\$200	\$600	\$1,400	\$1,700	\$2,000

- On a separate piece of graph paper, create a scatter plot comparing the number of spaces a property is from GO and the cost to an opponent for rent with a hotel for that property. (You can use the Student Excel sheet that accompanies this activity.)
- Are there any points that seem to be outliers? Does the game seem to have properties that are possibly under or overvalued?

To predict the future of this line and the value of future Monopoly properties, we might find a line of best fit. We'll do that by first finding the average of all of the x-coordinates and y-coordinates to find the sample's mean point.

- Find the average x-coordinate on the graph and the average y-coordinate on the graph. Plot this point on your scatter plot.
- Draw a line of best fit through the data points. Your line should go through the average (x, y) point from the previous problem.
- According to your line, what would be a more appropriate or fair cost for landing on Boardwalk with a hotel on it?
- Two new properties are to be added to a newer version of the game. They are to be placed at the 35th and 36th spaces on the board. According to your line, what should be the cost for landing on these spaces when they occupy a hotel?
- The new Biden Ave costs about \$700 for landing on it with hotel. How many spaces from GO is it?
- The board is to be enlarged and several more spaces are added. Using your line find the cost of Wheeler Road at the 46th space and Room 230 at the 48th space.
- Write an equation that gives the cost of landing on a space with a hotel on it for any number of spaces from GO in $y = mx + b$ form.
- Using the same grid make one additional scatter plot comparing any column of information about the Monopoly properties and the number of spaces from zero. Draw a line of best fit and write an equation to model the situation. Are there any outliers for this relationship? Explain.