

**GOAL:** Use statistics to learn about home prices in various cities.

Find the cost per square foot of each house, **rounded to the nearest cent**. You may use a **calculator** to find the cost per square foot.

AGGIEVILLE				BLUE DEVIL LAND			
House	Cost	Square Feet	Cost per sq. ft.	House	Cost	Square Feet	Cost per sq. ft.
1.	\$176,500	2,450	\$72.04	8.	\$158,900	2,300	
2.	\$108,675	1,725		9.	\$158,695	1,925	
3.	\$112,365	1,870		10.	\$110,995	1,970	
4.	\$143,950	2,200		11.	\$121,490	2,090	
5.	\$106,900	1,452		12.	\$124,900	1,645	
6.	\$154,590	2,160		13.	\$157,990	2,430	
7.	\$151,990	2,055		14.	\$122,975	1,825	
15.	What is the median cost per square foot in Aggieville?						
16.	What is the median cost per square foot in Blue Devil Land?						
17.	Which city has the lower median cost per square foot?						
18.	What is the difference between the two medians?						
19.	Which house is the least expensive per square foot?						
20.	Which house is the most expensive per square foot?						

21.	A. Calculate the mean and the median and range of the five homes listed below.		Mean =
	B. Which of the numbers, mean or median, is closer to the “typical” price of these homes?		Median =
	C. Provide support for your answer in B.		Range =
	D. Why are the mean and median so different?		
	\$135,000	B.	
	\$3,375,000	C.	
	\$99,950	D.	
	\$126,900		
	\$119,550		

***Grapevine Real Estate Listings***

Below are 12 single-family homes that were for sale a few years ago in Grapevine. Single family means it is a home that one family would live in. An apartment would be an example of a multi-family home. Homes can have half a bath. A half bath is a bathroom without a bathtub or shower.

Find the cost per square foot of each house, **rounded to the nearest cent**. You may use a **calculator** to find the cost per square foot.

Address	Cost	Square Feet	Cost per square foot	Bed-rooms	Bath-rooms	Age
2825 Panhandle	\$143,500	1508 sq. ft.		3	2	22 years
3430 Spring Willow	\$174,900	2210 sq. ft.		3	2	18 years
4319 Windswept	\$201,000	2462 sq. ft.		4	2.5	13 years
1408 Clearwater	\$216,500	2317 sq. ft.		3	3	3 years
2662 Pinehurst	\$232,000	2402 sq. ft.		4	2	3 years
2702 Yorkshire	\$249,900	2971 sq. ft.		5	3	15 years
2717 Cobblestone	\$257,990	2839 sq. ft.		4	2.5	0 years
3826 Shady Meadow	\$262,000	3042 sq. ft.		5	4	15 years
2715 Cobblestone	\$268,990	2942 sq. ft.		4	3	0 years
2719 Cobblestone	\$283,990	3116 sq. ft.		4	3.5	0 years
3105 Coveside	\$289,900	3198 sq. ft.		3	2.5	4 years
3312 Marsh	\$369,900	4031 sq. ft.		4	3.5	11 years

Use your data to now calculate the following items. Round according to the parentheses.

	Cost (dollar)	Square Feet (whole number)	Cost/Square Foot (cent)	Bedrooms	Bathrooms	Age
Lower Quartile						
Median						
Upper Quartile						
Range						

**On a sheet of graph paper draw two box plots: one for cost and one for square feet.**

Real estate agents typically use the median price, not the mean, for homes in their area. Below you can see some of the median home prices for residences across the country.

Use a calculator to determine the price per square foot for each city. Start your rankings with 1 equal to the lowest number.

City	2017 Median Price		Average Size Home (Square Feet)		Price per Square Foot	
		Rank		Rank	Nearest dollar	Rank
San Francisco	\$1,204,700		1198			
New York City	\$685,000		769			
Los Angeles	\$631,600		1556			
Washington DC	\$551,400		1052			
Boston	\$435,900		1608			
Seattle	\$420,500		1789			
Denver	\$394,400		1637			
Miami	\$310,000		1574			
Chicago	\$246,400		1579			
<b>United States</b>	<b>\$240,700</b>		<b>1732</b>			
Phoenix	\$234,700		1608			
Dallas	\$232,200		1773			
Philadelphia	\$232,200		1720			
Houston	\$217,400		1874			
San Antonio	\$210,500		1740			
Tampa	\$199,900		1503			
Atlanta	\$192,000		1684			
St. Louis	\$170,300		1385			
Pittsburgh	\$140,500		1201			
Mean of all cities						
Median of all cities						
Range of all cities						

<p>Review the cost of homes in different cities. Are the highest home prices generally due to larger homes or a higher cost per square foot? Support your answer.</p>	
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The tables below represent the results of a national survey about people and their homes. Use the results of the survey to complete the missing items and questions. You may use a calculator for this page.

**Question #1: What is most important about your home?**

		Number of people in the survey	Number responded	Percent
1.	It is comfortable.	2500		47%
2.	It is clean and safe.	2500		22%
3.	I like the location.	2500		16%
4.	It's well decorated.	2500		11%
5.	It has great curb appeal.	2500		4%

**Question #2: Which of these upgrades would make you happiest?**

		Number of people in the survey	Number responded	Percent
6.	State of the art kitchen	3500	1050	
7.	High-tech family room	3500	875	
8.	Finished basement	3500	595	
9.	Spa-like bathroom	3500	560	
10.	Luxurious bedroom	3500	420	

**Question #3: Where would your dream home be?**

		Number of people in the survey	Number responded	Percent
11.	Beach		728	26%
12.	Country		644	23%
13.	Small Town		532	19%
14.	Big City		476	17%
15.	Mountain		420	15%

16.	<p>Create a bar graph of one of the tables above. Make sure your graph has a <b>title and all sections are labeled</b> with both the answer and either the percent or the number of responses.</p> <p>Use a separate piece of graph paper to create your graph.</p>
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Have you ever wondered how much it costs to have your computer on for an hour? How about the dishwasher or the washing machine? What uses the largest amount of energy in a typical house?

1.	Heating and Cooling	43%
2.	Appliances and Refrigeration	18%
3.	Water Heating	12%
4.	Lighting	11%
5.	Home Electronics	7%
6.	Other	9%

- An average 2000 sq. foot house uses 1600 kWh (kilowatt hours) per month of electricity.
- An average cost per kWh in Texas is \$0.12.
- While many homes use gas as part of their energy consumption, we will assume everything in your house runs on electricity for this exercise.

Use the information above to complete the table below for a typical Texas house. You may use a calculator for this page.

	Monthly Electricity Usage (in kWh)	Monthly Electricity Cost (in \$)	Yearly Electricity Usage (in kWh)	Yearly Electricity Cost (in \$)
Heating and Cooling				
Appliances and Refrigeration				
Water Heating				
Lighting				
Home electronics				
Other				
<b>TOTAL</b>				

1.	If a typical family was able to cut their heating and cooling costs by 10%, how much would they save each month? year?		
2.	If a typical family was able to cut their lighting costs by 40%, how much would they save each month? year?		
3.	If a typical family was able to cut their water heating costs by 15%, how much would they save each month? year?		
4.	If a family wishes to spend a total of \$2000 each year on energy, by what percentage are they going to need to decrease their energy usage? (tenth of a %)		
5.	Based on the information on this page, what would be the easiest thing for a family to do to save money each month on their energy bill?		

Utilities are things at your house such as electricity, gas, telephone, internet, and cable TV. The total monthly cost of utilities can vary quite a bit depending on the city that you live in.

Use the information below to complete the table regarding 2008 utility costs. You may use a calculator for all problems on this page. Note that the percentages are all compared to the US average.

City	Total Monthly Utility Cost (nearest dollar)	% Compared to US	% Compared to US, fraction form (simplest form)	% Compared to US, decimal form
United States Average	\$290	100%		
LA		81%		
Orlando		86%		
Chicago		98%		
Atlanta		99%		
Philadelphia		109%		
Baltimore		124%		
Houston		129%		
Dallas		130%		

1.	In Dallas the summers are very warm and using a lot of air conditioning can greatly increase the total utility bill. If an average home in Dallas during the summer is spending 40% more than the monthly cost above for Dallas, how much would expect to pay per month in the summer?	
2.	During winter months, the average Dallas bill is 30% below the Dallas average listed above. How much would you expect to pay per month during the winter?	
3.	Looking at the percentage column, what is the ratio of US to Dallas in simplest form?	
4.	If there are between 400,000 and 500,000 households in Dallas, which of the following is a good estimate of the total amount spent on utilities in a month in Dallas?  A \$1.7 million                      C \$17 million B \$170 million                        D \$1.7 billion	
5.	What is the range of the total monthly utility cost of the cities above?	