

## Cost of Super Bowl ads

Better use scientific notation for these large amounts



A 30-second, 2021 Super Bowl commercial will be bringing in more than  $\$5.6 \bullet 10^6$  dollars. What on earth do those numbers mean? I did a little research on these numbers and it turns out that it is a number written in something called scientific notation.

So what is scientific notation? We use scientific notation to write really large or really small numbers as the product of a number and a power of ten.

$\$5.6 \bullet 10^6$  is a shorter way to write the dollar amount of \$5,600,000.

The 5.6 is called the **coefficient**. If the coefficient is positive then it must be written as a number greater than or equal to 1, and less than 10 ( $1 \leq \text{coefficient} < 10$ ).

If the coefficient is negative, then it must be written as a number less than or equal to -1 and greater than -10. ( $-10 > \text{coefficient} \geq -1$ )

The 10 in this number ( $5.1 \bullet 10^6$ ) is called the **base**. When we write numbers in scientific notation the base is always ten, thus giving us powers of ten. The 6 is the **exponent**. It tells us how many times to multiply the base by itself.

So, in this case, we have  $5.6 \bullet 10^6 = 5.6 \bullet 10 \bullet 10 \bullet 10 \bullet 10 \bullet 10 \bullet 10 \bullet 10$

### Lets try a little a Super Bowl math with scientific notation:

The average price of a Super Bowl commercial in 2014 was approximately 4 million U.S dollars for a 30 second slot. In 2015, ads were selling for \$4.5 million dollars for 30 seconds of ad time. In 2016, a 30-second advertisement cost \$5 million dollars and this year that same ad will cost **\$5.6 million dollars**.

1. **84 Lumber** (a building material supplier) bought a 90-second ad in 2017 when the cost was still \$5 million dollars per 30-second ad. How much did that ad cost? *Write your answer in scientific notation.*

2. With the chart below we can make some interesting observations. Use the current price of a Super Bowl ad of \$5,600,000. The numbers get really big. So, please write your answers in both standard notation and scientific notation.

Commercial length in seconds	Length of commercial in minutes	Cost written in standard form	Cost written in scientific notation
30		\$ 5,600,000	$\$ 5.6 \bullet 10^6$
60			
90			
120			
150			
180			
210			

3. This year the company, **TurboTax** will again have one 45-second commercial. How much money will they spend? Do the math and write your answer in **scientific notation**.
4. How much would a 15-second commercial cost this year? (In both standard and scientific notation)
5. How much would a 10-second commercial cost this year? (In both standard and scientific notation)
6. How much would a 1-second commercial cost this year? (In both standard and scientific notation)
7. What might a 1-second commercial be like?



8. If 10 commercials cost  $\$5.6 \bullet 10^7$  and 100 commercials cost  $\$5.6 \bullet 10^8$ , how much would **110** commercials cost? Write your answer in **scientific notation**.
  9. During the entire Super Bowl game (It lasts about 4 hours), about how many minutes do you think will be filled with commercials?
  10. How much would that amount of ads cost (in scientific notation) this year?
  11. As a test of how effective these ads were, name **four** of the commercials that you saw along with a brief description of the ad.
- After you have watched the Super Bowl, answer the following questions about your favorite commercial.
12. Describe your favorite commercial and why you liked it?
  13. Who do you think the commercial was marketed towards? (For example: Children, teenagers, young adults, working class people, retired adults, mothers, etc.) Why?

Matt Timmins, a Newton Public Schools teacher, originally contributed this activity.

Sources: <http://adage.com/article/special-report-super-bowl/super-bowl-xlix-ad-chart-buying-big-game-commercials/295841/>  
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