



### The average number

The result obtained by adding a group of numbers and dividing the sum quantity of numbers in that group

The ages of 9 students are 18, 30, 19, 25, 22, 19, 23, 26 and 24.

What is the average age?

$$18 + 30 + 19 + 25 + 22 + 19 + 23 + 26 + 24 = 206$$

$$206 \text{ divided by } 9 = 22.9$$

The average age is 22.9 years.

### The median number

The middle number in a list of numbers that is in numerical order.

The ages of 9 students are 18, 30, 19, 25, 22, 19, 23, 26 and 24.

What is the median age?

Arrange in order:

18, 19, 19, 22, 23, 24, 25, 26, 30

The median age is 23.

Seven homes were sold in Huntington Beach last month.

The selling prices were:

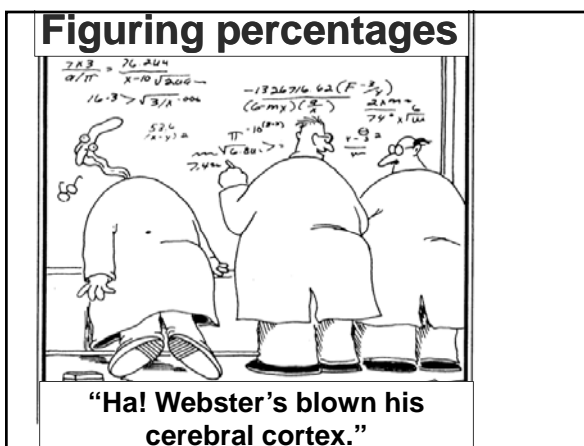
\$189,000, \$250,000, \$299,000, \$350,000, \$425,000, 525,000 and \$1.9 million.

Average home price is \$562,570.

The average home price is high than six of the seven homes sold.

\$189,000, \$250,000, \$299,000, \$350,000, \$425,000, 525,000 and \$1.9 million.

Median home price is \$350,000.



The median score on a style quiz is 18 points.

If 18 points equals a grade of 75%, how many points is 100%?

$$18 = 75\%$$

$$x = 100\%$$

$$75x = 18 \text{ times } 100 = 1,800$$

$$x = 1,800 \text{ divided by } 75 = 24$$

$$24 \text{ points} = 100\%$$

If 24 points in 100%, what is the grade for 19 points or 17 points?

Divide the score by the number that is worth 100%:

$$19 \text{ divided by } 24 = 0.79 = 79\%$$

$$17 \text{ divided by } 24 = 0.71 = 71\%$$

If 24 points in 100%, how many points is 90% or 80% or 70%?

$$90\% \text{ of } 24 \text{ points} = 0.9 \times 24 = 21.6 \text{ points}$$

$$80\% \text{ of } 24 \text{ points} = 0.8 \times 24 = 19.2 \text{ points}$$

$$70\% \text{ of } 24 \text{ points} = 0.7 \times 24 = 16.8 \text{ points}$$

### Word problems:

The unemployment rate fell 25 percent compared with last year, from 5 percent in September of last year to 4 percent in September of this year.

**Is this correct?**

**Or did it fall 1 percent?**

### formula:

new number minus base number divided by base number

**base number:** the figure used for comparison (usually from the earlier year)

**new number:** the latest figure

The unemployment rate fell 25 percent compared with last year, from 5 percent in May of last year to 4 percent in May of this year.

### formula:

new number minus base number divided by base number

$$\text{new number} = 4\% \quad \text{base number} = 5\%$$

$$4 \text{ minus } 5 = -1 \quad -1 \text{ divided by } 5 = -0.2, \text{ or } -20\%$$

The unemployment rate fell 20 percent

or: The rate fell 1 percentage point.

A campus poll last week found that 25% of the students surveyed said they had smoked marijuana in the last two weeks. Last year, 34% of the students said they had smoked pot.

What is the rate of change?

rate of change = *new number* minus *base number* divided by *base number*

$$0.25 \text{ minus } 0.34 = -0.09$$

$$-0.09 \text{ divided by } 0.34 = -0.26$$

Marijuana use by college students is down 26 percent compared with last year.

### Style reminders:

Always spell out the word "percent."

Use a singular verb when "percent" stands alone or when a prepositional phrase with a singular object follows the construction:

Any grade below 70 percent is considered failing.

About 20 percent of the class is going to fail the test.

Use a plural verb when a prepositional phrase with a plural object follows the construction:

About 20 percent of the students are going to fail the test.

Always use Arabic numerals and decimal points (not fractions):

0.5 percent, 1 percent, 13 percent, 12.4 percent

Repeat "percent" with each figure:

About 15 percent to 20 percent of the job applicants have poor writing skills.

Use the phrase "percentage points" when describing changes in percentages:

The unemployment rate fell one percentage point this year; it was 5 percent at this time last year and is 4 percent today.