PERCENTAGES PART 4 OF 8 · AGES 11–16

Percentage Change Rules

How to measure a change as a percentage, and how to work backwards to the value before the change.

Percentage change

change ÷ original × 100	**The rule** Divide the change by the original value, the one before the change, then multiply by 100.
12 ÷ 80 × 100 = 15% increase	**Percentage increase** A price rises from 80 to 92. The change is 92 − 80 = 12, and the original is 80.
60 ÷ 250 × 100 = 24% decrease	**Percentage decrease** A bus fleet shrinks from 250 to 190 buses. The change is 250 − 190 = 60, and the original is 250.
92 ÷ 80 = 1.15, so up 15%	**Multiplier shortcut** Divide the new value by the original. Above 1 is a rise and below 1 is a fall.
10 ÷ 40 × 100 = 25% profit	**Percentage profit** Use the cost price as the original. Buy something for 40 and sell it for 50: the profit is 10.

Reverse percentages

original = new value ÷ multiplier	**Find the original** Write the new value as a percentage of the original, turn that into a multiplier, then divide by it.
63 ÷ 0.7 = 90	**After a decrease** After 30% off, a jacket costs 63. That is 100% − 30% = 70% of the original price.
1,500 ÷ 1.25 = 1,200	**After an increase** After a 25% pay rise, a wage is 1,500 a month. That is 100% + 25% = 125% of the old wage.
90 × 0.7 = 63 and 1,200 × 1.25 = 1,500	**Check forwards** Multiply your answer by the multiplier. You should get back the value you were given.

Divide by the original

In a percentage change the original value always goes on the bottom. In a reverse percentage the original is the unknown, so you divide by the multiplier instead.

NEXT IN THE SERIES
5. Percentage vs Percentage Points: What Is the Difference?

Free to share · CC BY-NC 4.0 · Sources at infographhub.com