

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Percents, percent changes, and percentiles

1. Calculate the following proportions (i.e., write as the most reduced fraction possible): 212 people out of 1060 never heard of The Grateful Dead.
2. Calculate percentages from the following proportions: 3 out of 8 people regularly ride a bike.
3. What is 13 basis points of \$1,000?
4. A person has 90 stamps, then is gifted more stamps: a 15.6% change increase. How many stamps was the person given?
5. The U.S. economy was worth \$18.5 trillion last year. A recession this year drops it to \$18.3 trillion dollars. What is the percent change?
6. There are 26 students in your freshman composition course. If you have the 17th best score on a writing assignment, what percentile are you at?
7. There are 78 people in your grade at school. How many people (approximately) are in quintile?
8. Show that a -50% change in your bank balance last year to this year, followed by a +50% change in your balance from this year to next year, doesn't return you to the original amount.
9. A candidate for mayor last week polled at 65% approval from the voters. After news of a scandal broke, they are polling at 48% this week. Describe the change both in percentage points and a percent change.
10. There are 17 students in a class, then 8 leave.
  - A. What is the current size as a percentage of the previous size?
  - B. What is the previous size as a percentage of the current size? (Yes, this is over 100%.)
11. Percent changes at 100% or over are incredibly confusing and should be avoided.
  - A. Explain why 100 percent change is not the same thing as 100%.
  - B. A 100 percent change is \_\_\_ times as big.
  - C. A 200 percent change is \_\_\_ times as big.

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# More percents, percent changes, and percentiles

1. Calculate the following proportions (i.e., write as the most reduced fraction possible): 5% of all newspaper stories contain an error or omission.
2. Calculate percentages from the following proportions: 22 out of 48 people own a blender.
3. What is 5 basis points of \$20,750?
4. I had 3 pets last month and experienced a +33% change this month. How many new pets joined my household?
5. I had 10 dollars yesterday and experienced -10% change today. How many dollars did I spend?
6. A house's value has risen over the last three years. In 2020, it was worth \$500,000. In 2021, its value had risen +5% from the previous year. In 2022, its value had risen +3% from the previous year.
  - A. What is the house worth at the end of 2022?
  - B. What is the overall percent change from 2020 to 2022? Do not tell me +8%.
7. What is the percentile of the 35th best student in a school of 212 total students?
8. What is the rank of the 22nd percentile best soccer player on a team of 18?
9. A candidate is polling at 56%, then suffers a -10% change in their support. Express this change in terms of percentage points. What is the candidate polling at now?
10. There are 20 students in a class, then 3 more are added.
  - A. What is the previous size as a percentage of the current size?
  - B. What is the current size as a percentage of the previous size? (Yes, this is over 100%.)
11. At a party, 7 people hate dogs and 15 people hate cats. What proportion of the people at the party hate dogs?