

## Text-Based Algebraic Reasoning

AP Statistics - Mr. Levy

**Instructions:** These are the warmups, in order of difficulty, and no two of them are the same problem twice. Every answer is a **proportion rounded to 3 decimal places** — write it on the line at the right. Do the algebra on your own paper; this sheet is for answers only. **Watch the denominator** — it is the whole group the question names, which is not always the group you solved for first.

1. A jar contains 40 coins, all nickels or dimes, with a total value of \$3.30. What proportion of the coins are dimes? \_\_\_\_\_
2. A farm has 50 chickens and cows altogether. Counting every animal's legs, there are 154 legs in total. What proportion of the animals are cows? \_\_\_\_\_
3. A school sold 320 yearbook packages. The standard package costs \$45 and the deluxe package costs \$70, and the school collected \$17,150. What proportion of the packages sold were deluxe? \_\_\_\_\_
4. A club has 84 members, each a freshman or a sophomore. There are 18 more sophomores than freshmen. What proportion of the members are freshmen? \_\_\_\_\_
5. A pet store has three times as many fish as birds. After 12 more birds arrive, there are twice as many fish as birds. What proportion of the store's **original** animals were birds? \_\_\_\_\_
6. 96 students take a test. One third of the girls and one fifth of the boys earned an A, and 24 students earned an A. What proportion of the students are girls? \_\_\_\_\_
7. 144 students entered a coding contest. Three eighths of the girls and one sixth of the boys advanced to round 2, and 44 students advanced in total. What proportion of the entrants were girls? \_\_\_\_\_
8. In a class of 31 students, exactly one third of the girls and exactly one quarter of the boys earned a perfect score, and 9 students earned a perfect score. What proportion of the class are girls? \_\_\_\_\_
9. Students took one of two versions of a quiz. The average score on Version A was 90 and the average on Version B was 78. The average for all students was 85.5. What proportion of the students took Version A? \_\_\_\_\_
10. Two sections, 60 students in all, took the same quiz. One section averaged 82 and the other averaged 91. All 60 students together averaged 84.25. What proportion of the students were in the section that averaged 91? \_\_\_\_\_
11. A school surveyed 250 students; each takes the bus, rides in a car, or walks. Three times as many students take the bus as walk, and 30 fewer students ride in a car than take the bus. What proportion of the students take the bus? \_\_\_\_\_
12. A vending machine holds 84 coins — nickels, dimes and quarters — worth \$13.50 altogether, and there are twice as many dimes as nickels. What proportion of the coins are quarters? \_\_\_\_\_
13. A school store sold 180 spirit items: t-shirts at \$15, hoodies at \$30 and hats at \$12. The store collected \$3,060 and sold 20 more t-shirts than hoodies. What proportion of the items sold were hats? \_\_\_\_\_