

5

Types of Quantitative Comparison

SOLUTIONS

1. Identify the type of quantitative comparison used in each of the following statements:
 - a. Value.
 - b. Absolute difference.
 - c. Ratio (relative difference).
 - d. Percentage change.
 - e. Absolute difference.
 - f. Ratio (relative difference).
 - g. Rank (median is the 50th percentile).
 - h. Z-score.
 - i. Value (in this case, the units of measurement are percentage points).
 - j. Rank.

3. Indicate whether each of the following statements is correct. If not, rewrite the second part of the sentence to agree with the first.
 - a. “Brand X lasts longer than Brand T, with an average lifetime 60% longer than Brand T’s.”
 - b. Correct as written.
 - c. “The ratio of flour to butter in shortbread is 2 : 1; it uses twice as much flour as butter.”
 - d. Correct as written.
 - e. “Nadia’s test score was higher than 84% of students nationwide ($Z = 1.0$). (Sixty-six percent are within 1 standard deviation of the mean [e.g., ± 1 standard deviation], but you must also include those for when $z < -1.0$ to answer this question correctly.)
 - f. “A panel of 200 consumers rated ISP A four to one over ISP B. In other words, four times as many panelists preferred Company A as their Internet service provider.”
 - g. Correct as written.
 - h. Correct as written.
 - i. “The value of mutual fund ABCD tripled since last year, going from 33 to 100.”

5. Fill in the missing information.
 - a. “Asians make about twice as much as blacks.”
 - b. “Hispanics earn \$2,825 more than blacks.”
 - c. “Whites rank second in terms of median income, below only Asians and Pacific Islanders.”
 - d. “Asians earn 20% more than whites.”

7. With a comparison value of \$200:
 The two phrases “25% of the original price” (item a) and “Marked down 75%” (f) have the same meaning. Each of those phrases corresponds to a price of \$50, equivalent to a ratio of 0.25 .
 The phrases “Costs 25% less than . . . ” (item b), “Priced 25% off” (d), “75% of the original price” (g), and “Costs 75% as much as . . . ” (h) are equivalent. They correspond to a price of \$150, equivalent to a ratio of 0.75.
 The two phrases “Costs 25% more than . . . ” (item c) and “125% of the original price” (e) have the same meaning. They correspond to a price of \$250 and a ratio of 1.25.
9. In table 5C, fill in the z-score for height for each boy in the sample.

Table 5C. Heights of a sample of six-year-old boys (standard population: mean = 115.12 cm; SD = 4.78 cm)

Name	Height (cm)	Z-score
David	117.51	0.50
Jamal	113.90	-0.26
Ryan	124.81	2.03
Luis	115.45	0.07
JC	112.73	-0.50

- a. Ryan is approximately two standard deviations above the average height for a six-year-old boy, while Luis is just about average and JC is half a standard deviation below average for his age.
- b. David and JC are half a standard deviation taller and shorter than the average six-year-old boy, respectively.
- c. Mike stands 119.90 cm tall.