

QC-21. a) $(x + 2)^2$ b) $\frac{x - 3}{x - 2}$ c) $2(x - y)$

QC-22. $f^{-1} = 3 \pm \sqrt{x}$ QC-23. 50° QC-24. a) 37

QC-25. a) mean = 79.77, $s = 12.8$ (because it is the whole population.
c) Scores above 92.6, 6 candidates.

QC-26. a) Raw score = mean b) Raw score is one standard deviation below the mean.

QC-27. No, Ryan just misses with a Z-score of -0.53 .

QC-28 c) 0.5 d) $\frac{550 - 504}{110} = 0.418$

QC-29. a) -3 Z 3
b) She did not necessarily get every question correct. She scored at least 3 standard deviations above the mean. Out of 78 possible on the exam any raw score of 75 or above would have received an 800 in 1994.

QC-30. What were the total points possible? What was the mean? How does 42 relate to the mean? What was the standard deviation?

QC-31. a & b) 38.8 mph c) Average rate is independent of distance.

QC-32. a) 5.96 mi/hr b) Spent much more time at 3 mi/hr QC-33. a

QC-34. a) Most students will assume it is a parabola, though other families are also reasonable (it could also be a quartic, for example). The equation of the parabola is $y = \frac{1}{8}(x - 3)^2 + 3$.

QC-35. a) 1.5 b) 2.25 c) -0.5 d) 78

QC-36. When a battery is tested, it is completely drained, which effectively destroys the product. Also, time and money concerns prevent unlimited testing.

QC-37. $x = 24/7$ QC-38. $-3 \pm 2i$

QC-39. c) The mean should be around 3.5 with a standard deviation around 0.6
d) Sample; the population is infinite.

QC-42. The expected rejections are about 5%.

- QC-43. a) set A: $\bar{x} = 76$, $s = 13.4$ set B: $\bar{x} = 77.75$, $s = 28.2$
 b) 95 on test A is more impressive because the standard deviation is lower.
- QC-44. Maureen is right. The short leg (3) is not half the hypotenuse (5).
- QC-45. a) $\frac{16}{3}$ b) $\frac{3n^2}{10n^2 - 5}$
- QC-46. a) $4x^2yz^2(y^2 - 3x)$ b) $2(2x - 1)^2y(2y^2 - 6x + 3)$ c) $ab(a + b)(a - b)$
- QC-47. $x = 1, y = 0$ or $x = -5, y = -12$
- QC-48. a) $x = 27$ b) $x = \frac{1}{27}$ c) $x = 4.86$ d) $x = 63$
- QC-49. a) $20\left(\frac{8}{5}\right)^2 = 51.2$ g b) $16 \frac{20}{6} = \frac{160}{3} = 167.556$ g
- QC-50. 32 students QC-51. a) 50% b) the median
- QC-55. a) Answers will vary. It is hard to tell without sorting or calculating some statistics. b) mean = 77.22, standard deviation = 17.906 c) The values are very spread out. The low score of 17 greatly influences this result. d) 40th percentile e) Scores of 42 and 17 receive an F. No A's are given.
- QC-56. The extreme scores were most likely high. Since the median is resistant to outliers and the mean is not, the mean is pulled toward the extreme values.
- QC-57. Bill won the bet. Bill had a Z-score of 0.917 and Karen had a Z-score of 0.842.
- QC-58. Low = 24, Q1=63, med=73.5, Q3=84, high=96
- QC-59. 70th percentile, $z = 0.730$ QC-60. The 15% option has the greater impact.
- QC-61. One is the population standard deviation and the other is for sample standard deviation. The sample standard deviation is divided by $n-1$ instead of n .
- QC-62. a) $y = -55x + 1488.3$ b) In the 27th month.