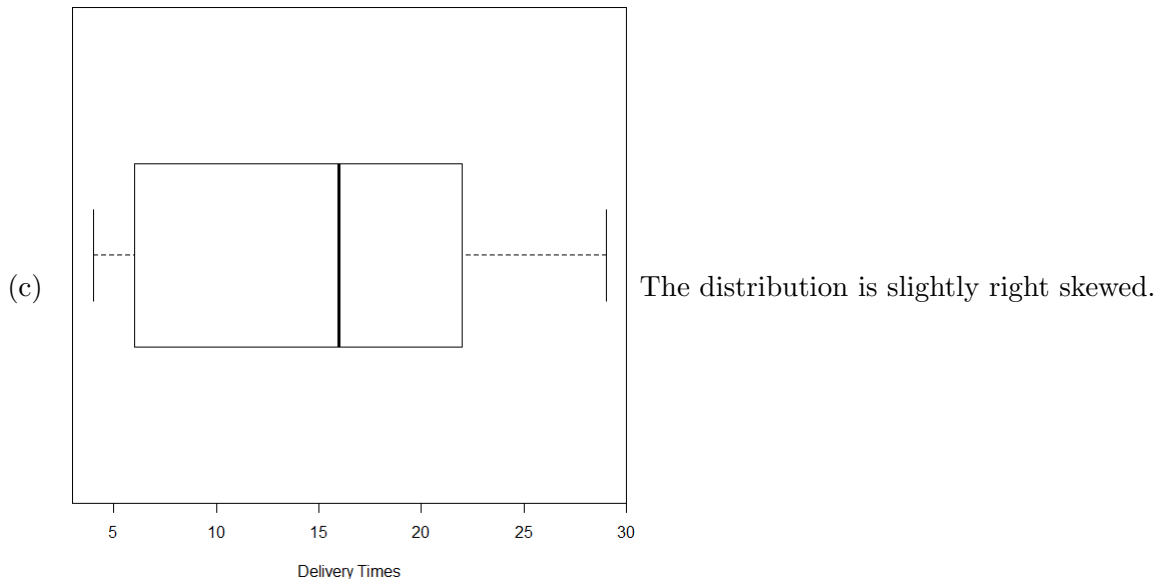


Chapter 2 Solutions

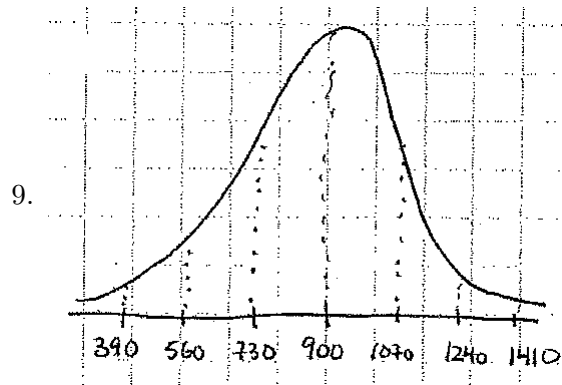
1. (a) parameter (b) parameter (c) statistic (d) statistic
2. A
3. B
4. (a) A numeric data set is **continuous** if the set of all possible values is an interval of numbers
 (b) A numeric data set is **discrete** if the set of all possible values is finite.
 (c) Bic corporation performs routine quality control testing on its lighters. Each lighter tested is struck and the trial is recorded as either a success (the lighter ignites) or a failure (the lighter does not ignite). This is an example of **categorical** data.
 (d) **Quartiles** divide the data into four parts.
 (e) A **z-score** measures the number of standard deviations a value lies from the mean.
 (f) A value in a data set that is outside the outer fence is considered a(n) **extreme outlier**
 (g) The sample mean is **sensitive** to outliers.
 (h) If an outlier is added to a data set, the sample standard deviation will get **larger**
 (i) A **boxplot** is a graph that represents the 5-number summary.
 (j) The **sample space** consists of all possible outcomes in an experiment.
 (k) The **intersection** of two events consists of all outcomes in both events.
5. (a) Calculate each of the following
 (i) 15.1 (ii) 16 (iii) 25 (iv) 8.72 (v) 76.1
 (vi) 6 (vii) 22 (viii) 16 (ix) 4.5 (x) 23.5
 (b) Inner fences: $Q_1 - 1.5IQR = 6 - 1.5(16) = -18$ and $Q_3 + 1.5IQR = 22 + 1.5(16) = 46$
 Outer fences: $Q_1 - 3IQR = 6 - 3(16) = -42$ and $Q_3 + 3IQR = 22 + 3(16) = 70$
 There are no outliers in this data set.



6. $\frac{10 + 21}{10 + 21 + 8 + 1} = \frac{31}{40} = 0.775 = 77.5\%$

7. unimodal - peak at 1mph; skewed right; outlier at 9mph; spread from 0 to 9mph

8. (a) Q_1 is at average of positions 3,4; Median is at average of positions 6,7; Q_3 is at average of positions 9,10. (b) Q_1 is at position 4; Median is at position 8; Q_3 is at position 12.



(a) between -2sd and +2sd is 95% of jobs

(b) above +3sd is $(100 - 99.7)/2 = 0.15\%$ of jobs

(c) Below -1sd is \$730 or less

(d) -3sd to +3sd is \$390 to \$1410.