

Normal Distribution

1. A forest products company claims that the amount of usable lumber in its harvested trees averages 172 cubic feet and has a standard deviation of 12.4 cubic feet. Assume that these amounts have approximately a normal distribution.
 - a. What proportion of trees contain more than 150 cubic feet?
 - b. What proportion of trees contain between 175 and 190 cubic feet?
 2. At two years of age, sardines inhabiting Japanese waters have a length distribution that is approximately normal with mean 20.20 cm and standard deviation 0.65 cm.
 - a. What proportion of these sardines are between 19.0 and 21.0 cm long?
 - b. How long are the longest 15% of all these sardines?
 - c. How short are the shortest 15% of all these sardines?
 - d. In what range do the middle 70% of all sardines fall?
 3. The mean cholesterol level in children is 175 mg/dL with standard deviation 35 mg/dL. Assume this level varies from child to child according to an approximate normal distribution.
 - a. What percentage of children have a cholesterol level above 200 mg/dL?
 - b. How high are the levels for the highest 2% of all children?
 4. Porphyrin is a pigment in blood protoplasm and other body fluids that is significant in body energy and storage. In healthy Alaskan brown bears, the amount of porphyrin in the bloodstream (in mg/dL) has approximate normal distribution with mean 47.5 and standard deviation 12.2.
 - a. What proportion of these bears have between 27.5 and 67.5 mg/dL porphyrin in their bloodstream? (That's within 20 of the mean amount of 47.5.)
 - b. How low are the porphyrin levels for the lowest 3% of all the bears?
 5. Healthy 10-week-old domesticated kittens have average weight 24.5 oz. with a standard deviation of 5.25 oz. The distribution is approximately normal.
 - a. A kitten is designated as dangerously underweight when, at 10 weeks, it weighs less than 10.0 oz. What proportion of healthy kittens will be designated as dangerously underweight?
 - b. What is the median weight of the kittens?
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