

PSYC 2317: Statistical Methods for Psychology

Tarleton State University

Unit 3 Homework

1. For a normal distribution with a mean of $\mu = 60$ and a standard deviation of $\sigma = 10$, find the proportion of the population corresponding to each of the following:
 - (a) Scores greater than 65
 - (b) Scores less than 68
 - (c) Scores between 50 and 70
2. IQ test scores are standardized to produce a normal distribution with a mean of $\mu = 100$ and a standard deviation of $\sigma = 15$. Find the proportion of the population in each of the following IQ categories:
 - (a) Genius or near genius: IQ greater than 140
 - (b) Very superior intelligence: IQ between 120 and 140
 - (c) Average or normal intelligence: IQ between 90 and 109
3. The distribution of scores on the SAT is approximately normal with a mean of $\mu = 500$ and a standard deviation of $\sigma = 100$. For the population of students who have taken the SAT,
 - (a) What proportion have SAT scores less than 400?
 - (b) What proportion have SAT scores greater than 650?
4. Over the past 10 years, the local school district has measured physical fitness for all high school freshmen. During that time, the average score on a treadmill endurance task has been $\mu = 19.8$ minutes with a standard deviation of $\sigma = 7.2$ minutes. Assuming the distribution of these scores is approximately normal, find each of the following probabilities:
 - (a) What is the probability of randomly selecting a student with a treadmill time greater than 25 minutes?
 - (b) What is the probability of randomly selecting a student with a time greater than 30 minutes?
 - (c) If the school required a minimum time of 10 minutes for students to pass the physical education course, what proportion of the freshmen would fail?