

15. Find the probability that a randomly selected adult has an IQ between 90 and 110 (referred to as the *normal* range).
16. Find the probability that a randomly selected adult has an IQ between 110 and 120 (referred to as *bright normal*).
17. Find P_{90} , which is the IQ score separating the bottom 90% from the top 10%.
18. Find the first quartile Q_1 , which is the IQ score separating the bottom 25% from the top 75%.
19. Find the third quartile Q_3 , which is the IQ score separating the top 25% from the others.
20. **Mensa** Mensa International calls itself “the international high IQ society,” and it has more than 100,000 members. Mensa states that “candidates for membership of Mensa must achieve a score at or above the 98th percentile on a standard test of intelligence (a score that is greater than that achieved by 98 percent of the general population taking the test).” Find the 98th percentile for the population of Wechsler IQ scores. This is the lowest score meeting the requirement for Mensa membership.



In Exercises 21–24, use these parameters (based on Data Set 1 in Appendix B):

- *Men’s heights are normally distributed with mean 69.5 in. and standard deviation 2.4 in.*
- *Women’s heights are normally distributed with mean 63.8 in. and standard deviation 2.6 in.*

21. Navy Pilots The U.S. Navy requires that fighter pilots have heights between 62 in. and 78 in.

- a. Find the percentage of women meeting the height requirement. Are many women not qualified because they are too short or too tall?
- b. Find the percentage of men meeting the height requirement. Are many men not qualified because they are too short or too tall?
- c. If the Navy changes the height requirements so that all women are eligible except the shortest 2% and the tallest 2%, what are the new height requirements for women?
- d. If the Navy changes the height requirements so that all men are eligible except the shortest 1% and the tallest 1%, what are the new height requirements for men?

22. Air Force Pilots The U.S. Air Force requires that pilots have heights between 64 in. and 77 in.

- a. Find the percentage of women meeting the height requirement.
- b. Find the percentage of men meeting the height requirement.
- c. If the Air Force height requirements are changed to exclude only the tallest 3% of men and the shortest 3% of women, what are the new height requirements?

23. Disney Characters Most of the live characters at Disney World have height requirements with a minimum of 4 ft 8 in. and a maximum of 6 ft 3 in.

- a. Find the percentage of women meeting the height requirement.
- b. Find the percentage of men meeting the height requirement.
- c. If the height requirements are changed to exclude only the tallest 5% of men and the shortest 5% of women, what are the new height requirements?

24. Executive Jet Doorway The Gulfstream 100 is an executive jet that seats six, and it has a doorway height of 51.6 in.

- a. What percentage of adult men can fit through the door without bending?
- b. What percentage of adult women can fit through the door without bending?