

For 1–5, express the **68-95-99.7 Property** in terms of a normal distribution with the following parameters:

1. 68%, mean $\mu = 25$ and standard deviation $\sigma = 3$
2. 68%, mean $\mu = 300$ and standard deviation $\sigma = 50$
3. 95%, mean $\mu = 75$ and standard deviation $\sigma = 5$
4. 95%, mean $\mu = 4.5$ and standard deviation $\sigma = 0.2$
5. 99.7%, mean $\mu = 0$ and standard deviation $\sigma = 1$

For 6–10, consider the normal random variable X with mean $\mu = 75$ and standard deviation $\sigma = 5$.

6. Find the probability that X assumes a value within one standard deviation of $\mu = 75$.
7. Find the probability that X assumes a value within two standard deviations of $\mu = 75$.
8. Find the probability that X assumes a value more than one standard deviation above $\mu = 75$.
9. Find the probability that X assumes a value more than two standard deviations below $\mu = 75$.
10. Find the probability that X assumes a value more than three standard deviations away from $\mu = 75$.

For 11–15, find the indicated probabilities for the normal random variable X with mean $\mu = 300$ and standard deviation $\sigma = 20$.

11. $P(260 < X < 340)$

12. $P(240 < X < 360)$

13. $1 - P(260 < X < 340)$

14. $P(X < 300)$

15. $P(X > 300)$

For 15–20, find the indicated probabilities for the normal random variable X with mean $\mu = 0$ and standard deviation $\sigma = 1$.

16. $P(-1 < X < 1)$

17. $P(-2 < X < 2)$

18. $P(-3 < X < 3)$

19. $P(X < 0)$

20. $P(X > 0)$