

$$1. \mu = 527, \sigma = 112, x = 500$$

$$P(X > 500) = P\left(Z > \frac{500 - 527}{112}\right)$$

$$= P(Z > -0.24) = 1 - P(Z < -0.24)$$

$$= 1 - 0.4052 = 0.5948$$

$$3. \mu = 4300, \sigma = 750$$

$$P(2500 \leq X \leq 4200)$$

$$P\left(\frac{2500 - 4300}{750} \leq Z \leq \frac{4200 - 4300}{750}\right)$$

$$P(-2.4 \leq Z \leq -0.13) = P(Z \leq -0.13) - P(Z \leq -2.4)$$

$$= 0.4483 - 0.0082$$

$$= 0.4401$$

$$2. \mu = 266, \sigma = 16$$

$$P(240 \leq X \leq 270)$$

$$P\left(\frac{240 - 266}{16} \leq Z \leq \frac{270 - 266}{16}\right)$$

$$P(-1.63 \leq Z \leq 0.25) = P(Z \leq 0.25) - P(Z \leq -1.63)$$

$$= 0.5987 - 0.0516$$

$$= 0.5471$$

$$4. \mu = 7.11, \sigma = 1.37, x = 5$$

$$P(X < 5) = P\left(Z < \frac{5 - 7.11}{1.37}\right)$$

$$= P(Z < -1.54) = 0.0618$$

$$5. \mu = 500, \sigma = 61, x = 561$$

$$P(X > 561) = P\left(Z > \frac{561 - 500}{61}\right) = P(Z > 1)$$

$$P(Z > 1) = 1 - P(Z < 1) = 1 - 0.8413$$

$$= 0.1587$$

$$6. \mu = 72 \quad \sigma = 7 \quad x = 65$$

$$P(x > 65) = P\left(z > \frac{65 - 72}{7}\right)$$

$$= P(z > -1) = 1 - P(z < -1)$$

$$= 1 - 0.1587$$

$$= 0.8413$$

$$= 84.13\%$$

$$7. \mu = 4.59, \sigma = 0.1, n = 30, \bar{x} = 4.55$$

$$P(\bar{x} < 4.55) = P\left(z < \frac{4.55 - 4.59}{\frac{0.1}{\sqrt{30}}}\right)$$

$$= P(z < -2.19) = 0.0143$$

$$8. \mu = 58.9, \sigma = 3.64, n = 44, \bar{x} = 60$$

$$P(\bar{x} > 60) = P\left(z > \frac{60 - 58.9}{\frac{3.64}{\sqrt{44}}}\right)$$

$$= P(z > 2) = 1 - P(z < 2)$$

$$= 1 - 0.9772$$

$$= 0.0228$$

$$9. \mu = 8.5, \sigma = 2.5, n = 36$$

$$(a) P(\bar{x} < 6) = P\left(z < \frac{6 - 8.5}{\frac{2.5}{\sqrt{36}}}\right) = P(z < -6)$$

$$(b) P(\bar{x} > 9) = P\left(z > \frac{9 - 8.5}{\frac{2.5}{\sqrt{36}}}\right) = P(z > 1.2)$$

$$= 1 - P(z < 1.2)$$

$$= 1 - 0.8849 = 0.1151$$

$$(c) P(7.5 \leq \bar{x} \leq 8.2)$$

$$= P\left(\frac{7.5 - 8.5}{\frac{2.5}{\sqrt{36}}} \leq z \leq \frac{8.2 - 8.5}{\frac{2.5}{\sqrt{36}}}\right)$$

$$= P(-2.4 \leq z \leq -0.72) = P(z \leq -0.72) - P(z \leq -2.4)$$

$$= 0.2358 - 0.0082$$

$$= 0.2276$$