

Lesson 5 At Home Problem Solutions

Problem # 5.5 $P(Z < 2.03) = .9788$

Problem # 5.6 $P(-0.91 < Z < -0.33) = P(Z < -.33) - P(Z < -.91) = .3707 - .1814 = .1893$

Problem # 5.8 $P(Z < 1.55) = .9394$

Problem # 5.9 Find $z_{.02} = P(Z < z_{.02}) = 1 - .02 = .9800$; $z_{.02} = 2.05$

Problem # 5.12

$$P(800 < X < 1100) = P\left(\frac{800 - 1,000}{250} < \frac{X - \mu}{\sigma} < \frac{1,100 - 1,000}{250}\right) = P(-.8 < Z < .4)$$

$$= P(Z < .4) - P(Z < -.8) = .6554 - .2119 = .4435$$

Problem # 5.14

$$P(Z < -z_{.08}) = .0800; -z_{.08} = -1.41; -z_{.08} = \frac{x - \mu}{\sigma}; -1.41 = \frac{x - 50}{8}; x = 38.72$$

Problem # 5-17

$$P(X > 8) = P\left(\frac{X - \mu}{\sigma} > \frac{8 - 7.2}{.667}\right) = P(Z > 1.20) = 1 - P(Z < 1.20) = 1 - .8849 = .1151$$

Problem # 5.20

$$P(x > 150,000) = P\left(\frac{X - \mu}{\sigma} < \frac{150,000 - 99,700}{30,000}\right) = P(Z > 1.68) = 1 - P(Z < 1.68) = 1 - .9535 = .0465$$

Problem # 5-21

$$P(Z < z_{.06}) = 1 - .06 = .9400; z_{.06} = 1.55; z_{.06} = \frac{ROP - \mu}{\sigma}; 1.55 = \frac{ROP - 200}{30}; ROP = 246.5$$

(rounded to 247)