

a) $\mu = 62.5$ $\sigma = 12.4$

a) $P(x \leq 40.1)$

$z = \frac{x - \mu}{\sigma} = \frac{40.1 - 62.5}{12.4} = -1.80$

$P(z = -1.8) = 1 - P(z \leq 1.8) = 1 - 0.9641 = 0.0359$

b) $P(z \geq 0.93)$

$z = \frac{x - \mu}{\sigma} = \frac{61.5 - 62.5}{12.4} = -0.8$

$P(z \geq 0.9) = 1 - P(z \leq 0.9) = 1 - 0.8159 = 0.1841$

c) $P(55.0 \leq x \leq 75.0)$

$z = \frac{55.0 - 62.5}{12.4} = -0.6$

$z = \frac{75.0 - 62.5}{12.4} = 1.0$

$P(0.20 \leq z \leq 1.00)$

$= P(z \leq 1.00) - P(z \leq 0.20)$

$= 0.8413 - 0.5793 = 0.262$

d) $P(59.4 \leq x \leq 69.4)$

$z = \frac{59.4 - 62.5}{12.4} = -0.41$

$z = \frac{69.4 - 62.5}{12.4} = 0.56$

$P(-0.41 \leq z \leq 0.41)$

$P(z \leq 0.41) - P(z \leq -0.41) = P(z \leq 0.41) - [1 - P(z \leq 0.41)]$

$0.6591 - [1 - 0.6591] = 0.3182$

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$\mu = 55$ $\sigma = 4$ $x = 40$ $x = 55.0$

$P(40 \leq x \leq 55.0)$

$z = \frac{40 - 55}{4} = -1.5$

$z = \frac{55.0 - 55}{4} = 1.25$

$P(-1.5 \leq z \leq 1.25)$

$P(z \leq 1.25) - P(z \leq -1.5) = P(z \leq 1.25) - [1 - P(z \leq 1.5)]$

$0.8944 - [1 - 0.9332] = 0.8276$

b) $\mu = 50$ $\sigma = 4$ $P(x \geq 40)$

$z = \frac{x - \mu}{\sigma} = \frac{40 - 50}{4} = -1.25$

$P(z \geq 1.25) = 1 - P(z \leq 1.25) = 1 - 0.8944 = 0.1056$

a) $P(1.20 \leq z \leq 1.33)$

$\Phi(1.33) - \Phi(1.2)$

$0.9082 - 0.8849 = 0.0233$

b) $P(-1.30 < z < 1.20)$

$P(z \leq 1.20) - P(z \leq -1.30)$

$P(z \leq 1.20) - [1 - P(z \leq 1.30)]$

$0.8849 - 0.0446 = 0.8403$

c) $P(-1.30 < z < -1.00)$

$\Phi(-1.00) - \Phi(-1.30)$

$0.7580 - 0.0446 = 0.7134$

a) $P(z \leq x) = 0.70$

$x = 0.53$

b) $P(z > x) = 0.20$

$x = 0.84$

c) $P(z < x) = 0.25$

$x = -0.67$

a) $\mu = 80$ $\sigma = 100$ $P(x > 60)$

$z = \frac{x - \mu}{\sigma} = \frac{60 - 80}{100} = -0.2$

$P(z > -0.2) = 0.5793$