HW8 reference answers

6.9

(a) $z = (15 - 18)/2.5 = -1.2$; $P(X < 15) = P(Z < -1.2) = 0.1151$.

(b) $z = -0.76$, $k = (2.5)(-0.76) + 18 = 16.1$.

(c) $z = 0.91$, $k = (2.5)(0.91) + 18 = 20.275$.

(d) $z_1 = (17 - 18)/2.5 = -0.4$, $z_2 = (21 - 18)/2.5 = 1.2$;
$P(17 < X < 21) = P(-0.4 < Z < 1.2) = 0.8849 - 0.3446 = 0.5403$.

6.13

(a) $z = (32 - 40)/6.3 = -1.27$; $P(X > 32) = P(Z > -1.27) = 1 - 0.1020 = 0.8980$.

(b) $z = (28 - 40)/6.3 = -1.90$, $P(X < 28) = P(Z < -1.90) = 0.0287$.

(c) $z_1 = (37 - 40)/6.3 = -0.48$, $z_2 = (49 - 40)/6.3 = 1.43$;
So, $P(37 < X < 49) = P(-0.48 < Z < 1.43) = 0.9236 - 0.3156 = 0.6080$.

6.19

$\mu = \$15.90$ and $\sigma = \$1.50$.

(a) 51%, since $P(13.75 < X < 16.22) = P\left(\frac{13.745-15.9}{1.5} < Z < \frac{16.225-15.9}{1.5}\right)$
$= P(-1.437 < Z < 0.217) = 0.5871 - 0.0749 = 0.5122$.

(b) \$18.36, since $P(Z > 1.645) = 0.05$; $x = (1.645)(1.50) + 15.90 + 0.005 = 18.37$.