4. a. $Q^* = \sqrt{\frac{2DC_o}{C_h}} = \sqrt{\frac{2(12,000)(25)}{(0.20)(2.50)}} = 1095.45$

b. $r = dm = \frac{1200}{250}(5) = 240$

c. $T = \frac{250Q^*}{D} = \frac{250(1095.45)}{12,000} = 22.82$

d. Holding $\frac{1}{2}QC_h = \frac{1}{2}(1095.45)(0.20)(2.50) = \$278.86$

Ordering $\frac{D}{Q}C_o = \frac{12,000}{1095.45}(25) = 273.86$

Total Cost = $547.72

5. For $Q = 1000$

$TC = 1/2(1000)(0.20)(2.50) + (12,000/1000)(25) = 250 + 300 = \$550$

The cost increase of using $Q = 1000$ is only $550 - $547.72 = $2.28. Thus the order quantity of 1000 is acceptable.

$r = dm = \frac{12,000}{250}(50) = 240$ (Unchanged)

6. a. $D = 12 \times 20 = 240$

$Q^* = \sqrt{\frac{2DC_o}{C_h}} = \sqrt{\frac{2(240)(70)}{(0.22)(600)}} = 15.95$

b. Holding $\frac{1}{2}QC_h = \frac{1}{2}(15.95)(0.22)(600) = \$1,053.00$

Ordering $\frac{D}{Q}C_o = \frac{240}{15.95}(70) = \$1,053.00$

Total Cost = $2,106.00

c. $D / Q = 240/15.95 = 15.04$

d. $T = \frac{250Q^*}{D} = \frac{250(240)}{15.95} = 16.62$ days