1.

(1): $$\text{Avg. FT} = \frac{\text{Inv}}{\text{Flow Rate}} = \frac{3643}{4165\text{/1 year}} = 32 \text{ days}$$

(2): cost for Costco = Avg. FT x Carrying rate x unit cost

$$= 32 \times 0.4 \times 50 = \$1.75$$

cost for Walmart = Avg. FT x carrying rate x unit cost

$$= \frac{2944\text{/}7}{215493} \text{ yr} \times 40\% \times 50 = \$2.73.$$

Lower for about: $2.73 - 1.75 = 0.98$

2:

(1) $D = 1000 \times 12 = 12000$ units

$K = \$25$ per order.

item cost $= \$2.5$

$C_h = 25\% \times 2.5 = \$0.625$ per annum

$$Q = \sqrt{\frac{2KD}{C_h}} = 980 \text{ units}$$

$$R = \left(\frac{12000}{365}\right) \times 5 = 165 \text{ units}$$

(2):

Annual holding cost = $(Q/2) * C_h$.

$= \$306.25$.

Annual ordering cost $= (D/Q) * k$

$= \$306.12$.

Annual purchasing cost $= D * C$

$= 12000 \times 2.5 = \$30000$

(3): Order Circle = Q / Daily average demand

$= 980 / (12000/365) = 29.8$ days

(4):

$$R = D * L = 1000 \times \frac{12}{365} \times 5$$

$$= 165 \text{ units}$$

(5):

$Q = 1000$

Annual holding cost $= (Q/2) * C_h$

$= (1000/2) * 0.625 = \$312.5$

Annual ordering cost $= \frac{DK}{Q} = \$300$

∴ the total relevant annual cost

$= 312.5 + 300 = \$612.5$

For $Q = 780$, it was $306.25 + 306.12 = \$612.37$

∴ difference: $612.5 - 612.37 = \$0.13$

part 4 is a little more expensive than part 1.