Practice Problem 1:

a. The order quantity is

$$EOQ = \sqrt{\frac{2KR}{h}} = \sqrt{\frac{2\ (\$15)\ (5{,}000)}{\$4}}$$

$$= \sqrt{37{,}500} = 193.65 \text{ or } 194 \text{ drills}$$

b. The total annual cost is

$$C = \frac{Q}{2}(h) + \frac{R}{Q}(K) = \frac{194}{2}(\$4) + \frac{5{,}000}{194}(\$15) = \$774.60$$

Practice Problem 2:

R = 3,000/year, K = $200/order, h = $20/unit/year. EQQ = 245 units, total cost = $4,899.

Practice Problem 3:

(a)

	A	B	C	D	E	F	G	H	I	J	K
1	**EOQ Model with Quantity Discounts (Analytical Version)**										
2											
3			**Data**								
4		D =	365	(demand/year)							
5		K =	$5	(setup cost)							
6		I =	20%	(inventory holding cost rate)							
7		N =	3	(number of discount categories							
8											
9								Annual	Annual	Annual	Total
10				Range of order quantities				Purchase	Setup	Holding	Variable
11		Category	Price	Lower Limit	Upper Limit	EOQ	Q*	Cost	Cost	Cost	Cost
12		1	$4.00	1	49	68	49	$1,460	$37	$20	$1,517
13		2	$3.90	50	99	68	68	$1,424	$27	$27	$1,477
14		3	$3.80	100	10000000	69	100	$1,387	$18	$38	$1,443
15											
16											
17											
18					**Results**						
19				Optimal Q	100						
20											
21				Total Variable Cost	$1,443						

(b) Orders placed per year = R/Q = 365/100 = 3.65.

Time interval between orders = Q/R = 100/365 years = 100 days.

Practice Problem 4:

a)

	A	B	C	D	E	F	G	H	I	J	K
1	**EOQ Model with Quantity Discounts (Analytical Version)**										
2											
3			**Data**								
4		D =	400	(demand/year)							
5		K =	$80	(setup cost)							
6		I =	20%	(inventory holding cost rate)							
7		N =	3	(number of discount categorie							
8											
9								Annual	Annual	Annual	Total
10				Range of order quantities				Purchase	Setup	Holding	Variable
11		Category	Price	Lower Limit	Upper Limit	EOQ	Q*	Cost	Cost	Cost	Cost
12		1	$8.50	1	99	194	99	$3,400	$323	$84	$3,807
13		2	$8.00	100	999	200	200	$3,200	$160	$160	$3,520
14		3	$7.50	1000	10000000	207	1000	$3,000	$32	$750	$3,782
15											
16											
17											
18					**Results**						
19				Optimal Q	200						
20											
21				Total Variable Cost	$3,520						

b) Orders placed per year = R/Q = 400/200 = 2.

Time interval between orders = Q/R = 200/400 = 0.5 years or 6 months.