

Qlt 1 task 5:  
interpretating and  
communicating  
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## QLT 1 Task 5: Interpreting and communicating quantitative Information

Inventory is a basic requirement of a school. Every teacher needs books, pens, pencils, chart sheets and such materials to impart education. The market offers many supplies of the inventory. To entice their customers the suppliers provide many forms of discounts. The teachers have to choose the most profitable offer from these offers. The offers can be categorized into two types: Offer A, the supplier provides a constant discount per dollar. Offer B, the supplier provides a discount above a minimum amount spent. The discount of offer B is assumed to be higher than discount of offer A. The teacher has to choose between the two offers. The choice incidentally depends totally on the amount the teacher can spend. Her requirements may be limited to get a few chart books or can be huge annual budget including books, papers and sorts. Offer A is apt for small budgeted purchases while offer B would fetch more savings for large spending. In between, there will be a particular budget (money to be spent) when offer A and offer B would fetch same net discount. Let's solve the offers mathematically. The discount is defined as  $D = (MP - SP) / MP$ , (1) where, D is the Discount earned, MP is the Marked Price, SP is the Selling Price. In Offer A, the selling price can be calculated as  $SP = MP - DP * MP / 100$ , (2) where, DP is discount percentage. Equation (2) is the linear equation which can be used to calculate selling price of the products. Then Equation (1) can be used to calculate discount.  $D = MP - MP * (100 - DP)$  (3) Offer B is a little more complex. It has two scenarios: Offer B  $\Rightarrow DP = 0$ , if  $MP < y$  or  $MP > y$  where, y is the lower limit of the offer. In Offer B, the selling price can be calculated as

When  $MP_y$ ,  $SP = MP - DP \cdot (MP - y) / 100$ , (4) Equation (4) is the linear equation which can be used to calculate selling price of the products. Then Equation (1) can be used to calculate discount.  $D = MP - y - (MP - y) \cdot (100 - DP)$ . (5) Equation (3) and (5) are the two equations that would calculate discounts of both scenarios. Comparing the two equations we can see that the only difference between the two equations is the subtraction of variable  $y$ . Since, DP of offer B is greater than DP of offer A, discount given by offer B will exceed offer given by offer A after a certain spending budget. We can calculate the MP where the two discounts will be equal by equating discounts of equation (3) and (5).  $MP - MP \cdot (100 - DP_a) = MP - y - (MP - y) \cdot (100 - DP_b)$ , where  $DP_a$  and  $DP_b$  are DP of the two offers.  $MP \cdot 100 - MP \cdot DP_a = y + MP \cdot 100 - y \cdot 100 - MP \cdot DP_b + y \cdot DP_b$  (equating discounts)  $MP \cdot (DP_b - DP_a) = y - y \cdot (DP_b - 100)$  (Bringing all MP terms on the left side)  $MP = y - y \cdot (DP_b - 100) / (DP_b - DP_a)$ . (6) Equation (6) calculates the marked price at which both the offers provide equal discounts. The graph shown below is a plot between discount and marked price of the two offers.

Offer A: 5% discount on every dollar the teacher spends. Offer B: 10% discount on every dollar the teacher spends over \$20. The intersection point of the two graphs (as can be calculated from the equation (6)) is \$40. Money Spent (\$) Discount (5%) at Company A (\$) Discount (10%) at Company B

Money Spent (\$)	Discount (5%) at Company A (%)	Discount (10%) at Company B (%)
0	0	0
20	1	0
25	1.25	0.5
30	1.5	1
35	1.75	1.5
40	2	2
50	2.5	3
70	3.5	5
100	5	8
200	10	18
500	25	48
1000	50	98

The graph and the table shows that the teacher should opt for offer A till her expenditure is limited i. e. below \$40. For a big budget she should apply for offer B i. e. when she has to buy novels for the class. For very large budget offer B is much more beneficial than offer A. At \$40 budget bill she can

choose any offer (I would suggest offer B to maintain a long term relationship).