***PROFIT AND LOSS***

***Summary:***

***1. (i)*** *Cost price is the price at which an item is purchased*

***(ii)*** *Selling price is the price at which an item is sold*

***2.*** *Selling above the cost price is a gain. Thus* ***profit =*** *selling price − cost price*

***3.*** *Selling below the cost price is a loss. Thus* ***loss =*** *cost price − selling price*

***4. (i) Percentage profit =***



***(ii) Percentage loss =***



***4. (i)*** *A profit of* ***20%*** *means the selling price is* ***120%*** *of the cost price*

***(ii)*** *A loss of* ***20%*** *means the selling price is* ***80%*** *of the cost price*

***EXAMPLES:***

***1.*** *A trader bought a radio at* ***Shs 16,000*** *and sold it at* ***Shs 20,000.*** *Find his****:******(i)*** *profits*

***(ii)*** *percentage profit*

***Soln:***

***(i)*** *profits = SP− CP*

***(ii)*** *percentage profit =*



***2.*** *A book is bought at* ***Shs 1,500*** *and sold at a profit of* ***40%.*** *Find the selling price* ***Soln:***

***SP =***



***3.*** *A trader sold an item at* ***Shs 54,000*** *and made a profit of* ***20%.*** *Find the cost price*

***Soln:***

***SP =***



***4.*** *A trader sold an item at a profit of* ***5%.*** *If his profit is* ***Shs 1500,*** *find his****:***

***(i)*** *cost price*

***(ii)*** *selling price*

***Soln:***

***(i)*** *percentage profit =*



*5 =*



***CP = 30,000***

***(ii) SP =*** *30,000 + 1,500* ***= 31,500***

***OR SP =***



***5.*** *The selling price of* ***12*** *eggs is equal to the cost price of* ***15*** *eggs****.*** *Find the percentage profit.*

***Soln:***

*If 12SP = 15CP*

***⇒ SP =*** *1⋅25CP*

*Percentage profit =*



***5.*** *By selling a book at* ***Shs 4,800,*** *a trader would gain* ***20%.*** *Find how much he must sell it in order to gain* ***30%.***

***Soln:***

***Soln:***

*SP* ***=***



*4,800 =*



***CP = 4,000***

*SP* ***=***



*SP* ***=***



***SP = 5,200***

***6.*** *A trader bought a car at* ***Shs 6 million*** *and sold it at* ***Shs 4⋅8 million.*** *Find his****:******(i)*** *loss*

***(ii)*** *percentage loss*

***Soln:***

***(i)*** *loss = CP− SP*

***(ii)*** *percentage loss =*



***7.*** *A plot of land is bought at* ***Shs 20 million*** *and sold at a loss of* ***20%.*** *Find the selling price*

***Soln:***

***SP =***



***8.*** *A trader sold an item at* ***Shs 7,000*** *and made a loss of Find the cost price*



***Soln:***

***SP =***



***9.*** *A trader sold an item at* ***Shs 3⋅6 million*** *and made a loss of* ***25%.*** *Find the profit he would make if he had sold it at* ***Shs 6 million***

***Soln:***

***SP =***



*3⋅6 =*



***CP = 4⋅8***

***Profit = 6*** *− 4⋅8* ***= 1⋅2m***

***10.*** *By selling items* ***P*** *and* ***Q*** *each at* ***Shs 3,300,*** *a profit of* ***10%*** *and a loss* ***34%*** *were respectively made on the items****.*** *Find the percentage loss on both items*

***Soln:***

***Item P:***

*SP* ***=***



*3,300 =*



***CP = 3,000***

***Item Q:***

*SP* ***=***



*3,300 =*



***CP = 5,000***

***Total CP*** *= 3000 + 5000 =* ***8,000***

***Total SP*** *= 3,300 + 3,300 =* ***6,600***

*Total percentage loss =*



*Total percentage loss =*



***EER:***

***1.*** *A radio is bought at* ***Shs 15,000*** *and sold at* ***Shs 16,200.*** *Find the percentage profit*

***2.*** *A trader sold an item at* ***Shs 4⋅8 million*** *and made a profit of* ***15%.*** *Find the cost price of the item*

***3.*** *A trader buys an old radio at* ***Shs 65,000*** *and spends* ***Shs 15,000*** *on its repair****.*** *If he sells it at Shs* ***100,000,*** *find his percentage profit.*

***4.*** *A carpenter incurs a loss of* ***20%*** *by selling a chair at* ***Shs 240,000.*** *Find the percentage he would gain by selling it at* ***Shs 360,000.***

***5.*** *By selling an item at* ***Shs 2400,*** *a trader would gain* ***4%.*** *Find how much he must sell it in order to gain* ***12%.***

***6.*** *The selling price of* ***5*** *eggs is equal to the cost price of* ***7*** *eggs****.*** *Find the percentage profit.*

***7.*** *The cost price of* ***17*** *books is equal to the selling price of* ***20*** *books****.*** *Find the percentage loss.*

***8.*** *The selling price of* ***n*** *eggs is equal to the cost price of* ***27*** *eggs****.*** *If there is a profit of* ***35%,*** *find the value of* ***n.***

***9.*** *The selling price of* ***n*** *pens is equal to the cost price of* ***12*** *pens****.*** *If there is a loss of* ***20%,*** *find the value of* ***n.***

***10.*** *A trader incurs a loss of* ***15%*** *by selling an item at* ***Shs 18,700.*** *Find how much he must sell it in order to make a profit of* ***15%.***

***11.*** *A trader sold two items at* ***Shs 18,000*** *each. On one he gained* ***20%*** *and the other he lost* ***20%.*** *Find the percentage loss on both items*

***12.*** *A trader bought two plates at* ***Shs 2,500*** *each. If he sells one at a profit of* ***5%,*** *then find how much he should sell the other so that he make a profit of* ***20%*** *on both plates****.***

***13.*** *A trader bought* ***120*** *books at a rate of* ***Shs 2,000*** *per book****.*** *He sold* ***72*** *of them at a rate of* ***Shs 2,500*** *per book and the remaining at a rate of* ***Shs 2,000*** *per book. Find his percentage profit*

***14.*** *An item is usually sold at a profit of* ***80%.*** *If its cost price later went up by* ***20%*** *and its selling price remained the same****,*** *find by how much is the percentage profit reduced*

***15.*** *A car dealer buys a car at* ***Shs 1,250,000*** *and hire it for* ***25*** *weeks at a charge of* ***Shs 3,500*** *per day****.*** *Insurance costs* ***Shs 33,700*** *during the entire period****,*** *at the end of which he sells it at* ***Shs 750,000.*** *Calculate the profit that he makes on the transaction*

***16.*** *A trader bought an item at* ***Shs 5,500*** *and sold it at* ***30%*** *more than the buying price. Find the trader’s****:***

***(i)*** *selling price*

***(ii)*** *profit*

***DISCOUNTS***

***Summary:***

***1. (i)*** *Discount is a reduction in the selling price of an item*

***(ii)******Sale price =*** *original price − discount*

***4. (i) Percentage discount =***



***(ii)*** *A discount of* ***20%*** *means the sale price is* ***80%*** *of the original price*

***EXAMPLES:***

***1.*** *An item costing* ***Shs 16,000*** *was sold at* ***Shs 12,000.*** *Find the****:******(i)*** *cash value of the discount*

***(ii)*** *percentage discount*

***Soln:***

***(i)*** *Discount cash value = 16,000− 12,000* ***=******4,000***

***(ii)*** *percentage discount =*



***2.*** *An item costing* ***Shs 60,000*** *was sold at a discount of* ***20%******.*** *Find****:***

***(i)*** *how much was paid for it*

***(ii)*** *cash value of the discount*

***Soln:***

***(i)*** *Actual cost price =*



***(ii)*** *Discount cash value =*



***3.*** *The cost of an item is* ***Shs 4,500*** *after a discount of* ***10%.*** *Find its original cost price*

***Soln:***



***∴ CP = 5,000***

***4.*** *An item costing* ***Shs 50,000*** *was sold at two successive discounts of* ***20%*** *and* ***5%.*** *Find****:***

***(i)*** *how much was paid for it*

***(ii)*** *the total percentage actual discount*

***Soln:***

***(i)******1st*** *cost price =*



***∴*** *Final cost price =*



***(ii)*** *Actual percentage discount =*



***5.*** *Find a single percentage discount equivalent to successive discounts of* ***20%,*** ***10%*** *and* ***5%.***

***Soln:***

***1st*** *selling price =*



***2nd***  *selling price =*



***∴*** *Final selling price =*



*Actual percentage discount =*



***6.*** *The marked price of an item is* ***Shs 240,000.*** *A trader sold it to his customer*

*at a discount of* ***10%*** *and still made a profit of* ***20%.*** *Find the****:***

***(i)*** *price at which the trader had bought the item*

***(ii)*** *percentage profit the trader would have made if no discount was allowed*

***Soln:***

***(i)*** *If discount is* ***10%***

***⇒ SP*** *=*



*If profit is* ***20%***

***⇒***



***∴ CP = 180,000***

***(ii)*** *Percentage profit =*



***7.*** *A trader buys a bag at* ***Shs 60,000*** *and marks it for sale at a price that gives a profit of* ***20%*** *when he allows a discount of* ***10%*** *on its purchase****.*** *Find the marked price of the bag*

***Soln:***

*If profit is* ***20%***

***⇒ SP*** *=*



*If discount is* ***10%***

***⇒***



***∴ MP = 80,000***

***EER:***

***1.*** *The cost of an item is* ***Shs 4,800*** *after a discount of* ***20%.*** *Find its original cost price*

***2.*** *A bicycle priced* ***Shs 200,000*** *was sold at a discount of* ***15%.*** *Find****:***

***(i)*** *how much was paid for it*

***(ii)*** *cash value of the discount*

***3.*** *Find the percentage discount allowed when an item costing* ***Shs 60,000*** *is sold at* ***Shs 48,000***

***4.*** *Find a single percentage discount equivalent to successive discounts of* ***20%*** *and* ***15%.***

***5.*** *An item costing* ***Shs 80,000*** *was sold at successive discounts of* ***10%*** *and* ***5%.*** *Find its final cost price after the discounts*

***6.*** *The marked price of a radio is* ***Sh. 950,000****. A trader allows a discount of*

***10%*** *but still makes a profit of* ***12%.*** *Find the****:***

***(i)*** *price at which the trader had bought the radio*

***(ii)*** *percentage profit the trader would have made if no discount was allowed*

***7.*** *A trader buys a bag at* ***Shs 40,000*** *and marks it for sale at a price that gives a profit of* ***20%*** *when he allows a discount of* ***4%*** *on its purchase****.*** *Find the marked price of the bag*

***8.*** *A man bought a shirt at* ***20%*** *discount. If he paid* ***Shs 20,000,*** *find the original price of the shirt*

***9.*** *The price of an article is* ***Shs 240,000.*** *If a discount of* ***12%*** *is given****,*** *find the selling price of the article*

***HIRE PURCHASE***

***Summary:***

***1.*** *Hire purchase is the instalment payment for an item over time*

***2.*** *The hire purchase price includes interest charges. Thus it is higher than the cash price of an item*

***EXAMPLES:***

***1.*** *A radio whose cash price is* ***Shs 180,000*** *can also be bought on hire purchase by paying a deposit of* ***35%*** *of the cash value followed by* ***6*** *equal monthly instalments of* ***Shs 24,500.*** *Find the****:***

***(i)*** *hire purchase price of the radio*

***(ii)*** *extra amount paid over the cash price using hire purchase*

***Soln:***

***(i) Hire purchase price*** *=*



***(ii) Extra payment =*** *210,000 − 180,000* ***= 30,000***

***2.*** *The marked price of an item is* ***Shs 640,000.*** *A* ***5%*** *discount is offered on cash purchase. It can also be bought on hire purchase by paying a deposit of* ***40%*** *followed by* ***18*** *equal monthly instalments of* ***Shs 23,000.*** *Find how much is saved by paying cash than using hire purchase*

***Soln:***

***Cash price*** *=*



***Hire purchase price*** *=*



***∴ Savings =*** *670,000 − 608,000* ***= 62,000***

***3.*** *A motor company had the following advertisement****:***

|  |
| --- |
| ***GET YOURSELF A CAR CHEAPLY*** |
| ***CASH VALUE: Shs 24⋅5 MILLION***  ***CASH DISCOUNT: 8% OF THE CASH VALUE***  ***HIRE PURCHASE: DEPOSIT 60% OF THE CASH VALUE***  ***AND PAY 4 MILLION MONTHLY FOR***  ***3 MONTHS*** |

*Calculate****:***

***(i)*** *how much is saved by paying cash than using hire purchase*

***(ii)*** *the percentage profit the trader made on hire purchase price if he*

*had bought it at* ***20%*** *below the cash price*

***Soln:***

***(i) Cash price*** *=*



***Hire purchase price*** *=*



***∴ Savings =*** *26⋅7− 22⋅54* ***= 4⋅16 million***

***(ii) Cost price*** *=*



***∴ Percentage profit*** *=*



***4.*** *The cash price of a radio is* ***Shs 200,000.*** *It can also be bought on hire purchase by paying a deposit of* ***45%*** *followed by* ***5*** *equal monthly instalments****.*** *If the total hire purchase price is* ***Shs 240,000,*** *find the amount of each monthly instalment*

***Soln:***

***Hire purchase price = deposit + total instalments***



***∴ P******= 30,000***

***EER:***

***1.*** *An item whose cash price is* ***Shs 60,000*** *can also be bought on hire purchase by paying a deposit of* ***Shs 20,000*** *followed by* ***4*** *equal weekly instalments of* ***Shs 13,000.*** *Find how much is saved by paying cash than using hire purchase*

***2.*** *The marked price of a car is* ***Shs 6⋅4 million.*** *A* ***7⋅5%*** *discount is offered on cash purchase****.*** *It can also be bought on hire purchase by paying* ***4*** *equal monthly instalments of* ***Shs 1⋅65 million.*** *Find how much is saved by paying cash than using hire purchase*

***3.*** *A radio whose cash price is* ***Shs 300,000*** *can also be bought on hire purchase by paying an extra charge of* ***Shs 60,000.*** *If* ***9*** *equal monthly instalments are to be made****,*** *find the amount of each monthly instalment*

***4.*** *A printer whose cash price* ***Sh. 800,000*** *can also be bought on hire purchase by paying a deposit of* ***Sh.260,000*** *and* ***18*** *equal monthly installments* ***.*** *If the hire purchase price is* ***45%*** *more than the cash price****,*** *find the amount of each monthly instalment*

***5.*** *The marked price of a car is* ***Shs 4⋅5 million.*** *A company bought it at a discount of* ***20%*** *for its employee****,*** *who was then to pay a deposit of* ***Shs 1⋅8 million*** *and* ***12*** *equal monthly instalments of* ***Shs 0⋅27 million.*** *Find the percentage profit the company got from the employee on the car*

***6.*** *A motor company had the following advertisement****:***

|  |
| --- |
| ***GET YOURSELF A CAR CHEAPLY*** |
| ***CASH VALUE: Shs 48⋅5 MILLION***  ***CASH DISCOUNT: 8% OF THE CASH VALUE***  ***HIRE PURCHASE: DEPOSIT 60% OF THE CASH VALUE***  ***AND PAY 7 MILLION MONTHLY FOR***  ***3 MONTHS*** |

***(a)*** *Calculate how much Tom would save by paying cash than using hire*

*purchase*

***(b)*** *Tom bought the car by hire purchase and then sold it at* ***35*** *million****.*** *Find the*

*percentage loss he made*

***7.*** *A Smartphone company had the following advertisement****:***

|  |
| --- |
| ***BUY A PHONE NOW WHILE STOCK LASTS*** |
| ***CASH VALUE: Shs 320, 000 LESS 15% DICOUNT***  ***HIRE PURCHASE: DEPOSIT 15% OF THE CASH VALUE***  ***AND PAY EITHER Shs 82, 000 MONTHLY***  ***FOR 4MONTHS OR Shs 25, 000 WEEKLY***  ***FOR 12WEEKS*** |

***(a)*** *Calculate the****:***

***(i)*** *saving made by paying cash than using monthly hire purchase.*

***(ii)*** *saving made by using weekly hire purchase than monthly hire purchase*

***(b)****If the trader had bought the phone at* ***20%*** *below cash value and sold it on monthly hire purchase****,*** *find the percentage profit he made*

***COMMISSION***

***Summary:***

***1.*** *Commission is a reward to the sales agent based on the level of sales*

***2.*** *Commission is usually a percentage of the value of goods sold*

***EXAMPLES:***

***1.*** *A sales agent gets a commission of* ***15%*** *for selling goods****.*** *Find his commission for sales worth* ***Shs 600,000***

***Soln:***

***Commission*** *=*



***2.*** *A salesman gets a commission of* ***15%*** *on the first* ***Shs 120,000*** *of his total sales and* ***20%*** *on the rest. Find his commission for sales worth* ***Shs 370,000***

***Soln:***

***Commission*** *=*



***3.*** *A salesman earns a basic salary of* ***Shs 100,000*** *per month and a commission of* ***8%*** *for sales above* ***Shs 150,000.*** *In a certain month****,*** *he allowed a discount of* ***5%*** *on the sold goods worth* ***Shs 400,000.*** *Calculate his income for that month*

***Soln:***

***Total sales*** *=*



***Earned Income*** *=*



***4.*** *A salesman earned* ***Shs 180,000*** *as commission for selling* ***10*** *shirts at* ***Shs 25,000*** *each****, 15*** *skirts at* ***Shs 10,000*** *each and* ***7*** *trousers at* ***Shs 50,000*** *each****.*** *Find his percentage rate of commission*

***Soln:***

***Total sales*** *= (10 × 25,000) + (15 × 10,000) + (7 × 50,000) = 750,000*

***Percentage commission*** *=*



***5.*** *A salesman gets a commission of* ***8%*** *for selling goods****.*** *Find his sales when he receives* ***Shs 40,000*** *as commission*

***Soln:***

*If required sales* ***= y***

***⇒***



***∴ y = 500,000***

***6.*** *A salesman gets a commission of* ***12%*** *on the first* ***Shs 150,000*** *of his total sales and* ***20%*** *on the rest. Find his sales when he receives* ***Shs 108,000*** *as commission*

***Soln:***

*If required sales* ***= y***

***⇒***



***∴ y = 600,000***

***7.*** *A sales agent earns a salary of* ***Shs 200,000*** *per month and a commission of* ***15%*** *for the sales in excess of* ***Shs 100,000.*** *In the first month****,*** *his total earning amounted to* ***Shs 320,000. (a)*** *Find his sales for that month* ***(b)*** *If the total sales in the second month increased by* ***20%,*** *find the commission he received in that month.* ***(c)*** *If the total sales in the third month decreased by* ***25%,*** *find his income for that month*

***Soln:***

***(i)*** *If required sales* ***= y***

***⇒***



***∴ y = 900,000***

***(ii) Total sales*** *=*



***Commission*** *=*



***(iii) Total sales*** *=*



***Earned Income*** *=*



***EER:***

***1.*** *A salesman earns a basic salary of* ***Shs 120,000*** *per month and a commission of* ***8%*** *of the month’s total sales****.*** *In a certain month****,*** *he sold goods worth* ***Shs 1,350,000.*** *Calculate his income for that month*

***2.*** *A salesman gets a commission of* ***4%*** *on the first* ***Shs 800,000*** *of his total sales and* ***5%*** *on the rest. Find his****:***

***(i)*** *commission for sales worth* ***Shs 1,500,000***

***(ii)*** *sales when he receives* ***Shs 172,000*** *as commission*

***3.*** *A bookshop employs two salesmen Bob and Tom****.*** *Bob earns a basic salary of* ***Shs 18,500*** *per week and a commission of* ***2⋅5%*** *on each book sold****.*** *Tom earns a basic salary of* ***Shs 24,000*** *per week and a commission of* ***5%*** *for sales in excess of* ***1,800*** *books****.*** *In a certain year****,*** *each sold a total of* ***15,000*** *books at* ***Shs 4,000*** *each****.***

***(i)*** *Find who earned more money and by how much* ***(****Assume* ***52*** *weeks in a year****)***

***(ii)*** *In another year****,*** *Bob earned a total of* ***Shs 2,962,000.*** *Find the number of books he sold that year*

***4.*** *A salesman gets commission as follows****:***

***10%*** *on the first* ***Shs 100,000***

***12%*** *on the next* ***Shs 400,000***

***15%*** *on the remainder*

*Find his****:***

***(i)*** *commission for sales worth* ***Shs 800,000***

***(ii)*** *sales when he receives* ***Shs 52,000*** *as commission*

***5.*** *A hawker sells cups at* ***Shs 500*** *each****.*** *He sold* ***50*** *cups in the first week****.*** *In the second week he sold* ***20%*** *more than in the first week****.*** *In the third week he sold* ***10%*** *more than in the second week****.*** *Each week he receives a commission of* ***8%*** *of the price of the first* ***20*** *cups sold****,*** *and 12% for any cups sold in excess of* ***20. (a)*** *Express the number of cups sold in the third week as a percentage of the number sold in the first week* ***(b)*** *Calculate the commission he received in the third week* ***(c)*** *If in the fourth week the hawker received* ***Shs 2,000*** *as commission****,*** *calculate the number of cups he sold in that week*

***CURRENCY EXCHANGE***

***Summary:***

***1.*** *The price of one currency relative to another is called currency exchange rate*

***2.*** *The rate at which the bank buys your foreign currency is called buying rate*

***3.*** *The rate at which the bank sells you foreign currency is called selling rate*

***4.*** *Currency conversion problems can be solved using a summary table and ratio theorem*

***EXAMPLES:***

***1.*** *A radio costs* ***£30.*** *Find its cost in dollars if* ***£1 = $1⋅6.***

***Soln:***

|  |  |  |
| --- | --- | --- |
| ***Pounds*** | *1* | *30* |
| ***Dollars*** | *1⋅6* |  |



***∴ x = $48***

***2.*** *Find how many dollars are worth* ***Ug Shs 21,000,*** *if* ***$1 = Ug Shs 3,500.***

***Soln:***

|  |  |  |
| --- | --- | --- |
| ***Dollars*** | *1* |  |
| ***Ug Shs*** | *3,500* | *21,000* |



***∴ x = $6***

***3.*** *Find how many pounds are worth* ***$600,*** *if* ***$1 = Ug Shs 1,900*** *and* ***£1= Ug Shs 5,700.***

***Soln:***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Dollars*** | *1* | *600* |  | ***Pounds*** | *1* | ***y*** |
| ***Ug Shs*** | *1,900* |  | ***Ug Shs*** | *5,700* |  |



***∴ x = Ug Shs 1,140,000***

*Also*



***∴ y = £200***

***4.*** *Find how many dollars are worth* ***K Shs 9,750,*** *if* ***1K Shs = 24 Ug Shs*** *and* ***$1= Ug Shs 1,950.***

***Soln:***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***K Shs*** | *1* | *9,750* |  | ***Dollars*** | *1* | ***y*** |
| ***Ug Shs*** | *24* |  | ***Ug Shs*** | *1,950* |  |



***∴ x = Ug Shs 234,000***

*Also*



***∴ y = $120***

***5.*** *Bank of Uganda buys and sells foreign currencies as follows****:***

|  |  |  |
| --- | --- | --- |
|  | ***Exchange rate*** | |
| ***Foreign currency*** | ***Buying*** | ***Selling*** |
| *1 Euro* ***(€)*** | *Shs 3,400* | *Shs 3,500* |
| *1 Pound sterling* ***(£)*** | *Shs 4,000* | *Shs 4,200* |

*A tourist arrived in Uganda with* ***1,300*** *Euros which he exchanged for Uganda shillings****.*** *During his stay he spent* ***Ug Shs 2,320,000*** *and converted the remainder in to pound sterling before he left****.*** *Calculate the amount he received on his departure*

***Soln:***

*The bank buys* ***1 Euro (€)*** *at* ***Shs 3,400***

|  |  |  |  |
| --- | --- | --- | --- |
| ***Euros*** | *1* | *1,300* |  |
| ***Ug Shs*** | *3,400* |  |



***∴ x = Ug Shs 4,420,000***

*Remainder = 4,420,000 − 2,320,000 =* ***2,100,000***

*The bank sells* ***1 pound (£)*** *at* ***Shs 4,200***

|  |  |  |  |
| --- | --- | --- | --- |
| ***Pound*** | *1* | ***y*** |  |
| ***Ug Shs*** | *4,200* | *2,100,000* |



***∴ y = £500***

***EER:***

***1.*** *Convert* ***£10*** *to Euros****,*** *if* ***£1 = € 1⋅12***

***2.*** *A Smartphone costs* ***24,000*** *Indian rupees****.*** *Find its cost in pound sterling if* ***£1 = 96 rupees***

***3.*** *A tourist exchanged* ***$1200*** *for Uganda shillings at a rate of* ***$1 = Ug Shs 3500.*** *Find the amount he received in Uganda currency*

***4.*** *A radio costs* ***Ug Shs 787,500.*** *Find its cost in pounds sterling****,*** *if* ***US $1 = Ug Shs 2500*** *and* ***£25 = US $ 35.***

***5.*** *A tourist exchanged* ***$900*** *for pound sterling at a rate of* ***£1 = $1⋅5.*** *Find the amount he received in pound sterling****,*** *if the bank charged him* ***5%*** *commission*

***6.*** *A tourist exchanged* ***$750*** *for Uganda shillings****.*** *He spent* ***Ug Shs 1,260,000*** *and converted the remainder in to pound sterling before he left****.*** *Find the amount he received on his departure****,*** *if* ***$1 = Ug Shs 3600*** *and* ***£1 = Ug Shs 4,800.***

***7.*** *Bank of Uganda buys and sells foreign currencies as follows****:***

|  |  |  |
| --- | --- | --- |
|  | ***Exchange rate*** | |
| ***Foreign currency*** | ***Buying*** | ***Selling*** |
| *1 US Dollar* ***($)*** | *Shs 2,900* | *Shs 3,000* |
| *1 Pound sterling* ***(£)*** | *Shs 4,650* | *Shs 4,700* |

*A tourist arrived in Uganda with* ***$4,500*** *which he exchanged for Uganda shillings****.*** *During his stay he spent* ***Ug Shs 10,230,000*** *and converted the remainder in to pound sterling before he left****.*** *Calculate the amount he received on his departure*

***8.*** *A tourist changed* ***$900*** *into Euros when the exchange rate was* ***€1 = $1⋅5.*** *He spent* ***€450*** *and received* ***$210*** *in exchange of the remainder****.*** *Find the exchange rate of this second transaction*

***9.*** *A tourist had* ***£ 8,000*** *when he visited Uganda. He changed all of it to Uganda shillings (Ug Shs) at a rate of* ***Shs 3200 per £ 1*** *while in Uganda, he spent* ***Ug Shs 7,200,000*** *and later exchanged the balance to pounds at a rate of* ***Ug Shs 4000 per £1****. How much did he get.*

***SIMPLE INTEREST***

***Summary:***

***1.*** *The amount borrowed or lent is called the principal*

***2.*** *The reward to the lender is called interest*

***3.*** *In solving simple interest problems****,*** *the following relations apply****:***

***(i)******Simple interest*** *=*



***(ii) Amount = principal + interest***

***EXAMPLES:***

***1.*** *Find the simple interest on* ***Shs 25,000*** *for* ***3*** *years at a rate of* ***8%*** *per annum*

***Soln:***



***2.****Find the amount to which* ***Shs 80,000*** *accumulates in* ***9*** *months at a simple interest rate of* ***15%*** *per annum*

***Soln:***

*If* ***A =*** *P + I****,***

***⇒***



***3.*** *Find the simple interest on* ***Shs 100,000*** *at a rate of* ***6%*** *per annum from* ***9th oct 2016*** *to* ***21st Dec 2016***

***Soln:***

***Hint:*** *In calculating interest on days****,*** *do not count the day when the money is lent out****,*** *but count the day when it is returned*

***No of days*** *= 22 (in Oct) + 30 (in Nov) + 21 (in Dec) =* ***73***



***4.*** *Find how long will it take for a sum of* ***Shs 80,000*** *to yield an interest of* ***Shs 12,000*** *at a rate of* ***5%*** *per annum simple interest*

***Soln:***

*If*



***⇒*** **

***∴ T = 3 years***

***5.*** *Find the principal that yields a simple interest of* ***Shs 27,000*** *in* ***9*** *years at a rate of* ***6%*** *per annum*

***Soln:***

*If*



***⇒***



***∴ P = Shs 50,000***

***6.*** *Find the principal that will amount to* ***Shs 147,200*** *in* ***6*** *years at a simple interest rate of* ***14%*** *per annum*

***Soln:***

*If* ***A = P + I,***

***⇒***



***∴ P = Shs 80,000***

***7.*** *A sum of* ***Shs 12,500*** *amounts to* ***Shs 15,500*** *in* ***4*** *years at the rate of simple interest. Find the rate of interest per annum*

***Soln:***

*If* ***A = P + I,***

***⇒***



***∴ R = 6%***

***8.*** *A man borrowed* ***Shs 15⋅6*** *million from a bank at a simple interest rate of* ***15%*** *per annum****.*** *He has to repay the loan within* ***2*** *years in equal weekly instalments****.*** *Calculate the****: (i)*** *interest he paid to the bank* ***(ii)*** *total amount to be paid* ***(iii)*** *amount he paid per week*

***Soln:***

***(i)***



***(ii)******A = P + I =*** *15⋅6 + 4⋅68* ***= 20⋅28 million***

***(iii)*** *Weekly payment* ***=***



***EER:***

***1.*** *Find the simple interest on* ***Shs 96,000*** *for* ***10*** *months at a rate of per annum*



***2.*** *A sum of* ***Shs 25,000*** *is invested for* ***3*** *years at a simple interest rate of* ***6%*** *per annum****.*** *Find the interest and amount received in that period*

***3.****Find the amount to which* ***Shs 60,000*** *accumulates in* ***4*** *years at a simple interest rate of* ***15%*** *per annum*

***4.*** *Tom deposited* ***Shs 8,000*** *which amounted to* ***Shs 9,200*** *after* ***3*** *years at simple interest****.*** *Find the rate of interest per annum*

***5.*** *Tom deposited* ***Shs 40,000*** *in a bank which offers a simple interest rate of* ***5%*** *per annum****.*** *Find how much interest he earned after* ***8*** *years*

***6.*** *A sum of money lent out at simple interest amounts to* ***Shs 84,000*** *in* ***10*** *years at a rate of* ***3%*** *per annum****.*** *Find the sum lent out*

***7.*** *A bank lent out* ***Shs 500,000*** *to Tom for* ***2*** *years and* ***Shs 300,000*** *to Bob for* ***4*** *years at the same rate of simple interest****.*** *If the total interest from both men amounted to* ***Shs 220,000,*** *find the rate of interest per annum*

***8.*** *Tom and Bob borrowed* ***Shs 30,000*** *and* ***Shs 35,000*** *respectively at the same rate of simple interest for* ***3*** *years. If Bob paid* ***Shs 1,500*** *more interest than Tom****,*** *find the rate of interest per annum*

***9.*** *Tom wants to buy a car which is priced at* ***Shs 6 million.*** *He deposits* ***Shs 2⋅4 million*** *and* ***15*** *months later his required to pay the rest on which his charged a simple interest rate of* ***20%*** *per annum****.*** *Find the total amount of money Tom will have to pay for the car*

***10.*** *A sum of money lent out at simple interest amounts to* ***Shs 62,000*** *after* ***4*** *years and to* ***Shs 77,000*** *after* ***9*** *years****.*** *Find the sum lent out and the rate of interest per annum*

***COMPOUND INTEREST***

***Summary:***

***1.*** *Compound interest is the interest earned on both the principal and on the interest previously earned*

***2.*** *In solving compound interest problems****,*** *the following relations apply****:***

***(i)***



***(ii) Compound Interest = Amount − principal***

***(iii)******The principal for the next period*** *=**Interest earned + principal*

***EXAMPLES:***

***1.*** *Find the amount and interest received on* ***Shs 600,000*** *invested for* ***2*** *years at a compound interest rate of* ***15%*** *per annum****.***

***Soln:***

*If*



***⇒***



*If* ***C⋅ I = A − P***

***⇒ C⋅ I =*** *793,500 − 600,000* ***= 193,500***

***METHOD 2: (STEP BY STEP METHOD)***

*First year amount A*



*Second year Amount A*



*If* ***C⋅ I = A − P***

***⇒ C⋅ I =*** *793,500 − 600,000* ***= 193,500***

***METHOD 3: (STEP BY STEP METHOD)***

*First year interest*



*First year amount* ***A*** *= 600,000 + 90,000 = 690,000*

*Second year interest*



*Second year Amount* ***A =*** *690,000 + 103,500* ***= 793,500***

*If* ***C⋅ I = A − P***

***⇒ C⋅ I =*** *793,500 − 600,000* ***= 193,500***

***2.*** *Tom deposited* ***Shs 750,000*** *in a bank which offers a compound interest rate of* ***20%*** *per annum****.*** *Find how much interest he earned after* ***3*** *years*

***Soln:***

*If* ***C⋅ I = A − P***

***⇒***



***3.*** *Find the difference between the simple interest and compound interest on* ***Shs 50,000*** *for* ***2*** *years at a rate of* ***5%*** *per annum*

***Soln:***



*If* ***C⋅ I = A − P***

***⇒***



***Required difference =*** *5,125− 50,000* ***= 125***

***4.*** *A sum of money amounts to* ***Shs 1,296,000*** *in* ***3*** *years at a compound interest rate of* ***20%*** *per annum. Find the sum invested*

***Soln:***

*If*



***⇒***



***∴ P = 750,000***

***5.*** *A sum of money lent out at compound interest yielded an interest of* ***Shs 36,400*** *in* ***3*** *years at a rate of* ***20%*** *per annum****.*** *Find the sum lent out*

***Soln:***

*If* ***C⋅ I = A − P***

***⇒***



***∴ P = 50,000***

***6.*** *Tom deposited* ***Shs 750,000*** *which amounted to* ***Shs 1,296,000*** *after* ***3*** *years at compound interest****.*** *Find the rate of interest per annum*

***Soln:***

*If*



***⇒***



***⇒***



***∴ r = 20%***

***7.*** *A man invests* ***Shs 200,000*** *at the beginning of each year in a bank which offers a compound interest rate of* ***5%*** *per annum****.*** *Calculate the amount of money the man had in the bank immediately after payment of the third investment****.***

***STEP BY STEP METHOD***

*First year amount* ***A***



*Second year principal = 210,000 + 200,000 = 410,000*

*Second year Amount* ***A***



*Third year principal =**430,500 + 200,000* ***= 630,500***

***∴ Required amount = 630,500***

***8.*** *A man borrows* ***Shs 250,000*** *at* ***10%*** *per annum compound interest****.*** *He pays back* ***Shs 100,000*** *at the end of each year****.*** *Calculate his debt at the beginning of the third year****.***

***STEP BY STEP METHOD***

*First year amount* ***A***



*Second year principal = 275,000 − 250,000 = 175,000*

*Second year Amount* ***A***



*Third year principal =**192,500 − 100,000* ***= 92,500***

***∴ Remaining debt = 92,500***

***8.*** *A sum of money lent out at compound interest amounts to* ***Shs 60,000*** *after one year and to* ***Shs 72,000*** *after* ***2*** *years****.*** *Find the sum lent out and the rate of interest per annum*

***9.*** *Tom deposited* ***Shs 800,000*** *in a bank which offers a compound interest rate of* ***8⋅5%*** *per annum****.*** *Find how long will it take for his money to accumulate to* ***Shs 941,780***

***PERIODIC COMPOUNDING***

***Summary:***

***1.*** *An investment may be compounded more than once a year****.*** *It can be compounded daily****,*** *weekly****,*** *monthly****,*** *quarterly and semiannually****.***

***2.*** *If interest is compounded more than once a year****,*** *then****:*** *where* ***n*** *= time frame in years****, k =*** *number of compoundings within a year****, nk =*** *number of compoundings over* ***n*** *year, = interest rate for one period*



***3. (i)*** *Interest compounded quarterly means that its compounded four times a year****.*** *Thus* ***k = 4 (ii)*** *Interest compounded semiannually means that its compounded two times a year****.*** *Thus* ***k = 2 (iii)*** *Interest compounded monthly means that its compounded* ***12*** *times a year****.*** *Thus* ***k = 12 (iv)*** *Interest compounded weekly means that its compounded* ***52*** *times a year****.*** *Thus* ***k = 52 (v)*** *Interest compounded daily means that its compounded* ***365*** *times a year****.*** *Thus* ***k = 365***

***4.*** *The term means that the interest rate per year is converted into interest rate for one period*



***EXAMPLES:***

***1.*** *Tom invested* ***Shs 60,000*** *for*  *years at a rate of* ***12%*** *per annum**compounded quarterly****.*** *Find the amount received in that period*



***Soln:***

*If*



***⇒***



***2.*** *Find the interest received on* ***Shs 800,000*** *invested at a rate of* ***20%*** *per annum****,*** *compounded semiannually for**years*



***Soln:***

*If* ***C⋅ I = A − P,*** *where*



***⇒***



***3.*** *Find the amount received on* ***Shs 400,000*** *invested at a rate of* ***15%*** *per annum****,*** *compounded monthly for* ***2*** *years*

***Soln:***

*If*



***⇒***



***EER:***

***1.*** *Find the amount and interest received on* ***Shs 750,000*** *invested for* ***3*** *years at a compound interest rate of* ***20%*** *per annum****.***

***2.*** *Tom invested* ***Shs 60,000*** *for*  *years at a rate of* ***12%*** *per annum**compounded quarterly****.*** *Find the interest received in that period* ***3.*** *Find the amount received on* ***Shs 800,000*** *invested at a rate of* ***20%*** *per annum****,*** *compounded semiannually for**years*



***4.*** *Tom and Bob were each given Uganda shilling* ***980,000*** *at the beginning of* ***2015.*** *Tom exchanged his money to US dollars and then banked it on his foreign currency account at a compound interest rate of* ***2%*** *per annum****,*** *while Bob banked his money without exchanging it, at a compound interest rate of* ***12%*** *per annum****.*** *The exchange rate in* ***2015*** *and* ***2016*** *were* ***Ug Shs 1,250*** *and* ***Ug Shs 1,500*** *to a dollar respectively****.*** *If Bob withdrew* ***Shs 120,000*** *at the end of* ***2016, (i)*** *Calculate the amount of money* ***(in UG Shs)*** *each man had in the bank at the end of* ***2016 (ii)*** *who had more money and by how much****?***

***5.*** *Jane and Joan invested* ***Shs 600,000*** *each in a savings society for* ***2*** *years****.*** *Jane opted for simple interest while Joan opted for compound interest. Both interest rates were at* ***12%*** *per annum****.******(i)*** *Find the interest earned by each of them* ***(ii)*** *who had more money and by how much****?***

***6.*** *Tom wants to buy a house which is priced at* ***Shs 56,000,000.*** *A deposit of* ***25%*** *of the value of the house is required****.*** *A bank will lend him the rest of the money at a compound interest of* ***15%*** *per annum and payable after two years****.*** *Calculate the****: (i)*** *deposit Tom must make* ***(ii)*** *amount of money Tom will have to pay the bank after two years* ***(iii)*** *total money which Tom will spend to buy the house*

***7.*** *At the beginning of the year* ***2015,*** *Bob deposited* ***Shs 1,900,000*** *in a bank which offers a compound interest rate of* ***2⋅75%*** *per four months****.*** *Find how much interest he earned at the end of the year*

***8.*** *Tom borrows* ***Shs 750,000*** *at a simple interest rate of 2****0%*** *per annum and then immediately lends it to Bob at the same rate but at a compound interest****.*** *Find how much will Tom gain by this transaction after* ***3*** *years*

***9.*** *A man borrowed* ***Shs 14⋅85*** *million from a bank at a compound interest rate of* ***12%*** *per annum****.*** *He has to repay the loan within* ***2*** *years in* ***6*** *equal instalments****.*** *Calculate the****: (i)*** *total amount he paid to the bank* ***(ii)*** *interest he paid to the bank (iii) amount he paid per instalment*

***10.*** *A man borrowed* ***Shs 39⋅6*** *million from a bank at a compound interest rate of* ***10⋅5%*** *per annum****.*** *He has to repay the loan within* ***2*** *years in* ***8*** *equal instalments****.*** *Calculate the****: (i)*** *total amount he paid to the bank* ***(ii)*** *interest he paid to the bank (iii) amount he paid per instalment*

***11.*** *At the beginning of each year starting in* ***2011,*** *a man invests* ***Shs 800,000*** *in a bank which offers a compound interest rate of* ***5%*** *per annum****.*** *Calculate the amount of money the man had in the bank at the end of* ***2013***

***APPRECIATION AND DEPRECIATION***

***Summary:***

***1. (i)*** *The gradual gain in the value of an asset is called appreciation* ***(ii)*** *If an asset appreciates in value****,*** *then*



***2. (i)*** *The gradual loss in the value of an asset is called depreciation* ***(i)*** *If an asset depreciates in value****,*** *then*



***EXAMPLES:***

***1.*** *A plot of land valued* ***Shs 400,000*** *appreciates in value at* ***15%*** *per annum****.*** *Find its value after* ***2*** *years*

***Soln:***

*If*



***⇒***



***2.*** *A house valued* ***Shs 600,000*** *appreciates in value at* ***10%*** *per annum****.*** *Find its value after* ***3*** *years*

***Soln:***

*If*



***⇒***



***3.*** *A bicycle valued* ***Shs 250,000*** *depreciates in value at* ***20%*** *per annum****.*** *Find its value after* ***3*** *years*

***Soln:***

*If*



***⇒***



***4.*** *A laptop valued* ***Shs 500,000*** *depreciates in value at* ***10%*** *per annum****.*** *Find its value after* ***3*** *years*

*If*



***⇒***



***5.*** *A car was bought at* ***Shs 5 million.*** *In the first year****,*** *its value depreciated by* ***20%,*** *in the second year by* ***15%*** *and in the third year by* ***10%.*** *Find its value after* ***3*** *years*

***STEP BY STEP METHOD***

*First year amount* ***A***



*Second year Amount* ***A***



*Third year Amount* ***A***



***∴ Required amount = 3⋅06 million***

***EER:***

***1.*** *A house was bought at* ***Shs 150,000.*** *In the first year****,*** *its value appreciated by* ***25%,*** *in the second year by* ***10%*** *but dropped by* ***20%*** *in the third year****.*** *Find its value after* ***3*** *years*

***2.*** *A new factory machine depreciates in value at* ***25%*** *per annum****.*** *If its value after* ***3*** *years is* ***Shs 135,000,*** *find its value when new*

***TRADE PARTNERSHIP***

***Summary:***

***1.*** *Partnership bussiness is a bussiness owned by two or more people* ***2.*** *Partners must negotiate and agree upon a fair profit−sharing ratio*

***EXAMPLES:***

***1.*** *Tom****,*** *Bob and Ben form a trade partnership****.*** *Tom contributes* ***Shs 750,000,*** *Bob* ***Shs 500,000*** *and Ben* ***Shs 900,000.******20%*** *of the annual gross profits are reinvested and a monthly taxation of* ***Shs 10,000*** *is to be paid by each shareholder****.*** *The net profit is to be shared in the ratio of their capital contributions. If at the end of the year their bussiness made a gross profit of* ***Shs 3,160,000 ,*** *find how much did each member get as his net profit*

***Soln:***

*Amount re−invested =*

*Annual tax*  ***=*** *3 × 10,000 × 12* ***= 360,000***

*Net profit = 3,160,000 − (632,000 + 360,000)* ***= 2,168.000***

*Profit−sharing ratio* ***=*** *750,000 : 500,000 : 900,000* ***= 15 : 10 : 18***

***Tom’s share =***

***Bob’s share =***

***Ben’s share =***

***2.*** *Tom, Bob and Ben decided to buy a bus. The bus owner offered the bus at*

***Shs 280*** *million but agreed to be paid* ***60%*** *of the value as initial deposit in the*

*ratio* ***3:2:5*** *respectively and the remaining amount to be paid after* ***1*** *year****.*** *The*

*total balance was to be paid from the profits of the bus in the same ratio as the*

*deposits****.*** *They agreed to share the net profits in the ratio of their deposits. If at*

*the end of the year the bus realized* ***Shs 208*** *million,**find****:***

***(i)*** *how much deposit did each contribute*

***(ii)*** *how much of the balance did Ben contribute.*

***(iii)*** *how much money was left with Tom after paying the balance*

***Soln:***

***(i)*** *Amount deposited = 0⋅6 × 280* *=* ***168 million***

*Total ratio* ***=*** *3 +2 + 5* ***= 10***

***Tom’s contribution =*** *0⋅3 × 168**=* ***50⋅4 million***

***Bob’s contribution =*** *0⋅2 × 168**=* ***33⋅6 million***

***Ben’s contribution =*** *0⋅5 × 168**=* ***84 million***

***(ii)*** *Total balance = 280 − 168 =* ***112 million***

***Ben’s balance contribution =*** *0⋅5 × 112**=* ***56 million***

***(iii)*** *Net profit = 208 − 112 =* ***96 million***

***Tom’s balance contribution =*** *0⋅3 × 96**=* ***28⋅8 million***

***EER:***

***1.*** *Tom and Bob decided to buy a plot. The plot owner offered the plot at*

***Shs 20*** *million but agreed to be paid* ***75%*** *of the value as initial deposit in the*

*ratio* ***5:3*** *respectively and the remaining amount to be paid after* ***2*** *years*

*including an additional* ***5%*** *of the initial value for processing the plot*

*documents****.*** *The total balance was to be paid in the same ratio as the deposit.*

*Find how much of the balance did Bob contribute.*

***2.*** *Tom and Bob have shares in a company****.*** *Tom contributed* ***Shs 400*** *million and Bob* ***Shs 600*** *million as share capital****.*** *The company expenses that year were electricity* ***Shs 12*** *million****,*** *salaries* ***Shs 55*** *million and transport* ***Shs 13*** *million****.*** *The net profit is to be shared in the ratio of their share capital. If at the end of the year their company made a gross profit of* ***Shs 200*** *million*

***(a)*** *find the****:***

***(i)*** *total expenditure for the company*

***(ii)*** *percentage of the company’s expenses to the net profit*

***(b)*** *Find how much money each share holder got that year if* ***10%*** *of this was paid as income tax*

***3.*** *Tom and Bob contributed* ***Shs 112,000*** *and* ***Shs 128,000*** *respectively to start a partnership business. They agreed to share their profits as follows.*

***35%*** *to be shared equally*

***25%*** *to be shared in the ratio of their respective contributions and* ***40%*** *to*

*be retained for the running of the business. If their profit was* ***Shs 864,000,*** *calculate the****:***

***(i)*** *amount Bob received*

***(ii)*** *amount retained for the business*

***4.*** *Five members of a self supporting enterprise Tom, Bob, Ben, Sam and Tim were*

*given a certain amount of money to share amongst themselves. Tom got* ***3/8*** *of*

*the total amount while Bob got* ***2/5*** *of the remainder. The remaining amount was*

*shared equally among Ben, Sam and Tim each of which received* ***Shs 600,000***

***(i)*** *How much was shared among the five business men?*

***(ii)*** *How much did Bob get?*

***(iii)*** *Tom, Bob and Tim invested their money and earned a profit of* ***Shs 1,200,000.***

*A third of the profit was reinvested and the rest was shared in the ratio of their*

*investments. Find how much each got.*

***TAXATION***

***(b)*** *A man earns a gross monthly salary of* ***sh 630,000.*** *His allowance*

*in a given month amounted to* ***sh 128,000*** *and tax was levied on*

*taxable income as follows****:***

***5%*** *for the first* ***sh 200,000***

***35%*** *for the rest*

*Find the****:***

***(i)*** *taxable income*

***(ii)*** *income tax paid by the man*