Financial Calculations
الرياضيات المالية

Grade 10

نبنــــي
اقتصاديّي
المستقبل

• Semester 2

حضرة صاحب السّموّ

الشيخ تميم بن حمد آل ثاني

أمير دولــة قطــر

النشيد الوطني

قَسَمًا بِمَنْ نَشَرَ الضِّيَاء	قَسَمًا بِمَنْ رَفَعَ السَّمَاء
تَسْمُو بِرُوحِ الأَوْفِيَاء	قَطَرْ سَتَبْقَى حُرَّةً
وَعَلَى ضِيَاءِ الأَنْبِيَاء	سِيرُوا عَلَى نَهْجِ الأُلَى
عِزٌّ وَأَمْجَادُ الإِبَاء	قَطَرُ بِقَلْبِي سِيرَةٌ
حُمَاتُنَا يَوْمَ النِّدَاء	قَطَرُ الرِّجَالِ الأَوَّلِين
جَوَارِحٌ يَوْمَ الفِدَاء	وَحَمَائِمٌ يَوْمَ السَّلَامْ

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Contents

About this Learner Resource

Welcome to the Learner Resource for Financial Calculations. In this Learner Resource you will be learning the skills and knowledge that will allow you to analyse, evaluate businesses, projects, budgets, and other finance-related transactions to determine their performance and suitability.

It is suggested that to meet all the require ments of Financial Calculations you will need to complete the following tasks:

- Read the information contained in this Learner Resource.
- Complete the activities.
- Complete all the required assessment/s for this unit.

The topics in this Learner Resource are:

- Business Discount
- Business Mark-up
- Presentation of Data
- Break Even Analysis
- Supply & Demand Functions

📝 Introduction

You are about to commence a vocational course where you will be required to demonstrate your competency in processing financial calculations.

You will also explore contemporary environment and community issues.

Chapter **1**

Business Discount

The Purpose Of Business Discount

To encourage prompt payment or to target particular customer groups, manufacturers offer discounts to wholesalers, wholesalers to retailers, and retailers to consumers. The discount is given on the list price. There are different types of business discount mainly trade, cash, and multiple.

Trade Discount

Trade discount is deducted from the list price for purchases made by buyers of a particular trade. The trade discount is stated as a percentage of the list price.

Trade Discount = List Price × Discount Rate
Price after Trade Discount = List Price – Trade Discount
Price after Trade Discount = List Price (1 – Discount Rate)

Activity No. 1

Aldelemy & Faraj have a wholesaler company which trades in Laptops. If the factory price of Toshiba Laptop is QR 4500. If the discount Rate % given from Toshiba to the wholesaler company is 6%. Calculate:

- The discount value for one unit.
- The net price for one unit.
- The total value of discount for 1500 units sold
- The total value of sales for 1500 units sold

Activity No. 2

If the list price of Samsung Galaxy S4 is QR 2600, but the Doha Agency for hi-tech gives 7% discount to the retailer, what is the discount value and the net price?

Activity No. 3

Alkarbi & Alkaabi have a Showroom that sells Toyota Land Cruiser. The compny list price for each car is QR 290,000, but to get rid of 2013 storage they give 3% discount for every customer. Calculate:

- The discount value for one unit.

- The net price for one unit.

- The total value of discount for 104 units sold

- The total value of sales for 104 units sold.

Activity No. 4

Rajaa& Alkebasy have a travel agency company that organizes overseas trips around the world. The trip list price for Malaysia is QR 11000/person. However, in November 2012, the manager decided to give 10% discount for groups over 20 person, and 15% discount for groups over 30 person. Calculate the discount value and the net price for two tourist regiments of 26 and 33 people.
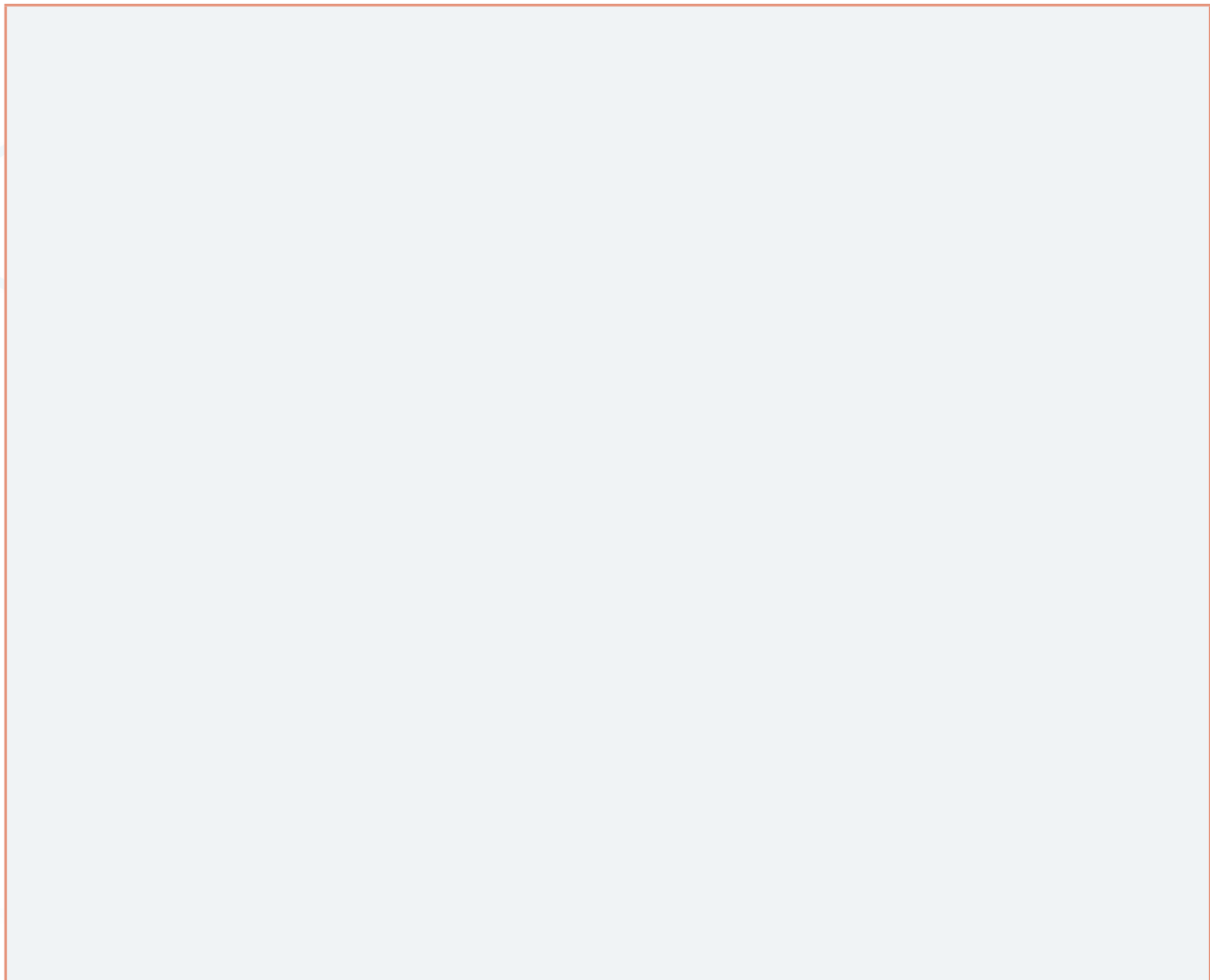
Activity No. 5

Hamad has a company that trades in Laptops. If the list price of a Toshiba Laptop is QR 5500 but the net price after discount is QR 5150. What is the discount rate %?. In addition, what is the total value of discount and total value of sales if the company sold 24 units in October 2012.

Activity No. 6

Khalifa has a company which trades in Apple products. If the list price of an ipad is QR 2600 but the net price after discount is QR 2300.

- What is the discount value in QR?

- What is the discount Rate %?

- What is the total value of discount if the company sold 63 units in September 2013?

- What is the total value of sales if the company sold 63 units in September 2013?

Activity No. 7

Doha overseas Co. is a travel agency company that organizes overseas trips around the world. The list price of trip for Malaysia is QR 5500 for each person. However, in November 2012 the manager decided to give discount of 5%. On the other hand, Torky travel agency gives 3% discount on its QR 5000 trip to Malaysia. Choose the best offer, and calculate the total cost of trip for a family of 6 members.

Cash Discount

Cash discounts are given to encourage people to buy. Another type of cash di-count is given to encourage debtors to pay their bills promptly. This type of dis-count usually stipulates a time period in which the payment must be made to take advantage of the discount. The discount terms may be stated as 10/10, 5/30 or N/30. The meaning of these terms are: 10% discount if paid within 10 days, 5% discount if paid within 30 days and no discount if paid after 30 days.

Activity No. 1

Waleed's invoice had terms of 5/30. If the list Price was $700, find the net price if the invoice is paid in 23 days. Find the total value of discount if the number of strippers sold is 120 units in November and 240 units in December 2011?

Activity No. 2

Your statement gives the following terms: 3/45. The balance you need to pay for 20 days is $447.20. How much will you have to pay if you take advantage of the discount?

Activity No. 3

What discount rate will give a net price of $650.25 if the list price is $765, and the term is 7/15?

Activity No. 4

Wholesale Plumbing Supplies gives a trade discount of 15/30 to plumbers. How much would Fred's Plumbing Services pay for a solar water service listed at $1,549 if he pays in 26 days?

Activity No. 5

The list price of a calculator is $75 and the student discount offered is 18/45. Find the net price if the invoice is paid in 38 days.

Activity No. 6

Find the discount value and the net price on a car listed at $7,999 with a discount of 6/50 if the balance will be paid in 52 days.

Activity No. 7

Find the discount value and the net price on a car listed at QAR 240,000 with a discount of 2/50 if the balance will be paid in 30 days.

Multiple Discount for One Product

Activity No. 1

A hardware store offers a trade discount 7% to trade people for a hard disk drive of QR 600. It offers a further 4% discount if the account is paid for in 7 days. Calculate:

a. The trade and cash discount?

b. The multiple discount value if the tradesperson pays in 7 days?

c. What will a tradesperson pay for the item if he pays within 7 days?

d. The multiple discount rate if the tradesperson pays in 7 days?

Original list price		
- Less trade discount		
= Net price after trade discount		
- Less cash discount		
= Net price after cash discount		
Multiple discount value		
Multiple discount rate		

Activity No. 2

A hardware store offers a trade discount 2% to trade people for a hard disk drive of QR 350. It offers a further 3% discount if the account is paid for in 15 days. Calculate:

a. The trade and cash discount?

b. The multiple discount value if the tradesperson pays in 10 days?

c. What will a tradesperson pay for the item if he pays within 10 days?

d. The multiple discount rate if the tradesperson pays in 10 days?

Original list price		
- Less trade discount		
= Net price after trade discount		
- Less cash discount		
= Net price after cash discount		
Multiple discount value		
Multiple discount rate		

Doha overseas Co. is a travel agency company that organizes overseas trips around the world. The list price of trip for Malaysia is QR 6000 for each person. However, in November 2012 the manager decided to give trade discount of 4% for large groups, and a cash discount of 6/25. Calculate:

a. The trade and cash discount?

b. The multiple discount value if the tradesperson pays in 14 days?

c. What will a tradesperson pay for the item if he pays within 14 days?

d. The multiple discount rate if the tradesperson pays in 14 days?

Original list price		
- Less trade discount		
= Net price after trade discount		
- Less cash discount		
= Net price after cash discount		
Multiple discount value		
Multiple discount rate		

Multiple Discount for More Than One Item

Activity No. 1

Read the following invoice and then complete spaces.

QCSS Stationery Supplies	INVOICE
1234 Al Fundaq Road	Invoice Number: B6554
Al Sadd	
www.qfcbe.com.qa Tel: 33678912	Invoice Date: 20 Feb 2013

Customer information			
Billing address		**Shipping Address**	
Company:	Al Jassim Group	**Company:**	Al Jassim Group
ABN:	444 555 666 11	**ABN:**	444 555 666 11
Name:	Mr Peter Williams	**Name:**	Mr Peter Williams
Address:	PO Box 7123	**Address:**	556 Salwa Road
	Doha		Abu Hamour
			Doha
Shipping Method:		Road Express	

Qty	Product Description	Unit price	Amount in QR
60	A4 Bond Paper - White	15	
58	Lever Arch Files	3	
35	3 Ring Files	2	
12	Receipt Books	5	
		Subtotal:	
		Less 4% trade discount	
		Total after trade discount	
		Less 2% cash discount	
		Total after cash discount	

Total Amount in words:	
Total Amount before multiple discount	
Multiple discount value (trade+cash)	
Total Amount after multiple discount	
Multiple discount rate	

Notes: Goods to be delivered by Doha Express Couriers as requested by customer.

Activity No. 2

Read the following invoice and then complete spaces.

QCSS Stationery Supplies	INVOICE
1234 Al Fundaq Road	**Invoice Number:** B6554
Al Sadd	
www.qfcbe.com.qa Tel: 33678912	**Invoice Date:** 20 Feb 2013

Customer information			
Billing address		**Shipping Address**	
Company:	Al Jassim Group	**Company:**	Al Jassim Group
ABN:	444 555 666 11	**ABN:**	444 555 666 11
Name:	Mr Peter Williams	**Name:**	Mr Peter Williams
Address:	PO Box 7123	**Address:**	556 Salwa Road
	Doha		Abu Hamour
			Doha
Shipping Method:			Road Express

Qty	Product Description	Unit price	Amount in QR
130	Note Book	15	
80	Red Pen	6	
25	Compass	9	
40	HP ink toner	56	
		Subtotal:	
		Less 1.5% trade discount	
		Total after trade discount	
		Less 3.25% cash discount	
		Total after cash discount	

Total Amount in words:	
Total Amount before multiple discount	
Multiple discount value (trade+cash)	
Total Amount after multiple discount	
Multiple discount rate	

Notes: Goods to be delivered by J & M Express Couriers as requested by customer.

Activity No. 3

Read the following invoice and then complete spaces.

	QCSS Stationery Supplies	INVOICE
	1234 Al Fundaq Road	Invoice Number: B6554
	Al Sadd	
	www.qfcbe.com.qa Tel: 33678912	Invoice Date: 20 Feb 2013

Customer information			
Billing address		**Shipping Address:**	
Company:	Al Jassim Group	**Company:**	Al Jassim Group
ABN:	444 555 666 11	**ABN:**	444 555 666 11
Name:	Mr Peter Williams	**Name:**	Mr Peter Williams
Address:	PO Box 7123	**Address:**	556 Salwa Road
	Doha		Abu Hamour
			Doha
Shipping Method:			Road Express

Qty	Product Description	Unit price	Trade Discount	Amount after Trade Discount
13	Note Book	7	1.0%	
40	Red Pen	2	1.5%	
23	Compass	11	3.5%	
48	HP ink toner	25	5.0%	
		Subtotal:		
		Less 2% cash discount		
		Total after cash discount		

Total Amount in words:

Total Amount before multiple discount	
Multiple discount value (trade+cash)	
Total Amount after multiple discount	
Multiple discount rate	

Notes: Goods to be delivered by J & M Express Couriers as requested by customer.

Activity No. 4

Read the following invoice and then complete spaces.

QCSS Stationery Supplies	INVOICE
1234 Al Fundaq Road	Invoice Number: B6554
Al Sadd	
www.qfcbe.com.qa Tel: 33678912	Invoice Date: 20 Feb 2013

Customer information			
Billing address		**Shipping Address**	
Company:	Al Jassim Group	**Company:**	Al Jassim Group
ABN:	444 555 666 11	**ABN:**	444 555 666 11
Name:	Mr Peter Williams	**Name:**	Mr Peter Williams
Address:	PO Box 7123	**Address:**	556 Salwa Road
	Doha		Abu Hamour
			Doha
Shipping Method:			Road Express

Qty	Product Description	Unit price	Trade Discount	Amount after Trade Discount
10	Note Book	6	2.00%	
45	Red Pen	4	1.25%	
83	Compass	15	3.00%	
15	HP ink toner	35	2.50%	
		Subtotal:		
		Less 4% cash discount		
		Total after cash discount		

Total Amount in words:

Total Amount before multiple discount	
Multiple discount value (trade+cash)	
Total Amount after multiple discount	
Multiple discount rate	

Notes: Goods to be delivered by J & M Express Couriers as requested by customer.

STOP

Test Your Knowledge and Skills

Activity No. 1

What is the equation used to calculate the trade discount?

a. Trade Discount = List Price + Discount Rate

b. Trade Discount = List Price - Discount Rate

c. Trade Discount = List Price × Discount Rate

d. Trade Discount = List Price ÷ Discount Rate

Activity No. 2

What is the equation used to calculate the Price after Trade Discount?

a. Price after Trade Discount = List Price (1 + Discount Rate)

b. Price after Trade Discount × List Price = 1 − Discount Rate

c. Price after Trade Discount + List Price = 1 − Discount Rate

d. Price after Trade Discount = List Price (1 − Discount Rate)

What does "5/30" mean?

a. A cash discount of 5% if the customer pays in 30 days.

b. A cash discount of 30% if the customer pays in 5 days.

c. A trade discount of 5% if the customer pays in 30 days.

d. None of the above.
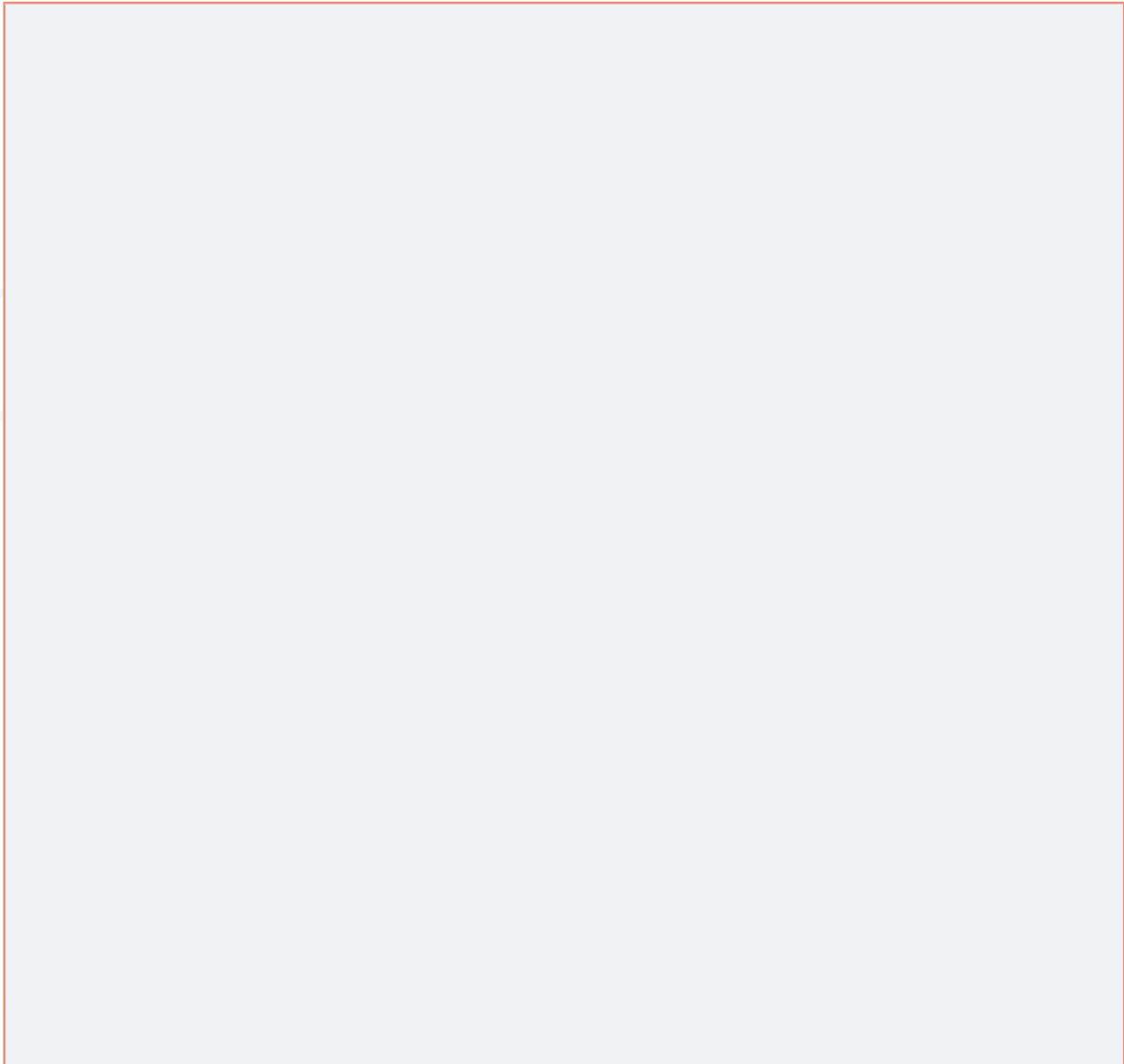
Activity No. 4

If the list price of Samsung Galaxy S4 is QR 2600, but the Doha Agency for hi-tech gives 7% discount to the retailer, what is the trade discount value and the net price?

Activity No. 5

If the list price of iPhone 5 is QR 3000, but the Doha Agency for hi-tech gives 5% discount to the retailer, what is the trade discount value and the net price?

Activity No. 6

Aldelemy & Faraj have a wholesaler company which trades in Laptops. If the factory price of Toshiba Laptop is QR 4500. If the discount Rate % given from Toshiba to the wholesaler company is 6%. Calculate:

- The discount value for one unit.

- The net price for one unit.

- The total value of discount for 1500 units sold.

- The total value of sales for 1500 units sold.

Activity No. 7

Alkarbi & Alkaabi have a Showroom that sells Toyota Land Cruiser. The company list price for each car is QR 290,000, but to get rid of 2013 storage they give 3% discount for every customer. Calculate:

- The discount value for one unit.

- The net price for one unit.

- The total value of discount for 104 units sold.

- The total value of sales for 104 units sold.

Activity No. 8

Rajaa & Alkebasy have a travel agency company that organizes overseas trips around the world. The trip list price to Malaysia is QR 11000/person. However, in November 2012, the manager decided to give 10% trade discount for groups over 20 person, and 15% discount for groups over 30 person. Calculate the trade discount value and the net price for a group of 33 people.

Activity No. 9

Rajaa & Alkebasy have a travel agency company that organizes overseas trips around the world. The trip list price to Malaysia is QR 7000/person. However, in November 2012, the manager decided to give 7.5% trade discount for groups over 40 person, and 10% discount for groups over 60 person. Calculate the trade discount value and the net price for a group of 50 people and a group of 70 people?

Activity No. 10

Wholesale Plumbing Supplies gives a trade discount of 15/30 to plumbers. How much would Fred's Plumbing Services pay for a solar water service listed at $1,549 if he pays in 26 days?

Activity No. 11

The list price of a calculator is $75 and the student discount offered is 18/45. Find the net price if the invoice is paid in 38 days.

Your statement gives the following terms: 3/45. The balance you need to pay for 20 days is $447.20. How?

Activity No. 13

Read the following invoice and then complete spaces.

	QCSS Stationery Supplies	INVOICE
	1234 Al Fundaq Road	Invoice Number: B6554
	Al Sadd	
	www.qfcbe.com.qa Tel: 33678912	Invoice Date: 20 Feb 2013

Customer information			
Billing address		**Shipping Address**	
Company:	Al Jassim Group	**Company:**	Al Jassim Group
ABN:	444 555 666 11	**ABN:**	444 555 666 11
Name:	Mr Peter Williams	**Name:**	Mr Peter Williams
Address:	PO Box 7123	**Address:**	556 Salwa Road
	Doha		Abu Hamour
			Doha
Shipping Method:			Road Express

Qty	Product Description	Unit price	Trade Discount	Amount after Trade Discount
13	Note Book	7	1.0%	
40	Red Pen	2	1.5%	
23	Compass	11	3.5%	
48	HP ink toner	25	5.0%	
		Subtotal:		
		Less 2% cash discount		
		Total after cash discount		

Total Amount in words:

Total Amount before multiple discount	
Multiple discount value (trade+cash)	
Total Amount after multiple discount	
Multiple discount rate	

Notes: Goods to be delivered by J & M Express Couriers as requested by customer.

Activity No. 14

Read the following invoice and then complete spaces.

QCSS Stationery Supplies		INVOICE	
1234 Al Fundaq Road		**Invoice Number:** B6554	
Al Sadd			
www.qfcbe.com.qa Tel: 33678912		**Invoice Date:** 20 Feb 2013	

Customer information			
Billing address		**Shipping Address**	
Company:	Al Jassim Group	**Company:**	Al Jassim Group
ABN:	444 555 666 11	**ABN:**	444 555 666 11
Name:	Mr Peter Williams	**Name:**	Mr Peter Williams
Address:	PO Box 7123	**Address:**	556 Salwa Road
	Doha		Abu Hamour
			Doha
Shipping Method:			Road Express

Qty	Product Description	Unit price	Trade Discount	Amount after Trade Discount
10	Note Book	6	2.00%	
45	Red Pen	4	1.25%	
83	Compass	15	3.00%	
15	HP ink toner	35	2.50%	
		Subtotal:		
		Less 4% cash discount		
		Total after cash discount		

Total Amount in words:	
Total Amount before multiple discount	
Multiple discount value (trade+cash)	
Total Amount after multiple discount	
Multiple discount rate	

Notes: Goods to be delivered by J & M Express Couriers as requested by customer.

Chapter 2

Business Mark-up

Mark-up on the Cost

Activity No. 1

a. What is the selling price of an item that has a cost of $250 and a mark-up percent of 40% based on cost?

b. The selling price of a pair of shoes is $75. The mark-up percent based on cost is 25%. Find the cost.

c. What is the mark-up percent based on cost when the selling price is $120 and the cost is $80?

d. What is the mark-up percent based on cost when the dollar mark-up is already known to be $30 and the cost is $75?

Activity No. 2

a. Hussain Computers Ltd purchased desktop computers for QR 880 each plus a freight inwards charge of QR 20 each. Their selling price for these computers is QR 1,260. Find the mark up and the mark-up percentage on cost.

b. At what price must a retailer Ahmad Abdallah list an item costing $45 to make a gain of 25% on cost?

c. A craft shop's owner knows she should sell clay for $12.50 a packet. What is the cost per packet if her mark-up is 33.33% on cost?

Activity No. 3

a. At what price will a portable TV sell if its cost price is $300 and the mark up is 20% on the selling price.

b. Walid Ltd purchased a necklace for $1,200 plus the following charges: air freight $20, insurance $30 and duty $250. The necklace will be sold for $2,700. Find the mark up and the mark-up percentage on cost.

c. A merchant Ghanem overall mark up is 25% on cost. What will be the selling price of goods costing $ 340?

Mark-up on the selling Price

Activity No. 1

Walid Ltd purchased a necklace for $1,000 plus the following charges: air freight $40, insurance $10 and duty $90. The necklace will retail for $3,000. Find: the $ mark up; the mark-up percentage on cost; the mark-up percentage on retail.

Activity No. 2

Abdelwahaab & Assem Ltd purchased suitcases for QR 200 each plus the following charges: air freight QR 20, insurance QR 70 and duty QR 40. The suitcase will be sold for QR 500. Find: the $ mark up; the mark-up percentage on cost; the mark-up percentage on retail.

Activity No. 3

a. The portable TVs costing $300 were of poor quality and actually sold at a 4% loss on selling price. What was the selling price?

b. A craft shop's owner knows that the cost of clay is $12.50 per packet and the selling price is $11, what are the loss and the retail markdown?

Activity No. 4

a. Sprinklers costing $25 were sold at loss (retail mark down) of 3% on selling price, what will be the selling price and loss value for the sprinklers?

b. What selling price and retail mark down will be of a portable TV if its cost price is $300 and the loss is $40?

c. What cost price and retail mark down will be of a portable TV if its selling price is $700 and the loss is $60?

Convert between Cost Mark-up & Selling Mark-up

Activity No. 1

a. Convert the cost mark-up of 25% to a retail mark-up?

b. Convert the cost mark-up of 10% to a retail mark-up?

Activity No. 2

a. Convert the retail mark up of 33.33 % to a cost percentage mark up?

b. Convert the retail mark up of 15.4 % to a cost percentage mark up?

Activity No. 3

Hamad & Khaled WLL is a limited company importing products from outside Qatar and resell them in the Qatari markets. The Co. purchased suitcases for QAR 240 each plus the following changes: air freight QAR 10, insurance QAR 30 and duty QAR 12. The suitcase will be sold for QAR 365.

Find:

a. The mark up.

b. The mark-up percentage on cost.

c. The mark - up percentage on sale.

d. Convert the cost mark - up to retail mark - up.

e. Convert the retail mark - up to cost mark - up.

Activity No. 4

a. Convert the following cost mark-up percentages to retail mark-up percentages rounded to the nearest percent:

    a. 22%   b. 30%   c. 13.6%   d. 40.25%

Activity No. 5

a. Convert the following retail mark-up percentages to cost mark-up percentages rounded to the nearest percent:

a. 40%   b. 30%   c. 28%   d. 17.5%

STOP

Test Your Knowledge and Skills

Activity No. 1

a. At what price will a portable TV sell if its cost price is $300 and the mark up is 20% on the selling price.

b. Walid Ltd purchased a necklace for $1,200 plus the following charges: air freight $20, insurance $30 and duty $250. The necklace will be sold for $2,700. Find the mark up and the mark-up percentage on cost.

c. A merchant Ghanem overall mark up is 25% on cost. What will be the selling price of goods costing $ 340?

Activity No. 2

a. Hussain Computers Ltd purchased desktop computers for QR 880 each plus a freight inwards charge of QR 20 each. Their selling price for these computers is QR 1,260. Find the mark up and the mark-up percentage on cost.

b. At what price must a retailer Ahmad Abdallah list an item costing $45 to make a gain of 25% on cost?

c. A craft shop's owner knows she should sell clay for $12.50 a packet. What is the cost per packet if her mark-up is 33.33% on cost?

Activity No. 3

a. Sprinklers costing $25 were sold at loss (retail mark down) of 3% on selling price, what will be the selling price and loss value for the sprinklers?

b. What selling price and retail mark down will be of portable TV if its cost price is $300 and the loss is $40?

c. What cost price and retail mark down will be of portable TV if its selling price is $700 and the loss is $60?

Activity No. 4

a. The portable TVs costing $300 were of poor quality and actually sold at a 4% loss on selling price. What was the selling price?

b. A craft shop's owner knows that the cost of clay is $12.50 per packet and the selling price is $11, what are the loss and the retail markdown?
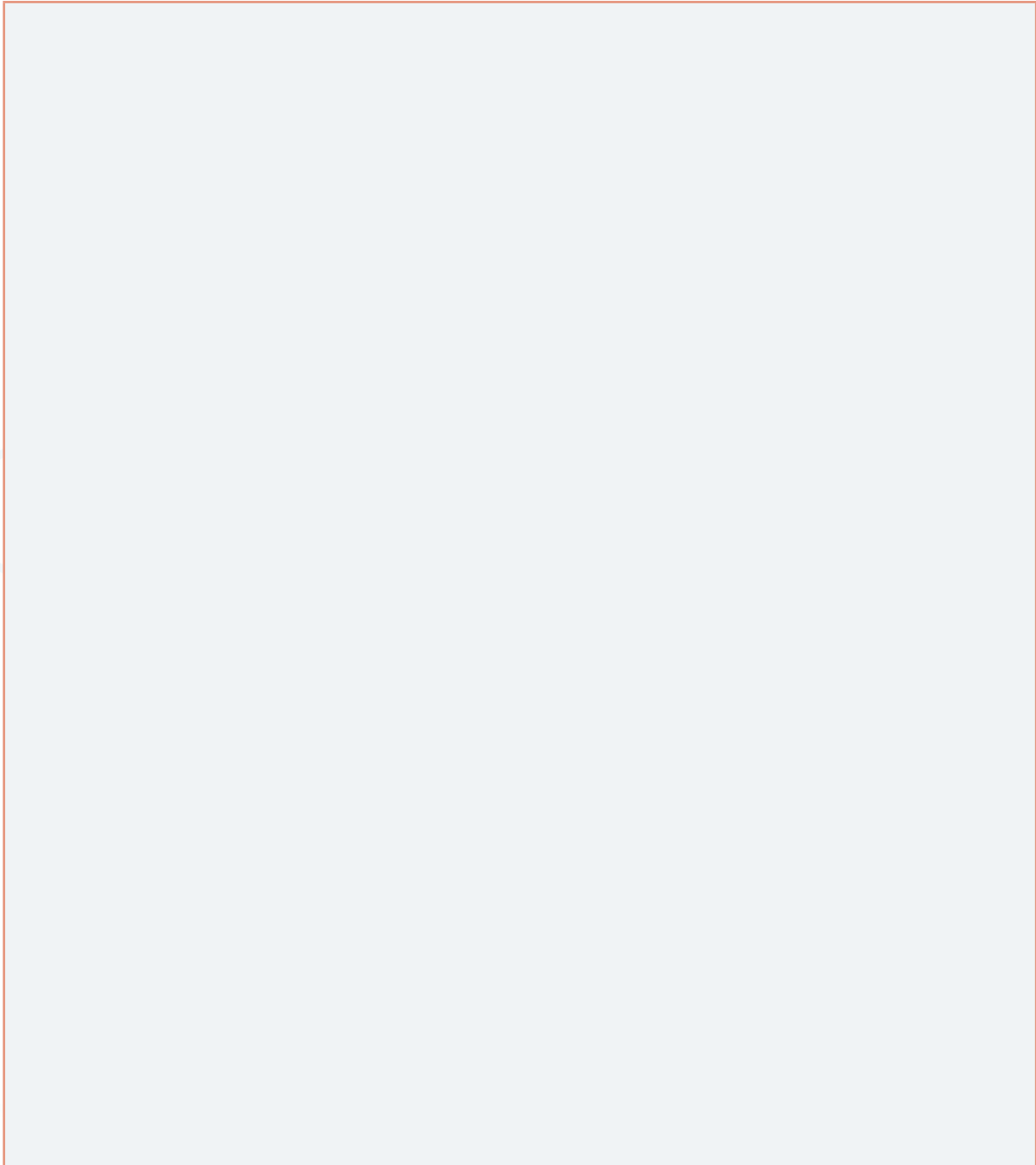
Activity No. 5

Convert the following retail mark-up percentages to cost mark-up percentages rounded to the nearest percent:

a. 40%

b. 30%

c. 28%

d. 17.5%

Activity No. 6

Abdelwahaab & Assem Ltd purchased suitcases for QR 200 each plus the following charges: air freight QR 20, insurance QR 70 and duty QR 40. The suitcase will be sold for QR 500. Find:

a. The cost.

b. The sellprice.

c. The $ mark up.

d. The mark-up percentage on cost.

e. The mark-up percentage on retail.

f. Convert the cost mark-up to retail mark-up.

g. Convert the retail mark-up to cost mark-up.

Chapter 3

Presentation of Data

Convert Ungrouped Data to Grouped Data

Activity No. 1

The following table represents the profits achieved by Qatari corporations registered in Qatar Stock Exchange. Classify the companies using a frequency table of 4 groups.

No.	Company name	Profit in QR millions	No.	Company name	Profit in QR millions
1	Aamal	50	10	Dlala	70
2	Al Ahli Bank	430	11	Doha Bank	380
3	Al Kaleej Takaful	- 40	12	Doha Insurance	-90
4	Al khalij Commercial Bank	324	13	Electricity and Water	200
5	Al Meera	160	14	Gulf International	318
6	Al-Khalij Holding	300	15	Gulf Warehousing Co	47
7	Barwa	278	16	Ind. Manf. Co.	150
8	Cinema	101	17	Industries Qatar	360
9	Comm. Bank of Qatar	185			

No.	Category	Frequency
1	From 100- to 0	
2	From 1 to 100	
3	From 101 to 200	
4	From 201 to 300	
5	From 301 to 400	

a. How many categories are in your classification?

b. Which category got the highest frequency?

c. Which category got the lowest frequency?

d. How many companies achieved loss?

Activity No. 2

The following table represents the sales achieved by Qatari corporations registered in Qatar Stock Exchange. Classify the companies using a frequency table of 4 groups.

No.	Company name	Profit in QR millions	No.	Company name	Profit in QR millions
1	Mazaya	90	9	Qatar Navigation	74
2	Medicare	10	10	Qatar Oman	539
3	National Leasing	28	11	Qatar Telecom	850
4	Cinema	6	12	Salam International	631
5	Electricity & Water	980	13	Vodafone Qatar	208
6	Qatar Fuel	62	14	Islamic Holding	160
7	Nakilat	47	15	Mannai Corp.	53
8	Qatar Meat	17			

No.	Category	Frequency
1	From 0 to 200	
2	From 201 to 400	
3	From 401 to 600	
4	From 601 to 800	
5	From 801 to 1000	

a. How many categories are in your classification?

b. What category got the highest frequency?

c. What category got the lowest frequency?

d. Which company made the highest sales?

Activity No. 3

The following table represents the distribution of Qatar population by Sex and Municipality in April, 2010. Read the table and then answer questions?

Municipality	Sex		Total
	Female	Male	
Doha	186130	610817	796947
Al Rayyan	153781	301842	455623
Al Wakra	26524	114698	141222
Umm Slal	23809	36700	60509
Al Khor and Al Thakhira	12978	181005	193983
Al Shamal	2623	5352	7975
Al Dayyan	8851	34325	43176
Total	414696	1284739	1699435

a. Which municipality has the highest population for both sexes?

b. Which municipality has the lowest population for both sexes?

c. Which municipality has the highest population for males only?

d. Which municipality has the lowest population for females only?

e. Calculate the percentage of males / total population in Qatar.

f. Calculate the percentage of females / total population in Qatar.

g. Calculate the percentage of Doha population / total population.

h. Calculate the percentage of your municipality population / total population.

Presentation of Data Using Linear Graph

Activity No. 1

The following table represents the sales of Carrefour Doha City Centre for several months in the year 2013. Plot the linear graph for sales over this period.

Month	Amount in QR million
April	210
May	348
June	482
July	459
August	546
September	690
October	720
November	675
December	839

sales of Carrefour Doha City Centre for 9 months in the year 2013

Activity No. 2

Abderahmaan's company sells CD package at QR 25 per unit. If it sells x units daily, then its revenue (y) is represented by the function: $Y = 5 + 25X$. Plot the graph of this function for daily sales.

Number of Units Sold (X)	Process Y = 5 + 25X	Revenue (Y)
0	5 + 25 X 0 =	
1	5 + 25 X 1 =	
2	5 + 25 X 2 =	
3		
4		
5		
6		
7		
8		

a. What is the revenue of the company if it sells 60 units in one day?

b. What is the revenue of the company if it sells 100 units in one day?

c. If the revenue of 2013-03-17 is QR 8630, how many units were sold in that day?

d. If the revenue of 2012-03-25 is QR 15355, how many units were sold in that day?

Activity No. 3

The total costs of producing a washing machine is represented by the function

y = 800 + 6x. Plot the graphs of this function for production cost

Number of Units produced (X)	Process Y = 800 + 6X	Total Cost (Y)
0	800 + 6 X 0 =	
1	800 + 6 X 1 =	
2	800 + 6 X 2 =	
3		
4		
5		
6		

a. What is the total cost of the company if it produces 60 units?

b. What is the total cost of the company if it produces 720 units?

c. If the total cost in 2013-03-14 is QR 3920, how many units were produced in that day?

d. If the total cost in 2013-07-10 is QR 3020, how many units were produced in that day?

Presentation of Data Using simple Bar Charts

Activity No. 1

The following table represents the sales of Carrefour Doha City Centre for several months in the year 2013. Plot the bar graph for sales over this period.

Month	Amount in QR million
April	340
May	387
June	420
July	405
August	463
September	481
October	590
November	640
December	675
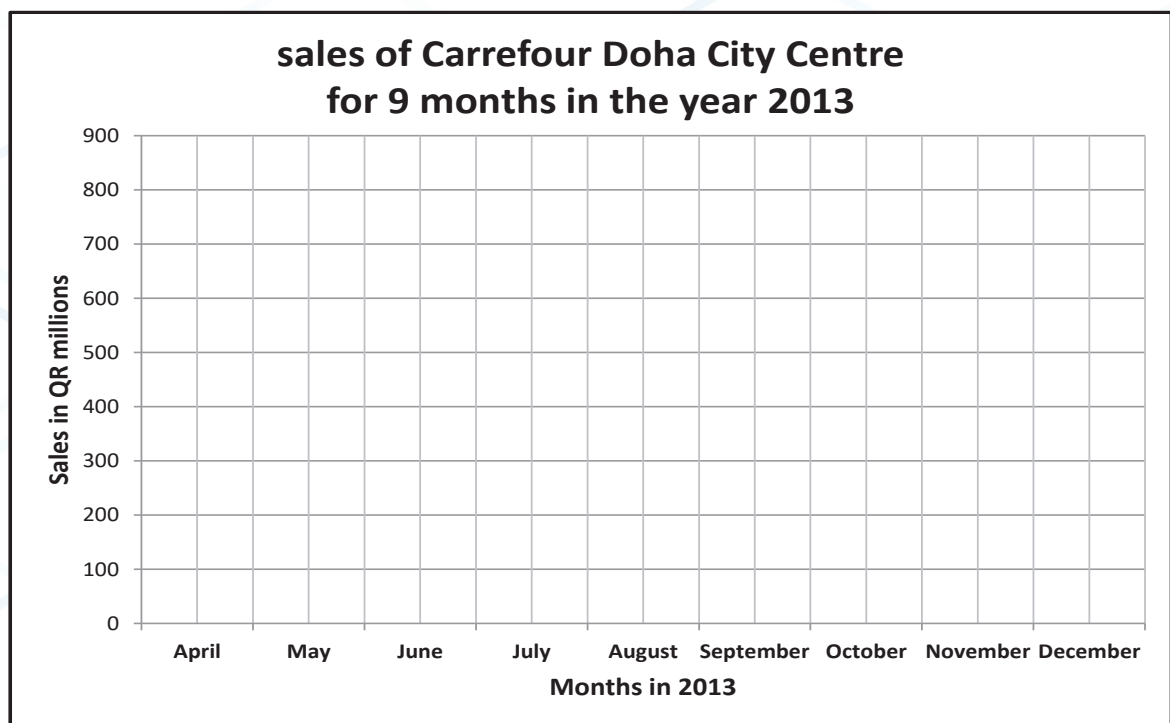
sales of Carrefour Doha City Centre for 9 months in the year 2013

Activity No. 2

The following table represents the profits achieved by some Qatari corporations in QR millions. Display the data using simple bar charts.

No.	Company name	Profit
1	Al Meera	860
2	Al-Khalij Holding	327
3	Barwa	250
4	Doha Bank	480
5	Doha Insurance	90
6	Electricity and Water	182
7	Industries Qatar	30

Activity No. 3

Abderahmaan's company sells CD package at QR 15 per unit. If it sells x units daily, then its revenue (y) is represented by the function: Y = 18 + 15X. Plot the graph of this function for daily sales using bar charts.

Number of Units Sold (X)	Process Y = 5 + 25X	Revenue (Y)
0	18 + 15 X 0 =	
1	18 + 15 X 1 =	
2	18 + 15 X 2 =	
3		
4		
5		
6		
7		
8		

a. What is the revenue of the company if it sells 300 units in one day?

b. If the revenue of 17-03-2013 is QR 18768, how many units were sold in that day?

The total costs of producing a washing machine is represented by the function y = 3600 + 12x. Plot the graphs of this function for production cost using bar chart.

Number of Units Produced (X)	Process Y = 800 + 6X	Total Cost (Y)
0		
1		
2		
3		
4		
5		
6		

Presentation of Data Using Multiple Bar Charts

Activity No. 1

The following table represents the profits achieved by some Qatari corporations in QAR million. Display the data using multiple bar charts (a group for each company).

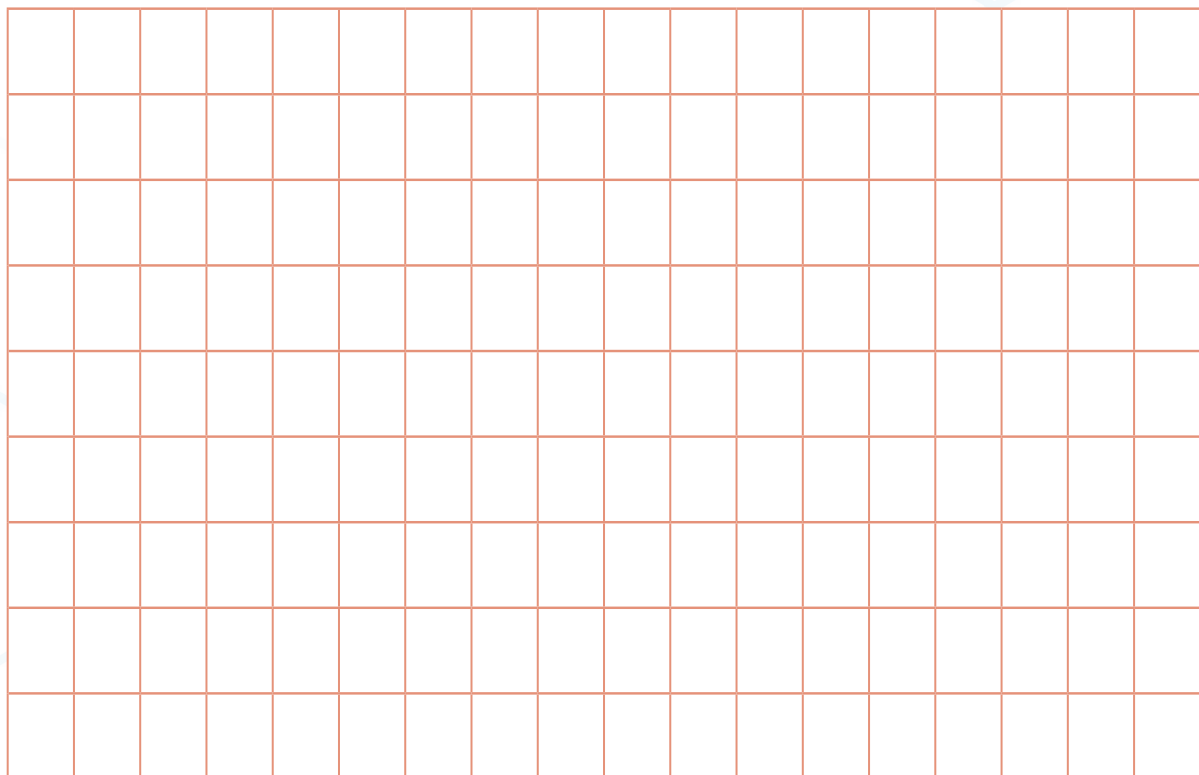| No.	Company name	Profit in 2012	Profit in 2013
1	Al Kaleej Takaful	40	60
2	Al-Khalij Holding	300	210
3	Dlala	70	110
4	Doha Insurance	90	52
5	Gulf International	154	190

Activity No. 2

The following table represents the profits achieved by some Qatari corporations in QAR million. Display the data using multiple bar charts (a group for each year).

No.	Company name	Profit in 2012	Profit in 2013
1	Al Kaleej Takaful	40	60
2	Al-Khalij Holding	300	210
3	Dlala	70	110
4	Doha Insurance	90	52
5	Gulf International	154	190

Activity No. 3

The following table represents the profits achieved by some Qatari corporations in QAR millions. Display the data using multiple bar charts (a group for each year).

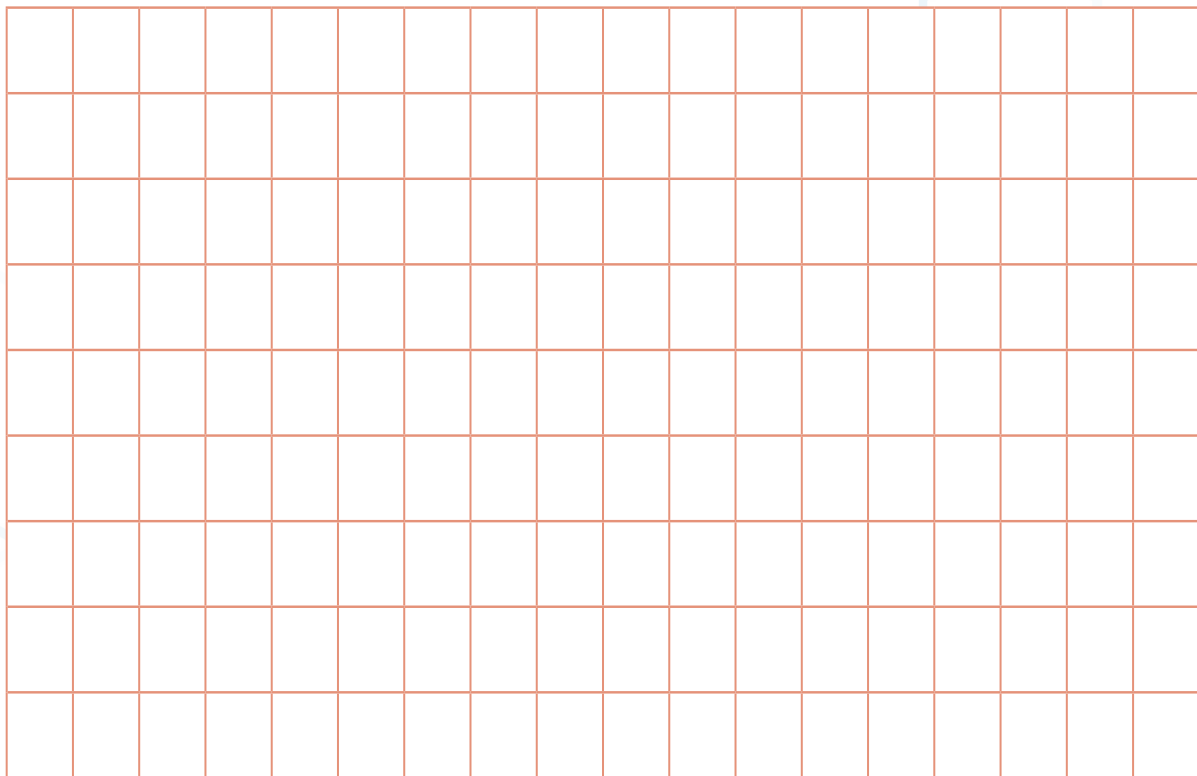| No.	Company name	Profit in 2011	Profit in 2012	Profit in 2013
1	Al-Khalij Holding	470	300	360
2	Doha Insurance	140	95	50
3	Gulf International	120	154	83

Activity No. 4

The following table represents the profits achieved by some Qatari corporations in QR millions. Display the data using multiple bar charts (a group for each company).

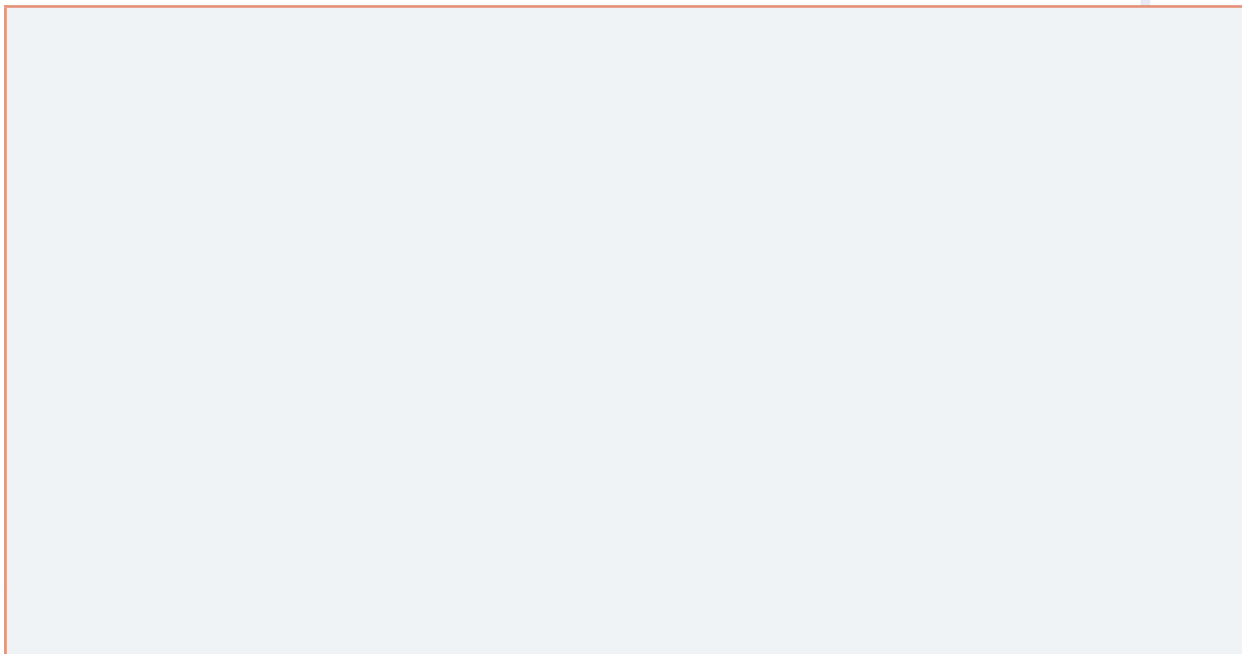| No.	Company name	Profit in 2011	Profit in 2012	Profit in 2013
1	Al-Khalij Holding	470	300	360
2	Doha Insurance	140	95	50
3	Gulf International	120	154	83

Presentation of Data Using Pie Charts

Activity No. 1

The following table represents the percentage of buying shares by investor type during 2013, quoted from Qatar Stock Exchange. Organize the data using pie charts, and then answer the questions?

Type of Investor	Percentage of Buying To Total Value			
	Qatari's Transactions		Non-Qatari's Transactions	
Individuals	36.17%		11.74%	
Institutions	30.34%		21.75%	

a. How many categories are in your classification?

b. What category got the highest frequency?

c. What category got the lowest frequency?

Activity No. 2

The following table represents the percentage of selling shares by investor type during 2013 quoted from Qatar exchange. Organize the data using pie charts, and then answer the questions?

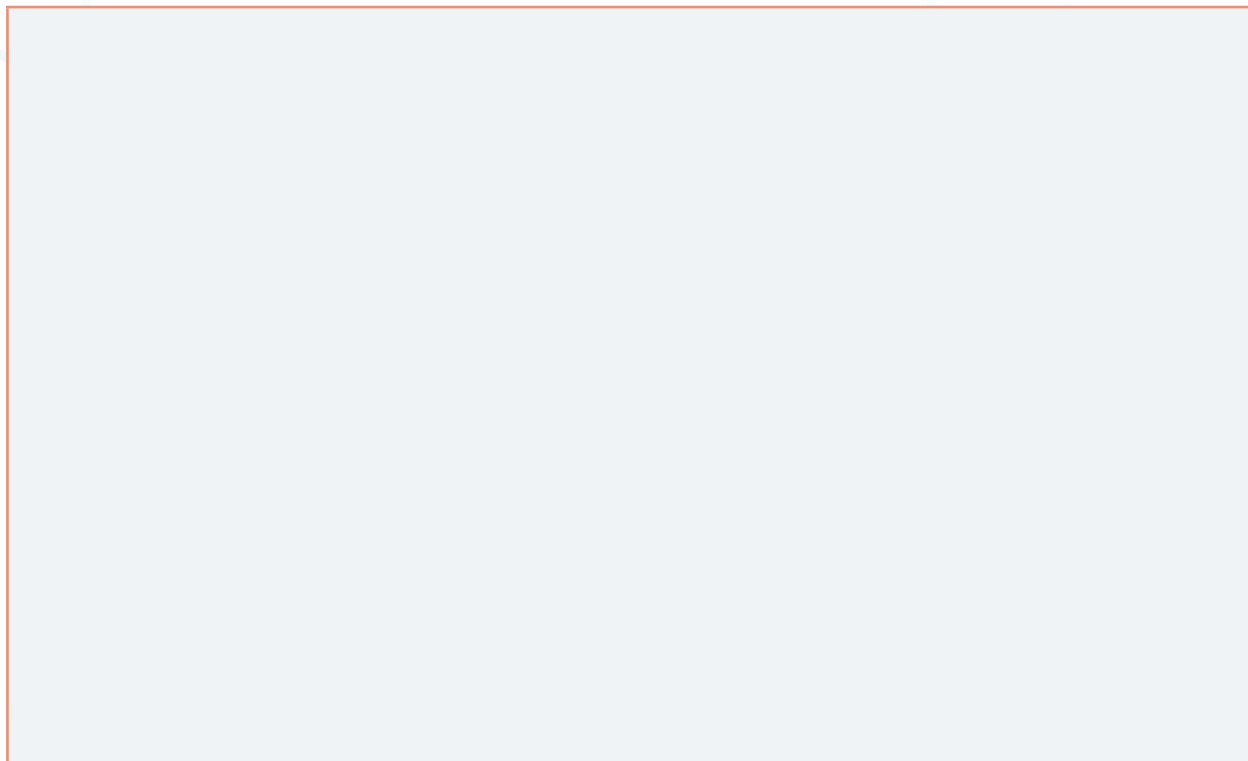| Type of Investor	Percentage of Buying To Total Value			
	Qatari's Transactions		Non-Qatari's Transactions	
Individuals	36.70%		11.68%	
Institutions	26.79%		24.83%	

a. How many categories are in your classification?

b. What category got the highest frequency?

c. What category got the lowest frequency?

Activity No. 3

The following table represents annual trades report of Qatari corporations traded in QE grouped according to sectors. Organize the data using pie charts, and then answer the questions.

Sector	Number of Transactions	Angle°
Banking & Financial	409,210	
Insurance	23,108	
Industry	165,173	
Services	521,608	
Total of Sectors	1,119,099	

a. What is the percentage of services sector?

b. What is the percentage of Banking & Financial sector?

Activity No. 4

The following table represents annual trades report of Qatari corporations traded in QE grouped according to sectors. Organize the data using two pie charts for each column in the table, and then answer the questions.

Sector	Traded number in millions	Angle°	Value in (billions QR)	Angle°
Banking & Financial	775.3		33.5	
Insurance	22.5		1.3	
Industry	218.1		13.8	
Services	1,287		34.8	
Total of Sectors	2,302.9		83.4	

Activity No. 5

The following pie-chart shows the percentage distribution of the expenditure of publishing a book. Study the pie-chart and the answer the questions based on it.

Various Expenditures (in percentage) to Publish a Book
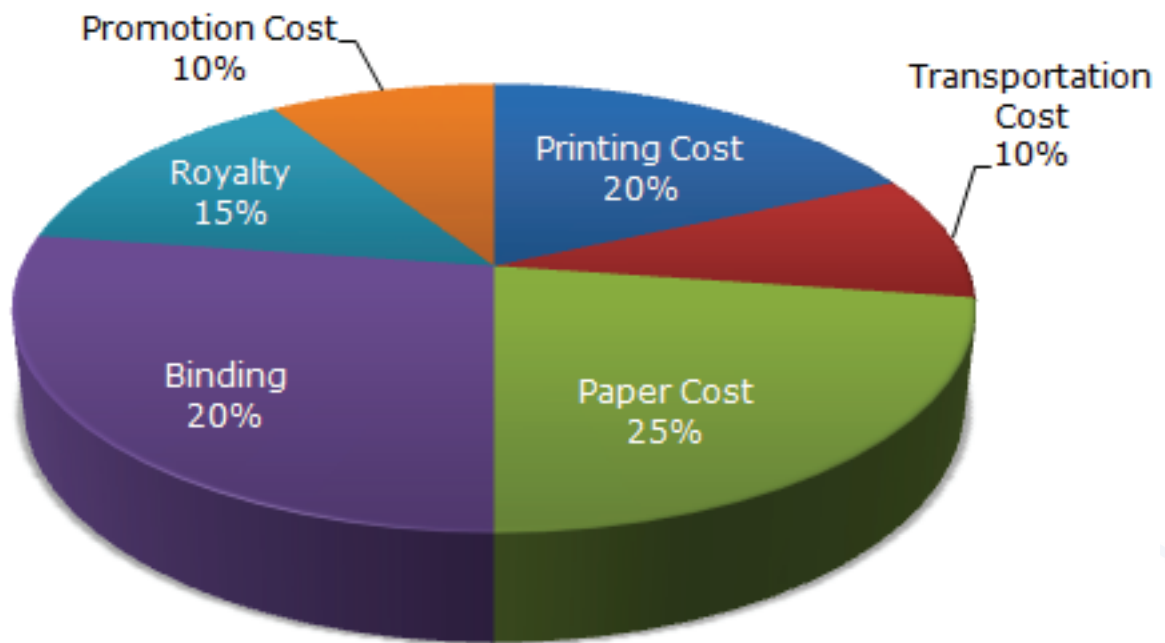
a. If the publisher has to pay QAR 30,600 as printing cost, what is the amount of royalty to be paid for these books?

A. QAR 19,450   B. QAR 21,200

C. QAR 22,950   D. QAR 26,150

b. What is the central angle of the expenditure incurred on royalty?

A. 15º   B. 24º

C. 54º   D. 48º

Activity No. 6

The following pie charts exhibit the distribution of the overseas tourist traffic from India. The two charts show the tourist distribution by country and the age profiles of the tourists respectively.
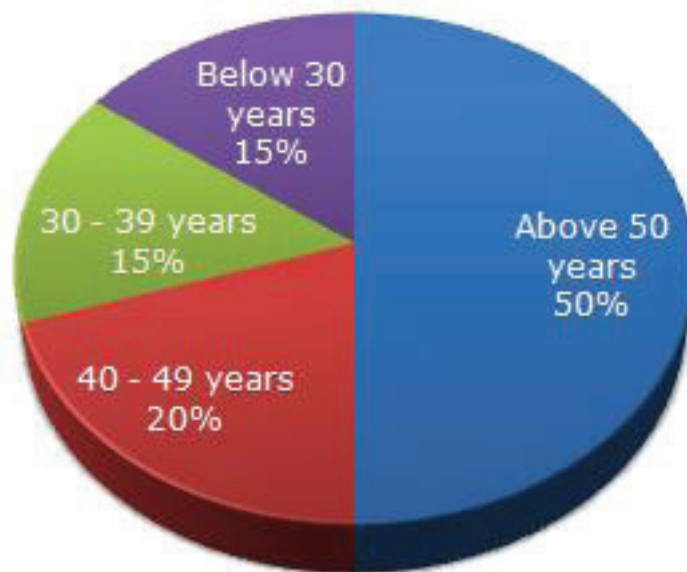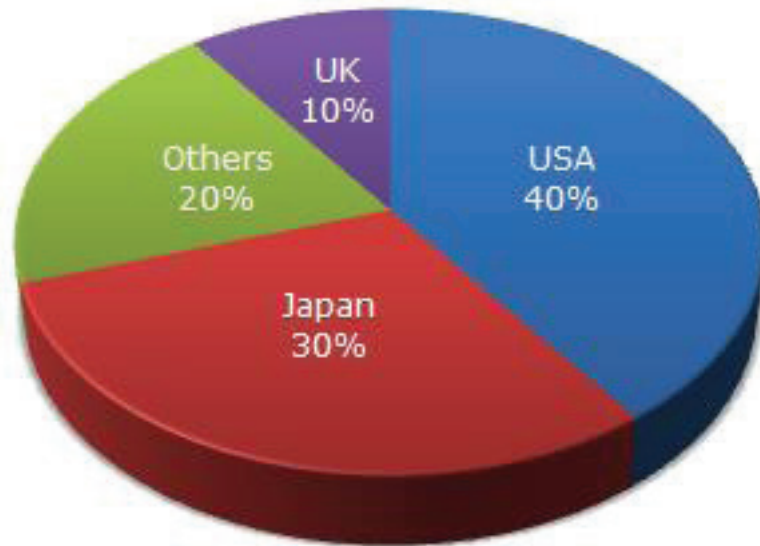
a. What percentage of Indian tourist went to either USA or UK?

b. If the total number of Indian tourists went overseas is 57 millions in the year 2011. What is the number of tourists went to the USA. And what is the number of tourists in the group of age 30-39 years.

STOP

Test Your Knowledge and Skills

Activity No. 1

The following table represents the sales achieved by Qatari corporations registered in Qatar Stock Exchange. Classify the companies using a frequency table of 4 groups.

No.	Company name	Sales in QR millions	No.	Company name	Sales in QR millions
1	Mazaya	90	9	Qatar Navigation	74
2	Medicare	10	10	Qatar Oman	539
3	National Leasing	28	11	Qatar Telecom	850
4	Cinema	6	12	Salam International	631
5	Electricity & Water	980	13	Vodafone Qatar	208
6	Qatar Fuel	62	14	Islamic Holding	160
7	Nakilat	47	15	Mannai Corp.	53
8	Qatar Meat	17	16	Mawashi	430

No.	Category	Frequency
1	From 0 to 200	
2	From 201 to 400	
3	From 401 to 600	
4	From 601 to 800	
5	From 801 to 1000	

a. How many categories are in your classification?

b. What category got the highest frequency?

c. What category got the lowest frequency?

d. Which company made the highest sales?

Activity No. 2

The total costs of producing a washing machine is represented by the function

y = 800 + 6x. Plot the graphs of this function for production cost

Number of Units produced (X)	Process Y = 800 + 6X	Total Cost (Y)
0	800 + 6 X 0 =	
1	800 + 6 X 1 =	
2	800 + 6 X 2 =	
3		
4		
5		
6		

a. What is the total cost of the company if it produces 60 units?

b. What is the total cost of the company if it produces 720 units?

c. If the total cost in 14-03-2013 is QR 3920, how many units were produced in that day?

d. If the total cost in 10-07-2013 is QR 3020, how many units were produced in that day?

Activity No. 3

Abderahmaan's company sells CD package at QR 15 per unit. If it sells x units daily, then its revenue (y) is represented by the function: $Y = 18 + 15X$. Plot the graph of this function for daily sales using bar charts.

Number of Units Sold (X)	Process $Y = 5 + 25X$	Revenue (Y)
0	18 + 15 X 0 =	
1	18 + 15 X 1 =	
2	18 + 15 X 2 =	
3		
4		
5		
6		
7		
8		

a. What is the revenue of the company if it sells 300 units in one day?

b. If the revenue of 17-03-2013 is QR 18768, how many units were sold in that day?

Activity No. 4

The following table represents the profits achieved by some Qatari corporations in QAR millions. Display the data using multiple bar charts (a group for each year).

No.	Company name	Profit in 2011	Profit in 2012	Profit in 2013
1	Al-Khalij Holding	470	300	360
2	Doha Insurance	140	95	50
3	Gulf International	120	154	83

Activity No. 5

The following table represents the profits achieved by some Qatari corporations in QR millions. Display the data using multiple bar charts (a group for each company).
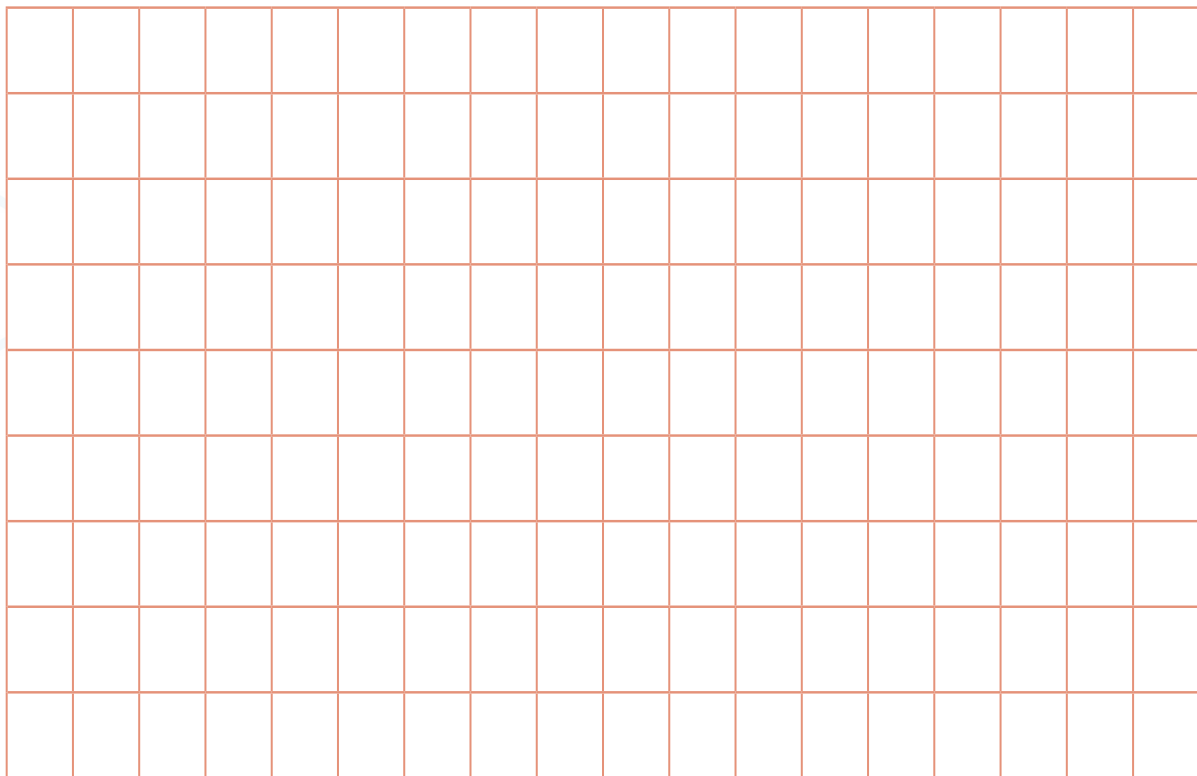
No.	Company name	Profit in 2011	Profit in 2012	Profit in 2013
1	Al-Khalij Holding	470	300	360
2	Doha Insurance	140	95	50
3	Gulf International	120	154	83

Activity No. 6

The following table represents annual trades report of Qatari corporations traded in QE grouped according to sectors. Organize the data using pie charts, and then answer the questions.

Sector	Number of Transactions	Angle°
Banking & Financial	409,210	
Insurance	23,108	
Industry	165,173	
Services	521,608	
Total of Sectors	1,119,099	

a. What is the percentage of services sector?

b. What is the percentage of Banking & Financial sector?

Chapter 4

Break Even Analysis

Break Even Point (BEP)

Activity No. 1

Fahad owns a factory that produces and sells leather covers for smart phones. The total cost of production per month is represented by the function TC = 3,000 + 50X. The selling price in the market is QAR 170. The total revenue from selling the product in the market is represented by the function TR = 170X. Draw the linear graphs for the two functions, and find the BEP.

Number of Units	Process TC = 3,000 + 50X	Total Cost	Process TR = 170X	Total Revenue
0	3,000 + 50*0 =		170*0 =	
20				
25				
30				

Activity No. 2

Mubarak owns a factory that produces and sells leather covers for smart phones. The total cost of production is represented by the function TC = 30,000 + 80X. The selling price in the market is QAR 130. The total revenue from selling the product in the market is represented by the function TR = 130X. Draw the linear graphs for the two functions, and find the BEP.

Number of Units	Process TC = 30,000 + 80X	Total Cost	Process TR = 130X	Total Revenue
0	30,000 + 80*0 =		130*0 =	
200	30,000 + 80*200 =		130*200	
600				
900				

Activity No. 3

Hamad owns a store that sells iPhone. The total cost of offering the services per month is represented by the function TC = 45,000 + 2800X. The selling price in the market is QAR 3400. The total revenue from selling the product in the market is represented by the function TR = 3400X. Draw the linear graphs for the two functions, and find the BEP.

Number of Units	Process TC = 45,000 + 2800X	Total Cost	Process TR = 130X	Total Revenue
0	45,000 + 2800*0 =		3400*0 =	
50	45,000 + 2800*50 =		3400*50 =	
75				
100				

Finding the Fixed Cost for a Company

$$\text{Total Cost} = \text{Fixed Cost} + \text{Variable Cost}$$

$$TC = 3{,}000 + 50X$$

Fixed Costs are expenses that do not change with production or sales volumes. They are constant in the short run of the company. They include salaries, building rent, insurance, loan interest, utilities bills.

Activity No. 1

Calculate the breakeven point BEP for the A&A company using the following financial data:

- The monthly fixed cost expenses: Salaries QAR 5,000, building rent QAR 15,000, insurance QAR 700, loan interest QAR 1450, utilities bills QAR 2300.

- The variable cost is represented by 1500X. Design the total cost function for the company.

- The total revenue function is represented by 1800X.

Number of Units	Process TC =	Total Cost	Process TR =	Total Revenue

Activity No. 2

Calculate the breakeven point BEP for the N&B WLL Company using the following financial data:

- The monthly fixed cost expenses: Salaries QAR 9,000, building rent QAR 10,000, insurance QAR 1900, loan interest QAR 5000, utilities bills QAR 2000.

- The variable cost is represented by 4,300X. Design the total cost function for the company.

- The total revenue function is represented by 4,500X.

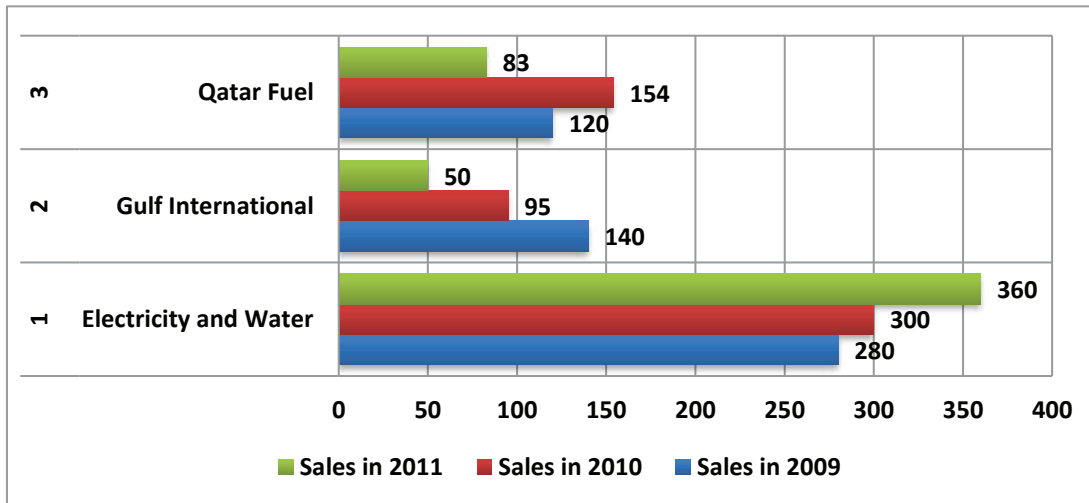| Number of Units	Process TC =	Total Cost	Process TR =	Total Revenue

Activity No. 3

Look at the multiple bar chart below which displays business info. for three Qatari Companies then answer the questions.

a) Are the sales of E&W co. increasing or decreasing over time?

b) Are the sales of Gulf International co. increasing or decreasing over time?

c) Which is greater in 2011, the sales of Qatar Fuel or Gulf International?

d) Which is lower, the sales of Qatar Fuel in 2010 or Gulf International in 2009?

e) Display the data using multiple bar charts (a group for each year).

Test Your Knowledge and Skills

Activity No. 1

Hamad owns a store that sells iPhone. The total cost of offering the services per month is represented by the function TC = 45,000 + 2800X. The selling price in the market is QAR 3400. The total revenue from selling the product in the market is represented by the function TR = 3400X. Draw the linear graphs for the two functions, and find the BEP.

Number of Units	Process TC = 45,000 + 2800X	Total Cost	Process TR = 130X	Total Revenue
0	45,000 + 2800*0 =		3400*0 =	
50	45,000 + 2800*50 =		3400*50 =	
75				
100				

Activity No. 2

Calculate the breakeven point BEP for the N&B WLL Company using the following financial data:

- The monthly fixed cost expenses: Salaries QAR 9,000, building rent QAR 10,000, insurance QAR 1900; loan interest QAR 5000, utilities bills QAR 2000.

- The variable cost is represented by 4,300X. Design the total cost function for the company.

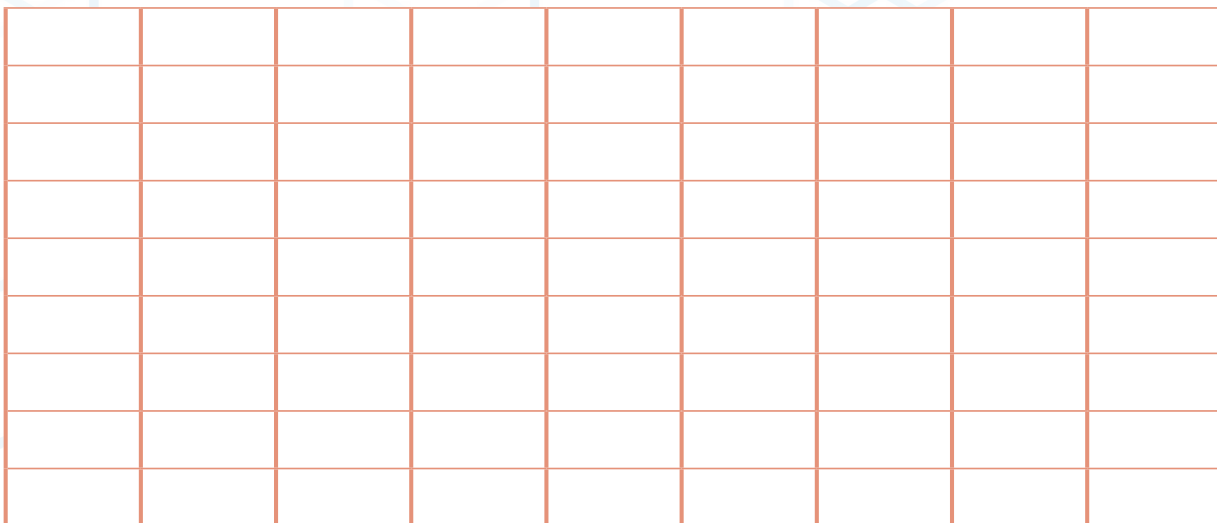- The total revenue function is represented by 4,500X.

Number of Units	Process TC =	Total Cost	Process TR =	Total Revenue

Chapter **5**

Supply & Demand Functions

The Demand Function

A demand function and the demand curve, represent the amount of a product that buyers purchase at various prices. Following the law of demand, the demand curve is represented as downward-sloping, meaning that as price decreases, consumers will buy more of the good.

Activity No. 1

After studying the garment market for two years, Doha Fashion Company developed a demand function for its store sales. The demand function is represented by D = 500 − 8P for the plain T-shirts.

a. Substitute in the demand function by suitable values.

b. Draw the demand curve using the previous values.

c. Describe the relationship between the quantity demanded and price.

Point	Price in QAR	Quantity purchased by customers
A	20	
B	30	
C	40	
D	50	
E	60	

Activity No. 2

After studying the fast food market for 1 years, KFC developed a demand function for its store sales to customers. The demand function is represented by D = 300 − 4P for the main snack meal.

a. Substitute in the demand function by suitable values.

b. Draw the demand curve using the previous values.

c. Describe the relationship between the quantity demanded and price.

Point	Price in QAR	Quantity purchased by customers
A	20	
B	30	
C	40	
D	50	
E	60	

The Supply Function

The supply function is a relationship mainly between supply quantity and the price that affect supplier to offer goods for sale. The graphic relationship of price and supply is called the supply curve. The curve is generally positively sloped. The curve depicts the relationship between two variables only; price and quantity supplied.

Activity No. 1

The supply function for Doha Fashion Company is represented by $S = 150 + 2P$ for the plain T-shirts.

a. Substitute in the supply function by suitable values.

b. Draw the supply curve using the previous values.

c. Describe the relationship between the quantity supplied and price.

Point	Price in QAR	Quantity purchased by customers
A	20	
B	30	
C	40	
D	50	
E	60	

Activity No. 2

The supply function for KFC is represented by S = 100+ 5P for the main snack meal.

a. Substitute in the supply function by suitable values.

b. Draw the supply curve using the previous values.

c. Describe the relationship between the quantity supplied and price.

Point	Price in QAR	Quantity purchased by customers
A	20	
B	30	
C	40	
D	50	
E	60	

The Market Equilibrium

Consumers and producers react differently to price changes. Higher prices tend to reduce demand while encouraging supply, and lower prices increase demand while discouraging supply. Equilibrium price is also called market clearing price because at this price the exact quantity that producers take to market will be bought by consumers, and there will be nothing 'left over'.

Activity No. 1

The weekly demand and supply schedule for a brand of soft drinks at various prices (between 40 p and £1.10 p) is shown opposite. Draw the linear diagram represents the market.

Price (£)	Quantity Demanded	Quantity Supplied
110	0	1000
100	100	900
90	200	800
80	300	700
70	400	600
60	500	500
50	600	400
40	700	300

Activity No. 2

After studying the garment market for two years, Doha Fashion Company developed a demand function for its store sales. The daily demand function is represented by D = 500 - 8P. The supply function is represented by S = 150+ 2P.

a. Substitute in the demand and supply functions by suitable values.

b. Draw the demand and supply curve using the previous values.

c. Find the equilibrium price and quantity on the chart.

Point	Price in QAR	Quantity purchased by customers	Quantity produced by company
A	20		
B	30		
C	40		
D	50		
E	60		

Activity No. 3

After studying the garment market for 1 years, KFC developed a demand function for its store sales. The demand function is represented by D = 300 − 4P. The supply function is represented by S = 100+ 5P.

a. Substitute in the demand and supply functions by suitable values.

b. Draw the demand and supply curve using the previous values.

c. Find the equilibrium price and quantity on the chart.

Point	Price in QAR	Quantity purchased by customers	Quantity produced by company
A	20		
B	30		
C	40		
D	50		
E	60		