IB Math Studies / Algebra 2

7.3 Currency Conversions

1. The following is part of a display on the notice board of a bank in the United Kingdom. It shows the exchange rate between one British pound (GBP) and other currencies.

Geraldine eats a meal in a restaurant while on holiday in Greece. The meal costs 4256 drachma (DR).

EXCHANGE RATES		
	Bank buys foreign currency	Bank sells foreign currency
Denmark (KR)	11.38	10.78
Finland (MKK)	7.00	6.60
France (FFR)	10.05	9.45
Germany (DM)	2.854	2.799
Greece (DR)	292	266

NO COMMISSION CHARGED

(a) Calculate the cost of the meal in British pounds.

$$\frac{x}{1} = \frac{4256}{266} \qquad x = 16 \ GBP$$

b) The Williams family go to Germany. Before leaving, they change GBP 600 into German marks. Calculate the number of German marks they receive for GBP 600, giving your answer correct to two decimal places.

$$\frac{x}{2.799} = \frac{600}{1} \qquad x = 1678.80 \ DM$$

c) They spend DM 824 in Germany, and on returning to the United Kingdom, they change their remaining German marks into British pounds. Calculate the number of British pounds they receive, correct to two decimal places.

$$1678.80 - 824 = 854.8 \ DM \ remaining$$

$$\frac{x}{1} = \frac{854.8}{2.854} \qquad x = 299.51 \ GBP$$

2. The following is a currency conversion table:

	FFR	USD	JPY	GBP
French Francs (FFR)	1	p	q	0.101
US Dollars (USD)	6.289	1	111.111	0.631
Japanese Yen (JPY)	0.057	0.009	1	0.006
British Pounds (GBP)	9.901	1.585	166.667	1

For example, from the table 1 USD = 0.631 GBP.
Use the table to answer the following questions.

a) Mireille wants to change money at a bank in London.

   i) How many French Francs (FFR) will she have to change to receive 140 British Pounds (GBP)?

$$\frac{X}{1} = \frac{140}{0.101} \qquad X = 1386.14 \text{ FFR}$$

   ii) The bank charges a 2.4% commission on all transactions. If she makes this transaction, how many British Pounds will Mireille actually receive from the bank?

$$140(1-0.024) = 136.64 \text{ GBP}$$

b) Find the values of p and q, correct to three decimal places.

$$p = \frac{1 \text{ USD}}{6.289 \text{ FFR}} = 0.159$$

$$q = \frac{1 \text{ YEN}}{0.057 \text{ FFR}} = 17.54$$

3. The exchange rate from US dollars (USD) to French francs (FFR) is given by 1 USD = 7.5 FFR. Give the answers to the following correct to two decimal places.

a) Convert 115 US dollars to French francs.

$$\frac{x}{7.5} = \frac{115}{1}$$

$$x = 862.50 \text{ FFR}$$

b) Roger receives 600 Australian dollars (AUD) for 2430 FFR. Calculate the value of one US dollar in Australian dollars.

$$\frac{x}{600} = \frac{1 \text{ FFR}}{2430}$$

$$x = 0.247 \text{ AUD} \quad \text{for 1 FFR}$$

$$\underline{\times 7.5 \text{ FFR} \quad \text{for 1 USD}}$$

$$1.85 \text{ AUD} \quad \text{for 1 USD}.$$

Frederick had to change British pounds (GBP) into Swiss francs (CHF) in a bank. The exchange rate is 1 GBP = 2.5 CHF. There is also a bank charge of 3 GBP for each transaction.

a) How many Swiss francs would Frederick buy with 133 GBP?

$$133 - 3 = 130 \text{ GBP} \quad \text{to} \quad CHF$$

$$\frac{x}{2.5} = \frac{130}{1} \qquad x = 325 \ CHF$$

b) Let s be the number of Swiss francs received in exchange for b GBP. Express s in terms of b.

$$s = 2.5(b - 3)$$

c) Frederick received 430 CHF. How many British pounds did he exchange?

$$430 = 2.5(b-3)$$

$$b = 175 \ GBP$$