Calculating Interest Earned on Accounts:

1. Jodie received $530 from family members for her birthday. She plans to buy a car in the near future, and she is putting all of the birthday money towards the purchase. On June 1, she opened a savings account and deposited the $530. The account pays an annual interest rate of 0.50% compounded daily.

$r = 0.5\% \div 100 = 0.005$

(a) How much interest will Jodie earn in one month?

$i = \frac{0.005}{365}$ $n = 30$

$A = P(1+i)^n$

$= 530\left(1+\frac{0.005}{365}\right)^{30}$

$A = 530.22$

$I = 530.22 - 530.00$

$= 0.22$

The interest earned is $0.22.

(b) How much interest will Jodie earn in six months? (June – November)

$i = \frac{0.005}{365}$ $n = 30+31+31+30+31+30$

$= 183$

$A = 530\left(1+\frac{0.05}{365}\right)^{183}$

$= 531.33$

$I = 531.33 - 530.00$

$= 1.33$

The interest earned is $1.33.

2. Determine the future value of each amount deposited into a daily interest savings account.

(a) $400 for one year at 2.5% per year

n in days

$A = 400\left(1+\frac{0.025}{365}\right)^{365}$

$= 410.13$

Future value is $410.13

(b) $2500 for one week at 1% per year

N = 365

n

$A = 2500\left(1+\frac{0.01}{365}\right)^{7}$

$= 2500.48$

Future value is $2500.48

Calculating Services Charges:

3. Hun's bank charges $5.95 for up to 10 transactions per month plus 75¢ for each additional transaction. In November, he made eight transactions; in December, he made 23 transactions. Determine the service charges deducted from Hun's account balance each month.

Service Charge = **Monthly Fee** + **Cost of Extra Transactions** (Number of extra transactions × Fee)

In November: # of transactions = 8 # of extra transactions = 0

Service Charge = 5.95 + 0
= 5.95

In December: # of transactions = 23 # of extra transactions = 13

Service Charge = 5.95 + 13 X 0.75
= 15.7

P r = 0.0325

4. Sara has $600 in a savings account. This account pays 3.25% interest per year, compounded daily. Her financial institution does not charge a fee for transactions on her account.

N = 365 I = ?

(a) How much interest will Sara earn in the month of May? → 31 days in May

$$A = 600\left(1 + \frac{0.0325}{365}\right)^{31}$$
$$= 601.66$$

$I = 601.66 - 600$
$= 1.66$

She will earn $1.66 in interest.

(b) How much interest will she earn in one year? n = 365

$$A = 600\left(1 + \frac{0.0325}{365}\right)^{365}$$
$$= 619.82$$

$I = 619.82 - 600$
$= 19.82$

She will earn $19.82 in interest.

For Questions 5 and 6, refer to the following table.

Banking Option 1	Banking Option 2	Banking Option 3
$9.75 per month for the first 10 transactions; $1.25 for each additional transaction	$14.75 per month for the first 25 transactions; $1.25 for each additional transaction	$24.95 per month for an unlimited number of transactions

1 extra

$\frac{30}{7} = 4.3$

5. In a typical month, Jack uses an automated bank machine (ABM) twice a week to withdraw cash from his chequing account. Each month, his car payment and his car insurance premium are automatically deducted from his account. 2

(a) How many transactions does Jack make in a typical month?

There are actually 4 weeks plus 2 or 3 days in a month. If Jack withdraw twice in a week, he would withdraw 9 times in a month. 8 times for the first two weeks then an extra time for the first half of the following week.

Total transactions = 2 x 4 + 1 + 1 + 1 = 11 transactions in a typical week

Jack makes 11 transactions in a typical month.

(b) Which banking option might be best for Jack? Explain.

Jack should choose option 1 because it is the cheapest and he does not make a lot of transactions to make it worthwhile to take option 2 and option 3.

(c) Calculate the total cost and the cost per transaction for each option.

① $9.75 + 1 \times 1.25$ ② $14.75 ③ $24.95

$= \$11$

Total cost = $11
Cost per transaction:
$11÷11
= $1/transaction

Total cost = $14.75
Cost per transaction:
$14.75÷11
= $1.34/transaction

Total cost = $24.95
Cost per transaction:
$24.95÷11
= $2.26/transaction

6. Alex is paid bi-weekly by cheque. He usually uses his debit card two or three times per week.

(a) Which banking option might be best for Alex? Explain.

2 + 14 = 16 12 - 14 → 14

① 9.75 + 6 x 1.25 = 17.25

② 14.75 + 0 = 14.75

③ 24.95 + 0 = 24.95

Alex should choose option 2 because .....

(b) On October 1, when he went online to do his banking, Alex noticed bank charge debits from his account by his bank for $9.75 and $7.50. Which banking option does Alex currently use? Explain.

Alex currently uses Option 1 because the $9.75 is the charge for the monthly fee and $7.50 is the charge for extra debit transactions over the month.

(c) How many transactions were made in Alex's account last month? Explain.

Number of transactions = extra fee/1.25 + 10

= 7.50/1.25 + 10

= 6 + 10

= 16

Alex made 16 transactions because $7.50 is for 6 extra transactions and add 6 to 10 is 16 transactions in total.

(d) Calculate the total cost and the cost per transaction for Alex last month.

Total cost = $9.75 + 7.50

= $17.25

Cost per transaction = $17.25/16

= $1.08/transaction

Worksheet 7-3: Creating Investment Portfolio

You become an investment advisor and you create investment portfolio for your client.

For the two clients below, create an investment portfolio for each client based on the completed Risk Tolerance Questionnaire.

Client 1: Mr. and Mrs. Safe

Mr. and Mrs Safe are in their 60's and both of them are retired. They receive regular pension income. Their house and their car are both paid off. They are debt free with a saving of $10000, earning little interest sitting in a savings account.

Recommendation for Investment Portfolio

< 20 points:	**100% in saving/low-risk investments**
20 – 30 points:	**5% to 20% in savings/low-risk investments** **60% to 80% in moderate-risk investments** **35% to 0% in higher-risk investments**
31 – 45 points:	**0% to 5% in savings/low-risk investments** **40% to 50% in moderate-risk investments** **60% to 45% in higher-risk investments**

GIC 30% x 10000 = $3000

Government Bond 40% x 10000 = $4000

Canada's Savings Bond 30% x 10000 = $3000

Client 2: Mr. Young

Mr. Young is married with 2 young children. He is a senior manager of a big corporation. He has not paid off his home mortgage. His wife stays home with the kids. He recently inherited $5000. He would like to invest this money for any future emergency.

Recommendation for Investment Portfolio

< 20 points:	**100% in saving/low-risk investments**
20 – 30 points:	**5% to 20% in savings/low-risk investments** **60% to 80% in moderate-risk investments** **35% to 0% in higher-risk investments**
31 – 45 points:	**0% to 5% in savings/low-risk investments** **40% to 50% in moderate-risk investments** **60% to 45% in higher-risk investments**

Canada's Savings Bond 20% x 5000

High-risk growth Fund 15% x 5000

Corporate Bond 50% x 5000

Blue chip Stock 15% x 5000