

Unit 6 Review

Financial Services

Frédéric makes 2 direct deposits per month and pays 4 bills online. Last month, he also made 5 cash withdrawals and 10 debit purchases with his bank card. He maintains a minimum monthly balance of \$1500.00. Calculate his service charges for the month if he had a:

a) Value Account.

$$2 + 4 + 5 + 10 = 21 \text{ transactions}$$

$$21 - 10 (\text{free}) = 11$$

$$11 \times 0.5 = \$5.50$$

monthly fee waived

b) Self-service Account.

NORTHWEST BANK OF CANADA SERVICE PACKAGES				
	Value Account	Self-service Account	Full-service Account	Bonus Savings Account
Monthly fee	\$3.90	\$10.90 Students and Youth (under 18) save 50% on the monthly fee	\$24.50	No fee
Fee waived on minimum monthly balance	\$1000.00	\$1500.00	\$2000.00	
Transactions covered by monthly fee: • cheques • withdrawals • bill payments • debit purchases • transfers to other Northwest Bank of Canada accounts	10 self-service	25 self-service	40 self-service or teller-assisted No annual fee for a credit card	2 debit transactions
Charge for additional transactions not covered by monthly fee	Self-service \$0.50 each Teller-assisted \$1.00 each	Self-service \$0.50 each Teller-assisted \$1.00 each	Self-service \$0.25 each	Self-service or teller-assisted \$1.25 each
Non-Northwest Bank of Canada ATM	\$1.50 each	\$1.50 each		

The following is Onani's accounting of his transactions for the past month. He has a Value Account.

Transaction	Description	Withdrawal	Deposit	Balance
ATM	Cash	\$100.00	1	\$4398.40
ATM (non-Northwest Bank)	Cash (other ATM)	\$40.00		
Bank card	Lunch	\$12.95	2	
Bank card	Groceries	\$174.32	3	
ATM	Birthday gift		4 \$50.00	
Teller	Phone bill	\$62.31		
Auto-withdrawal	Car payment	\$275.48	5	
ATM	Cash	\$100.00	6	
Direct deposit	Paycheque		7 \$586.21	
Auto-withdrawal	Rent	\$790.00	8	
Bank card	Groceries	\$58.21	9	
Bank card	Lunch	\$8.59	10	
Direct deposit	Paycheque		11 \$586.21	
Teller	Gas bill	\$107.45		

a) How much will Onani pay in extra transaction fees?

b) What will his balance be at the end of the month?

$$11 - 10(\text{free}) = 1$$

$$1 \times 0.5 = \$0.50$$

$$\text{Teller } 2 \times \$1 = \$1.00$$

$$\text{Non-bank } 1 \times 1.50 = \$1.50$$

$$0.50 + 1 + 1.50 = \$3$$

Example 1

- You would like to invest \$5000.00 in an account that offers simple interest. Calculate
- how much the investment would be worth at each of the following rates and terms:
- a) 3.00% per annum over a 2-year term;

$$I = Prt$$

$$I = 5000 \times 0.03 \times 2$$

$$= \$300$$

$$P = \$5000$$

$$r = 3\% = 0.03$$

$$t = 2 \text{ years}$$

$$5000 + 300 = \$5300 \quad \leftarrow \text{investment value}$$

- Calculate the final value of a deposit of \$5000.00 invested at 3.00% per annum, compounded annually, for 2 years.

$$A = P \left(1 + \frac{r}{n} \right)^{nt}$$

(once a year)

$$P = 5000$$

$$r = 3\% = 0.03$$

$$n = 1$$

$$t = 2$$

$$A = 5000 \left(1 + \frac{0.03}{1} \right)^{1 \times 2}$$

$$A = 5000 (1 + 0.03)^2$$

$$A = 5000 (1.03)^2$$

$$A = 5000 (1.0609)$$

$$A = \$5304.5$$

B
E
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M
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S

Example – Rule of 72

- Approximately how long will it take an investment of \$5000.00, invested at a rate of 3.75% per annum, compounded annually, to double in value

$$72 \div 3.75 = 19.2 \text{ years}$$

- Sheng Li has a \$4384.76 unpaid balance on his credit card that charges an interest rate of 19.50% per annum. The payment was due on March 23.
- a) His minimum payment is \$50.00 or 10% of the outstanding balance, whichever is more. What is the minimum he must pay?
- b) What will his balance be on April 15?

$$a) 4384.76 \times 0.1 = 438.48$$

Minimum Payment

$$b) \begin{array}{l} \text{March } 24 - 31, 8 \text{ days} \\ \text{April } 15 \text{ days} \end{array}$$

$$15 + 8 = 23 \text{ day in total}$$

$$I = Prt$$

$$= 4384.76 \times \frac{19.5}{365} \times 23$$

$$53.88 + 4384.76 = 4438.64$$

↑
amount owed

$$= 453.88$$

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- Javier's credit card charges 24.90% interest per annum. He used his credit card, which had no previous balance, to take out a cash advance of \$550.00 on December 10. Interest is calculated starting on the day of the withdrawal.
- a) Javier's next statement is dated December 21. For how many days is interest calculated for the balance on this statement?
- December 10-21 = 12 days (including December 10)

- 6. Sol is buying a new TV. The cash price is \$1675.89, or he can take the store promotion: "24 easy monthly payments of \$75!" If Sol chooses the store promotion, what annual rate of interest will he pay for the TV?

$$24 \times 75 = \$1800$$

$$1800 - 1675.89 = \$124.11 \quad A_{\text{interest}}$$

$$I = Prt$$

$$124.11 = (1675.89)r(2)$$

$$\begin{aligned} I &= 124.11 \\ P &= 1675.89 \\ t &= 24 \text{ months} \\ &= 24 \div 12 \\ &= 2 \text{ years} \end{aligned}$$

$$\frac{124.11}{\div 3351.78} = \frac{3351.78 \times r}{\div 3351.78}$$

$$0.037 = r$$

$$0.037 \times 100 = 3.7\%$$

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- Arleta borrowed \$500.00 for 25 days at 1.12% per day. How much did she have to repay?

$$I = P \cdot r \cdot t$$

$$I = 500 \times \cancel{1.12\%} \times 25 \text{ days}$$

0.0112

$$I = \$140$$

$$140 + 500 = \$640$$

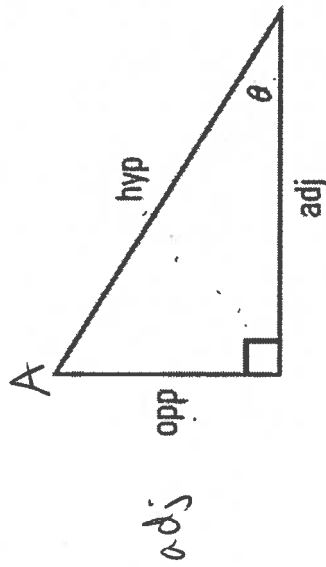
→
amount
to
repay

Study Guide

- Calculate fees for a bank account including transactions
- Simple Interest ($I = Prt$)
 - On Investments
 - On Credit Cards, financing
- Compound Interest
- Rule of 72
- Calculate fees for payday loans
- Calculate fees for store promotions
- Calculate interest rate and term from simple interest formula
- ~~Monthly Compound Interest Chart~~

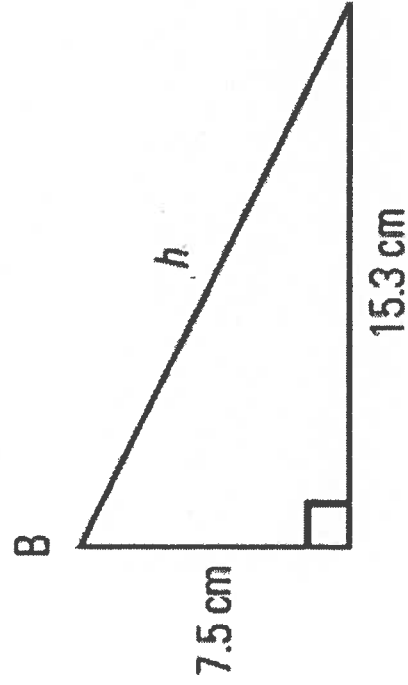
Unit 6 Review

Trigonometry of Right Angles



The sides are labelled as opposite (opp) angle θ , adjacent (adj) to angle θ , and as the hypotenuse (hyp).

Solve for h



BEIDMAS

$$a^2 + b^2 = c^2$$

$$7.5^2 + 15.3^2 = c^2$$

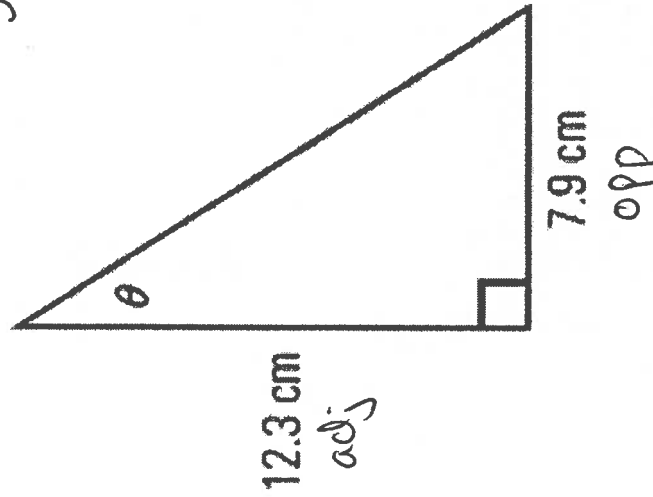
$$56.25 + 234.09 = c^2$$

$$\frac{290.34}{\sqrt{\quad}} = c$$

$$\sqrt{290.34} = c$$

$$17.04 \text{ cm} = c$$

SOH CAH TOA



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

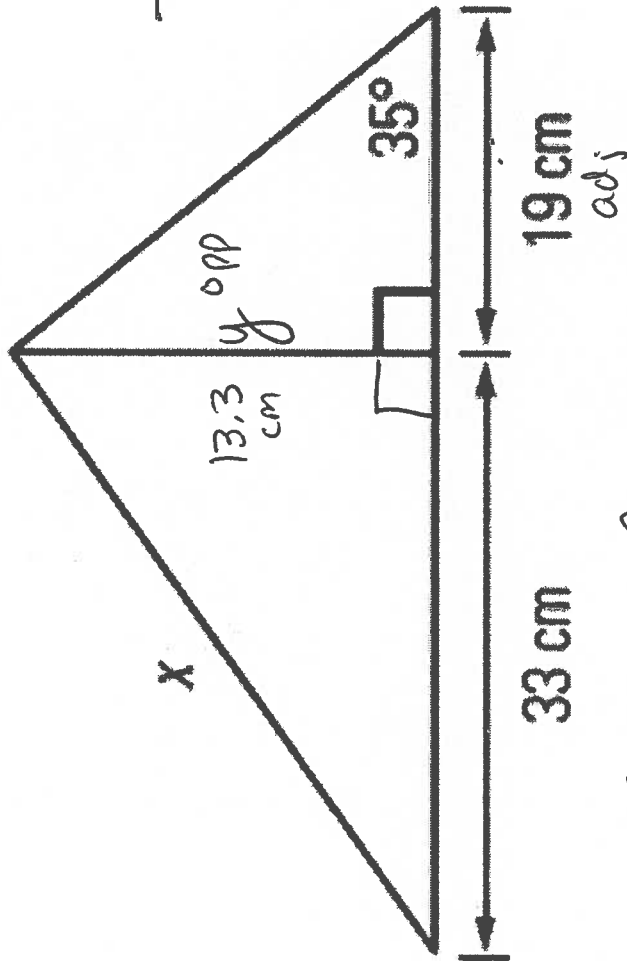
$$\tan \theta = \frac{7.9}{12.3}$$

$$\frac{\tan \theta = 0.642276}{\tan^{-1} \mid \tan^{-1}}$$

$$\theta = \tan^{-1}(0.642276)$$

$$\theta = 32.7^\circ$$

What is the length of x?



SOH CAH TOA

$$\tan 35^\circ = \frac{\text{opp}}{\text{adj}} = \frac{13.3}{19}$$

$$19 \times \tan 35^\circ = \text{opp}$$

$$13.3 \text{ cm} = \text{opp}$$

B
E
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$$a^2 + b^2 = c^2$$

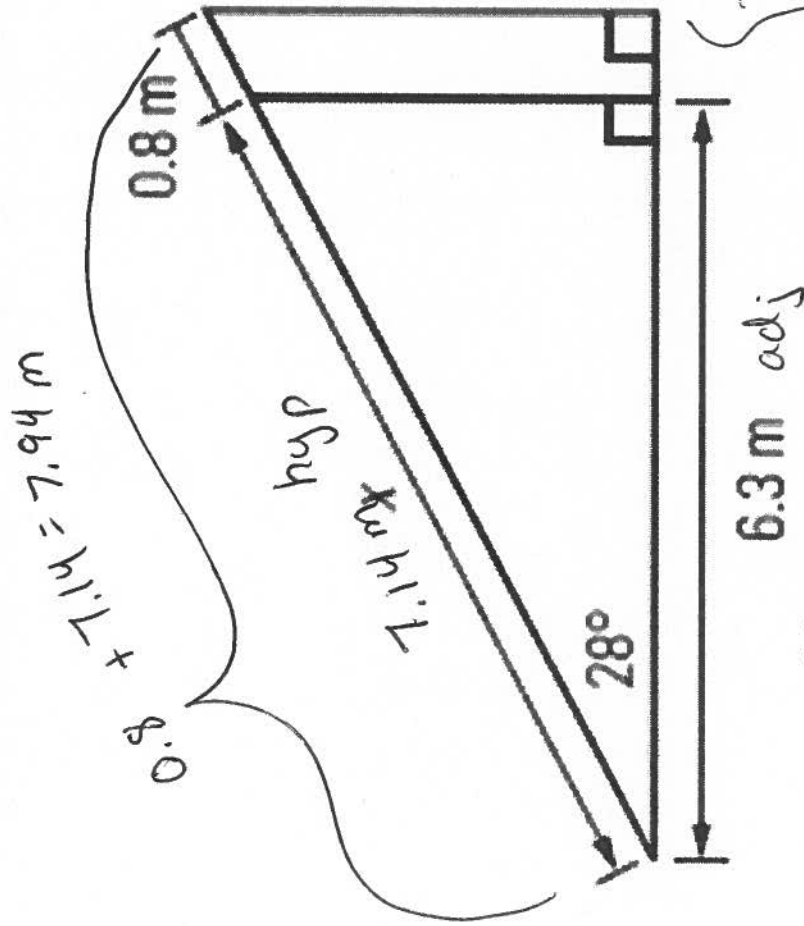
$$13.3^2 + 33^2 = c^2$$

$$176.89 + 1089 = c^2$$

$$\frac{1265.89}{\sqrt{\quad}} = c$$

$$x \rightarrow 35.58 \text{ cm} = c$$

Find each of the indicated sides.



SOH CAH TOA

$$\cos A = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 28^\circ = \frac{6.3}{\text{hyp}}$$

$$\text{hyp} \times \cos 28^\circ = 6.3$$

$$\text{hyp} = \frac{6.3}{\cos 28^\circ}$$

$$\text{hyp} = 7.14 \text{ m} = x$$

$$\sin A = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 28^\circ = \frac{\text{opp}}{7.94}$$

$$\text{opp} = 7.94 \times \sin 28^\circ$$

$$\text{opp} = \sin 28^\circ \times 7.94$$

$$\text{opp} = 3.73 \text{ m} = y$$

Study Guide

- Solve for lengths and angles using sin, cos and tan
- Pythagorean Theorem
- Two step questions involving the above.