

## LEVEL 1 — CONSUMER ARITHMETIC

- Q1. (a) Jeremy earns \$11.93 per hour and works a 38-hour week. Eddie earns \$11.28 per hour and works a 40-hour week. Who receives the higher weekly wage and by how much do the wages differ?
- (b) I am paid a salary of \$32 269 per year. What is my weekly salary if it is calculated on 52.178 weeks in a year?
- (c) On applying for a job Mandy is offered two remuneration plans. She can choose between a yearly salary of \$28 560 or a salary/commission package of \$24 000 yearly salary plus 5% commission. If her expected sales for the year amount to \$46 350, which option produces the higher yearly income?
- (d) Michael is paid \$9.75 per hour from Monday to Friday and time-and-a-half on weekends. For a week in which he worked from 8:30 a.m. to 6 p.m. each weekday, and from 11 a.m. to 3:30 p.m. on the Sunday, how much did Michael earn?
- Q2. Mary works a 38-hour week at a rate of \$8.62 per hour. Calculate her holiday loading if  $17\frac{1}{2}\%$  is given on 4 weeks' wage.
- Q3. Using the tax table on page 3, calculate the tax payable on the following taxable income:
- (a) \$5908      (b) \$21 053      (c) \$34 968      (d) \$43 124
- Q4. (a) Find the amount Ingrid will pay for a mountain bike worth \$336 if she pays \$45 deposit and \$17.50 per month for 18 months.
- (b) Greg wants to buy a car worth \$7760. He can either pay a deposit of \$1000 and then \$210 per month for 36 months, or he can borrow the entire amount at 6% p.a. simple interest payable over 24 months. Which is the better choice and by how much?
- Q5. (a) Which is the least expensive: chocolate ice cream at \$6.24 for 1.25 L, frozen yoghurt at \$3.96 for 750 mL or lemon sorbet at \$4.90 for 950 mL.
- (b) The same model TV is on sale at two stores. At store 1 the TV is priced at \$689, but a discount of 12% is offered. At store 2 the TV is priced at \$719, but a discount of 8% is offered plus a further 5% off the discounted price for cash payment. Which is the best buy and by how much?

- Q1. (a) Joydeep receives a normal hourly wage of \$18.60 and time-and-a-half for any overtime. On public holidays he receives double-time with a minimum of 4 hours paid. What is his wage for a week in which he works 40 normal hours, 6.5 hours overtime and 3 hours on a public holiday?
- (b) Karen earns a weekly gross salary of \$628. Tax of \$148.90 is deducted, 4.5% is paid into a superannuation fund and 8% is paid directly towards her mortgage. Karen aims to save 10% of her remaining income. What amount will she save each week?
- Q2. (a) Thomas received \$2176.10 as a holiday loading payment ( $17\frac{1}{2}\%$  on 4 weeks' pay). What is his weekly wage?
- (b) Kim receives time-and-a-half for any hours worked exceeding the normal 38 hours per week. The normal hourly rate is \$13.63. In a particular week Kim receives \$671.28. How many hours overtime did he work in that week?
- Q3. Becky earns \$633.81 for a 40-hour week. Any overtime is paid at double-time.
- (a) Using the tax schedule on page 40, what is the tax payable on Becky's normal wage?
- (b) How many hours overtime can she work in a year and still remain in the same tax category?
- Q4. On retirement Victor was offered the option of receiving monthly payments of \$1674.08 or a lump-sum payment of \$150 667.
- (a) What are the respective incomes per annum of each option if the lump sum can be invested at 11.5% p.a.
- (b) At what interest rate must the lump sum be invested in order for the yearly interest to exceed the yearly superannuation payment?
- Q5. Simone is buying a bedroom suite priced at \$1850. She has three payment options:
- (i) Pay cash and receive a discount of 8.5%.
- (ii) Pay a deposit of \$500 and 12 monthly payments of \$122.
- (iii) Purchase it on finance at 9.25% p.a. payable over 2 years.
- (a) How much will Simone pay under each option?
- (b) If Simone pays a deposit of \$500 and borrows the remainder at 9.25% p.a. for a 1 year term, will she be better off than if she chose option (ii)?

## TAX TABLE

Taxable income		Tax on taxable income
From	To	
\$1	\$5 250	Nil
\$5 251	\$17 650	Nil plus 32 cents for each \$1 in excess of \$5 250
\$17 651	\$34 000	\$3 968 plus 39 cents for each \$1 in excess of \$17 650
\$34 001 and over		\$10 344.50 plus 47 cents for each \$1 in excess of \$34 000

## Level 1 — Consumer arithmetic

ANSWERS

- Q1. (a) Jeremy, \$2.14 (b) \$618.44 (c) Salary pays \$2242.50 more (d) \$528.94  
 Q2. \$229.29  
 Q3. (a) \$210.56 (b) \$5295.17 (c) \$10 799.46 (d) \$14 632.78  
 Q4. (a) \$360 (b) \$1000 deposit and \$210/month is better by \$131.20  
 Q5. (a) Chocolate ice cream \$4.99/L (b) Store 1 is \$22.09 cheaper.

## Level 2 — Consumer arithmetic

- Q1. (a) \$1074.15 (b) \$40.06  
 Q2. (a) \$463 (b) 7.5 hours  
 Q3. (a) \$9938.17 (b) 32 hours  
 Q4. (a) Payments: \$20 088.96; Lump sum: \$17 326.71 interest (b) 13.4% p.a.  
 Q5. (a) (i) \$1692.75 (ii) \$1964 (iii) \$2192.25 (b) No, worse off by \$10.88.

## FURTHER CONSUMER ARITHMETIC

Note: Only turn back to page number if you have difficulty	Page
Q1. Find the simple interest on a principal of: (a) \$5893 at 23% p.a. for 3 months. (b) \$16 330 at $9\frac{1}{2}\%$ p.a. for 32 months. (c) \$27 500 at 4.25% p.a. for 44 days.	165
Q2. What simple interest rate would allow \$10 110 to grow to \$14 027 in 5 years? [Answer to 4 d.p.]	165
Q3. Find the compound interest on a principal of: (a) \$6540 at 6% p.a. for 4.5 years. (b) \$15 430 at $5\frac{1}{4}\%$ p.a. for 42 months. (c) \$182 500 at 12.2% p.a. for 75 months.	166, 167
Q4. Find the compound interest on a principal of: (a) \$1040 invested for 20 years at 15% p.a. compounded half yearly. (b) \$30 600 invested for 2 years at $6\frac{p.a.}{4}$ compounded quarterly. (c) \$11 920 borrowed at 8% p.a. for $5\frac{1}{2}$ years compounded monthly.	166, 167
Q5. I want to invest \$3550 for 10 years. I have a choice of investing at a simple interest rate of 15.5% p.a. or a compound rate of 10.25% p.a. Which is the better option and by how much?	165 – 167
Q6. \$7500 is invested for 3 years with interest compounded biannually. If at the end of the 3 years the investment is worth \$9767, what is the applied interest rate?	167
Q7. Find the value after 8 years of: (a) a car costing \$29 000 depreciated at 15% p.a. (b) a fax machine costing \$569 depreciated at 6.5% p.a. (c) a mobile phone costing \$799 depreciated at $33\frac{1}{3}\%$ p.a.	168
Q8. After being depreciated at 7% p.a. for 12 years, a laser printer is valued at \$413. What was its value 12 years ago?	168
Q9. Joe and Wendy bought a house costing \$210 000. They paid a 35% deposit and borrowed the remainder at a flat interest rate of 7.75% p.a. payable over 25 years. What is the amount of their total monthly instalment?	170, 171
Q10. A \$25 000 loan is repaid over 8 years with monthly instalments of \$391. What was the interest rate (p.a.) charged on the loan?	170, 171

- (g)  $\angle DFC = \angle GBF$  (corr.  $\angle$ 's EB  $\parallel$  DF)  
 $\angle EGD = \angle GBF$  (corr.  $\angle$ 's AD  $\parallel$  BC)  
 In  $\triangle EGD$  and  $\triangle DFC$ :  
 $\angle EGD = \angle DFC$  (proven above)  
 $\angle GED = \angle FDC$  (corr.  $\angle$ 's EB  $\parallel$  DF)  
 $GD = FC$  (data)  
 $\therefore \triangle EGD \cong \triangle DFC$  (AAS)  
 $\therefore ED = DC$  (corr. sides of cong.  $\triangle$ 's)

- (h) In  $\triangle ADE$  and  $\triangle FBC$ :  
 $AD = BC$  (opp. sides of rectangle)  
 $\angle ADE = \angle FBC$  (alt.  $\angle$ 's AD  $\parallel$  BC)  
 $DE = FB$  (data)  
 $\therefore \triangle ADE \cong \triangle FBC$  (SAS)  
 $\angle AED = \angle BFC$  (corr.  $\angle$ 's or cong.  $\triangle$ 's)  
 $\angle AEF = \angle EFC$  (supp. to  $\angle AED$  and  $\angle BFC$  respectively)  
 $\therefore AE \parallel FC$  ( $\angle AEF$  and  $\angle EFC$  alt.  $\angle$ 's)

- (i) In  $\triangle ADE$  and  $\triangle ABF$ :  
 $AD = AB$  (sides of rhombus)  
 $\angle ADE = \angle ABF$  (opp.  $\angle$ 's of rhombus)  
 $DE = DC - EC$   
 $BF = BC - CF$   
 $DE = BF$  ( $DC = BC$  sides of rhombus and  $EC = CF$  data)  
 $\therefore \triangle ADE \cong \triangle ABF$  (SAS)  
 $\therefore AE = AF$  (corr. sides of cong.  $\triangle$ 's)

## Level 1 — Trigonometry

- Q1. (a) h : AB; op : CB; adj : AC (b) h : AC; op : AB; adj : CB (c) h : CB; op : AC; adj : AB  
 Q2. (a) 0.766 (b) 0.259 (c) 0.625 (d) 0.668 (e) 0.225 (f) 0.922  
 Q3. (a)  $71^\circ 6'$  (b)  $64^\circ 17'$  (c)  $38^\circ 04'$  (d)  $7^\circ 04'$  (e)  $55^\circ 19'$  (f)  $55^\circ 07'$   
 Q4. (a)  $x = 9.2$  cm (b)  $x = 4.6$  cm (c)  $\theta = 22^\circ 37'$   
 Q5. (a)  $x = 6.14$  cm (b)  $x = 15.01$  cm (c)  $\theta = 55^\circ 46'$   
 Q6. (a)  $x = 19.63$  cm (b)  $x = 13.33$  cm (c)  $\theta = 59^\circ 45'$   
 Q7. 1.97 m  
 Q8. (a) 9.46 cm (b) 13.35 cm (c) 9.60 cm (d) 52.32 cm (e) 9.71 cm (f) 21.43 cm  
 Q9. (a) 35.79 m (b) 744 m  
 Q10. (a) 21.79 km (b) 7.25 km (c) (i)  $225^\circ$  (ii)  $315^\circ$  (iii) 9.48 km

## Level 2 — Trigonometry

- Q1. (a) 28.80 m (b) 17 m Q2.  $d = 7.1$  cm,  $\ell = 6.0$  cm  
 Q3. 156 m Q4. 148 m; 2 nautical miles per hour  
 Q5. (a) 8.49 cm (b) 9.95 cm (c)  $64^\circ 46'$  (d)  $72^\circ 27'$   
 Q6.  $185^\circ 43'$  Q7. (a) 21.9 km (b)  $33^\circ 38'$

## Further consumer arithmetic

- Q1. (a) \$338.85 (b) \$4136.93 (c) \$140.89  
 Q2. 7.75% p.a.  
 Q3. (a) \$1960.69 (b) \$3026.24 (c) \$192 229.79  
 Q4. (a) \$1776.01 (b) \$3870.67 (c) \$6561.26  
 Q5. compound interest pays an extra \$366.71  
 Q6. 4.5% per 6 months or 9% p.a.  
 Q7. (a) \$7902.23 (b) \$332.36 (c) \$31.18  
 Q8. \$986.63 Q9. \$1336.56/month Q10. 6.3% p.a.