

## FURTHER CONSUMER ARITHMETIC

Note: Only turn back to page number if you have difficulty

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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)  
 $\therefore \triangle EGD \equiv \triangle DFC$  (AAS)  
 $\therefore ED = DC$  (corr. sides of cong.  $\Delta$ '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)  
 $\therefore \triangle ADE \equiv \triangle FBC$  (SAS)  
 $\angle AED = \angle BFC$  (corr.  $\angle$ 's or cong.  $\Delta$ '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)  
 $\therefore \triangle ADE \equiv \triangle ABF$  (SAS)  
 $\therefore AE = AF$  (corr. sides of cong.  $\Delta$ '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,  $l = 6.0$  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.