

## CHAPTER 2

### THE CALCULATOR

	Page
□ INTRODUCTION	16
□ THE BASIC OPERATIONS	17
□ SIGN CHANGE, FRACTIONS, RECIPROCAL	18
□ SQUARE ROOT, SQUARE, CUBE ROOT, POWERS	19
□ CONSTANT MULTIPLICATION, MEMORY KEYS	20
□ SOME PRACTICAL APPLICATIONS	21
□ DIAGNOSTIC TESTS	22 – 24

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

Page

Q1. Work out the following in your head, then check your answers using a calculator:

17

- (a)  $3000 + 600 + 40 + 8$  (b)  $50\,000 + 3500 + 85$   
 (c)  $40 - 15 - 10 - 3$  (d)  $(17 - 9) \div (3 + 1)$   
 (e)  $90 \div (4 + 5)$  (f)  $3 \times 6 + 4 \times 5$   
 (g)  $50 - 20 + 15 - 6$  (h)  $36 \div 4 - 3 \times 2$

Q2. Find:

18

- (a)  $5 - (+3)$  (b)  $8 - (-4)$   
 (c)  $(-6) \times 7$  (d)  $-48 \div (-12)$   
 (e)  $(19 - 3) \div (-4)$  (f)  $-2 \times 3 \times -1$   
 (g)  $11 - (+2) - (-6)$  (h)  $-15 + (-6) - (-4)$

Q3. Find: (a)  $\frac{4}{5} + \frac{2}{3}$  (b)  $1\frac{4}{9} + \frac{9}{10}$  (c)  $4\frac{2}{3} - 1\frac{1}{5}$  (d)  $3\frac{7}{8} - 2\frac{1}{3}$   
 (e)  $1\frac{5}{8} \times \frac{3}{10}$  (f)  $2\frac{1}{4} \times 3\frac{7}{8}$  (g)  $4\frac{1}{2} \div \frac{3}{7}$  (h)  $1\frac{3}{5} \div 1\frac{1}{6}$

18

Q4. Use the FIX key to write these correct to 3 decimal places:

18

- (a) 5.321 697 35 (b)  $4.3986 + 2.13125$  (c)  $5.317 - 3.846\,93$   
 (d)  $11 \div 31$  (e)  $4 \div 7 \times 6$  (f)  $6.383 \times 4.88$

Q5. Evaluate the following to 2 d.p., using the  $\frac{1}{x}$  key:

18

- (a)  $\frac{1}{2.96 + 3.04}$  (b)  $\frac{1}{5.68 - 3.15}$  (c)  $\frac{1}{6.83} \times 2$   
 (d)  $\frac{1}{3.5 + 7.2}$  (e)  $\frac{1}{\sqrt{927}}$  (f)  $\frac{1}{1.36 \div 3} \times 5$

Q6. Using the  $\sqrt{\quad}$  and  $x^2$  keys find the following correct to 2 d.p.:

19

- (a)  $\sqrt{7}$  (b)  $(1.38)^2$  (c)  $\sqrt{17.3}$  (d)  $(6.3)^2$   
 (e)  $(-2.8)^2$  (f)  $\sqrt{16.99}$  (g)  $(-8)^2$  (h)  $\sqrt{65}$

Q7. Using the  $\sqrt[3]{\quad}$  and  $x^y$  keys find these correct to 2 d.p.:

19

- (a)  $\sqrt[3]{6}$  (b)  $(6)^5$  (c)  $\sqrt[3]{1.2}$  (d)  $(-1.5)^4$   
 (e)  $\sqrt[3]{-125}$  (f)  $\sqrt[3]{25}$  (g)  $(2.8)^7$  (h)  $(-8.1)^6$

Q8. Using the M in and MR keys, evaluate these to 1 d.p.:

20

- (a)  $\frac{2.25}{9.36 \times 4.12}$  (b)  $\frac{1.116 + 0.3}{5.018 \times 1.3}$  (c)  $\frac{9.8 \times 2}{6.19 - 4.05}$   
 (d)  $\frac{6.2 + 4.6}{8.7 \times 3.02}$  (e)  $\frac{5.4 \times 8.1}{6^2 + 2^3 + 3}$  (f)  $\frac{2.75}{\sqrt{3 \times 2.9 \times 10}}$

Q1. Evaluate the following correct to 3 d.p.:

(a)  $(-15.9) + \sqrt{3} \times 8.91$       (b)  $(2.1)^2 - 5.38 + 8541$       (c)  $6^5 \times \sqrt{1.4} + (-17.2)$   
 (d)  $\frac{15.023 \times (0.1)^3}{\sqrt[3]{56 - (-63) + (-5)}}$       (e)  $\frac{5 \times [6.2 + (4.3)^2]}{21 - [0.18 \div (0.3)^2]}$       (f)  $\frac{156.212 \div 2.0135}{9^2 + 5^3 - (-4)^3}$

Q2. If  $a = 9.6$  and  $b = -4.8$  and  $c = 2.4$ , evaluate the following correct to 2 d.p.:

(a)  $a - b + c$       (b)  $\sqrt[3]{abc}$       (c)  $a^2 + b^2 - c^2$       (d)  $2a \div b + c$   
 (e)  $\frac{a+b}{\sqrt{c}}$       (f)  $\frac{a}{b} + \frac{b}{c}$       (g)  $\sqrt[3]{a+b+c}$       (h)  $a^3 + b^2 + c^4$

Q3. Find answers to these correct to 2 d.p.:

(a)  $\frac{5}{6}$  of \$3.75      (b) 0.153 of 56 m      (c) 78.3% of 3.62 kg  
 (d) 0.32 of 15.8 km      (e) 59% of \$689.05      (f)  $\frac{7}{9}$  of 1.25 t  
 (g) 41.25% of 63 cm      (h)  $\frac{8}{11}$  of 598.34 L      (i) 0.187 of \$3918.81

Q4. Find the amount (correct to 2 d.p.) if:

(a) 19.3% is \$456      (b)  $\frac{7}{9}$  is 460.5 mL      (c) 0.38 is 5.2 L  
 (d)  $\frac{4}{11}$  is 96.3 kg      (e) 63% is 763 m      (f)  $\frac{22}{25}$  is \$58.65  
 (g) 0.325 is 3.8 km      (h) 0.48 is \$88.40      (i) 27.1% is 780.8 cm

Q5. Evaluate the following correct to 3 d.p.:

(a)  $1\frac{1}{3} \times 3.142 \times 4^5$       (b)  $\left(3.68 - 3\frac{1}{3}\right) \times 4\frac{5}{6}$       (c)  $(0.2)^2 - \left(\frac{2}{3}\right)^2 + (0.3)^2$   
 (d)  $\left(2\frac{1}{4} + 0.67 - \frac{5}{6}\right)^2$       (e)  $\sqrt{9\frac{3}{4} - 2\frac{1}{6} + 4.21}$       (f)  $\frac{6}{15} \times 0.8 + 6.9 \times \frac{3}{8}$

Q6. (a) One apple costs 23 c. What is the cost of  $2\frac{1}{2}$  dozen apples?

(b) How many \$7.60 books can be bought for \$1162.80?

(c) Change  $\frac{21}{23}$  to a decimal correct to 3 d.p.

(d) Six dozen flowers costs \$104.40. How much does 1 flower cost?

Q7. (a)  $\frac{-6 \times 3 + (-4)}{(-4)^2 - (-3)^2}$       (b)  $\frac{9 \times (8)^2 \div (-8)}{49 \div (-7) - (-11)}$       (c)  $\frac{-43 + (-5) \div (-12)}{56 \div (-8) - (-3)}$

(d)  $\frac{9^2 - 8^2 + 4^2}{43 \times (-2) + (-20)}$       (e)  $\frac{16 \times 2^3 \div (-2)^2}{2^4 \times 3 \div 6}$       (f)  $\sqrt{\frac{10^2 \times 4^4}{2^8 \times 5^2}}$

Q1. Use your calculator to list the multiples of:

- (a) 12 between 200 and 299      (b) 15 between 400 and 500  
 (c) 6 between 160 and 200      (d) 9 between 600 and 700

Q2. Find two numbers that have:

- (a) a sum of 71 and a product of 1188.  
 (b) a difference of 24 and a product of 1792.  
 (c) a sum of 136 and a product of 4368.  
 (d) a sum of 899 and a difference of 153.

Q3. If one Australian dollar (A\$1.00) is equivalent to 74.2 American cents (US\$0.742) or 46.1 English pence (£0.461), find the value of the following amounts in Australian dollar terms:

- (a) US\$5.60      (b) £13.90      (c) US\$453  
 (d) £68      (e) US\$23 490      (f) £693

Q4. Find:

(a) $6\frac{3}{4}\%$ of \$6921.50	(b) $5\frac{1}{2}\%$ of \$3501.20
(c) $2\frac{1}{4}\%$ of \$4999.60	(d) $4\frac{2}{5}\%$ of \$7936.48
(e) $7\frac{4}{5}\%$ of \$5341.55	(f) $33\frac{1}{3}\%$ of \$8934.52

Q5. (a) Increase \$1563 by 11%      (b) Decrease \$798.50 by 23%  
 (c) Decrease 15.9 L by 7.5%      (d) Increase 390 km by  $3\frac{1}{2}\%$   
 (e) Increase 15.36 kg by 52%      (f) Decrease \$1698.23 by  $9\frac{3}{4}\%$

Q6. Kim owns a boutique. She purchased 3 dozen shirts for \$14.95 each, 2 dozen dresses for \$32.40 each and 5 dozen belts for \$6.85 each from the wholesaler. If Kim marks her cost prices up by 125%, how much profit will she make if she sells all of the shirts, dresses and belts?

Q7. Complete the pattern:

- |  |   |
|--|---|
| (a) 2.30, 2.22, 2.14, <input type="text"/> , <input type="text"/>    | (b) 5.83, -2.915, 1.4575, <input type="text"/> , <input type="text"/> |
| (c) 3.9, 22.62, 131.196, <input type="text"/> , <input type="text"/> | (d) 76, 60.8, 48.64, <input type="text"/> , <input type="text"/>      |
| (e) 0.297, 0.594, 1.188, <input type="text"/> , <input type="text"/> | (f) 0.16, 1.5475, 2.935, <input type="text"/> , <input type="text"/>  |

Q8. Find:

(a)  $3 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + 3^8 + 3^9 + 3^{10}$   
 (b)  $\frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \frac{1}{2^4} + \frac{1}{2^5} + \frac{1}{2^6} + \frac{1}{2^7} + \frac{1}{2^8} + \frac{1}{2^9} + \frac{1}{2^{10}}$

## Level 1 — The Calculator

- Q1. (a) 3648 (b) 53 585 (c) 12 (d) 2 (e) 10  
(f) 38 (g) 39 (h) 3
- Q2. (a) 2 (b) 12 (c) -42 (d) 4 (e) -4 (f) 6 (g) 15 (h) -25
- Q3. (a)  $1\frac{7}{15}$  (b)  $2\frac{31}{90}$  (c)  $3\frac{7}{15}$  (d)  $1\frac{13}{24}$   
(e)  $\frac{39}{80}$  (f)  $8\frac{23}{32}$  (g)  $10\frac{1}{2}$  (h)  $1\frac{13}{35}$
- Q4. (a) 5.322 (b) 6.530 (c) 1.470 (d) 0.355 (e) 3.429 (f) 31.149
- Q5. (a) 0.17 (b) 0.40 (c) 0.29 (d) 0.09 (e) 0.03 (f) 11.03
- Q6. (a) 2.65 (b) 1.90 (c) 4.16 (d) 39.69  
(e) 7.84 (f) 4.12 (g) 64.00 (h) 8.06
- Q7. (a) 1.82 (b) 7776.00 (c) 1.06 (d) 5.06  
(e) -5.00 (f) 2.92 (g) 1349.29 (h) 282 429.54
- Q8. (a) 0.1 (b) 0.2 (c) 9.2 (d) 0.4 (e) 0.9 (f) 0.3

## Level 2 — The Calculator

- Q1. (a) -0.467 (b) 8540.030 (c) 9183.487 (d) 0.0031 (e) 6.497  
(f) 0.287
- Q2. (a) 16.80 (b) -4.80 (c) 109.44 (d) -1.60  
(e) 3.10 (f) -4.00 (g) 1.93 (h) 940.95
- Q3. (a) \$3.13 (b) 8.57 mL (c) 2.83 kg (d) 5.06 km (e) \$406.54  
(f) 0.97 t (g) 25.99 cm (h) 435.16 L (i) \$732.82
- Q4. (a) \$2362.69 (b) 592.07 mL (c) 13.68 L (d) 264.83 kg (e) 1211.11 m  
(f) \$66.65 (g) 11.69 kg (h) \$184.17 (i) 2881.18 cm
- Q5. (a) 4289.877 (b) 1.676 (c) -0.314 (d) 4.354 (e) 3.434  
(f) 2.908
- Q6. (a) \$6.90 (b) 153 books (c) 0.913 (d) \$1.45
- Q7. (a) -3.14 (b) -18 (c) 10.65 (d) -0.31 (e) 4 (f) 2

## Level 3 — The Calculator

- Q1. (a) 204, 216, 228, 240, 252, 264, 276, 288 (b) 405, 420, 435, 450, 465, 480, 495  
(c) 162, 168, 174, 180, 186, 192, 198 (d) 603, 612, 621, 630, 639, 648, 657, 666, 675, 684, 693
- Q2. (a) 27 and 44 (b) 32 and 56 (c) 52 and 84 (d) 373 and 526
- Q3. (a) A\$7.55 (b) A\$30.15 (c) A\$610.51 (d) A\$147.51 (e) A\$31 657.68 (f) A\$1503.25
- Q4. (a) \$467.20 (b) \$192.57 (c) \$112.49 (d) \$349.21 (e) \$416.64 (f) \$2978.17
- Q5. (a) \$1734.93 (b) \$614.85 (c) 14.71 L (d) 403.65 km (e) 23.3472 kg (f) \$1532.65
- Q6. \$2158.50
- Q7. (a) 2.06; 1.98 (b) -0.728 75; 0.364 375 (c) 760.9368; 4413.4334  
(d) 38.912; 31.1296 (e) 2.376; 4.752 (f) 4.3225; 5.71
- Q8. (a) 88 572 (b)  $\frac{1023}{1024}$