

Chapter 16 Exercise 16.1

- Q. 1.** $0.2 \times 26,000 = \text{€}5,200$
- Q. 2.** $0.18 \times 32,000 = \text{€}5,760$
- Q. 3.** (i) $0.2 \times 35,000 = \text{€}7,000$
Tax Payable = $\text{€}7,000 - \text{€}2,140$
 $= \text{€}4,860$
(ii) Net Pay = $\text{€}35,000 - \text{€}4,860$
 $= \text{€}30,140$
- Q. 4.** (i) $0.21 \times 73,000 = \text{€}15,330$
(ii) $73,000 - 15,330 + 4,300$
 $= \text{€}61,970$
- Q. 5.** (i) $0.2 \times 36,000 = \text{€}7,200$
(ii) $7,200 - 1,830 = \text{€}5,370$
(iii) $36,000 - 5,370 = \text{€}30,630$
- Q. 6.** (i) $0.2 \times 34,000 = \text{€}6,800$
(ii) $6,800 - 2,600 = \text{€}4,200$
(iii) $34,000 - 4,200 = \text{€}29,800$
- Q. 7.** Gross Tax = $0.22 \times 36,300 = \text{€}7,986$
Tax Payable = $7,986 - 2,016 = \text{€}5,970$
Net Income = $36,300 - 5,970 = \text{€}30,330$
- Q. 8.** Gross Tax = $0.2 \times 29,400 = \text{€}5,880$
(i) Tax Payable = $5,880 - 1,890$
 $= \text{€}3,990$
Total Deduction = $3,990 + 300 = \text{€}4,290$
(ii) Net Pay = $29,400 - 4,290 = \text{€}25,110$
- Q. 9.** Gross Tax = $0.21 \times 37,000 = \text{€}7,770$
(i) Tax Payable = $7,770 - 2,100$
 $= \text{€}5,670$
Total Deduction = $5,670 + 450$
 $+ 350 = \text{€}6,470$
(ii) Take-home pay = $37,000 - 6,470$
 $= \text{€}30,530$
- Q. 10.** Gross Tax = $0.2 \times 33,500 = \text{€}6,700$
(i) Tax Payable = $6,700 - 2,200$
 $= \text{€}4,500$
Total Deduction = $4,500 + 400$
 $+ 600 = \text{€}5,500$
(ii) Take-home pay = $33,500 - 5,500$
 $= \text{€}28,000$

- Q. 11.** $\frac{6,930}{33,000} \times 100 = 21\%$
- Q. 12.** (i) $6,300 + 1,300 = \text{€}7,600$
(ii) $\frac{7,600}{38,000} \times 100 = 20\%$
- Q. 13.** $10,940 + 4,600 = \text{€}15,540$
 $\frac{15,540}{74,000} = 21\%$

Exercise 16.2

- Q. 1.** (i) $0.135 \times 10 = \text{€}1.35$ (iii) $0.135 \times 18 = \text{€}2.43$
(ii) $0.135 \times 14 = \text{€}1.89$ (iv) $0.135 \times 20 = \text{€}2.70$
- Q. 2.** (i) $1.21 \times 150 = \text{€}181.50$ (iii) $1.21 \times 800 = \text{€}968$
(ii) $1.21 \times 500 = \text{€}605$ (iv) $1.21 \times 1,999 = \text{€}2418.79$
- Q. 3.** $1.21 \times 5 = \text{€}6.05$
- Q. 4.** $1.20 + 3 \times 1.21 + 2 \times 1.135 = \text{€}7.10$
- Q. 5.** $300(0.5 \times 1.21) = 300(0.605) = \text{€}181.50$
- Q. 6.** $140 \times 1.135 = \text{€}158.90$
- Q. 7.** $8 + 12 = 20$
 $1.2 \times 20 = \text{€}24$
- Q. 8.** $113.5\% = \text{€}170.25$
 $1\% = 170.25 \div 113.5 = \text{€}1.50$
 $100\% = \text{€}150$
- Q. 9.** $125\% = \text{€}9000$
 $1\% = \text{€}9000 \div 125 = \text{€}72$
 $100\% = \text{€}7,200$
 $\therefore \text{VAT} = 9,000 - 7,200 = \text{€}1,800$
OR
 $25\% = 72 \times 25 = \text{€}1,800$

Q. 10. $121\% = \text{€}968$

$1\% = 968 \div 121 = \text{€}8$

$100\% = \text{€}800$

Q. 11. $121\% = \text{€}1,452$

$1\% = 1,452 \div 121 = \text{€}12$

$21\% = \text{€}252$

Q. 12. (i) $0.0125 \times 270,000$

$= \text{€}3,375$

(ii) $1.21 \times 3,375$

$= \text{€}4,083.75$

Exercise 16.3

Q. 1. $A = 576$

$B = 58 \times 0.252 = 14.62$

$C = 576 \times 0.141 = 81.22$

$D = B + C = 95.84$

$E = 0.135 \times 95.84 = 12.94$

$F = D + E = 108.78$

Q. 2. $A = 16948 - 16811 = 137$

$B = 137 \times 11.3625 = 1,556.66 = 1557$

$C = 0.164 \times 63 = 10.33$

$D = 0.03932 \times 1,557 = 61.22$

$E = 0.00277 \times 1,557 = 4.31$

$F = C + D + E = 75.86$

$G = 0.135 \times F = 10.24$

$H = F + G = 86.10$

Q. 3.

	(i)	(ii)	(iii)
Bill 1	69	€8.28	$(12 + 8.28) \times 1.135$ $= \text{€}23.02$
Bill 2	1,250	€150	$(12 + 150) \times 1.135$ $= \text{€}183.87$
Bill 3	613	€73.56	$(12 + 73.56) \times 1.135$ $= \text{€}97.11$
Bill 4	658	€78.96	$(12 + 78.96) \times 1.135$ $= \text{€}103.24$

Q. 4. Bill 1 = €67.20 Bill 3 = €71.28

Bill 2 = €79.36 Bill 4 = €40.08

Q. 5. (i) $20 \times 0.45 = \text{€}9$

(ii) $65 + 9 = \text{€}74$

(iii) $1.21 \times 74 = \text{€}89.54$

Q. 6. $14986 - 13789 = 1,197$

$1,197 \times 11.305 = 13,532.085$

$\approx 13,532$

$13,532 \times 0.04132 = \text{€}559.14$

Standing charge = $0.155 \times 61 = 9.46$

Total cost = 559.14

9.46

€568.60

VAT 13.5% = 76.76

€645.36

Q. 7. (i) $24 + 0.06 \times 94 = \text{€}29.64$

(ii) $29.64 \times 1.2 = \text{€}35.57$

Q. 8. $3.78 \div 0.07 = 54$

Q. 9. $50 - 12 = 38$

$38 \div 0.19 = 200$ minutes.

Q. 10. Network A: $20 + 50 \times 0.1 + 20 \times 0.15$
 $= \text{€}28$

Network B: $15 + 65 \times 0.12 + 20 \times 0.25$
 $= \text{€}27.80$

Network B is cheaper.

Q. 11. (i) $12,348 - 11,938 = 410$

(ii) $410 \times 11.3625 = 4658.625$ kw/hrs
 $= 4659$ kw/hrs

(iii) $0.03 \times 4659 = \text{€}139.77$

(iv) $1.135 \times 139.77 = \text{€}158.64$

Exercise 16.4

Q. 1.

	Cost price	Selling price	Profit/loss	% Profit/loss
1	€25.00	€30.00	€5.00	20
2	€31.00	€36.00	€5.00	16.6
3	€25.00	€20.00	-€5.00	-20
4	€14.00	€28.00	€14.00	100
5	€12.00	€18.00	€6.00	50
6	€18.00	€18.90	€0.90	5
7	€6.00	€3.00	-€3.00	-50
8	€3.50	€2.80	-€0.70	-20
9	€10.00	€12.00	€2.00	20
10	€11.00	€15.50	€4.50	40.90
11	€16.00	€20.00	€4.00	25
12	€16.00	€18.00	€2.00	12.5
13	€70.00	€90.00	€20.00	28.5714285 ≈ 28.57
14	€1,100.00	€990.00	-€110.00	-10
15	€1,904.00	€2,564.00	€660.00	34.6638655 ≈ 34.66
16	€2,750	€2,475.00	-€275.00	-10
17	€8,375.00	€10,050.00	€1,675.00	20
18	€1,238.00	€1,254.00	€16.00	1.2924071 ≈ 1.29
19	€91.20	€120.00	€28.80	31.5789473 ≈ 31.58
20	€512.00	€448.00	-€64.00	-12.5

Q. 2. (i) $50 \times 1.05 = €52.5$

(ii) $120 \times 1.06 = €127.2$

(iii) $240 \times 1.125 = €270$

(iv) $650 \times 1.215 = €789.75$

(v) $2250 \times 1.16 = €2,610$

Q. 3. (i) $50 \times 0.95 = €47.5$

(ii) $1,250 \times 0.85 = €1,062.5$

(iii) $34,000 \times 0.75 = €25,500$

(iv) $12,800 \times 0.625 = €8,000$

(v) $14,400 \times 0.88 = €12,672$

Q. 4. $15,900 - 13,250 = 2,650$

$$\frac{2,650}{13,250} \times 100 = 20\%$$

Q. 5. $10 \times 1.125 = €11.25$

Q. 6. $120 \times 1.15 = €138$

Q. 7. $125\% = 15$

$$1\% = 15 \div 125 = 0.12$$

$$100\% = €12$$

Q. 8. $124\% = 1,116$

$$1\% = 1,116 \div 124 = 9$$

(i) $100\% = €900$

(ii) $1035 - 900$

$$\text{Profit} = 135$$

$$\% \text{ Profit} = \frac{135}{900} \times 100 = 15\%$$

Q. 9. $40\% = €10$

$$1\% = 10 \div 40 = 0.25$$

$$100\% = €25$$

Exercise 16.5

Q. 1.

	(i)	(ii)
(a)	€60	€1,140
(b)	€30	€170
(c)	€240	€1,360
(d)	€88	€4,312
(e)	€350	€1,050
(f)	€180	€1,320
(g)	€547.5	€912.5
(h)	€3,408	€24,992

Q. 2.

- (i) $\frac{2.5}{50} \times 100 = 5\%$
 (ii) $\frac{8.64}{144} \times 100 = 6\%$
 (iii) $\frac{40.5}{270} \times 100 = 15\%$
 (iv) $\frac{126.36}{789.75} \times 100 = 16\%$
 (v) $\frac{313.2}{2,610} \times 100 = 12\%$

Q. 3. (i) $0.06 \times 70 = €4.20$

(ii) $70 - 4.2 = €65.80$

Q. 4. (i) $0.12 \times 423.5 = €50.82$

(ii) $423.5 - 50.82 = €372.68$

Q. 5. $10(120 \times 0.8) = 10(96) = €960$

Q. 6. $450 \times 0.93 = €418.50$

Q. 7. (i) $80\% = €12$

$1\% = 12 \div 80 = 0.15$

$100\% = €15$

(ii) $80\% = €25$

$1\% = 25 \div 80 = 0.3125$

$100\% = €31.25$

Q. 8. (i)

Invoice no. 24564			
Terms: Discount 5% if paid within 1 month			
Quantity	Description	Unit price	Total ex. VAT
50	TVs	€70.00	€3,500.00
10	Laptops	€500.00	€5,000.00
10	Blu-ray players	€120.00	€1,200.00
			€9,700.00
Trade Discount 20%			€1,480.00
Price (ex. VAT)			€5,920.00
VAT @ 21%			€1,243.20
Total due			€7,163.20

(ii) $7163.2 \times 0.95 = €6,805.04$

Exercise 16.6

Q. 1.

(i) $€60 = 60 \times £0.68 = £40.80$

(ii) $€1 = £0.68$

$£1 = \frac{€1}{0.68}$

$£816 = \frac{€1}{0.68} \times 816 = €1,200$

Q. 2. (i) $€350 = 350 \times \$1.34 = \469

(ii) $\$1 = \frac{€1}{1.34}$

$\$871 = \frac{€1}{1.34} \times 871$
 $= €650$

Q. 3. $£21 = 21 \times €0.84 = €17.64$

Q. 4. $€1 = \$1.30$

$\$1 = \frac{€1}{1.3}$

$\$104 = \frac{€1}{1.3} \times 104$
 $= €80$

- Q. 5.** (i) $€60 = 60 \times \$1.42 = \85.20
(ii) $€150 = 150 \times ¥111.87 = ¥16,780.50$
(iii) $€50 = 50 \times £0.87 = £43.50$
(iv) $¥67,122 = \frac{€1}{111.87} \times 67,122 = €600$
(v) $\$106.50 = \frac{€1}{1.42} \times 106.5 = €75$
(vi) (a) $¥44,748 = \frac{€1}{111.87} \times 44,748$
 $= €400$
(b) $£347 = \frac{€1}{0.87} \times 347 = €398.85$
 $¥44,748$ is better.

- Q. 6.** (i) $900 \times 0.82 = £738$
(ii) $5,994 \div 111 = €54$
(iii) $104.4 \div 0.87 = €120$
(iv) $1100 \div 1.38 = €797.10$
(v) $1500 \times 108 = ¥162,000$

Q. 7. $10 \times 12 \times \$3.66 = \439.20
 $439.20 \div 1.83 = €240$

Q. 8. $800 \times 12,450.5 = 9,960,400$ IDR
 $800 \times 12,449 = 9,959,200$ IDR
Difference = 1,200 IDR

Q. 9. (i) $500 \times 1.3 = \$650$
(ii) $500 \times 1.025 = €512.5$

Q. 10. (i) $90.20 \div 0.82 = €110$
(ii) $110 \times 1.03 = €113.30$

Exercise 16.7

- Q. 1.** (i) $1,000 \times 0.05 = €50$
(ii) $2,500 \times 0.1 = €250$
(iii) $300 \times 0.12 = €36$
(iv) $1,450 \times 0.15 = €217.5$
(v) $600 \times 0.06 = €36$
(vi) $24,500 \times 0.03 = €735$
(vii) $17,000 \times 0.04 = €680$
(viii) $800 \times 0.25 = €200$
(ix) $950 \times 0.3 = €285$
(x) $14,400 \times 0.005 = €72$

- Q. 2.** (i) $300 \times 1.05 = €315$
(ii) $1,400 \times 1.1 = €1,540$
(iii) $1,200 \times 1.12 = €1,344$
(iv) $1,250 \times 1.15 = €1,437.5$
(v) $96 \times 1.06 = €101.76$
(vi) $750 \times 1.03 = €772.5$
(vii) $110 \times 1.04 = €114.4$
(viii) $13 \times 1.25 = €16.25$
(ix) $5,400 \times 1.3 = €7,020$
(x) $98,010 \times 1.005 = €98,500.05$

Q. 3. $2,500 (1.05)^2 = €2,756.25$

Q. 4. $600 (0.03) = €18$

Q. 5. $1,200 (1.04)^2 = €1,297.92$

Q. 6. $10,000 (1.08)^3 = €12,597.12$

Q. 7. $15,000 (1.06)^3 = €17,865.24$
 $17,865.24 - 15,000 = €2,865.24$

Q. 8. $25,400 (0.03) = €762$

Q. 9. $2,500 (1.04)^2 = €2,704$
 $2,704 - 2,500 = €204$

Q. 10. $1,500 (1.05)^2 = €1,653.75$

Q. 11. $10,000,000 (1.105)^3 = €13,492,326.25$

Q. 12. $9,600 (0.02) = €192$

Q. 13. $60,000 \times 1.03 = €61,800$
 $61,800 - 16,000 = €45,800$
 $45,800 (1.02) = €46,716$

Q. 14. Yr 1 = $12,000,000 @ 1.08 = 12,960,000$
Repaid = $12,960,000 - 500,000$
 $= 12,460,000$
Yr 2 = $12,460,000 @ 1.10 = €13,706,000$

Q. 15. $30,000 (1.03)^2 = €31,827$
 $31,827 (1.025) = €32,622.68$
 $32,622.68 - 30,000 = €2,622.68$

Revision Exercises

Q. 1. Tadhg: $340 \times 0.2 - 36 = \text{€}32$

Helen: $380 \times 0.21 - 35 = \text{€}44.80$

Eoin: $260 \times 0.2 - 28 = \text{€}24$

Jenny: $580 \times 0.21 - 44 = \text{€}77.80$

Q. 2. $26,000 \times 0.2 = \text{€}5,200$

$5,200 - 1,830 = \text{€}3,370$

$26,000 - 3,370 = \text{€}22,630$

Q. 3. $\frac{5,000}{30,000} \times 100 = 16.67\%$

Q. 4. $36,000 \times 0.2 - 2,300 = \text{€}4,900$

Q. 5. (i) $26,000 \times 0.21 - 1,820 = \text{€}3,640$

(ii) $26,000 - 3,640 = \text{€}22,360$

(iii) $22,360 \div 52 = \text{€}430$

Q. 6. (i) $255 + 65 = \text{€}320$

(ii) $\frac{65}{255} \times 100 = 25.49\%$

Q. 7. (i) $300 \times 1.21 = \text{€}363$

(ii) $18 \times 1.21 = \text{€}21.78$

(iii) $2 \times 1.135 = \text{€}2.27$

(iv) $120 \times 1.135 = \text{€}136.2$

Q. 8. (i) $110\% = \text{€}715$

$10\% = 715 \div 11 = \text{€}65$

$100\% = \text{€}650$

(ii) 650×1.13

$= \text{€}734.5$

Q. 9. $121\% = \text{€}290.4$

$1\% = 290.4 \div 121 = \text{€}2.4$

$21\% = \text{€}50.40$

Q. 10. Paul's weekly wage is €690. He pays income tax at the rate of 20%. His weekly tax credit is €65. What is Paul's take-home pay?

Gross pay	€690
Tax @ 20%	€138
Tax credit	€65
Tax due	€73
Take-home pay	€617

Q. 11.

	(a)		(b)
	(i)	(ii)	
Bill 1	58	€6.96	$(12 + 6.96) \times 1.135$ $= \text{€}21.52$
Bill 2	250	€30	$(12 + 30) \times 1.135$ $= \text{€}47.67$
Bill 3	613	€73.56	$(12 + 73.56) \times 1.135$ $= \text{€}97.11$
Bill 4	658	€78.96	$(12 + 78.96) \times 1.135$ $= \text{€}103.24$

Q. 12. Units used: $14,896 - 13,879 = 1,017$

kWh $1,017 \times 11.305 = 11,497.185$

$\approx 11,497$

Standing charge = $0.145 \times 61 = 8.845$

Cost of units = $11,497 \times 0.045 = \underline{517.365}$

Total excl. VAT = 526.21

VAT 13.5% = 71.04

Total = €597.25

Q. 13. $60 - 15 = \text{€}45$

$45 \div 0.19 = 236.84$

\therefore 236 minutes is her limit.

Q. 14.

	Cost price	Selling price	Profit	% Mark-up
1	€200.00	€300.00	€100.00	50
2	€24.00	€32.00	€8.00	$33\frac{1}{3}$
3	€25.00	€30.00	€5.00	20
4	€14.00	€28.00	€14.00	100
5	€12.00	€18.00	€6.00	50

Q. 15. $0.5 - 0.2 = 0.3$

$$\frac{0.3}{0.2} \times 100 = 150\%$$

Q. 16. $35\% = \text{€}70$

$$5\% = \text{€}70 \div 7 = \text{€}10$$

$$100\% = 10 \times 20 = \text{€}200$$

Q. 17. (i)

Invoice no. 24564			
Terms: Discount 5% if paid within 1 month			
Quantity	Description	Unit price	Total ex. VAT
50	TVs	€70.00	€3,500.00
10	Laptops	€500.00	€5,000.00
10	Blu-ray players	€120.00	€1,200.00
			€9,700.00
Trade Discount 20%			€1,940.00
Price (ex. VAT)			€7,760.00
VAT @ 21%			€1,629.60
Total due			€9,389.60

(ii) $0.95 \times 9,389.60 = \text{€}8,920.12$

Q. 18. (i) $850 \times 0.74 = \text{£}629$

(ii) $4248 \div 118 = \text{€}36$

(iii) $51.09 \div 0.78 = \text{€}65.50$

(iv) $8,970 \div 1.38 = \text{€}6,500$

(v) $500 \times 115 = \text{¥}57,500$

Q. 19. $16,000(1.05)^2 = \text{€}17,640$

Q. 20. $2,450(0.03) = \text{€}73.50$

Q. 21. $44,000(1.04)^2 = \text{€}47,590.40$

Q. 22. $33,330(1.1)^3 = \text{€}44,362.23$

Q. 23. $7,800,000(1.02)^3 = \text{€}8,277,422.40$
 $8,277,422.4 - 7,800,000 = \text{€}477,422.40$

Q. 24. $15,000(1.02) = \text{€}15,300$
 $15,300 - 2,500 = \text{€}12,800$
 $12,800(1.025) = \text{€}13,120$