

Chapter 10 Exercise 10.1

Q. 1. $25,000 \times 0.20 = \text{€}5,000$

Q. 2. $46,000 \times 0.225 = 10,350$
 $\quad\quad\quad - 2,500$
 $\quad\quad\quad \text{€}7,850$

Q. 3. $41,500 \times 0.22 = 9,130$
 $\quad\quad\quad - 2,340$
 $\quad\quad\quad \text{€}6,790$

$41,500 - 6,790 = \text{€}34,710$

Q. 4. $56,000$ $\left\{ \begin{array}{l} 23,200 \times 0.41 = 9,512 \\ 32,800 \times 0.20 = \underline{+ 6,560} \\ 16,072 \end{array} \right.$

$56,000 - 16,072 = \text{€}39,928$

Q. 5. (i) $94,500$ $\left\{ \begin{array}{l} 61,500 \times 0.42 = 25,830 \\ 33,000 \times 0.21 = \underline{+ 6,930} \\ 32,760 \\ \underline{- 3,450} \end{array} \right.$

Tax payable 29,310

(ii) $94,500 - 29,310 = \text{€}65,190$

Q. 6. $37,000 \times 0.21 = \text{€}7,770$
 $\quad\quad\quad - 2,100$
 $\quad\quad\quad \text{€}5,670$

Total deductions = $5,670 + 450 + 350$
 $= 6,470$

$37,000 - 6,470 = \text{€}30,530$

Q. 7. (i) $6,300 + 1,300 = 7,600$

(ii) $\frac{7,600}{38,000} = 0.20 = 20\%$

Q. 8. $50,000$ $\left\{ \begin{array}{l} 18,000 \times 0.42 = 7,560 \\ 32,000 \times 0.20 = \underline{+ 6,400} \\ 13,960 \\ \underline{- 3,500} \end{array} \right.$
Tax payable $\text{€}10,460$

$$\begin{array}{r}
 \text{Q. 9. } 10,036 \times 0.02 = 200.72 \\
 5,980 \times 0.04 = 239.20 \\
 18,984 \times 0.07 = \underline{+ 1,328.88} \\
 \hline
 \text{€1,768.80}
 \end{array}$$

$$\begin{array}{r}
 \text{Q. 10. } 10,036 \times 0.02 = 200.72 \\
 5,980 \times 0.04 = 239.20 \\
 30,484 \times 0.07 = \underline{+ 2,133.88} \\
 \hline
 \text{€2,573.80}
 \end{array}$$

$$\begin{array}{l}
 \text{Q. 11. (i) } \text{€}127 \times 52 = 6,604 \\
 65,396 \times 0.04 = \text{€}2,615.84 \\
 \text{€}2,615.84 \div 52 = \text{€}50.30 \text{ per week}
 \end{array}$$

$$\begin{array}{l}
 \text{(ii) } 72,000 \times 0.1075 = \text{€}7,740 \\
 7,740 \div 52 = \text{€}148.85 \text{ per week}
 \end{array}$$

$$\begin{array}{r}
 \text{(iii) } 10,036 \times 0.02 = 200.72 \\
 5,980 \times 0.04 = 239.20 \\
 55,984 \times 0.07 = \underline{3,918.88} \\
 \hline
 \text{€}4,358.80
 \end{array}$$

$$\begin{array}{r}
 \text{(iv) } \begin{array}{l} 72,000 \end{array} \left\{ \begin{array}{l} 37,400 \times 0.41 = 15,334 \\ 34,600 \times 0.20 = \underline{+ 6,920} \\ \hline \text{€}22,254 \\ - \underline{3,000} \\ \hline \text{€}19,254 \end{array} \right.
 \end{array}$$

$$72,000 - 2,615.84 - 4,358.80 - 19,254 = 44,771.36$$

$$44,771.36 \div 52 = \text{€}880.22$$

$$\begin{array}{l}
 \text{Q. 12. (i) } 127 \times 52 = 6,604 \\
 64,000 - 6,604 = 57,396 \\
 57,396 \times 0.04 = 2,295.84 \\
 2,295.84 \div 52 = \text{€}44.15 \text{ per week}
 \end{array}$$

$$\begin{array}{l}
 \text{(ii) } 64,000 \times 0.1075 = 6,880 \\
 6,880 \div 52 = \text{€}132.31 \text{ per week}
 \end{array}$$

$$\begin{array}{r}
 \text{(iii) } 10,036 \times 0.02 = 200.72 \\
 5,980 \times 0.04 = 239.20 \\
 4,7984 \times 0.07 = \underline{3,358.88} \\
 \hline
 \text{€}3,798.80
 \end{array}$$

$$\begin{array}{r}
 \text{(iv) } \begin{array}{l} 64,000 \end{array} \left\{ \begin{array}{l} 31,600 \times 0.41 = 12,956 \\ 32,400 \times 0.20 = \underline{+ 6,480} \\ \hline 19,436 \\ - \underline{2,400} \\ \hline \text{€}17,036 \end{array} \right.
 \end{array}$$

$$64,000 - 17,036 - 2,295.84 - 3,798.80 = 40,869.36$$

$$40,869.36 \div 52 = \text{€}785.95$$

Q. 13. (i) $127 \times 52 = 6,604$; $6,604 \times 2 = 13,208$
 $152,000 - 13,208 = 138,792$
 $138,792 \times 0.04 = \text{€}5,551.68$

(ii) $10,036 \times 2 = 20,072$; $20,072 \times 0.02 = \text{€}401.44$
 $5,980 \times 2 = 11,960$; $11,960 \times 0.04 = \text{€}478.40$
 $119,968 \times 0.07 = \text{€}8,397.76$
 $\text{€}9,277.60$

(iii)

152,000	{	$86,400 \times 0.41 = 35,424$
		$65,600 \times 0.20 = \underline{13,120}$
		48,544
		<u>-3,400</u>
		€45,144

(iv) $152,000 - 45,144 - 5,551.68 - 9,277.60 - 704 - 5,063$
 $= \text{€}86,259.72$

Q. 14. $35,400 \times 0.20 = 7,080$
 $12,396 - 7,080 = 5,316$
 $\frac{5,316}{0.41} = 12,965.85$
 $\therefore \text{Gross Income} = 35,400 + 12,965.85$
 $= \text{€}48,365.85$

Q. 15. (i)

45,000	{	$13,000 \times 0.41 = 5,330$
		$32,000 \times 0.20 = \underline{6,400}$
		11,730
		<u>- 3,800</u>
		€7,930

(ii) $13,680 + 3,900 = \text{€}17,580$ gross tax
 $32,000 \times 0.20 = 6,400$
Tax paid at 0.41 = €11,180
 $\frac{11,180}{0.41} = \text{€}27,268.29$
 $\therefore \text{Gross Income} = 32,000 + 27,268.29$
 $= \text{€}59,268.29$

(iii) $10,036 \times 0.02 = 200.72$
 $5,980 \times 0.04 = 239.20$
 $43,252.29 \times 0.07 = \underline{3,027.66}$
Total = €3,467.58

Q. 16. (a)

$$\begin{array}{r}
 57,500 \left\{ \begin{array}{l} 24,700 \times 0.41 = 10,127 \\ 32,800 \times 0.20 = \underline{+ 6,560} \end{array} \\
 \\
 16,687 \\
 \underline{- 2,830} \\
 13,857
 \end{array}$$

$$\text{Net Income} = 57,500 - 13,857 = \text{€}43,643$$

(b) $15,640 + 2,830 = 18,470$ gross tax

$$18,470 - 6,560 = 11,910$$

$$\frac{11,910}{0.41} = 29,048.78$$

$$\begin{aligned} \text{Gross Income} &= 29,048.78 + 32,800 \\ &= \text{€}61,848.78 \end{aligned}$$

Q. 17. (i) $1,650 + 1,650 + 70 = \text{€}3,370$

(ii)

$$\begin{array}{r}
 42,000 \left\{ \begin{array}{l} 9,200 \times 0.41 = 3,772 \\ 32,800 \times 0.20 = \underline{6,560} \end{array} \\
 \\
 10,332 \\
 \underline{- 3,370}
 \end{array}$$

$$\text{Tax Paid } \text{€}6,962$$

(iii) $10,036 \times 0.02 = 200.72$

$$5,980 \times 0.04 = 239.20$$

$$25,984 \times 0.07 = \underline{+ 1,818.88}$$

$$\text{Total USC} = \text{€}2,258.80$$

$$\text{PRSI } \text{€}127 \times 52 = 6,604$$

$$42,000 - 6,604 = 35,396$$

$$35,396 \times 0.04 = \text{€}1,415.84$$

$$\begin{aligned} \therefore \text{Net Income} &= 42,000 - 6,962 - 2,258.80 - 1,415.84 \\ &= \text{€}31,363.36 \end{aligned}$$

Q. 18.

$$\begin{array}{r}
 50,000 \left\{ \begin{array}{l} 17,200 \times 0.41 = 7,052 \\ 32,800 \times 0.20 = \underline{+ 6,560} \end{array} \\
 \\
 \text{€}13,612
 \end{array}$$

$$13,612 - 10,460 = \text{€}3,152$$

Q. 19. (a)

$$\begin{array}{r}
 46,000 \left\{ \begin{array}{l} 13,200 \times 0.41 = 5,412 \\ 32,800 \times 0.20 = \underline{6,560} \end{array} \\
 \\
 11,972 \\
 \underline{- 2,300} \\
 \text{Tax Payable: } \text{€}9,672
 \end{array}$$

$$\begin{aligned}
 \text{(b) } & \text{€}13,680 + 2,900 = \text{€}16,580 \text{ gross tax} \\
 & 16,580 - 6,560 = \text{€}10,020 \\
 & \frac{10,020}{0.41} = \text{€}24,439.02 \\
 \text{Gross Income} & = \text{€}24,439.02 + 32,800 \\
 & = \text{€}57,239.02
 \end{aligned}$$

Exercise 10.2

Q. 1.

	Cost price (€)	Selling price (€)	Profit (€)	% Mark-up (2 d.p.)	% Margin (2 d.p.)
(i)	25.00	30.00	5.00	20.00	16.67
(ii)	31.00	36.00	5.00	16.13	13.89
(iii)	15.00	20.00	5.00	33.33	25.00
(iv)	14.00	28.00	14.00	100.00	60.00
(v)	12.00	18.00	6.00	50.00	33.33
(vi)	18.00	18.90	0.90	5.00	4.76
(vii)	1.00	4.00	3.00	300.00	75.00
(viii)	2.10	2.80	0.70	33.33	25.00
(ix)	10.00	12.00	2.00	20.00	16.67
(x)	11.00	15.50	4.50	40.91	29.03

Q. 2.

$$\begin{aligned}
 \text{(i) } & 40 \times 0.98 = \text{€}39.20 \\
 \text{(ii) } & 85 \times 0.95 = \text{€}80.75 \\
 \text{(iii) } & 135 \times 0.90 = \text{€}121.50 \\
 \text{(iv) } & 100 \times 0.995 = \text{€}99.50 \\
 \text{(v) } & 1,565 \times 0.97 = \text{€}1,518.05
 \end{aligned}$$

Q. 3.

$$\begin{aligned}
 \text{(a) } & 18,900 - 16,250 = \text{€}2,650 \text{ profit} \\
 & \frac{2,650}{16,250} = 16.31\% \text{ mark-up} \\
 \text{(b) } & \frac{2,650}{18,900} = 14.02\% \text{ margin}
 \end{aligned}$$

Q. 4.

$$\begin{aligned}
 \text{(a) } & 15,900 - 10,250 = 5,650 \\
 & \frac{5,650}{10,250} = 55.12\% \text{ mark-up} \\
 \text{(b) } & \frac{5,650}{15,900} = 35.53\% \text{ margin}
 \end{aligned}$$

Q. 5.

$$\begin{aligned}
 \text{(i) } & 120 \times 1.15 = \text{€}138 \text{ selling price} \\
 \text{(ii) } & \frac{18}{138} = 13\% \text{ margin}
 \end{aligned}$$

Q. 6.

$$\begin{aligned}
 \text{(i) } & 1,140 \times 0.75 = \text{€}855 \\
 \text{(ii) } & 855 \times 1.15 = \text{€}983.25 \\
 & 983.25 - 855 = 128.25 \\
 & \frac{128.25}{983.25} = 13.04\%
 \end{aligned}$$

Q. 7.

$$\begin{aligned}
 \text{(i) Company A: } & 15\% \text{ mark-up} \\
 & \therefore \text{Margin} = \frac{0.15}{1.15} \times 100 \\
 & = 13.04\% \\
 \text{(ii) Company B: } & 28.6\% \text{ profit margin} \\
 \text{mark-up} & = \frac{0.286}{0.714} \times 100 \\
 & = 40.06\% \\
 \text{(iii) } & \text{A company is more likely to} \\
 & \text{advertise its percentage profit} \\
 & \text{mark-up as it is greater than the} \\
 & \text{percentage profit margin and would} \\
 & \text{be more likely to attract investors.}
 \end{aligned}$$

$$(iv) 33\% \text{ margin} \Rightarrow \frac{0.33}{0.67} = 49.25\%$$

I would prefer to buy shares in a company with a 33% profit margin as this is a 49.25% profit on cost price. This is a profit of 6.25% more than the company with percentage profit mark-up of 43%.

Exercise 10.3

$$\begin{aligned} \text{Q. 1. } F &= P(1 + i)^t \\ &= 22,500(1 + 0.05)^3 \\ &= \text{€}26,046.56 \end{aligned}$$

$$\begin{aligned} \text{Q. 2. } F &= P(1 + i)^t \\ &= 16,000(1 + 0.03)^6 \\ &= \text{€}19,104.84 \\ \therefore \text{Total Interest} &= \text{€}3,104.84 \end{aligned}$$

$$\begin{aligned} \text{Q. 3. } F &= P(1 + i)^t \\ &= 10,200(1 + 0.034)^8 \\ &= \text{€}13,327.98 \end{aligned}$$

$$\begin{aligned} \text{Q. 4. } F &= P(1 + i)^t \\ &= 1,500,000(1 + 0.08)^3 \\ &= \text{€}1,889,568 \end{aligned}$$

$$\begin{aligned} \text{Q. 5. } F &= P(1 + i)^t \\ &= 10,000(1 + 0.06)^5 \\ &= \text{€}13,382.26 \\ \therefore \text{Interest} &= \text{€}3,382.26 \end{aligned}$$

$$\begin{aligned} \text{Q. 6. } F &= P(1 + i)^t \\ F &= 25,400(1 + 0.03)^{10} \\ &= \text{€}34,135.48 \\ \text{Interest} &= \text{€}34,135.48 - 25,400 \\ &= \text{€}8,735.48 \end{aligned}$$

$$\begin{aligned} \text{Q. 7. } F &= P(1 + i)^t \\ &= 200,500(1 + 0.025)^8 \\ &= \text{€}244,289.78 \\ \text{Interest} &= \text{€}43,789.78 \end{aligned}$$

$$\begin{aligned} \text{Q. 8. } F &= P(1 + i)^t \\ &= 100,500(1 + 0.05)^6 \\ &= \text{€}134,679.61 \end{aligned}$$

$$\begin{aligned} \text{Q. 9. } F &= P(1 + i)^t \\ &= 1,000,000(1.105)^{3.5} \\ &= \text{€}1,418,299.58 \end{aligned}$$

$$\begin{aligned} \text{Q. 10. } F &= P(1 + i)^t \\ &= 9,600(1 + 0.02)^4 \\ &= \text{€}10,391.35 \\ \therefore \text{Interest} &= \text{€}791.35 \end{aligned}$$

$$\begin{aligned} \text{Q. 11. } F &= P(1 + i)^t \\ 2,500 &= P(1 + 0.06)^5 \\ \frac{2,500}{(1.06)^5} &= P \\ \text{€}1,868.15 &= P \end{aligned}$$

$$\begin{aligned} \text{Q. 12. } F &= P(1 + i)^t \\ 12,500 &= P(1 + 0.032)^6 \\ \frac{12,500}{(1.032)^6} &= P \\ \text{€}10,347.41 &= P \end{aligned}$$

$$\begin{aligned} \text{Q. 13. } F &= P(1 + i)^t \\ 1,500 &= P(1 + 0.035)^2 \\ \frac{1,500}{1.035^2} &= P \\ \text{€}1,400.27 &= P \end{aligned}$$

$$\begin{aligned} \text{Q. 14. } 16,000 \times 1.03 &= 16,480 \\ &\quad \underline{- 2,000} \\ &\quad 14,480 \\ 14,480 \times 1.02 &= \text{€}14,769.60 \end{aligned}$$

$$\begin{aligned} \text{Q. 15. } 1,500,000,000 \times 1.005 &= 1,507,500,000 \\ 1,507,500,000 \times 1.0042 &= \text{€}1,513,831,500 \end{aligned}$$

Q. 16.

	Principal	Rate of interest	Amount at year end
Year 1	€500	2.36%	€511.80
Year 2	€511.80	2.36%	€523.88
Year 3	€523.88	2.36%	€536.24

Q. 17. (i) $100,000 \times 1.03 = \text{€}103,000$
(ii) $\text{€}103,000 - \text{€}5,000 = \text{€}98,000$
 $98,000(1.0325)^3 = \text{€}107,868.90$

No, the advice is not correct as she will have only €107,868.90 if she invests the remaining €98,000 for the remaining 3 years at 3.25%.

Q. 18. (i) $1,000 \times 0.04 = \text{€}40$
 $40 \times 3 = \text{€}120$
 $1,000 + 120 = \text{€}1,120$

(ii) This method is incorrect as his interest should be accumulated each year.
The correct answer is
 $1,000(1.04)^3 = \text{€}1,124.86$

Revision Exercises

Q. 1. $27,000 \times 0.21 = \text{€}5,670$
 $\begin{array}{r} -2,100 \\ \hline \text{€}3,570 \end{array}$

Take-home pay = $27,000 - 3,570 - 450 - 350$
= €22,630

Q. 2. (i) Gross tax = $7,300 + 1,300 = \text{€}8,600$
(ii) $\frac{8,600}{37,000} = 23.24\%$

Q. 3. $45,000 \begin{cases} 13,000 \times 0.42 = 5,460 \\ 32,000 \times 0.20 = \frac{6,400}{11,860} \end{cases}$
 $\begin{array}{r} -3,500 \\ \hline \text{Tax payable } \text{€}8,360 \end{array}$

Q. 4. $10,036 \times 0.02 = 200.72$
 $5,980 \times 0.04 = 239.20$
 $19,784 \times 0.07 = \underline{1,384.88}$
Total USC = €1,824.80

Q. 5. $79,000 \begin{cases} 7,000 \times 0.41 = 2,870 \\ 72,000 \times 0.20 = \frac{+ 14,400}{\text{€}17,270} \end{cases}$
 $\begin{array}{r} - 3,790 \\ \hline \text{Tax Payable: } \text{€}13,480 \end{array}$

$\text{€}110 \times 12 = \text{€}1,320$
 $\text{€}240 \times 12 = \text{€}2,880$
 $\text{€}44 \times 12 = \text{€}528$
Total deductions = €18,208
 $79,000 - 18,208 = \text{€}60,792 \div 26$
= €2,338.15

- Q. 6.** (a) $10,036 \times 0.02 = 200.72$
 $5,980 \times 0.04 = 239.20$
 $28,984 \times 0.07 = \underline{2,028.88}$
 Total USC = €2,468.80
- (b) Total tax credits = $1,650 + 1,650$
 = €3,300
- (c) $45,000$ $\left\{ \begin{array}{l} 12,200 \times 0.41 = 5,002 \\ 32,800 \times 0.20 = \underline{6,560} \end{array} \right.$
 $11,562$
 $\underline{- 3,300}$
 Tax Bill: €8,262
- (d) $45,000 - 2,468.80 - 8,262$
 = €34,269.20

- Q. 7.** (a) 16,000 c.p., 24,000 s.p.
 $24,000 - 16,000 = \text{€}8,000$ profit
 $\frac{8,000}{16,000} \times 100 = 50\%$ mark-up
- (b) $\frac{8,000}{24,000} \times 100 = 33.33\%$ margin

- Q. 8.** (i) $120 \times 1.15 = \text{€}138$
 (ii) $\frac{18}{138} = 13.04\% \approx 13\%$ margin

- Q. 9.** (i) $3,750 \times 0.75 = \text{€}2,812.50$
 (ii) $2,812.50 \times 1.15 = \text{€}3,234.38$
 \therefore Profit = €421.88
 $\frac{421.88}{3,234.38} = 13.04\%$

- Q. 10.** (a) By calculating 13.5% of €136.20, Jerry gets a different amount than was originally calculated.

Price of meal before VAT: $\frac{136.20}{1.135} = \text{€}120$

VAT amount: 13.5% of $120 = \text{€}16.20$

Jerry's calculation for the VAT amount: $136.20 \times 0.135 = \text{€}18.39$

(b) $120 \times 1.09 = \text{€}130.80$

- Q. 11.** A profit margin of 60% implies that the cost price is 40% of the selling price.

To make a profit of 25%:

$40\% \times 1.25 = 50\%$

So, to make a profit of 25%, the manager must sell at 50% of the original selling price.

\therefore Prices should be reduced by 50%.

Q. 12. (a) $35,000 \times 0.80 = 28,000$
 $28,000 \times 0.85 = \text{€}23,800$
 (b) $35,000 - 23,800 = 11,200$
 $\frac{11,200}{35,000} \times 100 = 32\%$ fall in value.

\therefore The manager is incorrect as the actual fall in value is 32%.

Q. 13. $F = P(1 + i)^t$
 $= 1,500,000(1 + 0.065)^{3.5}$
 $= \text{€}1,869,884.95$

Q. 14. $F = P(1 + i)^t$
 $= 18600(1 + 0.02)^4$
 $= \text{€}20,133.24$
 \therefore Interest = $\text{€}1,533.24$

Q. 15. $F = P(1 + i)^t$
 $20,500 = P(1 + 0.05)^5$
 $\frac{20,500}{1.05^5} = P$
 $\text{€}16,062.29 = P$

Q. 16. $F = P(1 + i)^t$
 $102,500 = P(1 + 0.042)^6$
 $\frac{102,500}{1.042^6} = P$
 $\text{€}80,078.80 = P$

Q. 17. (a) $5,000 \times 0.03 = \text{€}150$ interest
 Tax: $150 \times 0.27 = \text{€}40.50$
 \therefore Interest = $\text{€}109.50$
 Amount = $\text{€}5,109.50$
 (b) $5,296 - 5,109.50 = \text{€}186.50$ interest after tax
 $\therefore \frac{186.50}{0.73} = \text{€}255.48$ interest before tax
 $\frac{255.48}{5,109.50} \times 100 = 5\%$

Q. 18. $F = P(1 + i)^t$
 $7,290 = P(1.08)^2$
 $\frac{7,290}{1.08^2} = P$
 $\text{€}6,250 = P$

Q. 19. (a) $\$1.58 \text{ US} = 2.25 \text{ Swiss francs}$
 $\$1 \text{ US} = \frac{2.25}{1.58}$
 $\$1 = 1.42 \text{ Swiss francs.}$
 (b) $2.25 \text{ Swiss F} = \$1.58 \text{ US}$
 $1 \text{ Swiss F} = \frac{1.58}{2.25} = \0.70 US

Q. 20. (a) (i) $1,200 \times 1.4045 = \$1,685.40$
 (ii) $\$1,685.40 \times 0.97 = \$1,634.84$
 (b) $\text{€}2,047$ after commission is deducted
 $\frac{2,047}{0.97} = \text{€}2,110.31$ before commission
 $\text{€}2,110.31 = \$3,060 \text{ US}$
 $\text{€}1 = \frac{3,060}{2,110.31}$
 $\text{€}1 = \$1.45 \text{ US}$
 (c) $\text{€}1 = \text{£}0.89$

Q. 21. (a) $210 \text{ m}^2 = 610 \text{ children}$

$$154 \text{ m}^2 = \frac{610}{210} \times 154$$
$$= 447\frac{1}{3} \text{ children}$$

(b) $610 \text{ children} = 210 \text{ m}^2$

$$24 \text{ children} = \frac{210}{610} \times 24$$
$$= 8.26 \text{ m}^2$$

Q. 22. (i) $4 \text{ people} = 6 \text{ hours}$

$$8 \text{ people} = \frac{6 \times 4}{8} = 3 \text{ hours}$$

(ii) $6 \text{ people} = \frac{6 \times 4}{6} = 4 \text{ hours}$

Q. 23. $6 \text{ people} = 300 \text{ g}$

$$8 \text{ people} = \frac{300}{6} \times 8$$
$$= 400 \text{ g of mince}$$

Q. 24. $500 \text{ ml} \div 5 = 100 \text{ ml}$

$$100 \text{ ml} : 400 \text{ ml} \quad \text{orange} : \text{water}$$

$$500 \text{ ml} \div 4 = 125 \text{ ml}$$

$$125 \text{ ml} : 375 \text{ ml} \quad \text{orange} : \text{water}$$

$$\text{Combined jugs} \Rightarrow 225 \text{ ml} : 775 \text{ ml}$$
$$\text{orange} : \text{water}$$

$$9 : 31$$

Q. 25. (a) $\text{John} : \text{Paul} : \text{Michael}$

$$2,250 : 2,600 : 150$$

$$225 : 260 : 15$$

$$45 : 52 : 3$$

$$150,000 \div 100 = \text{€}1,500$$

$$\text{John} = 1,500 \times 45 = \text{€}67,500$$

$$\text{Paul} = 1,500 \times 52 = \text{€}78,000$$

$$\text{Michael} = 1,500 \times 3 = \text{€}4,500$$

(b) (i) $\text{John} : \text{Paul} : \text{Michael}$

$$2.5 : 1.5 : 1$$

$$5 : 3 : 2$$

$$\therefore 140,000 = 5 \text{ shares}$$

$$1 \text{ share} = \text{€}28,000$$

$$\text{Total bonus} = \text{€}280,000$$

(ii) $\text{Paul} = 28,000 \times 3$

$$= \text{€}84,000$$

$$\text{Michael} = 28,000 \times 2$$

$$= \text{€}56,000$$

Q. 26. $\text{€}1,200 \times 12 = 14,400$

$$\text{€}60,000 - \text{€}14,400 = \text{€}45,600$$

$$\frac{45,600}{0.15} = \text{€}304,000 \text{ is the value of cars he must sell}$$

Q. 27. (a) $620 \times 12 = \text{€}7,440$

(b) $\text{€}7,440 \times 0.04 = \text{€}297.60$ or $\text{€}24.80$ per month

(c) $7,440 + 297.60 = \text{€}7,737.60$

$$\frac{7,737.60}{12} = \text{€}644.80$$

(d) $620(1.04)^6 = \text{€}784.50$

Q. 28. Before: $9 \text{ litres} = 72 \text{ km}$

$$1 \text{ litre} = 8 \text{ km}$$

After: $5.5 \text{ litres} = 58.3 \text{ km}$

$$1 \text{ litre} = \frac{58.3}{5.5}$$
$$= 10.6 \text{ km}$$

$$\text{Increase} = 2.6 \text{ km}$$

$$\frac{2.6}{8} \times 100 = 32.5\%$$

Q. 29. (a) $510 \times 0.20 = \text{€}102$

$$\underline{-63}$$

$$\text{€}39$$

(b) $193 \times 0.02 = 3.86$

$$115 \times 0.04 = 4.60$$

$$202 \times 0.07 = + \underline{14.14}$$

$$\text{USC } \text{€}22.60$$

(c) $76.92 - 39 - 22.60 = \text{€}15.32 \text{ PRSI}$

Q. 30. (i) $2,500 \times 1.04 = \text{€}2,600$
 $2,600 \times 1.03 = \text{€}2,678$
(ii) $\text{€}2,744.95 - \text{€}2,678 = \text{€}66.95$
 $\frac{66.95}{2,678} \times 100 = 2.5\%$

Q. 31. (i) Fixed charge €15
 $40 \times 0.11 = \text{€}4.40$
 $70 \times 0.28 = \text{€}19.60 +$
 €39.00
(ii) $\text{€}39 \times 1.23 = \text{€}47.97$

Q. 32. (i) $\text{€}900 \begin{cases} 660 \times 0.42 = 277.20 \\ 240 \times 0.20 = + 48 \end{cases}$
 €325.20
 - 50
 €275.20

(ii) Increase in after-tax weekly income: $58\% = \text{€}20.30$
Increase in gross weekly income: $\frac{20.30}{0.58} = \text{€}35$