PROFIT AND LOSS – PRACTICE QUESTIONS
CALCULATOR ALLOWED

1. The table below shows how much money a company spent and its income in May, June and July.

<table>
<thead>
<tr>
<th>Month</th>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spent</td>
<td>£15,350</td>
<td>£16,700</td>
<td>£19,100</td>
</tr>
<tr>
<td>Income</td>
<td>£12,950</td>
<td>£17,100</td>
<td>£21,050</td>
</tr>
</tbody>
</table>

(a) Find the profit or loss for each month.

May = £12,950 - £15,350 = £2,400 loss
June = £17,100 - £16,700 = £400 profit
July = £21,050 - £19,100 = £1,950 profit

(b) Did the company make a profit in the three months combined?

\[ \text{Spent} = 15,350 + 16,700 + 19,100 = 51,150 \]
\[ \text{Income} = 12,950 + 17,100 + 21,050 = 51,100 \]
\[ 51,100 - 51,150 = -£50 = £50 \text{ loss} \]

2. A company spends money on wages, advertising and supplies. The table below shows how much money they spent on each item in 2018 and 2019.

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages</td>
<td>£525,700</td>
<td>£635,800</td>
</tr>
<tr>
<td>Advertising</td>
<td>£90,500</td>
<td>£117,900</td>
</tr>
<tr>
<td>Supplies</td>
<td>£104,200</td>
<td>£130,100</td>
</tr>
</tbody>
</table>

In 2018, the company’s income was £790,000.
In 2019, the company’s income was £975,000.

In which year did the company make the largest profit?

2018: \[ \text{Spent} = 525,700 + 90,500 + 104,200 = £720,400 \]
\[ 790,000 - 720,400 = £69,600 \text{ profit} \]

2019: \[ \text{Spent} = 635,800 + 117,900 + 130,100 = £883,800 \]
\[ 975,000 - 883,800 = £91,200 \text{ profit} \]
3. Amy buys and sells fish.
On Saturday, she bought 300 fish for £2.10 each.
She sold 165 of the fish for £4.10 each.
The rest of the fish remained unsold.

Work out Amy's profit or loss.

\[
\text{Spent} = 300 \times 2.10 = £630 \\
\text{Income} = 165 \times 4.10 = £676.50 \\
676.50 - 630 = £46.50 \text{ profit}
\]

4. Barbara buys and sells used books.
On Sunday, she bought 155 books for 95p each.
She sold 44 of the books for £1.90 each and 35 of the books for £1.40 each.
The rest of the books remained unsold.

Work out Barbara's profit or loss.

\[
\text{Spent} = 155 \times 0.95 = £147.25 \\
\text{Income} = 44 \times 1.9 = £83.60 \\
\quad 35 \times 1.4 = £49 \\
83.60 + 49 = £132.60 \\
132.60 - 147.25 = -£14.65 = £14.65 \text{ loss}
\]

5. Carlos buys and sells rucksacks.
Last week, he bought 250 rucksacks for £15.50 each.
He sold 40% of the rucksacks for £24 each.
The rest of the rucksacks remained unsold.

Work out Carlos’s profit or loss.

\[
\text{Spent} = 250 \times 15.5 = £3875 \\
\text{40\% of 250} = 100 \\
\text{Income} = 100 \times £24 = £2400 \\
2400 - 3875 = -£1475 = £1,475 \text{ loss}
\]
6. Victor buys and sells musical instruments. He bought 45 guitars for £55 each and 24 violins for £40 each. He sold two thirds of the guitars for £95 each and half of the violins for £75 each. The rest of the items remained unsold. Work out Victor’s profit or loss.

\[
\text{Spent: } 45 \times 55 = 2475 \\
24 \times 40 = 960 \\
2475 + 960 = 3435 \\
\frac{2}{3} \text{ of } 45 = 30 \\
\frac{1}{2} \text{ of } 24 = 12 \\
\text{Income: } 30 \times 95 = 2850 \\
12 \times 75 = 900 \\
2850 + 900 = 3750 \\
3750 - 3435 = \underline{315} \quad \text{profit}
\]

7. John runs a clothes shop. He bought 50 t-shirts for £8.75 each and 40 blazers for £14.50 each. John sold 60% of the t-shirts for £16.60 each, and half of the blazers for £27.70 each. The rest of the items remained unsold.

John’s target was to make a profit of over £100. Did John achieve his target? Show all your working.

\[
\text{Spent: } 50 \times 8.75 = 437.50 \\
40 \times 14.5 = 580 \\
437.50 + 580 = 1017.50 \\
60\% \text{ of } 50 = 30, \quad \frac{1}{2} \text{ of } 40 = 20 \\
\text{Income: } 30 \times 16.6 = 498 \\
20 \times 27.7 = 554 \\
498 + 554 = 1052 \\
1052 - 1017.50 = \underline{34.50} \quad \text{profit}
\]

\[\text{No}\]
8.
Doris runs a market stall selling honey.
She bought 50 kilograms of honey for £185.
She sells honey in 900g jars for £5.50 each.
She sold 40 jars.
The remaining honey was sold to another seller for 90p per kilogram.

Work out Doris's profit or loss.

Spent = £185

\[40 \times 900 = 36,000 \text{ g} = 36 \text{ kg}\]
\[50 - 36 = 14 \text{ kg of honey remaining}\]

Income:
\[40 \times 5.5 = 220\]
\[14 \times 0.9 = 12.60\]
\[220 + 12.60 = £232.60\]

\[232.60 - 185 = £47.60 \text{ profit}\]

9.
Eric buys and sells sports equipment.
He bought 80 footballs for £9.50 each and 65 basketballs for £10.50 each.
He sold 45% of the footballs for £12 each.
He sold 20% of the basketballs for £15 each.
He also offered a basketball and a football for £20.
24 people bought both.

Work out Eric's profit or loss.

Spent:
\[80 \times 9.5 = 760\]
\[65 \times 10.5 = 682.5\]
\[760 + 682.5 = £1442.50\]

45% of 80 = 36 footballs sold
20% of 65 = 13 basketballs sold

Income:
\[36 \times 12 = 432\]
\[13 \times 15 = 195\]
\[24 \times 20 = 480\]
\[432 + 195 + 480 = £1107\]

\[1107 - 1442.50 = -£335.50 = £335 \text{ loss}\]
10.
Quinn runs a fruit stall at a market.
She bought 50 boxes of apples for £2.75 each.
Each box contains 16 apples.
She sold 45% of the apples for 30p each.
She sold 75% of the remainder of the apples in bags of 3 for 40p each.
The rest of the apples remained unsold.

Work out Quinn's profit or loss.

\[
\begin{align*}
\text{Spent: } & \quad 50 \times 2.75 = £137.50 \\
& \quad 16 \times 50 = 800 \text{ apples} \\
& \quad 45\% \text{ of } 800 = 360 \text{ sold for } 30p \text{ each} \\
& \quad 800 - 360 = 440 \\
& \quad 75\% \text{ of } 440 = 330 \div 3 = 110 \text{ bags of 3 sold} \\
\text{Income: } & \quad 360 \times 0.3 = 108 \\
& \quad 110 \times 0.4 = 44 \\
& \quad 108 + 44 = £152 \\
\end{align*}
\]

\[
152 - 137.50 = £14.50 \text{ profit}
\]

11.
Raj runs a fruit stall at a market.
She bought 15 crates of bananas for £7.50 each.
Each crate contains 10 bunches of bananas.
Each bunch contains 5 bananas.
She sold 210 bananas for 35p each.
She sold a quarter of the remainder of the bananas in bunches of 5 for £1 each.
The rest of the bananas remained unsold.

Work out Raj's profit or loss.

\[
\begin{align*}
\text{Spent: } & \quad 15 \times 7.5 = £112.50 \\
& \quad 15 \times 10 \times 5 = 750 \text{ bananas} \\
& \quad 750 - 210 = 540 \\
& \quad 540 \times \frac{1}{4} = 135 \div 5 = 27 \text{ bunches of 5} \\
\text{Income: } & \quad 210 \times 0.35 = 73.50 \\
& \quad 27 \times 1.00 = 27 \\
& \quad 73.50 + 27 = £100.50 \\
\end{align*}
\]

\[
100.50 - 112.50 = -£12 = £12 \text{ loss}
\]
12. Shaun buys and sells flip-flops. 
He bought 140 pairs of flip-flops for £12.25 each. 
He sells the flip-flops for £19.95 per pair. 
His goal is to make a profit of at least £240.

How many pairs would Shaun need to sell to achieve his goal?

\[\text{Spent} = 140 \times 12.25 = £1,715\]
\[1715 + 240 = £1,955 \text{ (income needed to achieve goal)}\]
\[1955 \div 19.95 = 97.99 \ldots \text{ pairs of flip-flops}\]
\[= 98\]

13. Tim buys and sells cameras. 
He bought 95 cameras for £120 each. 
He sells the cameras for £189 each. 
His goal is to make a profit of at least £3,000.

How many cameras would Tim need to sell to achieve his goal?

\[\text{Spent} = 95 \times 120 = £1,140\]
\[1140 + 3000 = £1,440 \text{ (income needed to achieve goal)}\]
\[1440 \div 189 = 76.19 \ldots \text{ cameras}\]
\[= 77\]

She bought 880 pens for 11p each. 
Her goal is to make a profit of at least £100.

If she sells 80% of the pens, what price would she need to sell them for in order to achieve her goal?

\[\text{Spent} = 880 \times 0.11 = £96.80\]
\[96.80 + 100 = £196.80 \text{ (income needed to achieve goal)}\]
\[80\% \text{ of } 880 = 704\]
\[196.80 \div 704 = 0.279\ldots\]
\[= £0.28\]
15. Irene buys and sells rings in two types – ruby and emerald. She buys 25 ruby rings for £56 each. She buys 36 emerald rings for £49 each. Irene sells the ruby rings for £95 each and the emerald rings for £75 each. Irene sold only 40% of the ruby rings. She made a loss of £114.

Work out how many emerald rings Irene sold.

Spent:
- $25 \times 56 = 1400$
- $36 \times 49 = 1764$
- $1400 + 1764 = £3164$

40% of 25 = 10 ruby rings sold

$3164 - 114 = £3050 = \text{income}

$10 \times 95 = £950 = \text{income from ruby rings}

$3050 - 950 = £2100 = \text{income from emerald rings}

$2100 \div 75 = 28 \text{ emerald rings sold}$

16. Harry buys and sells computer equipment. He bought 55 keyboards for £10.50 each. He bought 115 mice for £6 each. He sells the mice for £9.85 each. He sold 39 of the keyboards and 70 of the mice. He made a profit of £202.

Work out the price he sold the keyboards for.

Spent:
- $55 \times 10.5 = 577.50$
- $115 \times 6 = 690$
- $577.50 + 690 = £1267.50$

Income = $1267.50 + 202 = £1469.50$

$70 \times 9.85 = £689.50 = \text{income from mice}$

$1469.50 - 689.50 = £780 = \text{income from keyboards}$

$780 \div 39 = £20$
Keith organised a raffle.  
Each ticket had a number between 1 and 100 on it.  
If the ticket number is a factor of 24, the player wins £4.  
If the ticket number is a multiple of 16, the player wins £6.  
Keith sells the tickets for £1.50 each.  
Keith sold all of the winning tickets and 74 of the losing tickets.  
Keith gave 40% of the profit made to charity.

Work out how much money Keith raised for charity.

Factors of 24: 1, 24, 2, 12, 3, 8, 4, 6 = 8 winning tickets  
Multiples of 16: 16, 32, 48, 64, 80, 96 = 6 winning tickets  
74 + 8 + 6 = 88 tickets sold  
Income = 88 x 1.5 = £132

Paid out:  
8 x £4 = £32  
6 x £6 = £36  
32 + 36 = £68

132 - 68 = £64 profit  
40% of 64 = £25.60
18.
Gavin ran a hot dog stand at a football match.
Hot dog rolls are sold in packs of 6 for £1.25 each.
Sausages are sold in jars of 8 for £3 each.
Gavin bought 120 packs of hot dog rolls and 90 jars of sausages.
He also had to pay the football club £500 to set up his stand.
He sold 430 hot dogs for £3.35 each.

(a) Gavin’s goal was to make more in profit than he paid to the football club.
Did Gavin achieve his goal?

\[
\text{Spent: } 120 \times 1.25 = £150 \text{ (rolls)}
\]
\[
90 \times 3 = £270 \text{ (sausages)}
\]
\[
150+270+500 = £920
\]
\[
\text{Income } = 430 \times 3.35 = £1440.50
\]
\[
1440.50 - 920 = £520.50 \text{ profit}
\]

Yes

(b) Gavin uses one hot dog roll and one sausage to make a hot dog.
How many hot dogs can Gavin make with the leftover ingredients?

\[
120 \times 6 = 720 \text{ rolls}
\]
\[
90 \times 8 = 720 \text{ sausages}
\]
\[
720 - 430 = 290
\]
19.
Hector buys and sells phones and tablets.
He bought 120 phones for £90 each.
He bought 75 tablets for £140 each.

He sells phones for a price 30% higher than he bought them for.
He sells tablets for a price 40% higher than he bought them for.

Hector sold 93 phones and made a profit of £1145.

How many tablets did he sell?

\[
\text{Spent: } 120 \times 90 = £10,800 \text{ (phones)} \\
75 \times 140 = £10,500 \text{ (tablets)} \\
10800 + 10500 = £21,300 \\
90 \times 1.3 = £117 \text{ (price of phone)} \\
140 \times 1.4 = £196 \text{ (price of tablet)} \\
93 \times 117 = £10,881 \text{ (income from phones)} \\
\text{Income} = 21300 + 1145 = £22,445 \\
22445 - 10881 = £11,564 \text{ (income from tablets)} \\
11564 \div 196 = 59 \text{ tablets sold}
\]