The following data is provided:

- Cost price per guitar $590
- Retail price per guitar $670
- Gross profit per guitar = $80
- Gross profit margin % = $80/$670x100 = 12%
- Markup % = $80/$590x100 = 13.6%
• Sales Revenue 100%
• Less Cost of Goods Sold 67%
• Gross Profit Margin 33%

To calculate the markup required – simply express the gross profit as a percentage of the cost of goods sold. For ease of calculation we can assume 100 guitars or simply use the percentages calculated above.

• Markup required = 33/67 x 100 = 49.2%
Cost of goods sold are $590 per guitar, with a markup of 49.2% we add $290 to reach a selling price of $880.

Gross Profit margin per guitar is $290, which expressed as a percentage of selling price is 33%.
Ed discovers that the markup used by the other retailers for this item is 54%. What gross profit margin would be generated on the guitars if this higher markup was used? Again we can use knowledge of the relationships:

- Sales Revenue 154%
- Cost of Goods Sold 100%
- Gross Profit 54%
As the markup determines the size of the gross profit, to find the gross profit margin percentage – simply express the gross profit as a percentage of the selling price.

- Gross profit margin % = $\frac{54}{154} \times 100 = 35\%$

Does this make sense and fit with the other calculations we have completed so far? Yes, a 49.2% markup led to a 33% gross profit margin, a 54% markup led to a 35% gross profit margin and a 13.6% markup led to a 12% gross profit margin.
• Selling Price $908.60 (Cost price $590 + (54% x $590) = $908.60)
• Cost of Goods Sold $590.00
• Gross Profit $318.60

Therefore gross profit of $318.60
Selling Price $908.60 = Gross Profit
Margin of 35%
Sales volume is obviously critical in determining the total gross profit made. If Ed meets his monthly sales estimate of 25 guitars, he makes a total gross profit, if using the original figures, of:

- 25 guitars @ $80 = $2,000 (Sales volume x gross profit per unit)
If only 15 units are sold the total gross profit is only $1,200. On the other hand if 30 units are sold the total gross profit is $2,400
Eventually Ed wishes to achieve a total monthly gross profit of $3,200 from the sale of guitars. The question is; “How many guitars will he need to sell each month to reach his target?” Using the understanding that volume times gross profit per unit determines total gross profit we can rearrange the formula to:

\[
\text{Volume} = \frac{\text{Total gross profit}}{\text{Gross profit per unit}}
\]

\[
X = \frac{\$3,200}{\$80}
\]

\[
= 40 \text{ guitars}
\]
Strategy 1

Maintain the existing margin percentage by increasing the selling price by the same percentage as the cost increase. If the cost price increases by 10% to $649 then the selling price would increase by 10% to $737. This means the gross profit margin per unit is $88 or a gross profit margin % of 12%. The gross profit margin % has been maintained.
If Ed sells 25 guitars then the new total gross profit is $2,200, an increase on the original calculations because of the absolute increase in gross profit per unit. How easy it will be to sell 25 guitars at the new price of $737 rather than the old price of $670 is an unanswered market demand question. To maintain the original total gross profit, a sales volume of 23 (rounded up) guitars is required ($2,000/$88 = 22.73).
Strategy 2

Maintain the current selling price by lowering the gross profit margin percentage and increasing the sales volume to earn the same total gross profit as originally planned. If the cost price increases by 10% to $649 then the gross profit per guitar would decrease to $21 per guitar.
To continue to make a total gross profit of $2,000 then the calculation of $2,000/$21 indicates a new volume 95 (rounded) guitars. Now we have even larger unanswered market demand questions. “Can Ed more than triple his monthly sales with no price change? Are there potential customers?”
Comparison of strategy 1 and 2.....to maintain total gross profit.

- Strategy 1: Selling price $737 and sell 23 guitars
- Strategy 2: Selling price $670 and sell 95 guitars

Which is more likely to be achieved, a drop in sales of 8% as a result of a price increase of 10%, or an increase of sales 380% with no change in the selling price?
Strategy 1

Follow the competitors’ price down and sell an increased volume in order to maintain existing total gross profit. The question to be answered is how large a volume increase will be required and how feasible is that change. Assume Ed’s competitors cut their selling price to $603 (a price cut of approximately 10%) and Ed follows the market down. To make the original profit of $2,000 an extra 129 guitars (rounded) will have to be sold.
Strategy 2

Maintain the original selling price and assume the sales volume will only drop by 10%. The new total gross profit will be $1,760 (22 guitars sold @ gross profit margin per unit of $80) a drop of only $240.
Comparison of strategy 1 and 2 when competitors cut price

- **Strategy 1**: Selling price $603 and sell 154 guitars.
- **Strategy 2**: Selling price $670 and sell 22 guitars.

Which is more likely? Sell an extra 129 guitars at the lower price or have a 10% decrease in demand.