

# Inverse Proportion Practice Problems

---

1. A company sells a product for \$30 per unit and sells 5 M units per year. If they reduce the Price by 20% what percentage increase in Quantity do they need in order to achieve the same Revenue. What is the numerical increase in units sold required to break-even on Revenue?
2. A company sells a product for \$120 per unit sells 35 M units per year. If they decrease Price by \$20, what percentage increase in Quantity do they need in order to achieve the same Revenue? What is the corresponding numerical increase in units sold?
3. A company cuts price of a product by 10%. What change in Quantity do they need in order to achieve the same Revenue?
4. A company increases Price by 25%, how much of their existing Quantity sold can they afford to lose and keep their Revenue constant? That is, what reduction in Quantity will result in Revenue remaining the same? Initial tests indicate Quantity will drop by 22.5%, will their Revenue increase or Decrease?
5. A company increases Quantity produced by 20% which increase supply and hence reduces Price. What percentage decrease in Price results in neutral Revenue?
6. A company increases Quantity produced by 60%. What percentage decrease in Price results in neutral Revenue? Initial research suggests their Price will be reduced by 40%, will they increase or decrease revenue?
7. A company sells 480 M units of a product per year for \$20. If they decrease their production by 40 M units, what Price change would keep their revenue constant?
8. A company sells a product for \$1,800 per unit sells 48 M units per year. If they decrease Price by \$600, what percentage increase in Quantity do they need in order to achieve the same Revenue? What is the corresponding numerical increase in units sold?
9. A manufacturing company has a problem with a particular machine which reduces overall worker productivity by 25%.
  - a) The company can hire temporary workers who will have the same productivity as their existing employees. How many temporary workers will they need to hire in order to keep production constant?

- b) The company can also have existing workers increase the number of hours worked. How many additional hours will workers need to work in order to keep production constant?
10. A company sells a product for \$140 per unit sells 125 M units per year. If they increase Price by \$35, what change in Quantity would lead to Revenue remaining constant? What production volume does this correspond to? If the Price increase causes Quantity to be 30 M units annually, will their Revenue increase or decrease?
11. A company cuts Price of a product by 40%. What change in Quantity do they need in order to achieve the same Revenue?
12. A company increases Price of a product by 40%. How much of their existing Quantity sold can they afford to lose and keep their Revenue constant? If Quantity drops by 30%, will they increase or decrease Revenue?
13. A company decrease Price of a Product from \$600 to \$450, and their units sold increase annually from 140 Million units to 175 Million units. Will this increase or decrease revenue?
14. If the company instead increases Price from \$600 to \$750, and decreases Quantity from 140 Million units to 120 Million units, will this increase or decrease Revenue? What Quantity change results in Revenue remaining constant?
15. American Airlines is thinking of changing the price of airplane tickets from New York to LA. The current cost is \$450. Existing average number of seats sold is 76% of airplane capacity – this is called the Load Factor ( $LF$ ).
- a) If American Airlines increases ticket price from \$450 to \$500, what percentage of seats would need to be sold under the new ticket price to keep Revenue constant? That is, what is the new Load Factor required to keep Revenue constant?
- b) If American Airlines decreases from \$450 to \$400 USD, what percentage of seats would need to be sold under the new ticket price to keep Revenue constant? That is, what is the new Load Factor required to keep Revenue constant?
16. An ultra-marathon runner decreases the time it takes them to run a 60 mile race from 10 hours to 8 hours. How much faster are they running than before?