

Partial Variation

THEORY QUESTIONS

1. The cost of providing a plate of lunch to a certain group of people is partly constant and partly inversely proportional to the number of people. If it costs ₦700 per plate to feed 100 people and ₦1,300 per plate to feed 40 people, find the cost per plate for 50 people.

2. The cost of running a generator varies partly as the number of hours it is used and partly as a fixed maintenance charge. If it costs ₦3,500 to run it for 5 hours and ₦5,000 to run it for 10 hours:
 - (a) find the law of variation.
 - (b) find the cost of running the generator for 8 hours.
 - (c) find how many hours it can run if the total cost is ₦6,100.

3. y varies partly as the square of m and partly as the inverse of the square root of m . If $y = 2$ when $m = 1$ and $y = 6$ when $m = 4$, express y in terms of m .

4. z is partly constant and partly varies as x . When $x = 2$, $z = 9$; when $x = 5$, $z = 18$. Find z when $x = 10$.

5. The total cost of a taxi ride is partly constant and partly varies directly as the distance travelled. If a 10 km ride costs ₦2,500 and a 20 km ride costs ₦4,000, find the cost of a 15 km ride.

6. y is partly constant and partly varies as the square of x . If $y = 11$ when $x = 2$ and $y = 26$ when $x = 3$, find y when $x = 5$.

ANSWERS

1. ₦1,100
2. (a) $C = 2000 + 300h$ (b) ₦4,400 (c) 13.67 hours
3. $y = \frac{10m^2}{31} + \frac{52}{31\sqrt{m}}$
4. $z = 33$
5. ₦3,250
6. $y = 74$