INVERSE PROPORTION UNITARY METHOD

Answer all of these questions. Remember to show your working out in all questions.

MAIN QUESTIONS

1. y is inversely proportional to x. When x = 4, y = 6. Find y when x = 8. | y = 3

2. p is inversely proportional to q. When p = 10, q = 2. Find p when q = 5. | p = 4

3. If $a \propto 1/b$ and a = 12 when b = 3, find a when b = 9. | a = 4

4. m varies inversely as n. m = 15 when n = 4. Find m when n = 10. | m = 6

5. Given $r \propto 1/s$ and r = 20 when s = 0.5, find r when s = 2. | r = 5

6. $y \propto 1/x^2$. When x = 2, y = 9. Find y when x = 3. | y = 4

7. $p \propto 1/\sqrt{q}$. p = 8 when q = 16. Find p when q = 64. | p = 4

8. $a \propto 1/b^3$. a = 54 when b = 1. Find a when b = 3. | a = 2

9. $y \propto 1/(x+1)$. When x = 1, y = 5. Find y when x = 4. | y = 2

10. $m \propto 1/(n-2)$. m = 6 when n = 4. Find m when n = 8. | m = 2

11. $p \propto 1/(q^2+1)$. p = 2 when q = 2. Find p when q = 4. | p = 0.4

12. $y \propto 1/\sqrt{(x+3)}$. y = 4 when x = 1. Find y when x = 13. | y = 2

13. $a \propto 1/(b-1)^2$. $a = 3$ when $b = 3$. Find a when $b = 5$. | $a = 0.75$

14. $y \propto 1/(2x-1)$. $y = 1$ when $x = 1$. Find y when $x = 2$. | $y = 1/3$

15. $p \propto 1/(q+\sqrt{q})$. $p = 2$ when $q = 4$. Find p when $q = 9$. | $p = 1$

16. $m \propto 1/(n^3-1)$. $m = 1$ when $n = 2$. Find m when $n = 3$. | $m = 1/13$

MASTER QUESTIONS

M1. The time taken to complete a task is inversely proportional to the number of workers. If 6 workers take 8 hours, how long would 4 workers take? | 12 hours

M2. The pressure of a gas is inversely proportional to its volume at constant temperature. If the volume is $5m^3$ when the pressure is 100kPa, what is the pressure when the volume is $2m^3$? | 250kPa

M3. The intensity of light is inversely proportional to the square of the distance from the source. At 3 metres, the intensity is 90 lux. What is the intensity at 5 metres? | 32.4 lux