



Attempt questions first; check the separate key afterward. Show all working. Draw accurate figures where required.

A. Very short answers - 1 mark each

1. Do time and speed vary inversely for a fixed distance?
2. Do side and area of a square vary directly?
3. Six workers finish a job in 12 days. How long do eight equally efficient workers take?
4. How many workers finish it in 4 days?
5. A 240 km journey takes 4 h. Find time at 80 km/h.
6. Find speed needed to complete it in 2.5 h.
7. Twelve taps fill a tank in 30 min. Find time for 10 identical taps.
8. Find time for 15 taps.

B. Short answers / practice - 2 marks each

9. If x and y vary inversely and $x=4$, $y=18$, find y at $x=6$.
10. Write the equation linking x and y .
11. A stock feeds 20 people for 18 days. For how long will it feed 30 people?
12. How many people can it feed for 15 days?
13. Explain why inverse proportion has a constant product.
14. Distinguish inverse proportion from a relation that merely decreases.
15. Five machines make 300 items in 2 hours. How many do 8 make in 3 hours?
16. How long do 10 machines need for 900 items?
17. Eight workers working 6 h/day finish in 10 days. Find days for 12 workers at 8 h/day.
18. Find days for 10 workers at 4 h/day.
19. A wheel turns 200 times for a fixed distance. If circumference doubles, find turns.
20. If circumference becomes $\frac{4}{5}$ of original, find turns.

C. Application / reasoning - 3 marks each

21. ₹1200 is shared equally among 8 children. Find each share.
22. If 4 more children join, find the new share.
23. In a direct proportion, $y=15$ when $x=3$. Find y at $x=7$.
24. In an inverse proportion with the same starting pair, find y at $x=9$.
25. A car uses 6 L for 90 km. Find fuel for 240 km at the same efficiency.
26. If efficiency improves to 20 km/L, find fuel for 240 km.
27. Nine workers finish a job in 20 days. Find time for twelve identical workers.
28. Four printers make 1200 pages in 5 minutes. Find output of six printers in 8 minutes.
29. A journey takes 6 h at 50 km/h. Find time at 75 km/h.
30. An inverse-proportion pair is $x=8$, $y=15$. Find y for $x=12$.
31. A food stock feeds 24 people for 15 days. After 5 days, 6 leave. How many more days will it last?

D. Extended practice - 5 marks per pair

32. A rectangular plot has fixed area 360 m^2 . Find width for lengths 20 m and 30 m.
33. Plot three length-width pairs and explain why they are inverse.
34. Ten workers can finish a job in 18 days. After 6 days, 5 more join. Find total time.
35. Explain the assumptions needed for the worker-time model.

ANSWER KEY - Numerical / closed questions

- 1) Yes. 2) No; area varies as side squared. 3) 9 days. 4) 18. 5) 3 h. 6) 96 km/h. 7) 36 min. 8) 24 min. 9) 12. 10) $xy=72$. 11) 12 days. 12) 24. 15) 720. 16) 3 hours. 17) 5 days. 18) 12 days. 19) 100. 20) 250. 21) ₹150. 22) ₹100. 23) 35. 24) 5. 25) 16 L. 26) 12 L. 27) 15 days. 28) 2880 pages. 29) 4 h. 30) 10. 31) $13\frac{1}{3}$ days. 32) 18 m; 12 m. 34) 14 days. 35) Equal constant efficiency; divisible work; no interference.