TYBA COACHING CENTRE, AJMER

RMS / RMC CLASS VI MATHEMATICS • CHAPTER 13: TIME AND WORK (समय एवं कार्य) — MASTER SUMMARY

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1. CORE CONCEPTS & UNITARY / LCM RULES — Basics of Time & Work

1. One-Day Work Rule (एक दिन का कार्य): If a person A can complete a full work in **n** days, then A's 1-day work = **1 / n**. Conversely, if A's 1-day work = **1 / n**, A finishes the full work in **n** days.

यदि A किसी कार्य को n दिनों में पूरा करता है, तो A का 1 दिन का कार्य = 1/n भाग होगा।

2. Total Work = Efficiency × Time (कुल कार्य = क्षमता × समय): Efficiency (rate of work per day) is **inversely proportional** to time taken for a fixed work: More efficient person takes LESS time.

निश्चित कार्य के लिए कार्यक्षमता और समय एक-दूसरे के व्युत्क्रमानुपाती होते हैं (अधिक क्षमता = कम समय)।

3. LCM Method (ल.स.प. विधि — Fastest Exam Trick): Assume Total Work = **LCM of given days**. Then 1-day work (efficiency) = Total Work ÷ Days. This avoids fractions completely!

दिए गए दिनों का ल.स.प. (LCM) ही कुल कार्य मान लें; इससे भिन्न (fraction) की गणना नहीं करनी पड़ती।

Situation	Direct Shortcut Formula	Hindi Meaning
A in *x* days, B in *y* days (Together)	**Time = (x × y) / (x + y)**	दोनों मिलकर = (x × y) / (x + y) दिन
A+B in *x* days, A alone in *y* days (B alone)	**Time = (x × y) / (y − x)**	केवल B = (x × y) / (y − x) दिन
A, B, C in *x, y, z* days (Together)	**Time = xyz / (xy + yz + zx)**	तीनों मिलकर (या LCM विधि अपनाएँ)

Golden Rule: If A finishes work in 10 days and B in 15 days, NEVER add 10 + 15 = 25! Always add their 1-day work rates: 1/10 + 1/15 = 1/6 ⇒ 6 days.

कभी भी दिनों को सीधे न जोड़ें! हमेशा 1 दिन का कार्य (क्षमता) जोड़कर कुल दिन निकालें।

4. MDH Chain Rule (श्रृंखला नियम): If M_1 men working H_1 hours/day finish W_1 work in D_1 days, and M_2 men working H_2 hours/day finish W_2 work in D_2 days:
$(M_1 \times D_1 \times H_1) / W_1 = (M_2 \times D_2 \times H_2) / W_2$.

M_1 आदमी H_1 घंटे प्रतिदिन कार्य करके D_1 दिनों में W_1 कार्य करें, तो $(M_1\ D_1\ H_1)/W_1 = (M_2\ D_2\ H_2)/W_2$।

5. Pipes and Cisterns (नल एवं टंकी): An **inlet pipe** fills (+1/x per hour); an **outlet/leak pipe** empties (−1/y per hour). If inlet fills in *x* h and outlet empties in *y* h (y > x), net time to fill = **(x × y) / (y − x)**.

भरने वाले नल को धनात्मक (+1/x) और खाली करने वाले नल/रिसाव को ऋणात्मक (−1/y) लें।

6. Distribution of Wages (मजदूरी का बँटवारा): Wages are ALWAYS divided in the ratio of **Work Done** (or Efficiency if all work for equal days): **Wage Share ∝ Efficiency**.

मजदूरी सदैव किए गए कार्य के अनुपात में (समान दिन काम करने पर क्षमता के अनुपात में) बाँटी जाती है।

Quick Solved Example	LCM / Formula Solution
A = 12 days, B = 24 days. Together?	LCM = 24. A = 2/day, B = 1/day ⇒ 24 / 3 = **8 days**
12 men take 10 days. How many days for 15 men?	$12 \times 10 = 15 \times D_2 \Rightarrow D_2 = 120 / 15$ = **8 days**
A is 2× efficient as B. Together = 10 days. A alone?	Total rate = 2 + 1 = 3/day. Work = 30. A = 30/2 = **15 days**

Narayan Sir's Mantra: For Men/Women "OR" problems (e.g., 3 Men = 6 Women), convert everyone into one unit (1 Man = 2 Women) first, then apply $M_1D_1 = M_2D_2$!

'अथवा' (OR) वाले प्रश्नों में पहले सबको एक इकाई (जैसे महिला) में बदलें, फिर $M_1D_1 = M_2D_2$ लगाएँ।