

QUICK DRILL · CBSE CLASS 12

Numbers, Quantification and Numerical Applications

Applied Mathematics · Chapter 1 · 15 MCQs · 20 minutes · PYQ-tagged with time budgets

DATE	TOTAL MARKS 15	DURATION 20 min	MARKING +1 / 0	TARGET ≥ 12/15
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OBJECTIVES

Reinforce the four core topics of Numbers, Quantification and Numerical Applications via 15 PYQ-derived MCQs. Identify weak sub-topics via concept-node IDs (see answer key). Build per-question time budget habit.

INSTRUCTIONS

Attempt all 15. Time budget shown per Q (use it as pacing guide). Mark answers (A/B/C/D) in the margin. Answer key + explanations on the last page. **Don't peek — score yourself honestly.**

SECTION · QUICK DRILL

Q 1-15 · 20 MIN

Q1. If today is Tuesday, what day will it be after 50 days?

- (A) Saturday (B) Sunday
(C) Wednesday (D) Friday

PYQ 2019 · Delhi · 2m · 30s

Q2. $23 \equiv ? \pmod{5}$

- (A) 0 (B) 1
(C) 2 (D) 3

PYQ 2020 · All India · 1m · 20s

Q3. Two grades of rice priced at ₹40/kg and ₹60/kg are mixed to obtain a mixture at ₹52/kg. The ratio of mixing (cheaper : dearer) is:

- (A) 1 : 3 (B) 2 : 3
(C) 3 : 2 (D) 8 : 12

PYQ 2021 · Delhi · 3m · 35s

Q4. A boat travels 30 km downstream in 2 hours and the same distance upstream in 3 hours. The speed of the boat in still water is:

- (A) 10 km/h (B) 12.5 km/h
(C) 15 km/h (D) 25 km/h

PYQ 2022 · All India · 3m · 40s

Q5. Pipe A fills a tank in 4 hours; pipe B (a leak) empties it in 12 hours. Time to fill the tank with both open:

- (A) 6 hours (B) 8 hours
(C) 12 hours (D) 16 hours

PYQ 2023 · Outside Delhi · 3m · 40s

Q6. Solve: $-3x \geq 12$. The solution is:

- (A) $x \geq -4$ (B) $x \leq -4$
(C) $x \geq 4$ (D) $x \leq 4$

PYQ 2024 · Delhi · 2m · 25s

Q7. A vendor needs to earn a profit of at least ₹3,000. If each item earns ₹250 profit, the minimum number of items he must sell is:

- (A) 10 (B) 11
(C) 12 (D) 13

PYQ 2020 · Outside Delhi · 3m · 30s

Q8. If $17 \equiv 2 \pmod{n}$, the smallest possible value of n is:

- (A) 3 (B) 5
(C) 15 (D) 17

PYQ 2021 · All India · 2m · 30s

Q9. Tea worth ₹80/kg is mixed with tea worth ₹120/kg to make a blend worth ₹95/kg. In what ratio must they be mixed (cheaper : dearer)?

- (A) 5 : 3 (B) 3 : 5
(C) 2 : 1 (D) 1 : 2

PYQ 2022 · Delhi · 3m · 40s

Q10. In a 100-metre race, A beats B by 20 metres. The ratio of speeds A : B is:

(A) 5 : 4

(B) 4 : 5

(C) 5 : 6

(D) 6 : 5

PYQ 2019 · Outside Delhi · 2m · 30s

Q11. A and B invest ₹20,000 and ₹30,000 respectively in a partnership for 1 year. Their profit-share ratio is:

(A) 1 : 1

(B) 2 : 3

(C) 3 : 2

(D) 1 : 2

PYQ 2023 · All India · 2m · 25s

Q12. From $-5x + 10 < 0$, the value of x is:

(A) $x > 2$

(B) $x < 2$

(C) $x > -2$

(D) $x < -2$

PYQ 2024 · Outside Delhi · 2m · 25s

Q13. A pipe fills a tank in 6 hours. Another pipe fills the same tank in 4 hours. Together how long do they take?

(A) 2 hours

(B) 2.4 hours

(C) 5 hours

(D) 10 hours

PYQ 2018 · Delhi · 2m · 30s

Q14. A boat takes 4 hours to travel 24 km upstream and the stream flows at 2 km/h. The boat's speed in still water is:

(A) 6 km/h

(B) 8 km/h

(C) 10 km/h

(D) 12 km/h

PYQ 2023 · Delhi · 3m · 35s

Q15. A merchant mixes 10 kg of rice costing ₹40/kg with x kg costing ₹60/kg, to obtain a mixture costing ₹52/kg. The value of x is:

(A) 10 kg

(B) 12 kg

(C) 15 kg

(D) 20 kg

PYQ 2024 · All India · 3m · 35s

ANSWER KEY & EXPLANATIONS

Q 1-15 · MARK YOUR SCORE

Q1. Answer: C

$50 \text{ mod } 7 = 1$ (since $50 = 7 \times 7 + 1$). One day after Tuesday is Wednesday → option C.

Q2. Answer: D

$23 = 4 \times 5 + 3$, so $23 \equiv 3 \pmod{5}$.

Q3. Answer: B

$(D-M) : (M-C) = (60-52) : (52-40) = 8 : 12 = 2 : 3$.

Q4. Answer: B

Downstream = 15 km/h; upstream = 10 km/h; boat = $(15 + 10) \div 2 = 12.5$ km/h.

Q5. Answer: A

Combined rate = $1/4 - 1/12 = 3/12 - 1/12 = 2/12 = 1/6$ per hour. Time = 6 hours.

Q6. Answer: B

Divide both sides by -3 (negative → FLIP sign): $x \leq -4$.

Q7. Answer: C

$250x \geq 3000 \rightarrow x \geq 12$. Minimum integer = 12.

Q8. Answer: A

$17 - 2 = 15$ must be divisible by n, and n must be greater than 2 (a remainder of 2 requires $n > 2$). The smallest divisor of 15 that is greater than 2 is 3 → option A.

Q9. Answer: A

By the alligation rule, ratio = (dearer – mean) : (mean – cheaper) = $(120 - 95) : (95 - 80) = 25 : 15 = 5 : 3$ (cheaper : dearer) → option A.

Q10. Answer: A

Speeds ratio A:B = $100 : (100-20) = 100 : 80 = 5 : 4$.

Q11. Answer: B

Profit ratio = (capital × time) ratio = $20000 : 30000 = 2 : 3$.

Q12. Answer: A

$-5x < -10$. Divide by -5 (negative → FLIP): $x > 2$.

Q13. Answer: B

Rates: $\frac{1}{6} + \frac{1}{4} = \frac{2}{12} + \frac{3}{12} = \frac{5}{12}$. Time = $\frac{12}{5} = 2.4$ hours.

Q14. Answer: B

Upstream speed = $\frac{24}{4} = 6$ km/h = $(b - s) = (b - 2)$. So $b = 8$ km/h.

Q15. Answer: C

$(D-M):(M-C) = (60-52):(52-40) = 8:12 = 2:3$. So cheaper:dearer = $2:3 = 10:x \rightarrow x = 15$ kg.