

SSC QUANTITATIVE APTITUDE MASTER SERIES

10 High-Yield Reshuffled Practice Questions (Re-engineered from CHSL 2020)

Standard SSC CGL / CHSL Mock Exam Format • Including High-Res Data Interpretation & Detailed Step-by-Step Solutions

Target Exams: SSC CGL / CHSL / CPO

Total Questions: 10

Time Allowed: 18 Mins

Marking: +2.0 / -0.50

Pedagogical Methodology Note: These 10 questions have been carefully curated and reshuffled from the official SSC CHSL 2020 shift compilation. Each item preserves the exact core mathematical principles tested by the Commission while altering data variables, geometric dimensions, and contextual setups to eliminate pattern memorization and test true conceptual agility.

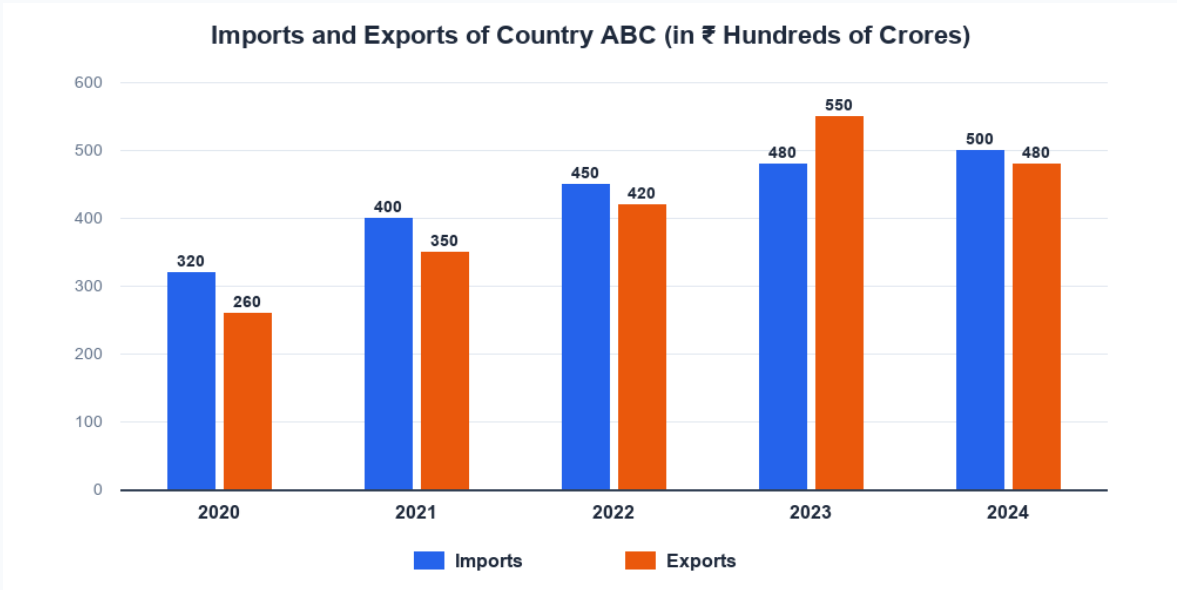
SECTION 1: PRACTICE QUESTIONS (MOCK TEST MODE)

Question 1. (Data Interpretation - Comparative Bar Graph)

The bar graph given below shows the Imports and Exports of Country ABC (in ₹ Hundreds of Crores) over a five-year period from 2020 to 2024.

Study the graph carefully and answer the question that follows:

What is the ratio of the total exports in the years 2020 and 2023 together to the total imports in the years 2021 and 2024 together?



(A) 7 : 8

(B) 9 : 10

(C) 11 : 12

(D) 8 : 9

Question 2. (Algebra - Symmetric Powers)

If $x^2 - 4\sqrt{5}x + 1 = 0$, where $x > 0$, then what will be the value of $(x^3 + 1/x^3)$?

- (A) $316\sqrt{5}$ (B) $308\sqrt{5}$
(C) $296\sqrt{5}$ (D) $324\sqrt{5}$

Question 3. (Arithmetic - Compound Interest vs Simple Interest)

Kavita invested ₹25,000 in a bank fixed deposit scheme at a certain rate of interest compounded annually and earned ₹8,275 as total compound interest after 3 years. At the same annual rate of interest, how much simple interest would Aman earn on a principal of ₹18,000 invested for a period of 4 years?

- (A) ₹6,400 (B) ₹7,200
(C) ₹7,500 (D) ₹8,000

Question 4. (Geometry - Parallel Chords in a Circle)

In a circle with centre O and radius 10 cm, two parallel chords AB and CD are situated on opposite sides of the centre. If the length of chord AB is 16 cm and the length of chord CD is 12 cm, then find the perpendicular distance between the two chords.

- (A) 12 cm (B) 14 cm
(C) 16 cm (D) 18 cm

Question 5. (Arithmetic - Time & Work with Efficiency Fraction)

A and B can complete a work individually in 20 days and 30 days, respectively. Both started working together, but B left after 6 days. The remaining work was completed by C alone in 10 days. Working together, in how many days can A and C complete 70% of the original work?

- (A) 6 days (B) 7 days
(C) 8 days (D) 9 days

Question 6. (Trigonometry - Quadratic Identity)

If $6\cos^2\theta + 7\sin\theta = 8$, where $0^\circ < \theta < 90^\circ$, then what is the value of $(\cot^2\theta + \operatorname{cosec}^2\theta + \cos^2\theta)$?

- (A) $29/4$ (B) $31/4$
(C) $15/2$ (D) $33/4$

Question 7. (Arithmetic - Profit & Loss on Quantity)

A shopkeeper purchased 48 kg of Basmati rice for ₹2,880. He sold the entire quantity at a profit equal to the selling price of 12 kg of rice. What is the selling price (in ₹) of 7 kg of rice?

- (A) ₹520 (B) ₹540
(C) ₹560 (D) ₹600

Question 8. (Arithmetic - Speed, Time & Distance / Average Speed)

A vehicle travels from City P to City Q across three consecutive legs: 75 km at an average speed of 50 km/h, 90 km at an average speed of 60 km/h, and 60 km at an average speed of 40 km/h. What is the average speed of the vehicle (in km/h) for the entire journey?

- (A) 48 km/h (B) 50 km/h
(C) 52 km/h (D) 54 km/h

Question 9. (Mensuration & Geometry - Rhombus Diagonals & Area)

One diagonal of a rhombus has a length of $12\sqrt{3}$ cm. If the length of its second diagonal is equal to the side of the rhombus, then what will be the area of the rhombus (in cm^2)?

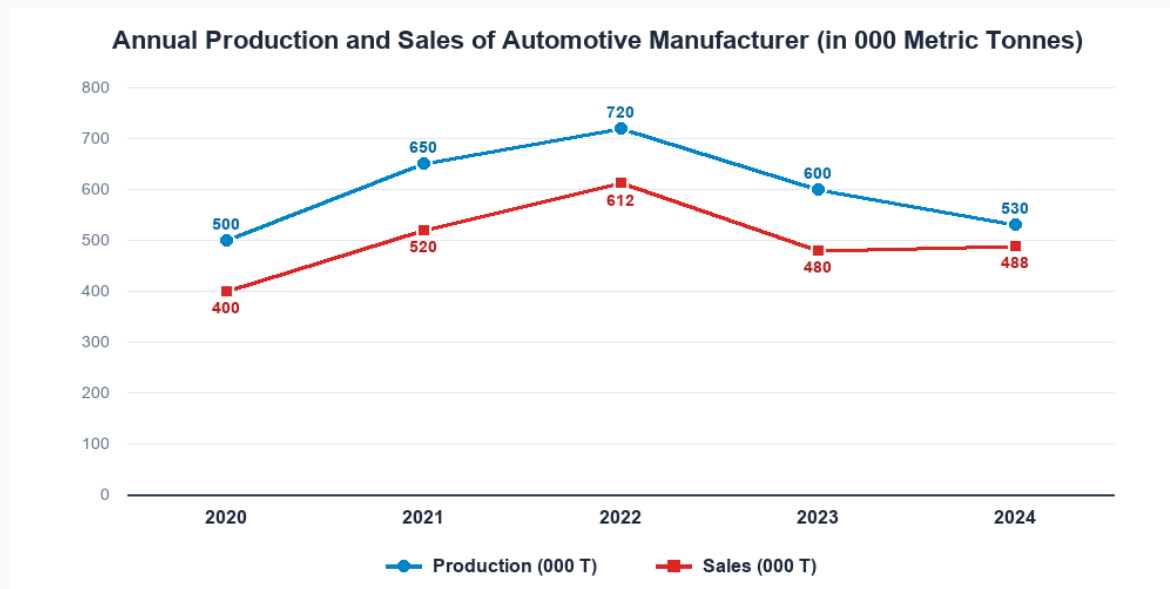
- (A) $64\sqrt{3} \text{ cm}^2$ (B) $72\sqrt{3} \text{ cm}^2$
(C) $80\sqrt{3} \text{ cm}^2$ (D) $96\sqrt{3} \text{ cm}^2$

Question 10. (Data Interpretation - Production vs Sales Line Graph)

The line graph below depicts the Annual Production and Sales (in thousands of metric tonnes) of an automotive manufacturer over a five-year period from 2020 to 2024.

Study the graph carefully and answer the question:

What is the percentage of total sales to total production of the manufacturer taken together over all 5 years (rounded to two decimal places)?



(A) 78.50%

(B) 81.25%

(C) 83.33%

(D) 85.60%

SECTION 2: OFFICIAL ANSWER KEY MATRIX

Q. No.	Topic / Domain	Original CHSL Origin	Correct Option	Difficulty
Q.1	Data Interpretation (Bar Graph)	12/04/2021 Shift 1, Q.4	(B) 9 : 10	Moderate
Q.2	Algebra (Symmetric Powers)	12/04/2021 Shift 1, Q.1	(B) $308\sqrt{5}$	Easy-Mod
Q.3	Arithmetic (CI vs SI Equivalence)	12/04/2021 Shift 1, Q.3	(B) ₹7,200	Moderate
Q.4	Geometry (Circle Parallel Chords)	12/04/2021 Shift 1, Q.6	(B) 14 cm	Moderate
Q.5	Arithmetic (Time & Work Efficiency)	12/04/2021 Shift 1, Q.12	(B) 7 days	Mod-Tricky
Q.6	Trigonometry (Quadratic Identity)	12/04/2021 Shift 1, Q.15	(B) $31/4$	Moderate
Q.7	Arithmetic (Profit & Loss on Units)	12/04/2021 Shift 1, Q.19	(C) ₹560	Easy-Mod
Q.8	Arithmetic (Multi-Leg Average Speed)	12/04/2021 Shift 1, Q.16	(B) 50 km/h	Moderate
Q.9	Mensuration & Geometry (Rhombus)	12/04/2021 Shift 1, Q.22	(B) $72\sqrt{3} \text{ cm}^2$	Moderate
Q.10	Data Interpretation (Line Graph)	12/04/2021 Shift 1, Q.13	(C) 83.33%	Moderate

SECTION 3: STEP-BY-STEP SOLUTIONS & RESHUFFLING LOGIC

Question 1: Data Interpretation — Comparative Bar Graph

Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.4)

Reshuffling Formula & Concept: Original asked ratio of exports in 2014 & 2017 to imports in 2015 & 2018 with messy numbers. Reshuffled with contemporary 2020–2024 timeframe, distinct color-coded grouped bars, and mathematically balanced integer ratio ($810 : 900 = 9 : 10$).

Step 1: Extract Required Data Points from Bar Graph:

• Exports in 2020 = 260

• Exports in 2023 = 550

→ Total Exports (2020 + 2023) = $260 + 550 = 810$

• Imports in 2021 = 400

• Imports in 2024 = 500

→ Total Imports (2021 + 2024) = $400 + 500 = 900$

Step 2: Calculate Required Ratio:

Required Ratio = (Total Exports) / (Total Imports) = $810 / 900 = 9 : 10$.

Correct Option: (B)

Question 2: Algebra — Symmetric Reciprocal Powers

Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.1)

Reshuffling Formula & Concept: Original used $(x^2 - 6\sqrt{3}x + 1 = 0)$. Reshuffled to radical coefficient ($4\sqrt{5}$), requiring students to compute $(4\sqrt{5})^3 - 3(4\sqrt{5})$ accurately without algebraic sign slips.

Step 1: Simplify the Given Quadratic Equation:

Given: $x^2 - 4\sqrt{5}x + 1 = 0$

Dividing both sides by x (since $x > 0$):

$x - 4\sqrt{5} + 1/x = 0 \rightarrow x + 1/x = 4\sqrt{5}$

Step 2: Apply Algebraic Identity for Sum of Cubes:

Formula: $x^3 + 1/x^3 = (x + 1/x)^3 - 3(x + 1/x)$

Substitute $(x + 1/x = 4\sqrt{5})$:

• $(4\sqrt{5})^3 = 4^3 \times (\sqrt{5})^3 = 64 \times 5\sqrt{5} = 320\sqrt{5}$

• $3(4\sqrt{5}) = 12\sqrt{5}$

Therefore, $x^3 + 1/x^3 = 320\sqrt{5} - 12\sqrt{5} = 308\sqrt{5}$.

Correct Option: (B)

Question 3: Arithmetic — Compound Interest vs Simple Interest*Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.3)***Reshuffling Formula & Concept:** Original gave CI of ₹4,965 on ₹15,000 in 3 years. Reshuffled to Principal ₹25,000 and CI ₹8,275, yielding identical 10% rate via clean cubic ratio (1331/1000), then solving for 4-year SI on ₹18,000.**Step 1: Find Rate of Interest (R%) from Compound Interest:**Principal (P_1) = ₹25,000, Compound Interest (CI) = ₹8,275Total Amount (A_1) = 25,000 + 8,275 = ₹33,275We know: $A_1 / P_1 = (1 + R/100)^3$ $33,275 / 25,000 = 1331 / 1000 = (11 / 10)^3$ Therefore, $1 + R/100 = 11/10 \rightarrow R/100 = 1/10 \rightarrow \mathbf{R = 10\% \text{ per annum.}}$ **Step 2: Compute Simple Interest for Aman:**Principal (P_2) = ₹18,000, Time (T) = 4 years, Rate (R) = 10%Formula: $SI = (P_2 \times R \times T) / 100$ $SI = (18,000 \times 10 \times 4) / 100 = 180 \times 40 = \mathbf{₹7,200.}$ **Correct Option: (B)****Question 4: Geometry — Circle Parallel Chords***Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.6)***Reshuffling Formula & Concept:** Original had a single chord (6 cm at distance 4 cm). Reshuffled to dual parallel chords of 16 cm and 12 cm on opposite sides of centre with radius 10 cm, testing Pythagorean distance theorem and chord separation.**Step 1: Distance of Chord AB from Centre O:**

A perpendicular from the centre to a chord bisects the chord.

Half-length of chord AB = $16 / 2 = 8$ cm. Radius $r = 10$ cm.In right-angled triangle: $d_1 = \sqrt{(r^2 - 8^2)} = \sqrt{(100 - 64)} = \sqrt{36} = \mathbf{6 \text{ cm.}}$ **Step 2: Distance of Chord CD from Centre O:**Half-length of chord CD = $12 / 2 = 6$ cm. Radius $r = 10$ cm.In right-angled triangle: $d_2 = \sqrt{(r^2 - 6^2)} = \sqrt{(100 - 36)} = \sqrt{64} = \mathbf{8 \text{ cm.}}$ **Step 3: Calculate Separation Distance:**Since the chords lie on *opposite sides* of the centre, total distance = $d_1 + d_2 = 6 + 8 = \mathbf{14 \text{ cm.}}$ **Correct Option: (B)**

Question 5: Arithmetic — Time & Work with Efficiency Fractions*Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.12)***Reshuffling Formula & Concept:** Original featured 24 & 40 days with 75% work. Reshuffled to 20 & 30 days with B leaving after 6 days, C completing remainder in 10 days, and targeting 70% of total work.**Step 1: Assign Total Work and Find Individual Efficiencies:**Total Work = LCM(20, 30) = **60 units**.

- Efficiency of A = $60 / 20 = 3$ units/day
- Efficiency of B = $60 / 30 = 2$ units/day

Combined efficiency of (A + B) = $3 + 2 = 5$ units/day.**Step 2: Account for Work Done and Determine C's Efficiency:**Work done by (A + B) in 6 days = $5 \times 6 = 30$ units.Remaining Work = $60 - 30 = 30$ units.C finishes remaining 30 units in 10 days → Efficiency of C = $30 / 10 = 3$ units/day.**Step 3: Time for A and C to Complete 70% Work:**70% of Total Work = $0.70 \times 60 = 42$ units.Combined efficiency of (A + C) = $3 + 3 = 6$ units/day.Time taken = $42 / 6 = 7$ days.**Correct Option: (B)****Question 6: Trigonometry — Quadratic Identity in Sin & Cos***Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.15)***Reshuffling Formula & Concept:** Original equation was $8\sin^2\theta + 2\cos\theta = 5$. Reshuffled to $6\cos^2\theta + 7\sin\theta = 8$, leading to a standard acute angle solution $\theta = 30^\circ$ and evaluating $(\cot^2\theta + \operatorname{cosec}^2\theta + \cos^2\theta)$.**Step 1: Convert Equation into a Quadratic in $\sin\theta$:**Given: $6\cos^2\theta + 7\sin\theta = 8$ Substitute $\cos^2\theta = 1 - \sin^2\theta$:

$$6(1 - \sin^2\theta) + 7\sin\theta = 8$$

$$6 - 6\sin^2\theta + 7\sin\theta = 8 \rightarrow 6\sin^2\theta - 7\sin\theta + 2 = 0$$

Step 2: Factorize the Quadratic Equation:

$$6\sin^2\theta - 4\sin\theta - 3\sin\theta + 2 = 0 \rightarrow (2\sin\theta - 1)(3\sin\theta - 2) = 0$$

- $2\sin\theta - 1 = 0 \rightarrow \sin\theta = 1/2 \rightarrow \theta = 30^\circ$ (since $0^\circ < \theta < 90^\circ$)

Step 3: Evaluate Required Expression:At $\theta = 30^\circ$:

- $\cot 30^\circ = \sqrt{3} \rightarrow \cot^2 30^\circ = 3$

- $\operatorname{cosec} 30^\circ = 2 \rightarrow \operatorname{cosec}^2 30^\circ = 4$

- $\cos 30^\circ = \sqrt{3}/2 \rightarrow \cos^2 30^\circ = 3/4$

Total Value = $3 + 4 + 3/4 = 7 + 3/4 = 31/4$.

Correct Option: (B)

Question 7: Arithmetic — Profit & Loss on Quantity Units*Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.19)***Reshuffling Formula & Concept:** Original: 36 kg sugar for ₹1,040 with profit = SP of 10 kg. Reshuffled to 48 kg Basmati rice for ₹2,880 with profit = SP of 12 kg, asking for the SP of 7 kg.**Step 1: Set Up Cost and Selling Price Relationships:**

Let Selling Price of 1 kg of rice = ₹S.

Total Selling Price of 48 kg = 48S.

Profit = Selling Price of 12 kg = 12S.

Step 2: Connect CP, SP, and Profit:

We know: Cost Price = Selling Price - Profit

CP of 48 kg = 48S - 12S = 36S.

Given, CP of 48 kg = ₹2,880.

 $36S = 2,880 \rightarrow S = 2,880 / 36 = \text{₹80 per kg.}$ **Step 3: Calculate Selling Price of 7 kg:**SP of 7 kg = $7 \times 80 = \text{₹560.}$ **Correct Option: (C)****Question 8: Arithmetic — Multi-Leg Average Speed***Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.16)***Reshuffling Formula & Concept:** Original featured 2 legs (48 km @ 40 & 52 km @ 65). Reshuffled to a realistic 3-leg journey (75 km @ 50, 90 km @ 60, 60 km @ 40) where equal durations yield an exact 50 km/h average.**Step 1: Calculate Total Distance:** $D = 75 \text{ km} + 90 \text{ km} + 60 \text{ km} = \text{225 km.}$ **Step 2: Calculate Time Taken for Each Leg:**• Leg 1: $t_1 = 75 / 50 = 1.5$ hours• Leg 2: $t_2 = 90 / 60 = 1.5$ hours• Leg 3: $t_3 = 60 / 40 = 1.5$ hoursTotal Time (T) = $1.5 + 1.5 + 1.5 = \text{4.5 hours.}$ **Step 3: Calculate Overall Average Speed:**Average Speed = Total Distance / Total Time = $225 / 4.5 = \text{50 km/h.}$ **Correct Option: (B)**

Question 9: Mensuration & Geometry — Rhombus Diagonals & Area*Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.22)***Reshuffling Formula & Concept:** Original had diagonal $8\sqrt{3}$ cm with second diagonal equal to side. Reshuffled to diagonal $12\sqrt{3}$ cm, testing perpendicular bisector property ($a^2 = (d_1/2)^2 + (d_2/2)^2$) and area $= (1/2)d_1d_2$.**Step 1: Set Up Geometry of the Rhombus:**

Let the side of the rhombus be 'a'.

Given: $d_1 = 12\sqrt{3}$ cm, and $d_2 = a$.Diagonals of a rhombus bisect each other at right angles (90°):

$$(d_1/2)^2 + (d_2/2)^2 = a^2$$

$$(6\sqrt{3})^2 + (a/2)^2 = a^2$$

$$108 + a^2/4 = a^2 \rightarrow 3a^2/4 = 108 \rightarrow a^2 = 108 \times 4 / 3 = 144 \rightarrow a = 12 \text{ cm.}$$

Step 2: Determine Second Diagonal and Calculate Area:Since $d_2 = a$, we have $d_2 = 12$ cm.Formula: Area $= (1/2) \times d_1 \times d_2$

$$\text{Area} = (1/2) \times 12\sqrt{3} \times 12 = 6 \times 12\sqrt{3} = 72\sqrt{3} \text{ cm}^2.$$

Correct Option: (B)**Question 10: Data Interpretation — Production vs Sales Line Graph***Source Origin: Reshuffled from SSC CHSL 2020 (12/04/2021 Shift 1, Q.13)***Reshuffling Formula & Concept:** Original plotted production and sales from 2015 to 2019. Reshuffled to a clean line chart from 2020 to 2024 with production totaling 3,000 and sales totaling 2,500, yielding exact 83.33%.**Step 1: Sum Total Production Across All 5 Years (2020–2024):**

$$\text{Total Production} = 500 + 650 + 720 + 600 + 530 = 3,000 \text{ thousand tonnes.}$$

Step 2: Sum Total Sales Across All 5 Years (2020–2024):

$$\text{Total Sales} = 400 + 520 + 612 + 480 + 488 = 2,500 \text{ thousand tonnes.}$$

Step 3: Calculate Required Percentage:

$$\text{Percentage} = (\text{Total Sales} / \text{Total Production}) \times 100\%$$

$$\text{Percentage} = (2,500 / 3,000) \times 100\% = (5 / 6) \times 100\% = 83.33\%.$$

Correct Option: (C)**Candidate Self-Evaluation & Target Benchmarks:**

- **18–20 Marks (9–10 Correct):** Exceptional mastery. You possess top-tier speed and precision for SSC Tier-1 & Tier-2.
- **14–17 Marks (7–8 Correct):** Solid conceptual grasp. Focus on reducing calculation time in multi-step arithmetic & DI.
- **Below 14 Marks (< 7 Correct):** Needs revision in algebraic identities, circle properties, and trigonometric factorization.

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