Mathematics — Ganita Manjari

Chapter 10 Test 5

How Quantities Combine: Understanding Data

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Calculators are not allowed.
2. Select one correct option in Section A. Show working in Sections B–D.
3. Use given data. Assume additive volumes and no loss unless stated.

SECTION A

(5 questions × 1 mark = 5 marks)

1. Pure gold has purity 16 varṇa. What percentage purity does 12 varṇa represent?

(A) 12% (B) 75%
(C) 80% (D) 84%

2. An alloy contains only copper and zinc. Copper's share rises by 5 percentage points. What happens to zinc's share?

(A) Rises by 5 points
(B) Stays unchanged
(C) Falls by 10 points
(D) Falls by 5 points

3. Using 16 varṇa = 24 karat, which gold is purer: 9 varṇa or 14 karat?

(A) 14 karat (B) 9 varṇa
(C) Both equally pure (D) Cannot be compared

4. Which mass ratio of 18-karat to 22-karat gold produces 20-karat gold?

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

5. An alloy's purity rises from 80% to 90%. What is the relative percentage increase in purity?

(A) 10% (B) 12.5%
(C) 20% (D) 90%

SECTION B

(4 questions × 2 marks = 8 marks)

6. How much 40%-copper alloy must be mixed with 12 kg of 70%-copper alloy to obtain 60%-copper alloy?

7. Use the table to find the A:B ratios of component counts and total masses. Explain why these ratios differ.

Batch	Components	Mean mass (kg)
A	10	2
B	15	4

8. A 5 kg alloy contains 70% copper. Exactly 1 kg of copper is removed, with no other metal lost. Find the remaining copper percentage.

9. A goldsmith melts 2 kg of 12-varṇa gold with 3 kg of 10-varṇa gold, without loss. Find the purity in varṇa.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Three alloys of masses 5 kg, 3 kg and 2 kg contain 80%, 40% and an unknown percentage of copper. Their mixture is 60% copper. Find the unknown percentage.

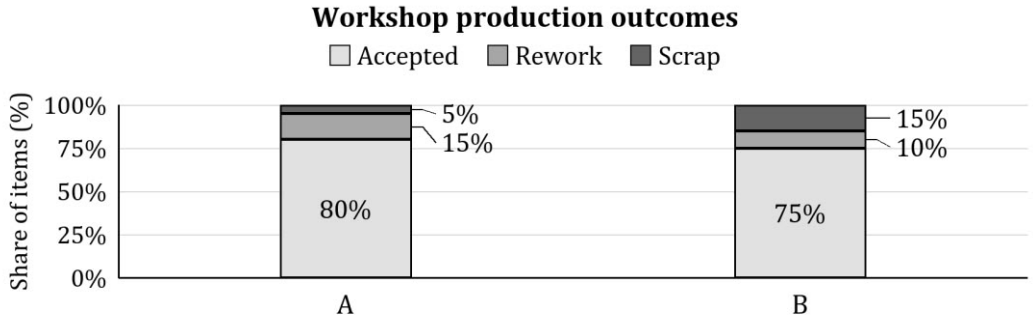
11. A 4 kg alloy is 70% copper. Only impurities are removed until the alloy becomes 80% copper. Find the final mass and the mass removed.

12. Four 1 kg alloy pieces average 50% copper; six 1 kg pieces average 80% copper. After melting all pieces together, find the copper percentage, impurity percentage and impurity mass.

SECTION D

(1 application question × 3 marks = 3 marks)

13. The percentages in figure describe 200 items from Workshop A and 300 from Workshop B.



(i) Which workshop has the higher accepted percentage?
(ii) Which has more accepted items, and by how many?
(iii) Find the combined scrap percentage.