

## Review of Your Wrong Answers — Step-by-step Teaching

You're doing well with basic percent ideas — you got several easier items right elsewhere. These mistakes are mostly from setting up the relationship incorrectly or simple arithmetic slips. I'll walk through each wrong question, show your answer versus the correct one, explain the error, and solve it carefully step by step.

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### Question 1 — Restated

Find which expression equals 60% of 264.

Options:

- a) 10% of 44
- b) 15% of 1056
- c) 30% of 132
- d) None of these

- Your answer: a (10% of 44)
- Correct answer: b (15% of 1056)

Why your answer is incorrect

- 10% of 44 =  $0.10 \times 44 = 4.4$ , which is far from 60% of 264. This looks like a confusion between percentages and scaling or a calculation slip.

Step-by-step solution 1. Compute 60% of 264:

$$60\% \text{ of } 264 = 0.60 \times 264 = 158.4.$$

2. Check option (b): 15% of 1056:

$$15\% \text{ of } 1056 = 0.15 \times 1056 = 158.4.$$

3. Since both give 158.4, option (b) is correct.

Quick insight:  $1056 = 4 \times 264$  and  $15\% = \frac{60\%}{4}$ , so  $15\% \times 1056 = 60\% \times 264$ .

Final: Option (b) is correct.

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### Question 2 — Restated

What should be added to 40% of 900 so that the total equals 30% of 2600?

Options: 300, 360, 420, 480

- Your answer: 360

- Correct answer: 420

Why your answer is incorrect

- You probably took 40% of 900 and used it as the answer instead of computing the difference needed to reach 30% of 2600.

Step-by-step solution 1. Compute 40% of 900:

$$40\% \text{ of } 900 = 0.40 \times 900 = 360.$$

2. Compute 30% of 2600:

$$30\% \text{ of } 2600 = 0.30 \times 2600 = 780.$$

3. The required addition =  $780 - 360 = 420$ .

Final: 420 (option c) is correct.

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### Question 3 — Restated

Rs. 5300 is shared among Anuj, Manuj and Tanuj.

- Anuj gets 20% more than Manuj.
- Manuj gets 25% less than Tanuj.

Find Tanuj's share.

Options: 2000, 2400, 2500, 2700

- Your answer: 2400
- Correct answer: 2000

Why your answer is incorrect

- Likely a mistake in converting “25% less” into the correct ratio or an arithmetic error in solving the system.

Step-by-step solution 1. Let Manuj's share =  $M$ .

2. Anuj gets 20% more than Manuj:

$$\text{Anuj} = M + 20\% \text{ of } M = 1.20M = \frac{6}{5}M.$$

3. Manuj gets 25% less than Tanuj:

- “25% less than Tanuj” means  $M = T - 25\% \text{ of } T = 0.75T$ .
- So Tanuj  $T = \frac{M}{0.75} = \frac{4}{3}M$ .

4. Sum of shares:

$$\text{Total} = \text{Anuj} + \text{Manuj} + \text{Tanuj} = \frac{6}{5}M + M + \frac{4}{3}M.$$

Bring to common denominator (15):

$$= \left( \frac{18}{15} + \frac{15}{15} + \frac{20}{15} \right) M = \frac{53}{15}M.$$

5. Set equal to total Rs. 5300:

$$\frac{53}{15}M = 5300 \Rightarrow M = 5300 \times \frac{15}{53}.$$

Compute:

$$\frac{5300}{53} = 100 \Rightarrow M = 100 \times 15 = 1500.$$

6. Tanuj's share:

$$T = \frac{4}{3}M = \frac{4}{3} \times 1500 = 2000.$$

Final: Rs. 2000 (option a) is correct.

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### Question 4 — Restated

When 80 is added to 80% of a number, you get the number. What is 50% of that number?

Options: 200, 210, 220, 240

- Your answer: 210
- Correct answer: 200

Why your answer is incorrect

- Likely a small arithmetic mistake solving the equation  $0.8x + 80 = x$ .

Step-by-step solution 1. Let the number =  $x$ . 2. Equation:  $0.8x + 80 = x$ . 3. Rearrange:  $x - 0.8x = 80 \Rightarrow 0.2x = 80$ . 4. Solve for  $x$ :

$$x = \frac{80}{0.2} = 80 \times 5 = 400.$$

5. 50% of  $x$ :

$$50\% \text{ of } 400 = 0.5 \times 400 = 200.$$

Final: 200 (option a) is correct.

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### Question 5 — Restated

A has twice as much as B. B has 50% more than C. The average money among A, B, C is Rs. 12,100. How much does A have?

Options: 12,500; 14,400; 16,800; 19,800

- Your answer: Rs. 12,500
- Correct answer: Rs. 19,800

Why your answer is incorrect

- Likely you mixed up the relative multipliers or misapplied the average formula. Be careful converting “50% more than C” into  $1.5 \times C$ .

Step-by-step solution 1. Let  $C = c$ . 2. B has 50% more than C:  $B = 1.5c = \frac{3}{2}c$ . 3. A has twice as much as B:  $A = 2B = 2 \times \frac{3}{2}c = 3c$ . 4. Sum:

$$A + B + C = 3c + \frac{3}{2}c + c = (3 + 1.5 + 1)c = 5.5c = \frac{11}{2}c.$$

5. Average is Rs. 12,100, so total is  $3 \times 12,100 = 36,300$ :

$$\frac{11}{2}c = 36,300 \Rightarrow c = 36,300 \times \frac{2}{11}.$$

Compute:

$$c = \frac{72,600}{11} = 6,600.$$

6. A's amount:

$$A = 3c = 3 \times 6,600 = 19,800.$$

Final: Rs. 19,800 (option d) is correct.

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### Question 6 — Restated

If 25% of A is added to 50% of B, the result equals 90% of B. What percentage of A is B? (i.e., B is what percent of A?)

Options: 32.50, 40, 50, 62.50

- Your answer: 50
- Correct answer: 62.50

Why your answer is incorrect

- Likely you assumed B equals 50% of A without forming the correct equation. You must translate the sentence into an equation and solve for the ratio  $B/A$ .

Step-by-step solution 1. Translate the statement: “25% of A plus 50% of B equals 90% of B.”

$$0.25A + 0.50B = 0.90B.$$

2. Move terms:

$$0.25A = 0.90B - 0.50B = 0.40B.$$

3. Solve for A in terms of B:

$$A = \frac{0.40}{0.25}B = \frac{40}{25}B = \frac{8}{5}B = 1.6B.$$

4. Therefore:

$$B = \frac{5}{8}A = 0.625A.$$

As a percentage:  $0.625 \times 100\% = 62.5\%$ .

Final: B is 62.50% of A (option d).

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## Concept Primer — Percentages and How to Solve These Problems

Below are the key ideas and formulas you should keep fresh. Use them every time you see a percent problem.

Basic percent to decimal/fraction conversions: -  $x\%$  means  $\frac{x}{100}$ . -  $x\%$  of  $N = \frac{x}{100} \times N$  or  $0.x \times N$ .

Percent increase / decrease: - New value after  $p\%$  increase:  $N_{\text{new}} = N_{\text{old}} \times \left(1 + \frac{p}{100}\right)$ . - New value after  $p\%$  decrease:  $N_{\text{new}} = N_{\text{old}} \times \left(1 - \frac{p}{100}\right)$ .

Translating word problems into equations: - Identify variables (use letters). - Translate phrases: - “A is 20% more than B”  $\rightarrow A = 1.20B$ . - “B is 25% less than T”  $\rightarrow B = 0.75T$ . - “X% of A added to Y% of B equals Z% of C”  $\rightarrow 0.XA + 0.YB = 0.ZC$ . - Use algebra to express all variables in one base variable, then solve.

Working with ratios from percentages: - When you get relationships like  $A = kB$  and  $B = mC$ , rewrite everything in terms of one variable (say  $C$ ) and then compute totals or averages. - For averages:  $\text{Average} = \frac{\text{Sum}}{\text{Count}}$ .

Small checklist before answering: - Convert all % to decimals or fractions immediately. - Write the equation from the sentence. - Solve symbolically, then compute numerically. - Double-check arithmetic, especially when dividing by decimals — consider multiplying numerator and denominator to clear decimals.

Examples in formulas: - Convert “25% of A + 50% of B = 90% of B”:

$$0.25A + 0.50B = 0.90B \Rightarrow 0.25A = 0.40B \Rightarrow \frac{B}{A} = \frac{0.25}{0.40} = \frac{5}{8}.$$

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## Next Steps Study Plan (Tailored to Your Diagnosis)

You have a solid base. The errors come from multi-step setup and little arithmetic slips. Here's a focused plan to strengthen retention and application:

1. Daily short practice (20–30 minutes):
  - 5 problems converting percentages to decimals/fractions.
  - 5 multi-step word problems combining percent, ratios, and averages.
2. Targeted topics (do 8–10 problems each over the next week):
  - Percent increase/decrease and reverse percentages.
  - Word problems with chained relations (A relative to B, B relative to C).
  - Average + percentage problems (like question 5).
  - Problems asking “what percent of A is B?” (practice solving  $B/A$ ).
3. Practice method:
  - Always write the equation first (no mental shortcuts).
  - Show each algebra step (no skipping).
  - After solving, plug values back into the original sentence to verify.
4. Weekly review (once per week):
  - Time yourself on 15 mixed problems (30 minutes).
  - Mark mistakes, categorize them (setup vs arithmetic), and re-do each wrong problem immediately.
5. Tools & drills:
  - Flashcards for percent-to-fraction/decimal conversions (e.g.,  $62.5\% = 5/8 = 0.625$ ).
  - A sheet of common helpful multipliers:  $25\% = 1/4$ ,  $50\% = 1/2$ ,  $20\% = 1/5$ ,  $12.5\% = 1/8$ ,  $62.5\% = 5/8$ , etc.

You're doing well — these are fixable slips. With consistent short practice and the habit of writing equations, your retention and multi-step problem accuracy will improve quickly. Keep going!