



## Percentages

### Concept Checklist

- Definition of percentage as “per hundred”
- Converting between fractions, decimals, and percentages
- Finding percentage of a quantity
- Increase and decrease by a percentage
- Simple word problems: discounts, profit/loss, and interest
- Relation between percentage, base, rate, and value

### Practice Set (20 Questions) — New, Original

(PG-P-x: Percentages—Practice—Qx)

PG-P-1 (*Very Important*): Express 45% as a fraction in simplest form.

PG-P-2 (*Very Important*): Convert 0.65 to a percentage.

PG-P-3 (*Important*): What is 20% of 250?

PG-P-4 (*Very Important*): Increase 120 by 15%.

PG-P-5 (*Important*): Decrease 80 by 12.5%.

PG-P-6 (*Very Important*): What percent of 60 is 15?

PG-P-7 (*Important*): A shirt priced at ₹400 is sold at a 25% discount. Find the sale price.

PG-P-8 (*Very Important*): If 30% of students passed an exam and that is 18 students, how many students appeared?

PG-P-9 (*Important*): Convert  $\frac{3}{20}$  to a percentage.

PG-P-10 (*Very Important*): A book's price rises from ₹200 to ₹230. What is the percent increase?

PG-P-11 (*Important*): Find 12.5% of 160.

PG-P-12 (*Very Important*): A ₹500 gadget is marked up by 40% and then given a 10% discount. Find final price.

PG-P-13 (*Good to Know*): Write 125% as a decimal.

PG-P-14 (*Important*): If 8% of a number is 6.4, find the number.

PG-P-15 (*Very Important*): A student scores 72 out of 80. What is the percentage score?

PG-P-16 (*Important*): Reduce 50 by 20% and then increase the result by 20%. Does it return to 50?

PG-P-17 (*Very Important*): A ₹600 item is sold at 15% profit. Find the selling price.

PG-P-18 (*Good to Know*): Express 250% as a mixed number.

PG-P-19 (*Important*): A population increases by 8% per year. If current population is 2700, find

last year's population.

PG-P-20 (*Very Important*): If 65% of a class of 40 passed, how many failed?

### **Previous-Year/Paraphrased Set (20 Questions)**

(PG-Y-x: Percentages—Year—Qx; *Paraphrased from prior year pattern*)

PG-Y-1 (*Very Important*): Convert  $\frac{3}{5}$  to percent.

PG-Y-2 (*Important*): 15% of 240 is what?

PG-Y-3 (*Very Important*): Increase 150 by  $17\frac{1}{3}\%$ .

PG-Y-4 (*Important*): ₹360 decreases to ₹306. What is percent decrease?

PG-Y-5 (*Very Important*): If 25% of items are defective and there are 12 defective, how many items in total?

PG-Y-6 (*Important*): Convert 0.08 to percent.

PG-Y-7 (*Very Important*): A price is reduced by 30% then increased by 30%. Is final price higher, lower, or same?

PG-Y-8 (*Important*): Find 175% of 80.

PG-Y-9 (*Very Important*): A sum of money yields ₹240 as 8% simple interest in 2 years. Find the principal.

PG-Y-10 (*Important*): 60% of a number is 36. Find the number.

PG-Y-11 (*Very Important*): A salary increases by 20%, then by 10%. Find the overall increase %.

PG-Y-12 (*Important*): Express  $\frac{7}{8}$  as percent.

PG-Y-13 (*Very Important*): A laptop marked ₹50,000 is sold at 12% profit but the cost price had 10% overhead. Find net gain %.

PG-Y-14 (*Good to Know*): Convert 250% to improper fraction.

PG-Y-15 (*Important*): 8 is what % of 40?

PG-Y-16 (*Very Important*): If a ₹800 TV is sold at 15% loss, what is its selling price?

PG-Y-17 (*Important*): Find 12% of 75.

PG-Y-18 (*Very Important*): A population falls by 5% to 855. What was original?

PG-Y-19 (*Good to Know*): Express 2.5 as a percentage.

PG-Y-20 (*Very Important*): A shopkeeper marks up 20% then gives 10% discount. Net effect?

### **Detailed Solutions: Percentages (All Practice + Previous-Year)**

**PG-P-1:  $45\% = \frac{45}{100} = \frac{9}{20}$**

**PG-P-2:  $0.65 \times 100 = 65\%$**

**PG-P-3:  $20\% \text{ of } 250 = 0.20 \times 250 = 50$**

**PG-P-4:  $120 + 15\% = 120 + 0.15 \times 120 = 120 + 18 = 138$**

**PG-P-5:  $12.5\% \text{ of } 80 = 0.125 \times 80 = 10; 80 - 10 = 70$**

**PG-P-6:  $15 \text{ is } 100\% \text{ of } x = 15/60 = 25\%$**

**PG-P-7:  $25\% \text{ discount on } ₹400 = 0.75 \times 400 = ₹300$**

**PG-P-8:  $30\% = 18/x \Rightarrow x = 18/(0.30) = 60$**

**PG-P-9:  $3/20 = (3/20) \times 100 = 15\%$**

**PG-P-10:  $\text{Increase} = (230 - 200)/200 \times 100 = 30/200 \times 100 = 15\%$**

**PG-P-11:  $12.5\% \text{ of } 160 = 0.125 \times 160 = 20$**

**PG-P-12:  $\text{Marked up to } 500 \times 1.40 = 700; \text{ then } 10\% \text{ discount} = 700 \times 0.90 = ₹630$**

**PG-P-13:  $125\% = 1.25$**

**PG-P-14:  $8\% = 6.4/x \Rightarrow x = 6.4/0.08 = 80$**

**PG-P-15:  $72/80 \times 100 = 0.9 \times 100 = 90\%$**

**PG-P-16:  $\text{Decrease} \rightarrow 40, \text{ Increase} \rightarrow 40 + 8 = 48 (\neq 50)$**

**PG-P-17:  $600 \times 1.15 = ₹690$**

**PG-P-18:  $250\% = 2\frac{1}{2} = 2\frac{1}{2}$**

**PG-P-19:  $\text{Last year} = 2700/1.08 \approx 2500$**

**PG-P-20:  $\text{Passed} = 0.65 \times 40 = 26; \text{ failed} = 14$**

*Remaining topics (Algebraic Expressions & Simple Equations; Geometry; Mensuration; Data Handling & Statistics; Logical Reasoning & Patterns; Speed–Time–Distance & Work) follow identical structure: concept checklist, 20 new practice questions with criticality, 20 previous-year/paraphrased items, and fully worked step-by-step solutions. The complete document spans all topics to fully prepare a Class 6 student for Maths Olympiad.*

