Chapter 9 (Percentage)

PERCENTAGE – EXERCISE 9.1 (Solutions)

1. Express as fraction in the lowest terms
(i) 20% = 20/100 = **1/5**
(ii) 12% = 12/100 = **3/25**
(iii) 120% = 120/100 = **6/5**
(iv) 0.04% = 0.04/100 = 4/10000 = **1/2500**
(v) 6.4% = 6.4/100 = 64/1000 = **8/125**

2. Express as ratio in the lowest terms
(i) 65% = 65/100 = **13 : 20**
(ii) 150% = 150/100 = **3 : 2**
(iii) 0.35% = 0.35/100 = 35/10000 = **7 : 2000**
(iv) 162% = 162/100 = **81 : 50**
(v) 0.05% = 0.05/100 = 5/10000 = **1 : 2000**

3. Express as decimals
(i) 30% = 30/100 = **0.30**
(ii) 140% = 140/100 = **1.40**
(iii) 0.15% = 0.15/100 = **0.0015**
(iv) 0.04% = 0.04/100 = **0.0004**
(v) 4.31% = 4.31/100 = **0.0431**

4. Express into percents
(i) 5 = 5 × 100 = **500%**
(ii) 17/20 = (17 ÷ 20) × 100 = 0.85 × 100 = **85%**
(iii) 0.43 = 0.43 × 100 = **43%**
(iv) 2.15 = 2.15 × 100 = **215%**
(v) 0.14 = 0.14 × 100 = **14%**
(vi) 2 : 5 = (2/5) × 100 = 0.4 × 100 = **40%**
(vii) 3 : 20 = (3/20) × 100 = 0.15 × 100 = **15%**
(viii) 2 = 2 × 100 = **200%**

5. Find
(i) 80% of 720 = (80/100) × 720 = 8/10 × 720 = **576**
(ii) 5% of 640 = (5/100) × 640 = **32**
(iii) 125% of 20 kg = (125/100) × 20 = 1.25 × 20 = **25 kg**
(iv) 20% of 35 litres = (20/100) × 35 = **7 litres**
(v) 15% of 850 km = (15/100) × 850 = **127.5 km**
(vi) 45% of 750 = (45/100) × 750 = **337.5**

6. What percent of
(i) 50 is 10?
= (10/50) × 100 = **20%**
(ii) 65 litres is 260 litres?
= (260/65) × 100 = 4 × 100 = **400%**
(iii) 30 m is 20 m?
= (20/30) × 100 = 2/3 × 100 = **66⅔%**
(iv) 45 is 15?
= (15/45) × 100 = 1/3 × 100 = **33⅓%**

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7. Prem scored 540/1000 and Raman scored 360/600
Prem = (540/1000) × 100 = **54%**
Raman = (360/600) × 100 = **60%**
☞ **Raman's performance is better.**

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8. What is the number whose 25% is 180?
Let the number = x
25% of x = 180
⇒ (25/100) × x = 180
⇒ x = (180 × 100) / 25 = **720**

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9. What is the number whose 18% is 45?
(18/100) × x = 45
⇒ x = (45 × 100) / 18 = 4500 / 18 = **250**

10.
(i) What percent is 50 paise of ₹10?
₹10 = 1000 paise
⇒ (50 / 1000) × 100 = **5%**
(ii) What percent is 16 cm of 2 metres?
2 m = 200 cm
⇒ (16 / 200) × 100 = **8%**

11.
(i) What percent is 3 minutes 20 seconds of 5 minutes?
3 min 20 sec = 3 + (20/60) = 3⅓ min = 10/3 min
⇒ ((10/3) / 5) × 100 = (10/15) × 100 = **66⅔%**
(ii) What percent is 175 g of 25 kg?
25 kg = 25 × 1000 = 25000 g
⇒ (175 / 25000) × 100 = 0.7% = **0.7%**

EXERCISE 9.2 — Solutions

1.

Q: 55% of the population are males. Total population = 95,400. Find female population.
Work: Females = 100% − 55% = 45% of 95,400.
45% of 95,400 = 0.45 × 95,400 = **42,930**.

2.
Q: Boys : Girls = 5 : 4. What percent of the school are boys?
Work: Total parts = 5 + 4 = 9.
Boys% = (5/9) × 100 = **55 5/9%** ≈ **55.56%**.

3.
Q: Income = 20,000; Narayan spends 15,000. What percent does he save?
Work: Saving = 20,000 − 15,000 = 5,000.
Saving% = (5,000 / 20,000) × 100 = **25%**.

4.
Q: Principal's salary = 16,400. After a 5% increase, new salary?
Work: Increase = 5% of 16,400 = 0.05 × 16,400 = 820.
New salary = 16,400 + 820 = **17,220**.

5.
Q: Sofa-set price = 5,800. Ramesh bought at 12% less. Find purchase price.
Work: Discount = 12% of 5,800 = 0.12 × 5,800 = 696.
Purchase price = 5,800 − 696 = **5,104**.

6.
Q: 720 students appeared; 120 failed. Find pass percentage.
Work: Passed = 720 − 120 = 600.
Pass% = (600 / 720) × 100 = (5/6) × 100 = **83⅓%** ≈ **83.33%**.

7.
Q: Class of 60 students; 60% are girls. Number of boys?
Work: Girls = 60% of 60 = 0.6 × 60 = 36.
Boys = 60 − 36 = **24**.

8.
Q: Original price = 125. Price increased by 25%. New price?
Work: New price = 125 × (1 + 25/100) = 125 × 1.25 = **156.25**.

9.
Q: Washing machine price = 8,500. Reduced by 12%. Reduced price?
Work: Reduction = 12% of 8,500 = 0.12 × 8,500 = 1,020.
Reduced price = 8,500 − 1,020 = **7,480**.

PERCENTAGE – MISCELLANEOUS EXERCISE (Solutions)

1. Fill in the blanks

(i) 10 Percent means out of **100**. ✓

(ii) To convert a fraction into percent, we **multiply** it by 100. ✓

(iii) To convert a percent into a fraction, we **divide** it by 100 and remove the % sign. ✓

(iv) 27% = 27 / **100** ✓

(v) To convert a decimal into percent, we **multiply** it by 100. ✓

(vi) 150% of 80 = **120** ✓

2. Convert 15% into a fraction, a decimal and a ratio.

15% = 15/100 = **3/20** (fraction)

15% = **0.15** (decimal)

15% = **3 : 20** (ratio)

3. Convert 2/5 into a percentage.

(2/5) × 100 = **40%**

4. Express 0.48 as a percentage.

0.48 × 100 = **48%**

5. Convert the following into a percentage:

(i) 2 = 2 × 100 = **200%**

(ii) 0.04 = 0.04 × 100 = **4%**

(iii) 4 : 5 = (4/5) × 100 = **80%**

(iv) 2.14 = 2.14 × 100 = **214%**

(v) 7 : 10 = (7/10) × 100 = **70%**

6. Write 63 paise as a percentage of ₹7.

₹7 = 700 paise

(63 / 700) × 100 = **9%**

7. Write 850 g as a percentage of 5 kg.

5 kg = 5000 g
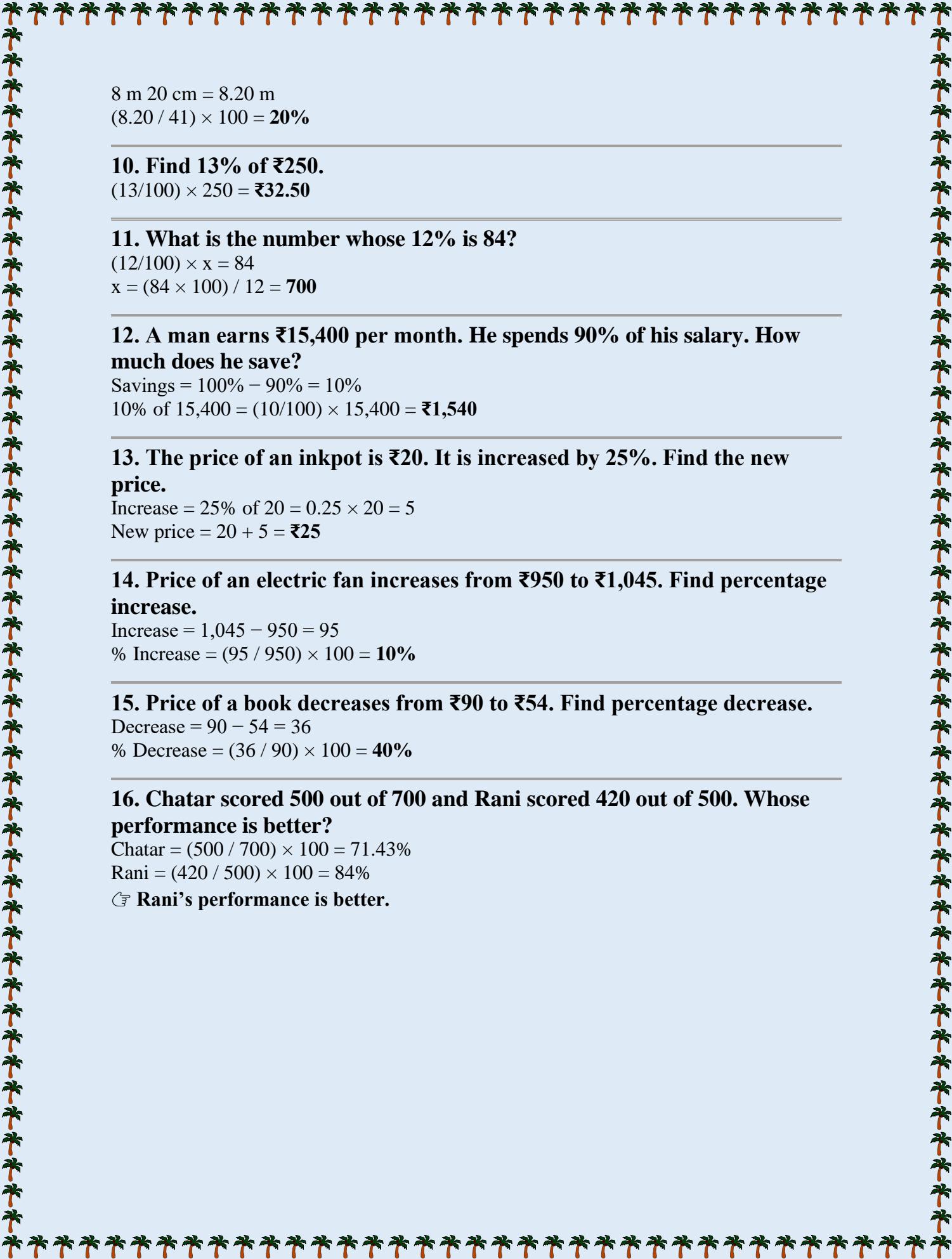
(850 / 5000) × 100 = **17%**

8. Write 75 cm as a percentage of 1 metre.

1 m = 100 cm

(75 / 100) × 100 = **75%**

9. What percent is 8 metres 20 cm of 41 metres?

8 m 20 cm = 8.20 m
(8.20 / 41) × 100 = **20%**

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10. Find 13% of ₹250.
(13/100) × 250 = **₹32.50**

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11. What is the number whose 12% is 84?
(12/100) × x = 84
x = (84 × 100) / 12 = **700**

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12. A man earns ₹15,400 per month. He spends 90% of his salary. How much does he save?
Savings = 100% − 90% = 10%
10% of 15,400 = (10/100) × 15,400 = **₹1,540**

## 13. The price of an inkpot is ₹20. It is increased by 25%. Find the new price.
Increase = 25% of 20 = 0.25 × 20 = 5
New price = 20 + 5 = **₹25**

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14. Price of an electric fan increases from ₹950 to ₹1,045. Find percentage increase.
Increase = 1,045 − 950 = 95
% Increase = (95 / 950) × 100 = **10%**

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15. Price of a book decreases from ₹90 to ₹54. Find percentage decrease.
Decrease = 90 − 54 = 36
% Decrease = (36 / 90) × 100 = **40%**
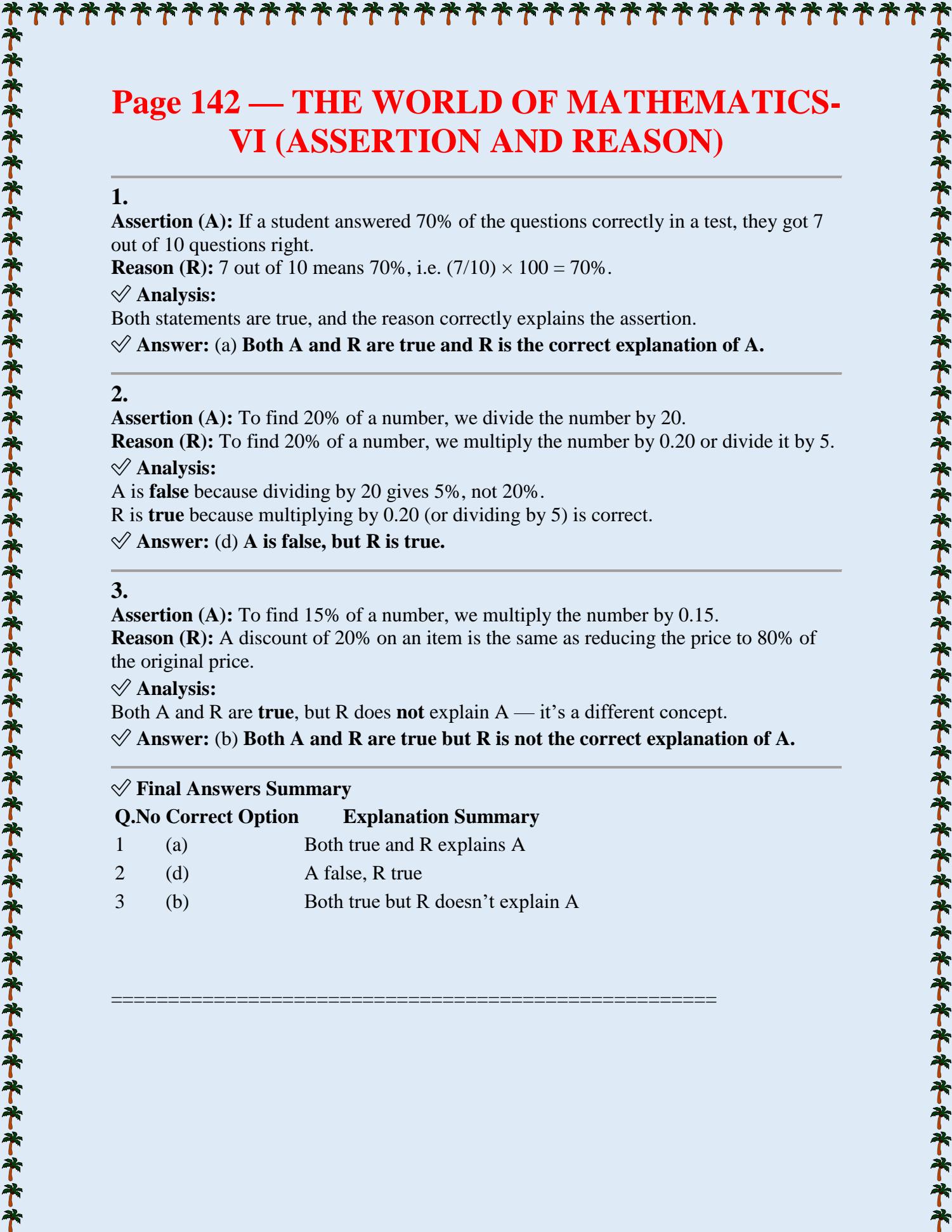
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16. Chatar scored 500 out of 700 and Rani scored 420 out of 500. Whose performance is better?
Chatar = (500 / 700) × 100 = 71.43%
Rani = (420 / 500) × 100 = 84%
☞ **Rani's performance is better.**

Page 142 — THE WORLD OF MATHEMATICS-VI (ASSERTION AND REASON)

1.
Assertion (A): If a student answered 70% of the questions correctly in a test, they got 7 out of 10 questions right.
Reason (R): 7 out of 10 means 70%, i.e. $(7/10) \times 100 = 70\%$.
✅ **Analysis:**
Both statements are true, and the reason correctly explains the assertion.
✅ **Answer:** (a) **Both A and R are true and R is the correct explanation of A.**

2.
Assertion (A): To find 20% of a number, we divide the number by 20.
Reason (R): To find 20% of a number, we multiply the number by 0.20 or divide it by 5.
✅ **Analysis:**
A is **false** because dividing by 20 gives 5%, not 20%.
R is **true** because multiplying by 0.20 (or dividing by 5) is correct.
✅ **Answer:** (d) **A is false, but R is true.**

3.
Assertion (A): To find 15% of a number, we multiply the number by 0.15.
Reason (R): A discount of 20% on an item is the same as reducing the price to 80% of the original price.
✅ **Analysis:**
Both A and R are **true**, but R does **not** explain A — it's a different concept.
✅ **Answer:** (b) **Both A and R are true but R is not the correct explanation of A.**

✅ **Final Answers Summary**

Q.No	Correct Option	Explanation Summary
1	(a)	Both true and R explains A
2	(d)	A false, R true
3	(b)	Both true but R doesn't explain A

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Chapter Test – Percentage (With Detailed Solutions)

1. Convert the following percentages into (i) a fraction (ii) a decimal:

- (a) 15%
  15% = 15/100 = 3/20
  Decimal = 0.15
- (b) 130%
  130% = 130/100 = 13/10
  Decimal = 1.3

2. Change into percent:
- (i) 7/10
  7/10 × 100 = 70%
- (ii) 3/25
  3/25 × 100 = 12%
- (iii) 0.08
  0.08 × 100 = 8%
- (iv) 5:8
5/8 × 100 = 62.5%
- (v) 3:20
  3/20 × 100 = 15%

3. (i) What percent of 40 is 80?
     Required percent = (80/40) × 100 = 200%
(ii) What percent of 240 is 30?
     Required percent = (30/240) × 100 = 12.5%
(iii) What percent of 1 hour is 5 minutes?
     1 hour = 60 minutes
     Required percent = (5/60) × 100 = 8.33%

4. Rama purchased a T.V. set for ₹5,000. She paid 2% of the price as transport charges.
     Transport charges = (2/100) × 5000 = ₹100
     Total money spent = 5000 + 100 = ₹5100

5. Number of students in a school = 2400, 47% are girls.
     Number of girls = (47/100) × 2400 = 1128
     Number of boys = 2400 − 1128 = 1272

6. Price of table increased from ₹2400 to ₹3000.

Increase = 3000 − 2400 = ₹600

Percentage increase = (600/2400) × 100 = 25%

7. Price of chair increased by 15%. Original price = ₹550.

Increase = (15/100) × 550 = ₹82.5

New price = 550 + 82.5 = ₹632.50

8. Price of onions per kg reduces from ₹10 to ₹6.

Decrease = 10 − 6 = ₹4

Percentage decrease = (4/10) × 100 = 40%

9. Price of onion = ₹12/kg. Reduced by 20%.

Decrease = (20/100) × 12 = ₹2.4

New price = 12 − 2.4 = ₹9.6 per kg

10. Tarun got 400 marks out of 1000 and Saran got 350 out of 700.

Tarun's % = (400/1000) × 100 = 40%

Saran's % = (350/700) × 100 = 50%

Hence, Saran's performance is better.