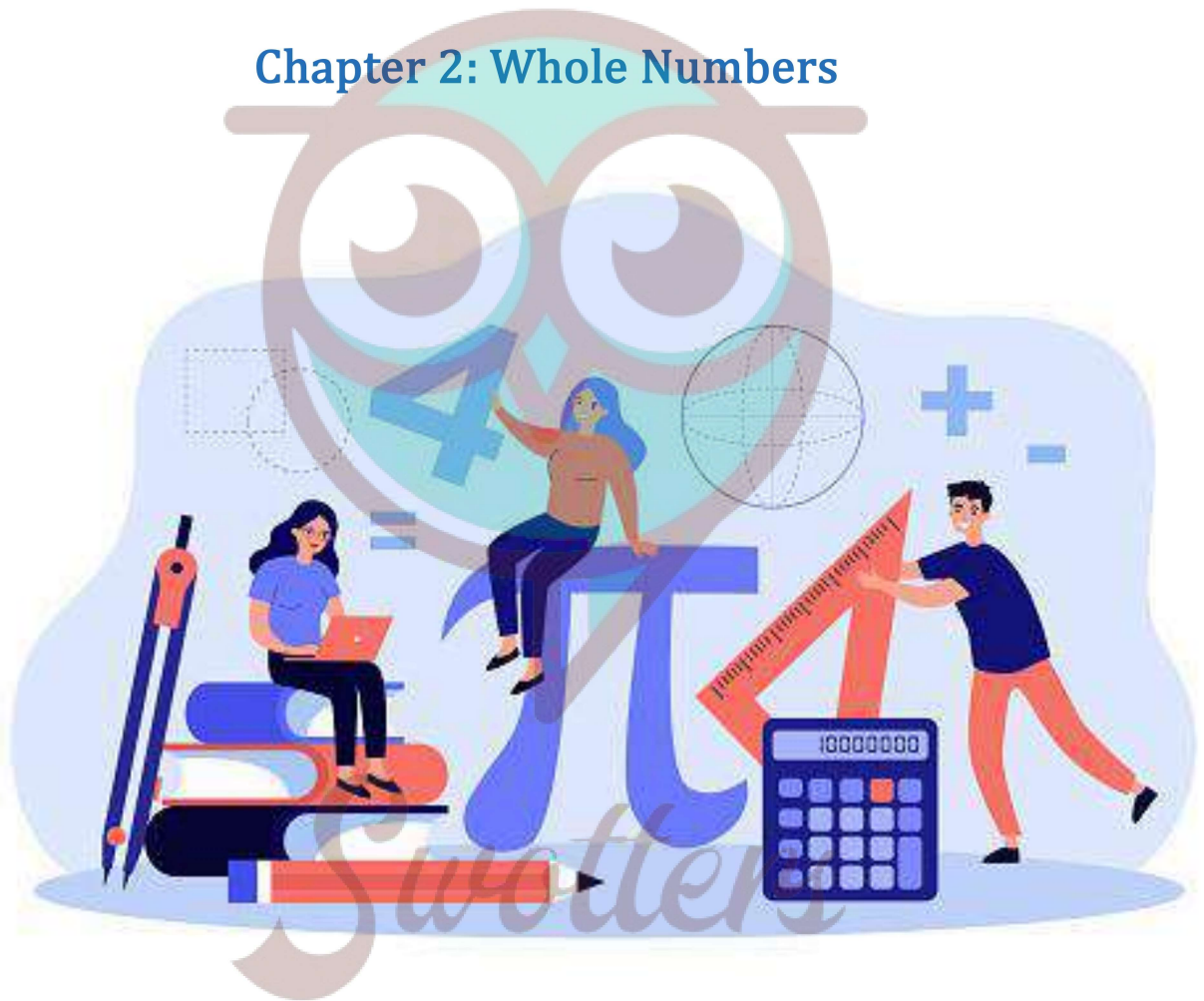


Mathematics

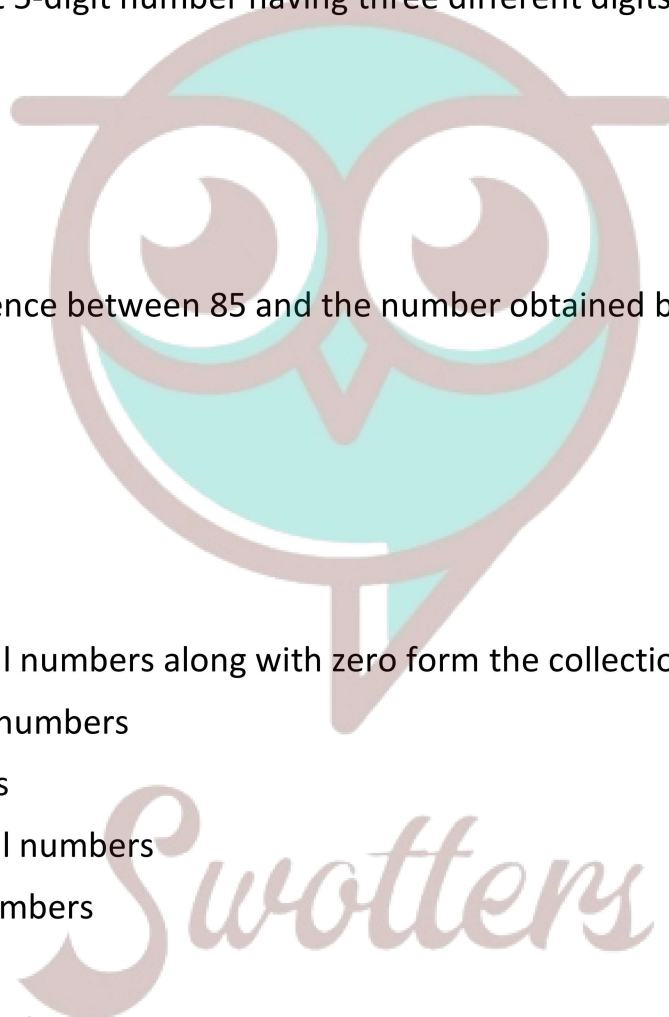
Chapter 2: Whole Numbers



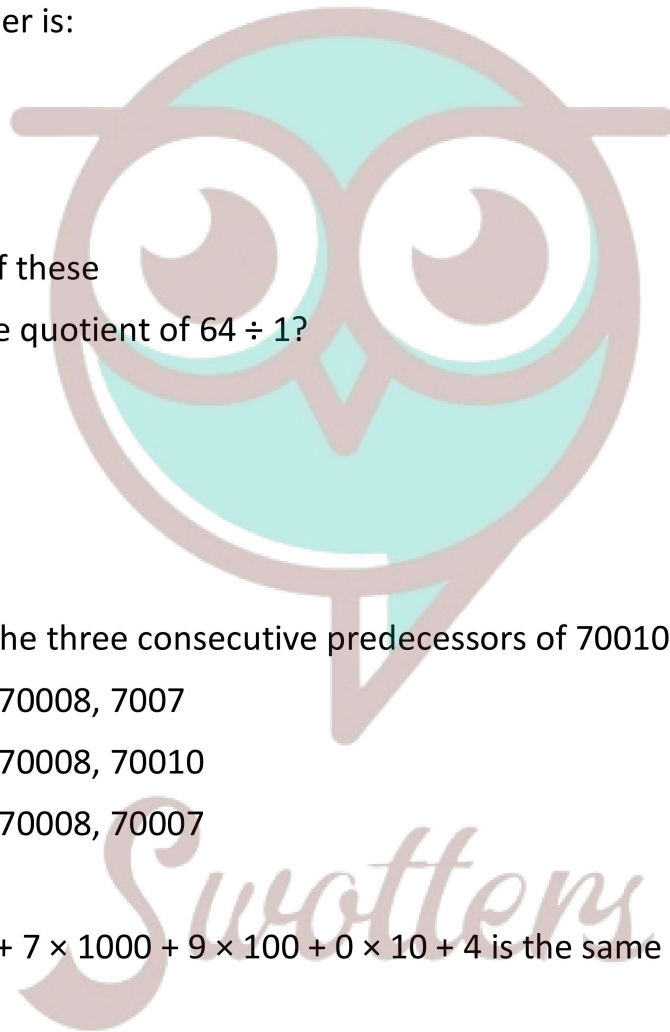
Important Questions

Multiple Choice questions:

1. What is the successor of 2001?
 - A. 2003
 - B. 2001
 - C. 2002
 - D. 2000
2. The largest 5-digit number having three different digits is:
 - A. 98978
 - B. 99897
 - C. 99987
 - D. 98799
3. The difference between 85 and the number obtained by reversing the digits is:
 - A. 25
 - B. 26
 - C. 27
 - D. 72
4. The natural numbers along with zero form the collection of:
 - A. Whole numbers
 - B. Integers
 - C. Rational numbers
 - D. Real numbers
5. Find value of $297 \times 17 + 297 \times 3$:
 - A. 5940
 - B. 5980
 - C. 5942
 - D. 5970
6. The smallest whole number is:
 - A. 1
 - B. 0



- C. not defined
D. None of these
7. Find product 12×35 :
A. 12600
B. 34840
C. 420
D. 400
8. The difference between the smallest 3 digit number and the largest two digit number is:
A. 0
B. 1
C. 2
D. None of these
9. What is the quotient of $64 \div 1$?
A. 1
B. 0
C. 46
D. 64
10. What are the three consecutive predecessors of 70010?
A. 70009, 70008, 7007
B. 70009, 70008, 70010
C. 70009, 70008, 70007
D. 70009
11. $3 \times 10000 + 7 \times 1000 + 9 \times 100 + 0 \times 10 + 4$ is the same as:
A. 3794
B. 37940
C. 37904
D. 379409
12. Study the pattern $1 \times 8 + 1 = 9$
 $12 \times 8 + 2 = 98$
Next step is-
A. $123 \times 8 + 3 = 987$
B. $1234 \times 8 + 4 = 9876$



- C. $120 \times 8 + 3 = 963$
 - D. $13 \times 8 + 3 = 987$
13. Number of whole numbers between 38 and 68 is:
- A. 31
 - B. 30
 - C. 28
 - D. 29
14. The value of $25 \times 20 \times 5$ is:
- A. 2505
 - B. 2503
 - C. 2500
 - D. None of these
15. Value of $0 \div 5$ is:
- A. 5
 - B. 0
 - C. 1
 - D. None of these



Match The Following:

	Column I		Column II
1.	Commutative property	A.	$(a \times b) \times c = a \times (b \times c)$
2.	Associative Property	B.	$a (b + c) = ab + ac$
3.	Identity for multiplication	C.	$a + b = b + a$
4.	Distributive Property	D.	$a \times 1 = a$

Fill in the blanks:

1. Division by _____ is not defined.
2. A number remains unchanged when added to _____.
3. A number remains unchanged when multiplied to _____.
4. $13 \times 100 \times \underline{\hspace{2cm}} = 1300000$

True/ False:

1. All natural numbers are whole numbers.
2. All whole numbers are natural numbers.

- The predecessor of a two digit number is never a single digit number.
- 1 is the smallest whole number.

Very Short Questions:

- How many whole numbers are there between 32 and 53?
- Are all whole numbers also natural numbers?
- Complete pattern
 $1\ 1 = 1$
 $11\ 11 = 121$
 $111\ 111 = \underline{\hspace{2cm}}$
 $1111\ 1111 = 1234321$
- Write the next three consecutive whole numbers of the following numbers:
 - 39359
 - 8632157
- A taxi driver filled his car petrol tank with 40 litres of petrol on Monday. The next day, he filled the tank with 50 litres of petrol. If the petrol costs Rs.44 per litre, how much did he spend in all on petrol?
- Find the product by suitable rearrangement:
 - $8 \times 391 \times 125$
 - $2 \times 1234 \times 50$
- If you're on a diet and have a breakfast consisting of 150 calories, a lunch consisting of 350 calories, and a dinner consisting of 1000 calories, then find the sum of the calories consumed that day.
- Write the smallest whole number.
- What is the predecessor of whole number 0?
- Which property do the following statements hold?
 - $6 + 4 = 4 + 6$
 - $3 + 2 = \text{whole number}$
- Add the following in three ways. Indicate the property used.
 - $25 + 36 + 15$
 - $30 + 18 + 22$
- Using distributive property, solve the following:
 - 360×102
 - 35×98

13. Find the product of the greatest 3-digit number and the smallest 2-digit number.
14. Write the predecessor of the smallest 4-digit number.
15. For $n = 5$, verify the given statement $10 \times n + 1 = n1$

Short Questions:

1. Using the properties, find the values of each of the following:

(a) 736×102

(b) $8165 \times 169 - 8165 \times 69$

2. Observe the following patterns and extend them by two more terms.

$$11 \times 11 = 121$$

$$101 \times 101 = 10201$$

$$10101 \times 10101 = 102030201$$

3. Observe the following patterns and extend them by two more terms:

$$15873 \times 7 \times 1 = 111111$$

$$15873 \times 7 \times 2 = 222222$$

4. Using the properties of whole numbers, find the value of the following in suitable way:

(a) $945 \times 4 \times 25$

(b) $40 \times 328 \times 25$

5. Represent the following on number line:

(a) $3 + 4$

(b) $6 - 2$

(c) 2×4

6. Give one example for each of the following properties for whole numbers.

(a) Closure property

(b) Commutative property

(c) Associative property

(d) Distributive property

7. A dealer purchased 124 LED sets. If the cost of one set is ₹38,540, determine their total cost.

8. Find the product of the greatest 3-digit number and the greatest 2-digit

number.

9. Write 10 such numbers which can be shown only as line.

Long Questions:

- 320 km distance is to be covered partially by bus and partially by train. Bus covers 180 km distance with a speed of 40 km/h and the rest of the distance is covered by the train at a speed of 70 km/h. Find the time taken by a passenger to cover the whole distance.
- Solve the following and establish a pattern:
 - 84×9
 - 84×99
 - 84×999
 - 84×9999
- Solve the following with suitable and short-cut method:
 - 86×5
 - 86×15
 - 86×25
 - 86×35
 - 86×50
 - 96×125
 - 96×250
 - 112×625
- Ramesh buys 10 containers of juice from one shop and 18 containers of the same juice from another shop. If the capacity of each container is same and the cost of each of the container is ₹150, find the total money spend by Ramesh.
- A housing complex built by DLF consists of 25 large buildings and 40 small buildings. Each large building has 15 floors with 4 apartments on each floor and each small building has 9 floors with 3 apartments on each floor. How many apartments are there in all?
- A school principal places orders for 85 chairs and 25 tables with a dealer. Each chair cost ₹180 and each table cost ₹140. If the principal has given ₹2500 to the dealer as an advance money, then what amount to be given to the dealer now?

Assertion Reason Questions:

- 1.) Assertion (A) – 17 is the successor of 16

Reason (R) – any natural number, you can add 1 to that number and get the next number i.e. you get its successor.

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true but R is not the correct explanation of A
- c) A is true but R is false
- d) A is false but R is true

2.) Assertion (A) –99 is the predecessor of 100

Reason (R) – any natural number, you can subtract 1 to that number and get the next number i.e. you get its predecessor.

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true but R is not the correct explanation of A
- c) A is true but R is false
- d) A is false but R is true

ANSWER KEY -

Multiple Choice questions:

- 1. C. 2002
- 2. C. 99987
- 3. C. 27
- 4. A. Whole numbers
- 5. A. 5940
- 6. B. 0
- 7. C. 420
- 8. B. 1
- 9. D. 64
- 10. C. 70009, 70008, 70007
- 11. C. 37904
- 12. A. $123 \times 8 + 3 = 987$
- 13. D. 29
- 14. C. 2500
- 15. B. 0

Match The Following:

	Column I		Column II
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	Column I		Column II
1.	Commutative property	C.	$a + b = b + a$
2.	Associative Property	A.	$(a \times b) \times c = a \times (b \times c)$
3.	Identity for multiplication	D.	$a \times 1 = a$
4.	Distributive Property	B.	$a(b + c) = ab + ac$

Fill in the blanks:

1. Division by 0 is not defined.
2. A number remains unchanged when added to zero.
3. A number remains unchanged when multiplied to 1.
4. $13 \times 100 \times \underline{1000} = 1300000$

True /False:

1. True
2. False, every whole number except 0 is a natural number.
3. False, the predecessor of 10 is 9.
4. True

Very Short Answer:

1. There are 20 whole numbers between 32 and 53. These are 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51 and 52.
2. No, all whole numbers are not natural numbers. (0 is a whole number but not a natural number.)
3. 12321
4.
 - I. The next three consecutive whole numbers of 39359 are: 39360, 39361, 39362
 - II. The next three consecutive whole numbers of 8632157 are: 8632158, 8632159, 8632160.
5. Petrol filled on Monday = 40 liters.
 Petrol filled the next day = 50 liters.
 \therefore Total petrol filled on the two days = 40 liters + 50 liters = 90 liters.
 \therefore Cost of petrol per liter = Rs. 44
 \therefore Cost of 90 liters petrol = Rs. 44 \times 90 = Rs. 3960.

6.

$$\begin{aligned}\text{I. } 8 \times 391 \times 125 &= 391 \times (125 \times 8) \\ &= 391 \times 1000 \\ &= 391,000\end{aligned}$$

$$\begin{aligned}\text{II. } 2 \times 1234 \times 50 &= 1234 \times (2 \times 50) \\ &= 1234 \times 100 \\ &= 123,400\end{aligned}$$

7. Breakfast consisting of 150 calories.

Lunch consisting of 350 calories.

Dinner consisting of 1000 calories.

The sum of the calories consumed that day is $150 + 350 + 1000 = 1500$ calories.

8. 0 is the smallest whole number.

9. Whole number 0 has no predecessor.

10. (a) $6 + 4 = 4 + 6$ holds commutative property of addition.

(b) $3 + 2 = \text{whole number}$ holds closure property.

11. (a) $25 + 36 + 15$

$$\text{Way I: } 25 + (36 + 15) = 25 + 51 = 76$$

$$\text{Way II: } (25 + 36) + 15 = 61 + 15 = 76$$

$$\text{Way III: } (25 + 15) + 36 = 40 + 36 = 76$$

Here, we have used associative property.

(b) $30 + 18 + 22$

$$\text{Way I: } 30 + (18 + 22) = 30 + 40 = 70$$

$$\text{Way II: } (30 + 18) + 22 = 48 + 22 = 70$$

$$\text{Way III: } (30 + 22) + 18 = 52 + 18 = 70$$

Here, we have used associative property.

12. (a) $36 \times 102 = 36 \times (100 + 2)$

$$= 36 \times 100 + 36 \times 2$$

$$= 3600 + 72 = 36072$$

(b) $35 \times 98 = 35 \times (100 - 2) = 35 \times 100 - 35 \times 2$

$$= 3500 - 70 = 3430$$

13. The greatest 3-digit number = 999

The smallest 2-digit number = 10

\therefore Product = $999 \times 10 = 9990$

14. The smallest 4-digit number = 1000

\therefore The predecessor of 1000 = $1000 - 1 = 999$

15. Given statement is

$10 \times n + 1 = n1$

Put $n = 5$, $10 \times 5 + 1 = 51$

$\Rightarrow 50 + 1 = 51$

$\Rightarrow 51 = 51$. Hence, verified.

Short Answer:

1. (a) $736 \times 102 = 736 \times (100 + 2)$

$= 736 \times 100 + 736 \times 2$ [Using distributive property]

$= 73600 + 1472 = 75072$

(b) $8165 \times 169 - 8165 \times 69 = 8165 \times (169 - 69)$ [Using distributive property]

$= 8165 \times 100 = 816500$

2. Next two terms are

$1010101 \times 1010101 = 1020304030201$

$101010101 \times 101010101 = 10203040504030201$

3. Next two terms are

$15873 \times 7 \times 3 = 333333$

$15873 \times 7 \times 4 = 444444$

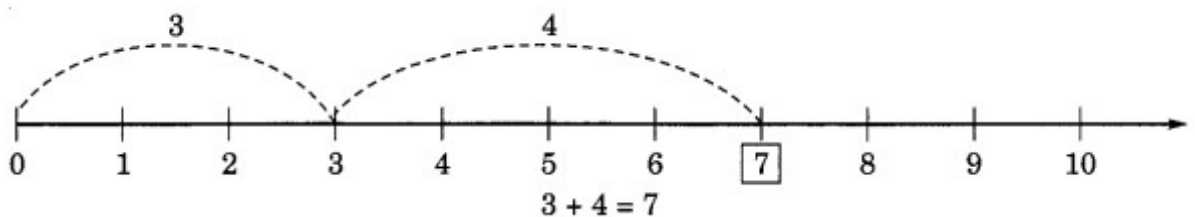
4. (a) $945 \times 4 \times 25 = 945 \times (4 \times 25)$

$= 945 \times 100 = 94500$

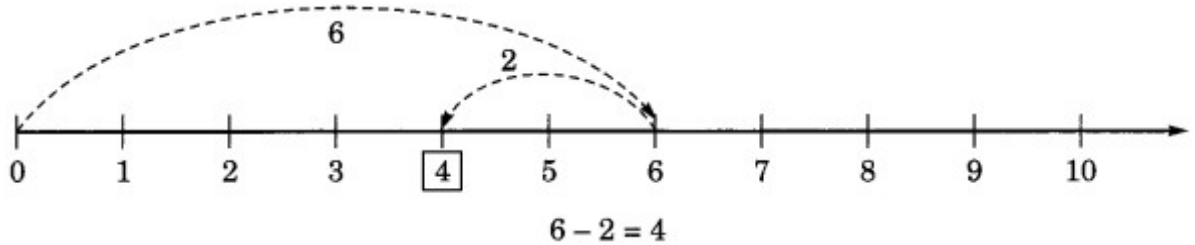
(b) $40 \times 328 \times 25 = 328 \times (40 \times 25)$

$= 328 \times 1000 = 328000$

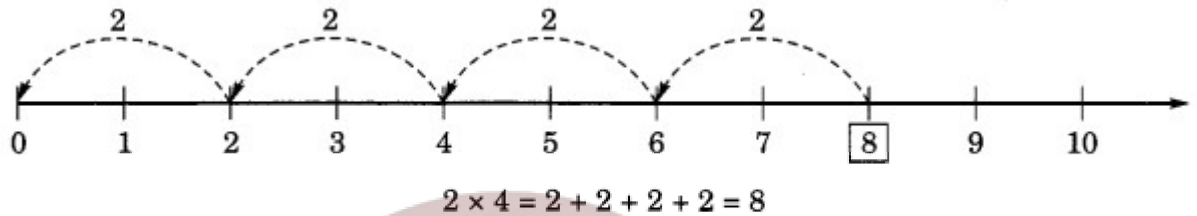
5. (a) $3 + 4$



(b) $6 - 2$



(c) 2×4



6. (a) $3 + 4 = 7$ (whole number) closure property
 (b) $4 + 5 = 5 + 4$ Commutative property
 (c) $3 + (5 + 7) = (3 + 5) + 7$ Associative property
 (d) $6 \times (8 + 3) = 6 \times 8 + 6 \times 3$ Distributive property.

7. Total cost of 124 LED sets = ₹ $(38,540 \times 124)$
 $= ₹ [38,540 \times (100 + 20 + 4)]$
 $= ₹ [38,540 \times 100 + 38,540 \times 20 + 38,540 \times 4]$
 $= ₹ [38,54,000 + 7,70,800 + 1,54,160]$
 $= ₹ 47,789,6$

8. Greatest 3-digit number = 999
 Greatest 2-digit number = 99
 \therefore Product = $999 \times 99 = 999 \times (100 - 1)$
 $= 999 \times 100 - 999 \times 1$
 $= 99900 - 999 = 98901$

9. 2, 5, 7, 11, 13, 17, 19, 23, 29 and 31 are such numbers which can be shown only as line.
 $123 \times 9 + 4 = 1111.$

Long Answer:

1. Total distance = 320 km
 Distance covered by the bus = 180 km
 Speed of the bus = 40 km/h
 \therefore Time Taken by the bus = $\frac{\text{Distance}}{\text{Speed}}$
 $= \frac{180}{40} \text{ hours} = \frac{9}{2} \text{ hours}$

Distance covered by the train = $320 - 180 = 140$ km.

Speed of the train = 70 km/h

∴ Time taken by the train

$$= \frac{\text{Distance}}{\text{Speed}} = \frac{140}{70} \text{ hours} = 2 \text{ hours}$$

Hence, the total time taken by the passenger

$$= \frac{9}{2} \text{ hours} + 2 \text{ hours}$$

$$= 4 \text{ hours } 30 \text{ min} + 2 \text{ hours}$$

$$= 6 \text{ hours } 30 \text{ min}$$

2. (a) $84 \times 9 = 84 \times (10 - 1) = 84 \times 10 - 84 \times 1 = 840 - 84 = 756$
 (b) $84 \times 99 = 84 \times (100 - 1) = 84 \times 100 - 84 \times 1 = 8400 - 84 = 8316$
 (c) $84 \times 999 = 84 \times (1000 - 1) = 84 \times 1000 - 84 \times 1 = 84000 - 84 = 83916$
 (d) $84 \times 9999 = 84 \times (10000 - 1) = 84 \times 10000 - 84 \times 1 = 840000 - 84 = 839916$

3.

$$(a) 86 \times 5 = 86 \times \frac{10}{2} = 43 \times 10 = 430$$

$$(b) 86 \times 15 = 86 \times \frac{30}{2} = 43 \times 30 = 43 \times (10 \times 3) \\ = 430 \times 3 = 1290$$

$$(c) 86 \times 25 = 86 \times \frac{100}{4} = 43 \times 50 = 43 \times (10 \times 5) \\ = 430 \times 5 = 2150$$

$$(d) 86 \times 35 = \frac{86 \times 70}{2} = 43 \times 70 = 43 \times (10 \times 7) \\ = 430 \times 7 = 3010$$

$$(e) 86 \times 50 = 86 \times \frac{100}{2} = 43 \times 100 = 4300$$

$$(f) 96 \times 125 = 96 \times \frac{1000}{8} = 12 \times 1000 = 12000$$

$$(g) 96 \times 250 = 96 \times \frac{1000}{4} = 24 \times 1000 = 24000$$

$$(h) 112 \times 625 = \frac{112 \times 10000}{16} = 7 \times 10000 = 70000$$

4. Ramesh buys 10 containers from one shop Cost of 1 container = ₹150
 He buys 18 containers of the same capacity from another shop.
 Cost of 1 container = ₹150
 ∴ Total money spent by Ramesh

$$= ₹ [10 \times 150 + 18 \times 150]$$

$$= ₹150 \times (10 + 18)$$

$$= ₹150 \times 28$$

$$= ₹4200$$

5. Number of large buildings = 25

Number of floors = 15

Number of apartments on each floor = 4

\therefore Total number of apartments in large buildings = $25 \times 15 \times 4$

Number of small building = 40

Number of floors = 9

Number of apartments on each floor = 3

\therefore Total number of apartments in small buildings = $40 \times 9 \times 3$

Hence, the number of apartments in all = $25 \times 15 \times 4 + 40 \times 9 \times 3 = 1500 + 1080 = 2580$.

6. Number of chairs = 85

Cost of one chair = ₹ 180

Cost of 85 chairs = ₹ (85 × 180)

Number of tables = 25

Cost of one table = ₹ 140

Cost of 25 tables = ₹ (25 × 140)

Total cost of all chairs and tables = ₹(85 × 180 + 25 × 140)

= ₹ (15300 + 3500) = ₹ 18800

Money given in advance = ₹ 2500

\therefore Balance money to be paid to the dealer = ₹ 18800 – ₹ 2500 = ₹ 16300

Assertion Reason Answers:

1) a) Both A and R are true and R is the correct explanation of A

2) a) Both A and R are true and R is the correct explanation of A