पुना International School

Shree Swaminarayan Gurukul, Zundal

MATHEMATICS

GRADE VI

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Chapter 1 knowing our number

Key points to remember

- Given two numbers, one with more digits is the greater number. If the number of digits in two given numbers is the same, that number is larger, which has a greater leftmost digit. If this digit also happens tobe the same, we look at the next digit and so on.
- In forming numbers from given digits, we should be careful to see if the conditions under which the numbers are to be formed are satisfied. Thus, to form the greatest four-digit number from 7, 8, 3, 5 without repeating a single digit, we need to use all four digits, the greatest number can have only 8 as theleftmost digit.
- The smallest four-digit number is 1000 (one thousand). It follows the largest three digit number 999. Similarly, the smallest five digit number is 10,000. It is ten thousand and follows the largest four digitnumber 9999. Further, the smallest six digit number is 100,000. It is one lakh and follows the largest five-digit number 99,999. This carries on for higher digit numbers in a similar manner.
- Use of commas helps in reading and writing large numbers. In the Indian system of numeration we havecommas after 3 digits starting from the right and thereafter every 2 digits. The commas after 3, 5 and 7 digits separate thousand, lakh and crore respectively. In the International system of numeration commasare placed after every 3 digits starting from the right. The commas after 3 and 6 digits separate thousandand million respectively.
- Large numbers are needed in many places in daily life. For example, for giving number of students in aschool, number of people in a village or town, money paid or received in large transactions (paying andselling), in measuring large distances say between various cities in a country or in the world and so on.
- Remember kilo shows 1000 times larger, Centi shows 100 times smaller and milli shows 1000 timessmaller, thus, 1 kilometre = 1000 metres, 1 metre = 100 centimetres or 1000 millimetres etc.
- There are a number of situations in which we do not need the exact quantity but need only a reasonable guess or an estimate. For example, while stating how many spectators watched a particular internationalhockey match, we state the approximate number, say 51,000, we do not need to state the exact number.
- Estimation involves approximating a quantity to an accuracy required. Thus, 4117 may be approximatedto 4100 or to 4000, i.e. to the nearest hundred or to the nearest thousand depending on our need.
- In number of situations, we have to estimate the outcome of number operations. This is done byrounding off the numbers involved and getting a quick, rough answer.
- Estimating the outcome of number operations is useful in checking answers.
- Use of brackets allows us to avoid confusion in the problems where we need to carry out more than onenumber operation.

We use the Hindu-Arabic system of numerals. Another system of writing numerals is the Roman system

Exercise 1.1

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1. Fill in the blanks:

(a) 1 lakh = ………….. ten thousand.

(b) 1 million = ………… hundred thousand.

(c) 1 crore = ………… ten lakh.

(d) 1 crore = ………… million.

(e) 1 million = …………lakh

Solutions:

(a) 1 lakh = 10 ten thousand = 1,00,000

(b) 1 million = 10 hundred thousand = 10,00,000

(c) 1 crore = 10 ten lakh = 1,00,00,000

(d) 1 crore = 10 million = 1,00,00,000

(e) 1 million = 10 lakh = 1,000,000

2. Place commas correctly and write the numerals:

(a) Seventy three lakh seventy five thousand three hundred seven.

(b) Nine crore five lakh forty one.

(c) Seven crore fifty two lakh twenty one thousand three hundred two.

(d) Fifty eight million four hundred twenty three thousand two hundred two.

(e) Twenty three lakh thirty thousand ten.

Solutions:

(a) The numeral of seventy three lakh seventy five thousand three hundred seven is 73,75,307

(b) The numeral of nine crore five lakh forty one is 9,05,00,041

(c) The numeral of seven crore fifty two lakh twenty one thousand three hundred two is 7,52,21,302

(d) The numeral of fifty eight million four hundred twenty three thousand two hundred two is 5,84,23,202

(e) The numeral of twenty three lakh thirty thousand ten is 23,30,010

3. Insert commas suitably and write the names according to Indian System of Numeration:

(a) 87595762 (b) 8546283 (c) 99900046 (d) 98432701

Solutions:

(a) 87595762 – Eight crore seventy five lakh ninety five thousand seven hundred sixty two

(b) 8546283 – Eighty five lakh forty six thousand two hundred eighty three

(c) 99900046 – Nine crore ninety nine lakh forty six

(d) 98432701 – Nine crore eighty four lakh thirty two thousand seven hundred one

4. Insert commas suitably and write the names according to International System of Numeration:

(a) 78921092 (b) 7452283 (c) 99985102 (d) 48049831

Solutions:

(a) 78921092 – Seventy eight million nine hundred twenty one thousand ninety two

(b) 7452283 – Seven million four hundred fifty-two thousand two hundred eighty three

(c) 99985102 – Ninety-nine million nine hundred eighty five thousand one hundred two

(d) 48049831 – Forty-eight million forty-nine thousand eight hundred thirty-one

Exercise 1.2

PAGE NO: 16

1. A book exhibition was held for four days in a school. The number of tickets sold at the counter on the first, second, third and final day was respectively 1094, 1812, 2050 and 2751. Find the total number of tickets sold on all the four days.

Solutions:

Number of tickets sold on 1st day = 1094

on 2nd day = 1812

on 3rd day = 2050

on 4th day = 2751

Hence, number of tickets sold on all the four days = 1094 + 1812 + 2050 + 2751 = 7707 tickets

2. Shekhar is a famous cricket player. He has so far scored 6980 runs in test matches. He wishes to complete 10,000 runs. How many more runs does he need?

Solutions:

Shekhar scored = 6980 runs

He want to complete = 10000 runs

Runs need to score more = 10000 – 6980 = 3020

Hence, he need 3020 more runs to score.

3. In an election, the successful candidate registered 5,77,500 votes and his nearest rival secured 3,48,700 votes. By what margin did the successful candidate win the election?

Solutions:

No. of votes secured by the successful candidate = 577500

No. of votes secured by his rival = 348700

Margin by which he won the election = 577500 – 348700 = 228800 votes

∴ Successful candidate won the election by 228800 votes

4. Kirti bookstore sold books worth Rs 2,85,891 in the first week of June and books worth Rs 4,00,768 in the second week of the month. How much was the sale for the two weeks together? In which week was the sale greater and by how much?

Solutions:

Price of books sold in June first week = Rs 285891

Price of books sold in June second week = Rs 400768

No. of books sold in both weeks together = Rs 285891 + Rs 400768 = Rs 686659

The sale of books is the highest in the second week

Difference in the sale in both weeks = Rs 400768 – Rs 285891 = Rs 114877

∴ Sale in second week was greater by Rs 114877 than in the first week.

5. Find the difference between the greatest and the least 5-digit number that can be written using the digits 6, 2, 7, 4, 3 each only once.

Solutions:

Digits given are 6, 2, 7, 4, 3

Greatest 5-digit number = 76432

Least 5-digit number = 23467

Difference between the two numbers = 76432 – 23467 = 52965

∴ The difference between the two numbers is 52965

6. A machine, on an average, manufactures 2,825 screws a day. How many screws did it produce in the month of January 2006?

Solutions:

Number of screws manufactured in a day = 2825

Since January month has 31 days

Hence, number of screws manufactured in January = 31 × 2825 = 87575

Hence, machine produce 87575 screws in the month of January 2006

7. A merchant had Rs 78,592 with her. She placed an order for purchasing 40 radio sets at Rs 1200 each. How much money will remain with her after the purchase?

Solutions:

Total money the merchant had = Rs 78592

Number of radio sets she placed an order for purchasing = 40 radio sets

Cost of each radio set = Rs 1200

So, cost of 40 radio sets = Rs 1200 × 40 = Rs 48000

Money left with the merchant = Rs 78592 – Rs 48000 = Rs 30592

Hence, money left with the merchant after purchasing radio sets is Rs 30592

8. A student multiplied 7236 by 65 instead of multiplying by 56. By how much was his answer greater than the correct answer?

Solutions:

Difference between 65 and 56 i.e (65 – 56) = 9

The difference between the correct and incorrect answer = 7236 × 9 = 65124

Hence, by 65124, the answer was greater than the correct answer

9. To stitch a shirt, 2 m 15 cm cloth is needed. Out of 40 m cloth, how many shirts can be stitched and how much cloth will remain?

Solutions:

Given

Total length of the cloth = 40 m

= 40 × 100 cm = 4000 cm

Cloth required to stitch one shirt = 2 m 15 cm

= 2 × 100 + 15 cm = 215 cm

Number of shirts that can be stitched out of 4000 cm = 4000 / 215 = 18 shirts

Hence 18 shirts can be stitched out of 40 m and 1m 30 cm of cloth is left out

10. Medicine is packed in boxes, each weighing 4 kg 500g. How many such boxes can be loaded in a van which cannot carry beyond 800 kg?

Solutions:

Weight of one box = 4 kg 500 g = 4 × 1000 + 500= 4500 g

Maximum weight carried by the van = 800 kg = 800 × 1000= 800000 g

Hence, number of boxes that can be loaded in the van = 800000 / 4500 = 177 boxes

11. The distance between the school and a student's house is 1 km 875 m. Everyday she walks both ways. Find the total distance covered by her in six days.

Solutions:

Distance covered between school and house = 1 km 875 m = 1000 + 875 = 1875 m

Since, the student walk both ways.

Hence, distance travelled by the student in one day = 2 × 1875 = 3750 m

Distance travelled by the student in 6 days = 3750 m × 6 = 22500 m = 22 km 500 m

∴ Total distance covered by the student in six days is 22 km and 500 m

12. A vessel has 4 litres and 500 ml of curd. In how many glasses, each of 25 ml capacity, can it be filled?

Solutions:

Quantity of curd in the vessel = 4 l 500 ml = 4 × 1000 + 500 = 4500 ml

Capacity of 1 glass = 25 ml

∴ Number of glasses that can be filled with curd = 4500 / 25 = 180 glasses

Hence, 180 glasses can be filled with curd.

Exercise 1.3

PAGE NO: 23

1. Estimate each of the following using general rule:

(a) 730 + 998 (b) 796 – 314 (c) 12904 + 2888 (d) 28292 – 21496

Make ten more such examples of addition, subtraction and estimation of their outcome.

Solutions:

(a) 730 + 998

Round off to hundreds

730 rounds off to 700

998 rounds off to 1000

Hence, 730 + 998 = 700 + 1000 = 1700

(b) 796 – 314

Round off to hundreds

796 rounds off to 800

314 rounds off to 300

Hence, 796 – 314 = 800 – 300 = 500

(c) 12904 + 2888

Round off to thousands

12904 rounds off to 13000

2888 rounds off to 3000

Hence, 12904 + 2888 = 13000 + 3000 = 16000

(d)   28292 – 21496

Round off to thousands

28292 round off to 28000

21496 round off to 21000

Hence, 28292 – 21496 = 28000 – 21000 = 7000

Ten more such examples are

(i)   330 + 280 = 300 + 300 = 600

(ii)   3937 + 5990 = 4000 + 6000 = 10000

(iii)   6392 – 3772 = 6000 – 4000 = 2000

(iv)   5440 – 2972 = 5000 – 3000 = 2000

(v)   2175 + 1206 = 2000 + 1000 = 3000

(vi)   1110 – 1292 = 1000 – 1000 = 0

(vii)   910 + 575 = 900 + 600 = 1500

(viii)   6400 – 4900 = 6000 – 5000 = 1000

(ix)   3731 + 1300 = 4000 + 1000 = 5000

(x)   6485 – 4319 = 6000 – 4000 = 2000

2. Give a rough estimate (by rounding off to nearest hundreds) and also a closer estimate (by rounding off to nearest tens):

(a) 439 + 334 + 4317 (b) 108734 – 47599 (c) 8325 – 491 (d) 489348 – 48365

Make four more such examples.

Solutions:

(a) 439 + 334 + 4317

Rounding off to nearest hundreds

439 + 334 + 4317 = 400 + 300 + 4300 = 5000

Rounding off to nearest tens

439 + 334 + 4317 = 440 + 330 + 4320= 5090

(b) 108734 – 47599

Rounding off to nearest hundreds

108734 – 47599 = 108700 – 47600= 61100

Rounding off to nearest tens

108734 – 47599 = 108730 – 47600= 61130

(c) 8325 – 491

Rounding off to nearest hundreds

8325 – 491 = 8300 – 500= 7800

Rounding off to nearest tens

8325 − 491 = 8330 − 490= 7840

(d) 489348 − 48365

Rounding off to nearest hundreds

489348 − 48365 = 489300 − 48400= 440900

Rounding off to nearest tens

489348 − 48365 = 489350 − 48370= 440980

Four more examples are as follows

(i) 4853 + 662

Rounding off to nearest hundreds

4853 + 662 = 4800 + 700= 5500

Rounding off to nearest tens

4853 + 662 = 4850 + 660= 5510

(ii) 775 − 390

Rounding off to nearest hundreds

775 − 390 = 800 − 400= 400

Rounding off to nearest tens

775 − 390 = 780 − 400= 380

(iii) 6375 − 2875

Rounding off to nearest hundreds

6375 − 2875 = 6400 − 2900= 3500

Rounding off to nearest tens

6375 − 2875 = 6380 − 2880= 3500

(iv) 8246 − 6312

Rounding off to nearest hundreds

8246 − 6312 = 8200 − 6300= 1900

Rounding off to nearest tens

8246 − 6312 = 8240 − 6310= 1930

3. Estimate the following products using general rule:

(a) 578 × 161

(b) 5281 × 3491

(c) 1291 × 592

(d) 9250 × 29

Make four more such examples.

Solutions:

(a) 578 × 161

Rounding off by general rule

578 and 161 rounded off to 600 and 200 respectively

600

× 200

_____

120000

_____

(b) 5281 × 3491

Rounding off by general rule

5281 and 3491 rounded off to 5000 and 3500 respectively

5000

× 3500

_____

17500000

_____

(c) 1291 × 592

Rounding off by general rule

1291 and 592 rounded off to 1300 and 600 respectively

1300

× 600

_____

780000

_____

(d) 9250 × 29

Rounding off by general rule

9250 and 29 rounded off to 9000 and 30 respectively

9000

× 30

_____

270000

THANK YOU

CHAPTER 2 WHOLE NUMBERS

Key Points:

1) Natural Numbers
Counting numbers are called natural numbers.

2) Whole numbers :
All natural numbers together with '0' are called whole numbers.

Thus 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,…… are whole numbers

Clearly, every natural number is a whole number but 0 is not a whole number.

3) Successor of a whole number:
If we add 1 to a whole number, we get the next whole number, called its successor.

Thus, the successor of 0 is 1, the successor of 1 is 2, the successor of 11 is 12, and so on. Every whole number has its successor.

4) Predecessor of a Whole number :
One less than a given whole number(other than 0), is called its predecessor.

Thus, the predecessor of 1 is 0, the predecessor of 2 is 1, the predecessor of 10 is 9, and so on. The whole number 0 does not have its predecessor.

Every whole number other than 0 has its predecessor.

Example : Write the successor and predecessor of :

(i)1000   (ii)1005399   (iii)999999

Solution (i) The successor of 1000 = (1000 + 1) = 1001

The predecessor of 1000 = (1000 − 1) = 999

(ii) The successor of 1005399 = (1005399 + 1) = 1005400

The predecessor of 1005399= (1005399 − 1) = 1005398

(iii)The successor of 999999 = (999999 + 1) = 1000000

The predecessor of 999999 = (999999 − 1) = 999998

Exercise 2.1

PAGE NO: 31

1. Write the next three natural numbers after 10999.

Solutions:

The next three natural numbers after 10999 are 11000, 11001 and 11002

2. Write the three whole numbers occurring just before 10001.

Solutions:

The three whole numbers occurring just before 10001 are 10000, 9999 and 9998

3. Which is the smallest whole number?

Solutions:

The smallest whole number is 0

4. How many whole numbers are there between 32 and 53?

Solutions:

The whole numbers between 32 and 53 are

(33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52)

Hence, there are 20 whole numbers between 32 and 53

5. Write the successor of:

(a) 2440701

(b) 100199

(c) 1099999

(d) 2345670

Solutions:

The successors are

(a) 2440701 + 1 = 2440702

(b) 100199 + 1 = 100200

(c) 1099999 + 1 = 1100000

(d) 2345670 + 1 = 2345671

6. Write the predecessor of:

(a) 94 (b) 10000 (c) 208090 (d) 7654321

Solutions:

The predecessors are

(a) 94 – 1 = 93

(b) 10000 – 1 = 9999

(c) 208090 – 1 = 208089

(d) 7654321 – 1 = 7654320

7. In each of the following pairs of numbers, state which whole number is on the left of the other number on the number line. Also write them with the appropriate sign (>, <) between them.

(a) 530, 503 (b) 370, 307 (c) 98765, 56789 (d) 9830415, 10023001

Solutions:

(a) Since, 530 > 503

Hence, 503 is on the left side of 530 on the number line

(b) Since, 370 > 307

Hence, 307 is on the left side of 370 on the number line

(c) Since, 98765 > 56789

Hence, 56789 is on the left side of 98765 on the number line

(d) Since, 9830415 < 10023001

Hence, 9830415 is on the left side of 10023001 on the number line

8. Which of the following statements are true (T) and which are false (F)?

(a) Zero is the smallest natural number.

Solution: False

0 is not a natural number

(b) 400 is the predecessor of 399.

Solution: False

The predecessor of 399 is 398 Since, (399 – 1 = 398)

(c) Zero is the smallest whole number.

Solution: True

Zero is the smallest whole number

(d) 600 is the successor of 599.

Solution: True

Since (599 + 1 = 600)

(e) All natural numbers are whole numbers.

Solution: True

All natural numbers are whole numbers

(f) All whole numbers are natural numbers.

Solution: False

0 is a whole number but is not a natural number

(g) The predecessor of a two digit number is never a single digit number.

Solution: False

Example the predecessor of 10 is 9

(h) 1 is the smallest whole number.

Solution: False

0 is the smallest whole number

The natural number 1 has no predecessor.

Solution: True

The predecessor of 1 is 0 but is not a natural number

(j) The whole number 1 has no predecessor.

Solution: False

0 is the predecessor of 1 and is a whole number

(k) The whole number 13 lies between 11 and 12.

Solution: False

13 does not lie between 11 and 12

(l) The whole number 0 has no predecessor.

Solution: True

The predecessor of 0 is -1 and is not a whole number

(m) The successor of a two digit number is always a two digit number.

Solution: False

As the successor of 99 is 100

Exercise 2.2

PAGE NO: 40

1. Find the sum by suitable rearrangement:

(a) 837 + 208 + 363
(b) 1962 + 453 + 1538 + 647
Solutions:
(a) Given 837 + 208 + 363

= (837 + 363) + 208

= 1200 + 208

= 1408

(b) Given 1962 + 453 + 1538 + 647

= (1962 + 1538) + (453 + 647)

= 3500 + 1100

= 4600

2. Find the product by suitable rearrangement:

(a) 2 × 1768 × 50

(b) 4 × 166 × 25

(c) 8 × 291 × 125

(d) 625 × 279 × 16

(e) 285 × 5 × 60

(f) 125 × 40 × 8 × 25

Solutions:

(a) Given 2 × 1768 × 50

= 2 × 50 × 1768

= 100 × 1768

= 176800

(b) Given 4 × 166 × 25

= 4 × 25 × 166

= 100 × 166

= 16600

(c) Given 8 × 291 × 125

= 8 × 125 × 291

= 1000 × 291

= 291000

(d) Given 625 × 279 × 16

= 625 × 16 × 279

= 10000 × 279

= 2790000

(e) Given 285 × 5 × 60

= 285 × 300

= 85500

(f) Given 125 × 40 × 8 × 25

= 125 × 8 × 40 × 25

= 1000 × 1000

= 1000000

3. Find the value of the following:

(a) 297 × 17 + 297 × 3

(b) 54279 × 92 + 8 × 54279

(c) 81265 × 169 − 81265 × 69

(d) 3845 × 5 × 782 + 769 × 25 × 218

Solutions:

(a) Given 297 × 17 + 297 × 3

= 297 × (17 + 3)

= 297 × 20

= 5940

(b) Given 54279 × 92 + 8 × 54279

= 54279 × 92 + 54279 × 8

= 54279 × (92 + 8)

= 54279 × 100

= 5427900

(c) Given 81265 × 169 – 81265 × 69

= 81265 × (169 – 69)

= 81265 × 100

= 8126500

(d) Given 3845 × 5 × 782 + 769 × 25 × 218

= 3845 × 5 × 782 + 769 × 5 × 5 × 218

= 3845 × 5 × 782 + 3845 × 5 × 218

= 3845 × 5 × (782 + 218)

= 19225 × 1000

= 19225000

4. Find the product using suitable properties.

(a) 738 × 103

(b) 854 × 102

(c) 258 × 1008

(d) 1005 × 168

Solutions:

(a) Given 738 × 103

= 738 × (100 + 3)

= 738 × 100 + 738 × 3 (using distributive property)

= 73800 + 2214

= 76014

(b) Given 854 × 102

= 854 × (100 + 2)

= 854 × 100 + 854 × 2 (using distributive property)

= 85400 + 1708

= 87108

(c) Given 258 × 1008

= 258 × (1000 + 8)

= 258 × 1000 + 258 × 8 (using distributive property)

= 258000 + 2064

= 260064

(d) Given 1005 × 168

= (1000 + 5) × 168

= 1000 × 168 + 5 × 168 (using distributive property)

= 168000 + 840

= 168840

5. A taxidriver 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?

Solutions:

Petrol quantity filled on Monday = 40 litres

Petrol quantity filled on Tuesday = 50 litres

Total petrol quantity filled = (40 + 50) litre

Cost of petrol per litre = ₹ 44

Total money spent = 44 × (40 + 50)

= 44 × 90

= Rs. 3960

6. A vendor supplies 32 litres of milk to a hotel in the morning and 68 litres of milk in the evening. If the milk costs ₹ 45 per litre, how much money is due to the vendor per day?

Solutions:

Milk quantity supplied in the morning = 32 litres

Milk quantity supplied in the evening = 68 litres

Cost of milk per litre = ₹ 45

Total cost of milk per day = 45 × (32 + 68)

= 45 × 100

= Rs. 4500

Hence, the money is due to the vendor per day is Rs. 4500

7. Match the following:

(i) 425 × 136 = 425 × (6 + 30 + 100)   **(a) Commutativity under multiplication.**

(ii) 2 × 49 × 50 = 2 × 50 × 49   **(b) Commutativity under addition.**

(iii) 80 + 2005 + 20 = 80 + 20 + 2005   **(c) Distributivity of multiplication over**

          addition

Solutions:

(i) 425 × 136 = 425 × (6 + 30 + 100)   (c) Distributivity of multiplication over addition.

Hence (c) is the correct answer

(ii) 2 × 49 × 50 = 2 × 50 × 49   (a) Commutativity under multiplication

Hence, (a) is the correct answer

(iii) 80 + 2005 + 20 = 80 + 20 + 2005   (b) Commutativity under addition

Hence, (b) is the correct answer

Exercise 2.3

PAGE NO: 43

1. Which of the following will not represent zero:

(a) 1 + 0

(b) 0 × 0

(c) 0 / 2

(d) (10 − 10) / 2

Solutions:

(a) 1 + 0 = 1

Hence, it does not represent zero

(b) 0 × 0 = 0

Hence, it represents zero

(c) 0 / 2 = 0

Hence, it represents zero

(d) (10 − 10) / 2 = 0 / 2 = 0

Hence, it represents zero

2. If the product of two whole numbers is zero, can we say that one or both of them will be zero? Justify through examples.

Solutions:

If product of two whole numbers is zero, definitely one of them is zero

Example: 0 × 3 = 0 and 15 × 0 = 0

If product of two whole numbers is zero, both of them may be zero

Example: 0 × 0 = 0

Yes, if the product of two whole numbers is zero, then both of them will be zero

3. If the product of two whole numbers is 1, can we say that one or both of them will be 1? Justify through examples.

Solutions:

If the product of two whole numbers is 1, both the numbers should be equal to 1

Example: 1 × 1 = 1

But 1 × 5 = 5

Hence, its clear that the product of two whole numbers will be 1, only in situation when both numbers to be multiplied are 1

4. Find using distributive property:

(a) 728 × 101

(b) 5437 × 1001

(c) 824 × 25

(d) 4275 × 125

(e) 504 × 35

Solutions:

(a) Given 728 × 101

= 728 × (100 + 1)

= 728 × 100 + 728 × 1

= 72800 + 728

= 73528

(b) Given 5437 × 1001

= 5437 × (1000 + 1)

= 5437 × 1000 + 5437 × 1

= 5437000 + 5437

= 5442437

(c) Given 824 × 25

= (800 + 24) × 25

= (800 + 25 − 1) × 25

= 800 × 25 + 25 × 25 − 1 × 25

= 20000 + 625 − 25

= 20000 + 600

= 20600

(d) Given 4275 × 125

= (4000 + 200 + 100 − 25) × 125

= (4000 × 125 + 200 × 125 + 100 × 125 − 25 × 125)

= 500000 + 25000 + 12500 − 3125

= 534375

(e) Given 504 × 35

= (500 + 4) × 35

= 500 × 35 + 4 × 35

= 17500 + 140

= 17640

5. Study the pattern:

1 × 8 + 1 = 9 1234 × 8 + 4 = 9876

12 × 8 + 2 = 98 12345 × 8 + 5 = 98765

123 × 8 + 3 = 987

Write the next two steps. Can you say how the pattern works?

(Hint: 12345 = 11111 + 1111 + 111 + 11 + 1)

Solutions:

123456 × 8 + 6 = 987654

1234567 × 8 + 7 = 9876543

Given 123456 = (111111 + 11111 + 1111 + 111 + 11 + 1)

123456 × 8 = (111111 + 11111 + 1111 + 111 + 11 + 1) × 8

= 111111 × 8 + 11111 × 8 + 1111 × 8 + 111 × 8 + 11 × 8 + 1 × 8

= 888888 + 88888 + 8888 + 888 + 88 + 8

= 987648

123456 × 8 + 6 = 987648 + 6

= 987654

Yes, here the pattern works

1234567 × 8 + 7 = 9876543

Given 1234567 = (1111111 + 111111 + 11111 + 1111 + 111 + 11 + 1)

1234567 × 8 = (1111111 + 111111 + 11111 + 1111 + 111 + 11 + 1) × 8

= 1111111 × 8 + 111111 × 8 + 11111 × 8 + 1111 × 8 + 111 × 8 + 11 × 8 + 1 × 8

= 8888888 + 888888 + 88888 + 8888 + 888 + 88 + 8

= 9876536

1234567 × 8 + 7 = 9876536 + 7

= 9876543

Yes, here the pattern works