SOLVED EXAMPLES

EXAMPLE 1. *Find the number which when divided by 53 gives 8 as quotient and 5 as remainder.*

Solution Given: divisor = 53, quotient = 8 and remainder = 5.

By division algorithm, we have:

dividend = (divisor × quotient) + remainder

= (53 × 8) + 5

= (424 + 5) = 429.

Hence, the required number is 429.

EXAMPLE 2. *Divide 535 by 31 and check the result by the division algorithm.*

Solution By actual division, we have:

```
31 ) 535 ( 17
   - 31
   ----
     225
   - 217
   -----
       8
```

∴ dividend = 535, divisor = 31, quotient = 17 and remainder = 8.

CHECK $(31 \times 17) + 8 = 527 + 8 = 535$.

Hence, the above result is correct.

EXAMPLE 3. *Divide 53068 by 257 and check the result by the division algorithm.*

Solution By actual division, we have:

```
527 ) 53068 ( 206
    - 514
    -----
      1668
    - 1542
    ------
       126
```

∴ dividend = 53068, divisor = 257, quotient = 206 and remainder = 126.

CHECK $(257 \times 206) + 126 = 52942 + 126 = 53068$.

Hence, the above result is correct.

PROPERTIES OF DIVISION

(i) *If a and b are nonzero whole numbers, then $a \div b$ is not always a whole number.*

EXAMPLE We know that 7 and 2 are whole numbers.

But, $7 \div 2$ is not a whole number.

(ii) DIVISION BY 0 *If a is a whole number, then $a \div 0$ is meaningless.*

(i) $0 \div 3 = 0$ (ii) $0 \div 57$

EXERCISE 3E

1. Divide and check your answer by the corresponding multiplication in each of the following:
   (i) $1936 \div 16$ (ii) $19881 \div 47$ (iii) $257796 \div 341$
   (iv) $612846 \div 582$ (v) $34419 \div 149$ (vi) $39039 \div 1001$
2. Divide, and find out the quotient and remainder. Check your answer.
   (i) $6971 \div 47$ (ii) $4178 \div 35$ (iii) $36195 \div 153$
   (iv) $93575 \div 400$ (v) $23025 \div 1000$ (vi) $16135 \div 875$
3. Find the value of
   (i) $65007 \div 1$ (ii) $0 \div 879$
   (iii) $981 + 5720 \div 10$ (iv) $1507 - (625 \div 25)$
   (v) $32277 \div (648 - 39)$ (vi) $(1573 \div 1573) - (1573 \div 1573)$
4. Find a whole number n such that $n \div n = n$.
5. The product of two numbers is 504347. If one of the numbers is 317, find the other.
6. On dividing 59761 by a certain number, the quotient is 189 and the remainder is 37. Find the divisor.
7. On dividing 55390 by 299, the remainder is 75. Find the quotient using the division algorithm.
8. What least number must be subtracted from 13601 to get a number exactly divisible by 87?
9. What least number must be added to 1056 to get a number exactly divisible by 23?
10. Find the largest 4-digit number divisible by 16.
11. Divide the largest 5 digit number by 653. Check your answer by the division algorithm.
12. Find the least 6-digit number exactly divisible by 83.
13. 1 dozen bananas cost ₹ 29. How many dozens can be purchased for ₹ 1392?
14. 19625 trees have been equally planted in 157 rows. Find the number of trees in each row.
15. The population of a town is 517530. If one out of every 15 is reported to be literate, find how many literate persons are there in the town.
16. The cost price of 23 colour television sets is ₹ 570055. Determine the cost price of each TV set if each costs the same.

Q1

Answer :

(i)

```
      53
36 ) 1936
   - 180
   ------
      136
     -108
     ----
       28
     ----
```

Dividend = 1936, Divisor = 36 , Quotient = 53 , Remainder = 28

Check: Divisor × Quotient + Remainder = 36 × 53 + 28

= 1936

=Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

(ii) 19881 ÷ 47

```
      423
47 ) 19881
     -188
     ------
      108
     - 94
     -----
      141
     -141
     ----
        0
     ----
```

Dividend = 19881, Divisor = 47 , Quotient = 423, Remainder = 0

Check: Divisor ×Quotient + Remainder= 47 × 423 + 0

= 19881

=Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

(iii)

$$
\begin{array}{r}
756 \\
341\overline{)257796} \\
-2387 \\
\hline
1909 \\
-1705 \\
\hline
2046 \\
-2046 \\
\hline
0
\end{array}
$$

Dividend = 257796 , Divisor = 341 , Quotient = 756 , Remainder = 0

Check : Divisor × Quotient + Remainder = 341 × 756 + 0

= 257796

= Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

(iv) 612846 ÷ 582

$$
\begin{array}{r}
1053 \\
582\overline{)612846} \\
-582 \\
\hline
3084 \\
-2910 \\
\hline
1746 \\
-1746 \\
\hline
0
\end{array}
$$

Dividend = 612846 , Divisor = 582, Quotient = 1053 , Remainder = 0

Check : Divisor × Quotient + Remainder= 582 × 1053 + 0

= 612846

=Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

(v) 34419 ÷ 149

$$
\begin{array}{r}
231 \\
149\overline{)34419} \\
-298 \\
\hline
461 \\
-447 \\
\hline
149 \\
-149 \\
\hline
0
\end{array}
$$

Dividend = 34419, Divisor = 149 , Quotient = 231, Remainder = 0

Check : Divisor × Quotient + Remainder = 149 × 231 + 0

= 34419

=Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

(vi) 39039 ÷ 1001

$$
\begin{array}{r}
39 \\
1001\overline{)39039} \\
-3003 \\
\hline
9009 \\
-9009 \\
\hline
0
\end{array}
$$

Dividend = 39039 , Divisor = 1001 , Quotient = 39 , Remainder = 0

Check : Divisor × Quotient + Remainder = 1001 × 39 + 0

= 39039

=Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

Q2

Answer :

(i) $6971 \div 47$

$$
\begin{array}{r}
148 \\
47\overline{)6971} \\
-47 \\
\hline
227 \\
-188 \\
\hline
391 \\
-376 \\
\hline
15
\end{array}
$$

Quotient = 148 and Remainder = 15

Check: Divisor × Quotient + Remainder = 47 × 148 + 15

= 6971

= Dividend

∴ Dividend = Divisor × Quotient + Remainder

Verified.

(ii) $4178 \div 35$

$$
\begin{array}{r}
119 \\
35\overline{)4178} \\
-35 \\
\hline
67 \\
-35 \\
\hline
328 \\
-315 \\
\hline
13
\end{array}
$$

Dividend = 119 and Remainder = 13

Check: Divisor × Quotient + remainder = 35 × 119 + 13

= 4178

= Dividend

∴ Dividend= Divisor × Quotient + Remainder

Verified.

(iii) $36195 \div 153$

(iii) 36195 ÷ 153

$$
\begin{array}{r}
236 \\
153\overline{)36195} \\
-306 \\
\hline
559 \\
-459 \\
\hline
1005 \\
-918 \\
\hline
87
\end{array}
$$

Quotient = 236 and Remainder = 87

Check: Divisor × Quotient + Remainder = 153 × 236 + 87

= 36195

= Dividend

∴ Dividend= Divisor × Quotient +Remainder

Verified.

(iv) 93575 ÷ 400

$$
\begin{array}{r}
233 \\
400\overline{)\,93575} \\
-\,800 \\
\hline
1357 \\
-\,1200 \\
\hline
1575 \\
-\,1200 \\
\hline
375
\end{array}
$$

Quotient = 233 and Remainder = 375

Check: Divisor × Quotient + Remainder = 400 × 233 + 375

= 93575

= Dividend

∴ Dividend= Divisor × Quotient + Remainder

Verified.

(v) 23025 ÷ 1000

$$
\begin{array}{r}
23 \\
1000\overline{)\,23025} \\
-\,2000 \\
\hline
3025 \\
-\,3000 \\
\hline
25
\end{array}
$$

Quotient = 23 and remainder = 25

Check: Divisor × Quotient + Remainder =1000 × 23 + 25

= 23025

= Dividend

∴ Dividend= Divisor × Quotient +Remainder

Verified.

(vi) 16135 ÷ 875

$$
\begin{array}{r}
18 \\
875\overline{)\,16135} \\
-\,875 \\
\hline
7385 \\
-\,7000 \\
\hline
385
\end{array}
$$

Quotient = 18 and Remainder = 385

Check: Divisor × Quotient + Remainder =875 × 18 + 385

= 16135

= Dividend

∴ Dividend= Divisor × Quotient +Remainder

Verified.

Q3

Answer :

(i) $65007 \div 1 = 65007$

(ii) $0 \div 879 = 0$

(iii) $981 + 5720 \div 10$
$= 981 + (5720 \div 10)$ (Following DMAS property)
$= 981 + 572$
$= 1553$

(iv) $1507 - (625 \div 25)$ (Following BODMAS property)
$= 1507 - 25$
$= 1482$

(v) $32277 \div (648 - 39)$ (Following BODMAS property)
$= 32277 \div (609)$
$= 53$

(vi) $(1573 \div 1573) - (1573 \div 1573)$ (Following BODMAS property)
$= 1 - 1$
$= 0$

Q4

Answer :

Given: $n \div n = n$
$\Rightarrow \frac{n}{n} = n$
$\Rightarrow n = n^2$

i.e., the whole number n is equal to n^2.

$\therefore$ The given whole number must be 1.

i.e., the whole number n is equal to n^2.

∴ The given whole number must be 1.

Q5

Answer :

Let x and y be the two numbers.

Product of the two numbers = $x \times y = 504347$

If $x = 317$, we have:

$317 \times y = 504347$

$\Rightarrow y = 504347 \div 317$

$$
\begin{array}{r}
1591 \\
317\overline{)504347} \\
-317 \\
\hline
1873 \\
-1585 \\
\hline
2884 \\
-2853 \\
\hline
317 \\
-317 \\
\hline
0 \\
\hline
\end{array}
$$

$y = 1591$

∴ The other number is 1591.

Q6

Answer :

Dividend = 59761, quotient = 189, remainder = 37 and divisor = ?

Dividend = divisor × quotient + remainder

⇒ 59761 = divisor × 189 + 37

⇒ 59761 − 37 = divisor × 189

⇒ 59724 = divisor × 189

⇒ Divisor = 59724 ÷ 189

Dividend = divisor × quotient + remainder

⇒ 59761 = divisor × 189 + 37

⇒ 59761 − 37 = divisor × 189

⇒ 59724 = divisor × 189

⇒ Divisor = 59724 ÷ 189

$$
\begin{array}{r}
316 \\
189\overline{)59724} \\
-567 \\
\hline
302 \\
-189 \\
\hline
1134 \\
-1134 \\
\hline
0 \\
\hline
\end{array}
$$

Hence, divisor =316

Q7

Answer :

Here, Dividend = 55390, Divisor = 299 and Remainder = 75

We have to find the quotient.

Now, Dividend = Divisor × Quotient + Remainder

⇒ 55390 = 299 × Quotient + 75

⇒ 55390 − 75 = 299 × Quotient

⇒ 55315 = 299 × Quotient

⇒ Quotient = 55315 ÷ 299

Answer :

Here, Dividend = 55390, Divisor = 299 and Remainder = 75

We have to find the quotient.

Now, Dividend = Divisor × Quotient + Remainder

⇒ 55390 = 299 × Quotient + 75

⇒ 55390 − 75 = 299 × Quotient

⇒ 55315 = 299 × Quotient

⇒ Quotient = 55315 ÷ 299

```
       185
    ______
299 ) 55315
     -299
    ______
      2541
     -2392
    ______
       1495
      -1495
    ______
          0
    ______
```

Hence, quotient =185

Q8

Answer :

First, we will divide 13601 by 87.

```
      156
   ______
87 ) 13601
    - 87
   ______
      490
    - 435
   ______
      551
    - 522
   ______
       29
   ______
```

Remainder = 29

So, 29 must be subtracted from 13601 to get a number exactly divisible by 87.

i.e., 13601 − 29 = 13572

Now, we have:

$$
\begin{array}{r}
156 \\
87\overline{)13572} \\
-87 \\
\hline
487 \\
-435 \\
\hline
522 \\
-522 \\
\hline
0 \\
\hline
\end{array}
$$

∴ 29 must be subtracted from 13601 to make it divisible by 87.

Q9

Answer :

First, we will divide 1056 by 23.

$$\begin{array}{r} 45 \\ 23\overline{)1056} \\ -92 \\ \hline 136 \\ -115 \\ \hline 21 \end{array}$$

Required number = 23 − 21 = 2

So, 2 must be added to 1056 to make it exactly divisible by 23.

i.e., 1056 + 2 = 1058

Now, we have:

$$\begin{array}{r} 46 \\ 23\overline{)1058} \\ -92 \\ \hline 138 \\ -138 \\ \hline 0 \end{array}$$

∴ 1058 is exactly divisible by 23.

Q10

Answer :

We have to find the largest four digit number divisible by 16 .

The largest four-digit number = 9999

Therefore, dividend =9999

Divisor =16

$$\begin{array}{r} 62 \\ 16\overline{)9999} \\ -96 \\ \hline 39 \\ -32 \\ \hline 79 \\ -64 \\ \hline 15 \end{array}$$

Here, we get remainder =15

Therefore, 15 must be subtracted from 9999 to get the largest four digit number that is divisible by 16.

i.e., 9999 − 15 = 9984

Thus, 9984 is the largest four-digit number that is divisible by 16.

Q11

Q11

Answer :

Largest five-digit number =99999

$$
\begin{array}{r}
153 \\
653\overline{)99999} \\
-653 \\
\hline
3469 \\
-3265 \\
\hline
2049 \\
-1959 \\
\hline
90
\end{array}
$$

Dividend = 99999, Divisor = 653, Quotient = 153 and Remainder = 90

Check: Divisor ×Quotient + Remainder

= 653 × 153 + 90

= 99909 + 90

= 99999

= Dividend

∴ Dividend = Divisor × Quotient + Remainder

Verified.

Q12

Answer :

Least six-digit number = 100000

Here, dividend = 100000 and divisor = 83

$$
\begin{array}{r}
1204 \\
83\overline{)99932} \\
\underline{83} \\
169 \\
\underline{166} \\
332 \\
\underline{332} \\
0
\end{array}
$$

In order to find a number exactly divisible by 83, we have to subtract the remainder from the dividend.

i.e., 100000 – 68 = 99932

So, 99932 is the least six-digit number exactly divisible by 83.

Answer :

Population of the town = 517530

$\left(\frac{1}{15}\right)$ of the population is reported to be literate. i.e., $\left(\frac{1}{15}\right) \times 517530 = 517530 \div 15$

$$
\begin{array}{r}
34502 \\
15\overline{)517530} \\
-45 \\
\hline
67 \\
-60 \\
\hline
75 \\
-75 \\
\hline
030 \\
-30 \\
\hline
0 \\
\hline
\end{array}
$$

∴ There are 34502 illiterate persons in the given town.

Q16

Answer :

Cost price of 23 colour TV sets = Rs 5,70,055

Cost price of 1 TV set = Rs 570055 ÷ 23

$$
\begin{array}{r}
24785 \\
23\overline{)570055} \\
-46 \\
\hline
110 \\
-92 \\
\hline
180 \\
-161 \\
\hline
195 \\
-184 \\
\hline
115 \\
-115 \\
\hline
0 \\
\hline
\end{array}
$$

∴ The cost price of one TV set is Rs 24,785.

$$
\begin{array}{r}
1204 \\
83\overline{)99932} \\
-83 \\
\hline
169 \\
-166 \\
\hline
332 \\
-332 \\
\hline
0 \\
\hline
\end{array}
$$

Q13

Answer :

Cost of 1 dozen bananas = Rs 29

Number of dozens purchased for Rs 1392 = 1392 ÷ 29

$$
\begin{array}{r}
48 \\
29\overline{)1392} \\
-116 \\
\hline
232 \\
-232 \\
\hline
0 \\
\hline
\end{array}
$$

Hence, 48 dozen of bananas can be purchased with Rs. 1392.

Q14

Answer :

Number of trees planted in 157 rows = 19625

Trees planted in 1 row = 19625 ÷ 157

$$
\begin{array}{r}
125 \\
157\overline{)19625} \\
-157 \\
\hline
392 \\
-314 \\
\hline
785 \\
-785 \\
\hline
0 \\
\hline
\end{array}
$$

∴ 125 trees are planted in each row.

Q15