



Master Lesson Plan

For

Ways to Multiply and Divide

Board	Standard	Subject	Chapter	Language	Reference Link	Creation
CBSE	STD V	Mathematics	Ways to Multiply and Divide	English	Ways to Multiply and Divide	2020-12

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Ways to Multiply and Divide

1. MS_Objectives-Ways to multiply and divide

Students will be able to

- Identify that multiplication is repeated addition
- Apply distributive law to multiply 2 digit numbers
- Able to calculate product of 3 digit numbers
- Appreciate the joy of multiplying love and goodness
- Apply multiplication of 2 and 3 digit numbers to do word problems
- Able to appreciate Shakunthala Devi's talent
- Identify that division is repeated subtraction
- Able to demonstrate division algorithm
- Able to apply long division method in division problems
- Able to recognize the importance of multiplication and division in daily life
- Able to apply multiplication and division to do word problems

Time to teach	Asset Type	Theme	SubTheme
2 Minutes	Main Script	Multiplication	Multiply 3 digit number by 3 Multiply 3 digit number by : Multiplication of numbers as addition, Multiply 3 digit num number, Multiply 3 digit num number, Multiplication of nu repeated addition

2. IQ_How can you multiply large numbers?

1) There are 5 students in a class. Each one has 4 toffees. In how many ways you can find the total number of Toffees?



There are two ways to find the total number of Toffees.

1) Addition method

To find the total number of Toffees we can add them.

$$\text{Total} = 4 + 4 + 4 + 4 + 4 = 20$$

2) Multiplication method

There are 5 groups of Toffees and in each group there are 4 Toffees.

$$\text{Total number of Toffees} = 5 \times 4 = 20$$

2) There are 3 groups of Bananas with 5, 5 and 3 Bananas respectively. What is the total number of Bananas?

Can you find it by the method of multiplication?



$$\text{Total number of Bananas is } 5 + 5 + 3 = 13$$

We cannot use multiplication in this example because it's not repeated addition. The groups here are not equal

Note that when the given groups are equal we can also use multiplication to find the total number.

3) When there are 46 groups of sheep each having 21 sheep, how can you find the total number of sheep?



We have to find the total as $21 + 21 + 21 + \dots + 21$ 46 times.

It's not easy to find the total when the number of groups is large.

So, we find the total number of sheep using multiplication, $46 \times 21 = 966$.

Again we cannot find this total easily, using multiplication table (of 46 or 21).

So, we need to learn how to multiply large numbers for large quantities or groups.

Source:

Toffee: <https://pixabay.com/vectors/candy-wrapped-sweet-food-sugar-304277/>

Banana: <https://pixabay.com/photos/banana-fruit-yellow-1504956/>

Sheep: <https://www.publicdomainpictures.net/en/view-image.php?image=224393&picture=sheep>

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Inquisitive Questions	Multiplication	

3. MS_Distributive law and its uses in multiplication of 2 digit numbers

We will find the product of 2 digit numbers using distributive law.

Distributive law:

For any three numbers a, b, c

$$a \times (b + c) = a \times b + a \times c$$

E.g. $3 \times (2 + 5) = 3 \times 2 + 3 \times 5$

L.H.S. is $3 \times 7 = 21$

R.H.S. is $6 + 15 = 21$

Thus $3 \times (2 + 5) = 3 \times 2 + 3 \times 5$

Let us consider one example of multiplication using distributive law.

There are 5 girls and each girl has 14 pendants. Find the total number of pendants.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1														
2														
3														
4														
5														

Total number of pendants = $5 \times 14 = 70$

Each girl decided to donate 4 pendants each to their respective friends.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1														
2														
3														
4														
5														

Total number of pendants is the sum of pendants in two columns =

$$= 5 \times 10 + 5 \times 4 = 50 + 20 = 70$$

In the above calculations we used distributive law as follows.

$$5 \times 14 = 5 \times (10 + 4) = 5 \times 10 + 5 \times 4 = 50 + 20 = 70$$

Thus, we can use distributive law when we multiply 2 digit large numbers.

E.g. Let us find the product 67×32 using distributive law.

$$67 \times 32$$

$$= 67 (30 + 2)$$

$$= 67 \times 30 + 67 \times 2 \text{ -----(1)}$$

$$\begin{array}{r} 67 \times 2 \\ \hline 134 \end{array}$$

$$\text{and } \begin{array}{r} 67 \times 30 \\ \hline 2010 \end{array}$$

$$\text{Thus, } 67 \times 32 = 2010 + 134 = 2144$$

Combining the above steps, we have, the procedure of finding the product of two digit numbers is as follows

To find the product 67×32

Step 1: First write the numbers one on top of the other. Multiplication will be easier if we write smaller number below.

So, we write it as follows.

$$\begin{array}{r} 67 \\ \times 32 \\ \hline \end{array}$$

Step 2: Now we start multiplication of numbers digit by digit as follows

We move from right to left

So, we consider the digit 2 in the unit place of the bottom number and multiply the top number 67 by 2

$$\begin{array}{r} 67 \\ \times 32 \\ \hline 134 \end{array} \quad \leftarrow 67 \times 2$$

Thus first line of the answer part is 134, we write it from right to left, such that the digit 4 is in the unit place, just below 2

Step 3 : Now we are moving to the next digit of the bottom number from right to left, so the digit to the left of the number 2 is 3.

So, we multiply the digits of our top number by 3 moving right to left.

The answer is 201. As 3 is in the tenths place of 32, multiplying by 3 is equivalent to multiplication by 30, so we write a 0 just below 4 of the preceding answer and then write 201 moving from right to left as follows

$$\begin{array}{r} 67 \\ \times 32 \\ \hline 134 \\ 2010 \end{array} \quad \begin{array}{l} \leftarrow 67 \times 2 \\ \leftarrow 67 \times 30 \end{array}$$

Step 4 : We draw a line under the second line and add the values obtained in steps 2 and 3

$$\begin{array}{r} 67 \\ \times 32 \\ \hline 134 \\ 2010 \\ \hline 2144 \end{array} \quad \begin{array}{l} \leftarrow 67 \times 2 \\ \leftarrow 67 \times 30 \end{array}$$

Thus $67 \times 32 = 2144$

Source:

Pendant: <https://www.needpix.com/photo/566739/pendant-iridescent-jewel-gemstone-free-pictures-free-photos-free-images-royalty-free-free-illustrations>

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Multiplication	

4. MS_Multiplication of 3 digit numbers

Using Distributive law, we find the product of 3 digit numbers as follows:

1) Multiplication of a 3 digit number by a 2 digit number

Consider the product 437×24

$$437 \times 24 = 437(20 + 4)$$

$$= 437 \times 20 + 437 \times 4 \text{ (using distributive law)}$$

$$= 8740 + 1748 = 10488$$

We use the following steps:

Step 1: First write the numbers one on top of the other with smaller number below as follows:

$$\begin{array}{r} 437 \\ \times 24 \end{array}$$

Step 2: Now we start multiplication of numbers.

In the second row, we move from right to left.

- So, we consider the digit 4 in the unit place of the bottom number and multiply the top number 437 by 4 and the product is

$$437 \times 4 = 1748$$

Thus, first line of the answer part is 1748.

$$\begin{array}{r} 437 \\ \times 24 \\ \hline 1748 \end{array} \leftarrow 437 \times 4$$

- Now we consider the next digit of the bottom number, i.e. 2.

So, we multiply the digits of our top number by 2 moving right to left.

$$437 \times 2 = 874$$

But 2 is in the ten's column.

Multiplication by 2 is equivalent to multiplying by 20.

So in the second row, we put a 0 in the unit place and then write the answer.

$$\begin{array}{r} 437 \\ \times 24 \\ \hline 1748 \leftarrow 437 \times 4 \\ 8740 \leftarrow 437 \times 20 \end{array}$$

We add the answers in two rows.

$$\begin{array}{r}
 437 \\
 \times 24 \\
 \hline
 1748 \quad \leftarrow 437 \times 4 \\
 8740 \quad \leftarrow 437 \times 20 \\
 \hline
 10488
 \end{array}$$

Thus, $437 \times 24 = 10488$.

2) Multiplication of a 3 digit number by a 3 digit number

Let us consider the product.

$$726 \times 123$$

Step 1: First write the numbers one on top of the other with smaller number below as follows:

$$\begin{array}{r}
 726 \\
 \times 123 \\
 \hline
 \end{array}$$

Step 2: Now we start multiplication of numbers digit by digit as follows:

In the second row, we move from right to left.

- So, we consider the digit 3 in the unit place of the bottom number and multiply the top number 726 by 3 and write the product in the first row
- Now we consider the digit 2 in the tenth place of the bottom number and multiply the top number 726 by 2 and write the product in the second row.

As multiplying by 2 is equivalent to multiplying by 20, we write a 0 in the unit place and then write the value of the product 726×2

- Now we consider the digit 1 in the hundredth place of the bottom number and multiply the top number 726 by 1 and write the product in the third row.

As multiplying by 1 is equivalent to multiplying by 100, we write a 0 in the unit and tenth place and then write the value of the product 726×1

Thus we have,

$$\begin{array}{r}
 726 \\
 \times 123 \\
 \hline
 2178 \\
 14520 \\
 72600 \\
 \hline
 \end{array}$$

Step 3: Now we add three numbers obtained in step 2.

$$\begin{array}{r}
 726 \\
 \times 123 \\
 \hline
 2178 \\
 14520 \\
 72600 \\
 \hline
 89298
 \end{array}$$

Thus, $726 \times 123 = 89298$.

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Multiplication	Multiply 3 digit number by 3 Multiply 3 digit number by : Multiplication of numbers as addition, Multiply 3 digit nun number, Multiply 3 digit num number, Multiplication of nu repeated addition

5. IA_Shakunthala Devi-The Human computer

<https://www.youtube.com/watch?v=7ampHEdupyl>

Teachers are requested to show the video before explaining the asset.

The video you saw just now is of Shakunthala Devi, popularly known as the ‘Human Computer’.



She was born in an Orthodox Brahmin family in Bangalore. Her father was working in a circus as Lion tamer and magician.

When Shakunthala Devi was three years old, her father discovered her talent of memorizing numbers.

After that he left the circus and started road shows displaying his daughter's ability of memorizing large numbers and doing calculations.

She had no formal education when she was doing this.

Foreign Tours:

Shakunthala Devi moved to London, with her father in 1944. In 1950 she made Europe tour, demonstrating her talents.

Also she conducted a performance in New York in 1976.

In 1988, again she traveled to US. There, a Professor of University of California named Arthur Jensen tested her performance.

Human Computer:

In 1977, she gave a solution to a problem with 201 digit number in 50 seconds.

Her answer was confirmed by a Bureau of standards using a computer for which a special program was written and the computer took longer time than her to do the same calculations.

Guinness record:

In the above video, we saw multiplication of two 8 digit numbers by Shakunthala Devi in few seconds.

In 1980, the Computer Department of London, picked at random two 13 digit numbers $7,686,369,774,870 \times 2,465,099,745,779$ and she calculated the product $18,947,668,177,995,426,462,773,730$ of numbers in 28 seconds.

The event was recorded in Guinness Book of Records and was described as an unbelievable event.

She died in Bangalore on 21st April 2013 at the age of 83 years.

Shakunthala Devi explained many of the methods she used to do mental calculations in her book Figuring: The Joy of Numbers, which is still in print.

Source:

Photo: <https://www.srisathyaivaividyaahini.org/alfresco/d/direct/workspace/SpacesStore/85ca036d-20ef-4495-b59f->

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	Multiplication	

6. QA_Solve the following

Word Problems

- 1) There are 65 garlands and in each garland there are 24 flowers. Find the total number of flowers used to make these garlands.
- 2) There are 26 boats and each boat can hold 94 people. Find the total number of people that all the 26 boats can hold.
- 3) In a rubber plantation there are 435 rows and in each row there are 208 trees. Find the total number of trees in the plantation.

Solution:

1) Number of flowers in one garland = 24

Number of flowers in 65 garlands = 65×24

$$\begin{array}{r}
 65 \\
 \times 24 \\
 \hline
 260 \quad \leftarrow 65 \times 4 \\
 1300 \quad \leftarrow 65 \times 20 \\
 \hline
 1560
 \end{array}$$

Number of flowers in 65 garlands = 1560

2) Number of people in one boat = 94

Number of people in 26 boats = 94×26

$$\begin{array}{r} 94 \\ \times 26 \\ \hline 564 \quad \leftarrow 94 \times 6 \\ 1880 \quad \leftarrow 94 \times 20 \\ \hline 2444 \end{array}$$

Number of people in 26 boats = 2444

3) Number of trees in one row = 208

Number of trees in 435 rows = 435×208

$$\begin{array}{r} 435 \\ \times 208 \\ \hline 3480 \quad \leftarrow 435 \times 8 \\ 0000 \quad \leftarrow 435 \times 0 \\ 87000 \quad \leftarrow 435 \times 200 \\ \hline 90480 \end{array}$$

Number of trees in 435 rows = 90480

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Assessments	Multiplication	Multiplication Word Problem Multiplication Word Problem

7. MS_Division divides a number by repeated subtraction

Division as repeated subtraction

We considered the example of finding the total number of Toffees in five groups when each group had 4 Toffees.

The total is repeated addition $4 + 4 + 4 + 4 + 4 = 20$ or the product $5 \times 4 = 20$

Now let us consider the inverse problem.

E.g. Shravya and her four friends are playing. Her mother gives 20 Toffees to her and asks her to distribute equally

Let us find how many Toffees each of them gets.

There are 5 children.

She distributes the Toffees as follows:

She gives one Toffee to each of them and keeps one for herself. As a result, $20 - 5 = 15$ Toffees will remain. Thinking that there are enough Toffees to distribute again, she continues distribution of Toffees similarly. After second distribution, $15 - 5 = 10$ Toffees will remain. After third distribution, $10 - 5 = 5$ Toffees will remain. And after 4th distribution, number of Toffees = $5 - 5 = 0$. So, each of them gets 4 Toffees.

In this example, starting from 20, the number 5 is subtracted repeatedly 4 times and the result is 0.

We can write it as $20 - 5 - 5 - 5 - 5 = 0$. Each one will get 4 Toffees, where 4 is the number of repeated subtraction

Also,

When 20 Toffees are divided equally among 5 children each one will get 4 Toffees.

Thus, $\frac{20}{5} = 4$

Repeated subtraction is Division of numbers.

Note:

After repeated subtraction if we get 0, as in the above example, we can write the equation like $\frac{20}{5} = 4$ and state 5 divides 20. Here 20 is the Dividend, 5 is the divisor and 4 is the quotient.

There are 5 students and each of them gets 4 Toffees.

In terms of multiplication we can write it as $4 \times 5 = 20$.

Thus the three equations $5 \times 4 = 20$, $\frac{20}{5} = 4$ and $\frac{20}{4} = 5$ are equivalent.

If her mother gives her 22 Toffees

The subtractions are

$$22 - 5 = 17$$

$$17 - 5 = 12$$

$$12 - 5 = 7 \text{ and } 7 - 5 = 2 \text{ and the extra 2 is called remainder in the division.}$$

In order to get 0, one should write the equation $2 - 2 = 0$.

In the last equation the number 2 is subtracted. It's not repeated subtraction.

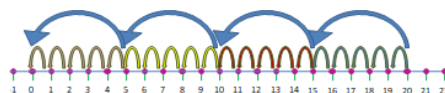
The remainder here is different from 0. I.e. we can't make equal distribution here using all 22 Toffees. In other words 5 does not divide 22.

Note that when there is repeated subtraction or the remainder is 0 we can use the operation Division.

Division Algorithm

Repeated subtraction is like jumping back from a bigger number in equal steps until you get 0 or a number less

than the length of the step as shown in the example.



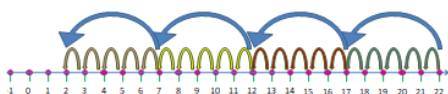
1) In the above figure, starting from 20, there are 4 jumps to reach 0. In each jump, 5 units are covered.

Thus, $20 = 4 \times 5$

In this case, 5 divides 20 and $\frac{20}{5} = 4$

2) When the number is 22, starting from 22, there are 4 jumps to reach 2. In each jump, 5 units are covered.

We can write it as $22 = 4 \times 5 + 2$



In this case 5 does not divide 22.

Division Algorithm

Statement: If a, b are any two natural numbers with $a > b$, we can divide a by b . We get two numbers q and r such that $a = qb + r$. The number a is called Dividend, b is the divisor q is the quotient and r is the remainder.

Image Source:

Original Creation by prabha.acharya@gmail.com

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Division	

8. SA_Verification of Division Algorithm

Aim: To demonstrate division algorithm

Materials Required:

Note book, pen, pencil, ruler, white sheets 4, about 100 beads/buttons, two small boxes, a dice (for each group)

Setting for the Activity: Indoor

Type of Activity: Individual/group

Instructions to Teacher:

Two days before the activity teacher will explain children Division Algorithm.

If a, b are any two natural numbers with $a > b$, we can divide a by b .

We get two numbers q and r such that $a = qb + r$. Here q is the quotient and r is the remainder.

Also the teacher divides the class into group of 6 students.

Each group students write numbers from 2 to 19 in small chits fold them and put them in the small box.

Procedure:

Activity 1

On the day of the activity, the teacher will give the following instructions to students.

1) Let one student from each group take some buttons from the box and count them. Let the number of button 'a' be more than 20.

E.g. let $a = 45$

2) Another student takes a chit from the box, opens it and reads the number b .

Say $b = 12$

3) Let all 6 students make equal groups of 12 buttons using 45 buttons.

4) Let them count the maximum number q of groups of 12 buttons and the extra buttons r .



In this case, they will get $q = 3$ and $r = 9$

5) The teacher can explain taking any one example as follows:

Total number of buttons, $a = 45 = \text{Dividend}$.

The number $b = 12$ is the divisor.

When you divide a by b the quotient obtained is 3, is the maximum number of groups of 12 buttons which can be formed using 45 buttons.

Thus $q = 3$ and the number of extra buttons is $r = 9$

The relation $a = q b + r$

R. H. S $= 3 \times 12 + 9 = 36 + 9 = 45 = a$, is satisfied.

Activity 2

Let the teacher give the following instructions to students.

- 1) A student in the group throws the dice 5 times and another student writes the numbers obtained in his note book.
- 2) Suppose the numbers obtained are 2, 5, 4, 2, 3.
- 3) Using the first three numbers the students write dividend $a = 254$ and the next 2 numbers give the divisor $b = 23$.

They arrange the numbers as follows:



4) The teacher will ask children to divide 254 by 23 and give the value of q and r .

$$\begin{array}{r}
 11 \\
 23 \overline{) 254} \\
 \underline{23} \\
 24 \\
 \underline{23} \\
 1
 \end{array}$$

In this case $q = 11$ and $r = 1$

5) Finally children will verify the equation $qb + r = a$

$$\text{L.H.S. } qb + r = 11 \times 23 + 1 = 253 + 1 = 254 = a$$

Conclusion: Division Algorithm is demonstrated using the two activities.

Image Source: Button : Self Clicked image

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Suggested Activity	Division	

9. MS_Introduction to long division

If a, b are any two natural numbers with $a > b$,

We have $\frac{a}{b} = q$ if $a = qb$

Here a is the dividend, b is the divisor and q is the quotient

Using this we can do simple divisions as follows

$$1) \frac{56}{8} \quad 2) \frac{91}{7}$$

Solutions

$$1) \text{ We have } 7 \times 8 = 56$$

$$\text{Thus, } \frac{56}{8} = 7$$

$$2) 13 \times 7 = 91$$

$$\frac{91}{7} = 13$$

We can use this method when the numbers are small.

How can you find such quotients when the numbers are large?

In such cases we use long division

Consider one example

Shruthi took a loan from her friend to buy a moped for Rs 9,672. She has to pay it back in equal amounts every month for six months.

How much will she have to pay every month?

Let us do it by repeated subtraction method first

The steps are as follows

Step 1

Assume that she pays Rs 1000 every month for 6 months

It is equivalent of paying a total of $6 \times 1000 = 6000$ rupees

$$\begin{array}{r}
 1000 \\
 9672 \\
 - 6000 \leftarrow 1000 \times 6 \\
 \hline
 3672
 \end{array}$$

Step 2

Then the balance would be Rs. $9672 - 6000 = \text{Rs. } 3672$ nearly Rs. 3600.

So, she can pay Rs. 600 in addition to Rs. 1000 in step 1

It is equivalent to paying a total of $6 \times 600 = \text{Rs } 3600$

$$\begin{array}{r}
 1000 + 600 \\
 9672 \\
 - 6000 \leftarrow 1000 \times 6 \\
 \hline
 3672 \\
 - 3600 \leftarrow 600 \times 6 \\
 \hline
 72
 \end{array}$$

Step 3

The balance is Rs. $3672 - 3600 = \text{Rs. } 72$ nearly Rs.60

So, she can pay Rs. 10 in addition to Rs. 1600 in steps 1 and 2

It is equivalent to paying a total of $6 \times 10 = \text{Rs } 60$

$$\begin{array}{r}
 1000 + 600 + 10 \\
 9672 \\
 - 6000 \leftarrow 1000 \times 6 \\
 \hline
 3672 \\
 - 3600 \leftarrow 600 \times 6 \\
 \hline
 72 \\
 - 60 \leftarrow 10 \times 6 \\
 \hline
 12
 \end{array}$$

Step 4

The balance is Rs. $72 - 60 = \text{Rs. } 12$

So, she can pay Rs. 2 in addition to Rs. 1610 in steps 1, 2 and 3

It is equivalent to paying a total of $6 \times 2 = \text{Rs } 12$

$$\begin{array}{r}
 1000 + 600 + 10 \\
 9672 \\
 - 6000 \leftarrow 1000 \times 6 \\
 \hline
 3672 \\
 - 3600 \leftarrow 600 \times 6 \\
 \hline
 72 \\
 - 60 \leftarrow 10 \times 6 \\
 \hline
 12 \\
 - 12 \leftarrow 2 \times 6 \\
 \hline
 0
 \end{array}$$

Step 5

The balance is 0

Thus, she has to pay an amount Rs. $1000 + 600 + 10 + 2 = \text{Rs. } 1,612$ every month for 6 months

We do it by another method as follows

Divide 9672 by 6 by long division

In the thousandth place we have 9

Step 1:

Divide 9 in the thousandth place by 6

The quotient is 1 (its place value is thousand)

Write the quotient 1 just above 9

$$\begin{array}{r} 1 \\ 6 \overline{) 9672} \\ \underline{6} \leftarrow 6 \times 1 \\ 3 \end{array}$$

Step 2:

Now $9 - 6 \times 1 = 9 - 6 = 3$

6 does not divide 3

So bring down the 6 in the hundredth place

$$\begin{array}{r} 1 \\ 6 \overline{) 9672} \\ \underline{6} \leftarrow 6 \times 1 \\ 36 \end{array}$$

Step 3:

Divide 36 by 6

(the quotient 6 has place value hundred)

Write the quotient 6 just above 6

$$\begin{array}{r} 16 \\ 6 \overline{) 9672} \\ \underline{6} \leftarrow 6 \times 1 \\ 36 \end{array}$$

Step 4:

Now $36 - 6 \times 6 = 36 - 36 = 0$

6 does not divide 0

So bring down the 7 in the tenth place

$$\begin{array}{r} 16 \\ 6 \overline{) 9672} \\ \underline{6} \\ 36 \\ \underline{36} \\ 07 \end{array}$$

← 6 × 1

← 6 × 6

Divide 7 by 6

Write the quotient 1 just above 7

$$\begin{array}{r} 161 \\ 6 \overline{) 9672} \\ \underline{-6} \leftarrow 6 \times 1 \\ 36 \\ \underline{-36} \leftarrow 6 \times 6 \\ 07 \end{array}$$

Now $7 - 6 \times 1 = 7 - 6 = 1$

So bring down the 2 in the unit place

161

6 9672

— 6 ↓ ← 6 × 1

36

— 36 ← 6 × 6

07

— 6 ← 6 × 1

12

Divide 12 by 6

Write the quotient 2 just above 2

$$\begin{array}{r} 1612 \\ 6 \overline{) 9672} \\ \underline{6} \leftarrow 6 \times 1 \\ 36 \leftarrow 6 \times 1 \\ \underline{36} \leftarrow 6 \times 1 \\ 07 \\ \underline{6} \leftarrow 6 \times 1 \\ 12 \end{array}$$

Now $12 - 6 \times 2 = 12 - 12 = 0$

$$\begin{array}{r}
 1612 \\
 6 \overline{) 9672} \\
 \underline{6} \leftarrow 6 \times 1 \\
 36 \leftarrow 6 \times 1 \\
 \underline{36} \\
 07 \leftarrow 6 \times 1 \\
 \underline{6} \\
 12 \leftarrow 6 \times 2 \\
 \underline{12} \\
 0
 \end{array}$$

Thus, $\frac{9672}{6} = 1612$

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Division	

10. DD_Multiplication and Division in daily life

The ability to solve simple multiplication and division questions is helpful to us in daily life.

We use multiplication and division all the time in real life whether we are aware of it or not.

When you handle money, share items between your friends for everything you need these two operations.

The following are the few of the many cases where we use multiplication and division.

Shopping:



While shopping, suppose we know the price of one unit, e.g. price of one litre milk, to find the price of more number of units we use multiplication.

To calculate the price per unit, we need division.

To calculate percentage discount, profit, to estimate the final price after discount for everything we need multiplication and division.

Cooking:



In cooking, when you follow a recipe to measure the ingredients multiplication and division are necessary.

E.g. if a recipe requires 5 cups of wheat powder, when you double the amount of ingredients in the recipe,

you have to multiply by 2 and use 10 cups of wheat powder.

Travelling:



When you travel, for estimating the amount of fuel required for your travelling, for reading a route map, to calculate the distance of your destination using the route map, to calculate time for everything, we use multiplication and division.

Building construction:



In measurement of area, calculation of total amount of concrete needed, estimating project cost are some examples where we use multiplication in building construction.

Image Source:

<Sale> - <<https://unsplash.com/photos/49mCO5ZRQDk>>

<Cooking> - <https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcROKzyjpWnO5tEfKOT90aOzuDY_pGHziT6aETmTt158x2NKTQo&s>

<Car> - <https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcRYsvn1h1jyWs5OkKZcaJJwZAuvINDE9HM9xwvu8YPr1Y86q_l&s>

<Architect> - <<https://pixabay.com/photos/architecture-blueprint-floor-plan-1857175/>>

<Building> - <<https://pixabay.com/photos/building-professional-employee-2762319/>>

Time to teach	Asset Type	Theme	SubTheme
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5 Minutes

Day-to-day Relevance

Multiplication

11. QA_Solve by using multiplication and division

1) Evaluate and verify the result

a) $\frac{546}{7}$ b) $\frac{2508}{12}$

Solution:

a) $\frac{546}{7}$

The dividend is 546.

Consider the digit 5 in the hundredth place.

7 doesn't divide 5.

So consider 54 and divide by 7, Quotient is 7.

Write 7 just above 4.

$$\begin{array}{r}
 78 \\
 7 \overline{) 546} \\
 \underline{-49} \quad \leftarrow 7 \times 7 \\
 56 \\
 \underline{-56} \quad \leftarrow 8 \times 7 \\
 00
 \end{array}$$

Verification

The dividend a = 546

Divisor b = 7

Quotient q = 78

The product $q \times b = 78 \times 7 = 546 = a$

b) $\frac{2508}{12}$

The dividend is 2508.

As 12 does not divide the digit 2, the first digit in the dividend, consider first 2 digits, i.e. 25 and proceed.

$$\begin{array}{r}
 209 \\
 12 \overline{) 2508} \\
 \underline{-24} \\
 10 \\
 \underline{-00} \\
 108 \\
 \underline{-108} \\
 000
 \end{array}$$

Verification

The dividend = a = 2508, divisor b = 12.

The quotient q = 209.

The product $q \times b = 209 \times 12 = 2508 = a$.

2) The cost of one dozen books of same kind is Rs. 756. Find the cost of 5 books.

Solution:

The cost of 12 books = Rs. 756

$$\text{Cost of one book} = \frac{756}{12}$$

$$\begin{array}{r} 63 \\ 12 \overline{) 756} \\ \underline{-72} \\ 36 \\ \underline{-36} \\ 00 \end{array}$$

Cost of one book = Rs. 63

Cost of 5 books = $63 \times 5 = \text{Rs. } 315$

3) The area of a rectangular garden is equal to the area of a square garden of side 12 m. If the breadth of the rectangular garden is 6 m, find its length.



Solution:

The area of the rectangular garden = Area of the square garden = $12 \times 12 = 144$ sq. m.

The area of the rectangular garden = 144 sq. m.

Let the length of the rectangular garden = l

Its breadth $b = 6$ m.

$l \times 6 = \text{Area} = 144$ sq. m.

$$l = \frac{144}{6}$$

$$\begin{array}{r}
 24 \\
 6 \overline{) 144} \\
 \underline{-12} \\
 24 \\
 \underline{-24} \\
 00
 \end{array}$$

Length of the rectangular garden = 24 m.

Source:

Garden:

<https://pixabay.com/photos/flower-meadow-flowers-wildflowers-3598562/>

<https://pixabay.com/photos/tulips-tulip-field-fields-orange-21690/>

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Assessments	Division	Division word problems (2,3 word problems (2,3 digits))

12. VC_Multiply love and goodness

,Multiply love and goodness

We live in a community that ideally should support each other. If we are to live in peace we need to help our neighbors to live in peace.

Peaceful living in a community lies in multiplying the joy by sharing the good things.

For example, If Indra shares her joy with Kabir, we have 2 people feeling joyful. If these two, share their joy with another 1 each, we have four of them. If these 4 share their joy with 1 each, we have 8 of them feeling joyful. It can go on and on.

Imagine how quickly it would multiply if each and every one of us could share joy with 3 people every day!

Let us look at this story of the farmer who shared his corn with others.

There was a farmer who grew superior quality and award-winning corn.

Each year he entered his corn in the state competition where it won honour and prizes.

Once a newspaper reporter interviewed him and asked him, "What is the secret of your winning the prize every year?"

The farmer simply said, “I always share my corn with my neighbors.”

The reporter was surprised. “How can you afford to share your best seed corn with your neighbors when they are entering corn in competition with yours each year?” the reporter asked.

“Why sir,” said the farmer, “didn’t you know? The wind picks up pollen from the ripening corn and swirls it from field to field. If my neighbors grow inferior, sub-standard and poor quality corn, cross-pollination will steadily degrade the quality of my corn. If I am to grow good corn, I must help my neighbors grow good corn.”

The farmer thus chose to multiply the growth of good corn by dividing and sharing his best corn with his neighbours.

Children. Have any of you done something today to multiply peace, or happiness, or some other good thing to others? If so, please tell us about what you did.

Time to teach	Value Type	Value Sub Type	Value Attribute
5 Minutes	Love		Stories

13. MS_Summary-Ways to multiply and divide

- Repeated addition and multiplication are equivalent – explained with example
- Distributive law and its use to find product of large numbers is explained
- The method of multiplication of 3 digit numbers is explained
- The multiplication of 2 and 3 digit numbers is used to solve word problems
- Shakunthala Devi’s talent of multiplication of large numbers is shown
- Repeated subtraction and division are equivalent – explained with example
- Division Algorithm is demonstrated using an activity

- **The long division method in division of large numbers is explained**
- **The use of multiplication and division in daily life is discussed**
- **The multiplication and division are used to solve word problems**
- **Multiplication is explained through values - love and goodness**

Time to teach	Asset Type	Theme	SubTheme
2 Minutes	Main Script	Multiplication	