

Chapter-6

DIVISION

STUDY NOTES

- * Division of 4-digit Numbers
- * Division by a 2-digit Number
- * Division by a 2-digit Number
(Word Problems)

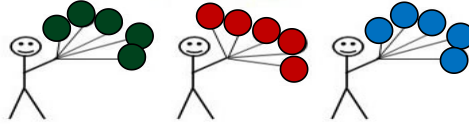
1. Division of 4-digit Numbers➤ EXPLANATION

On dividing the whole or a group of objects into **equal parts**, we get equal shares. We need to divide an **object** or a **whole number** into equal parts to distribute it equally. In the sharing situation, some known quantity (amount) is shared equally among a known number of entities (people, boxes, packages, etc.). What is not known in a sharing situation is the amount of the given quantity per share.



Equal Sharing

$15 \div 3 = 5$ is the amount each person gets if 15 items are shared equally among 3 people.



$$15 \div 3 = 5$$



The number which is to be divided is called **DIVIDEND**.

The number by which we divide is called **DIVISOR**.

The answer of the division is called **QUOTIENT**.

In $1085 \div 5 = 217$

↓
↓
↓

DIVIDEND **DIVISOR** **QUOTIENT**

REMEMBER

In case a number is left after division, it is called **REMAINDER**

DIVISION IS ALSO A REPEATED SUBTRACTION

Repeated subtraction is a method of subtracting the equal number of items from a larger group. It is also known as division.

If the same number is repeatedly subtracted from another larger number until the remainder is zero or a number smaller than the number being subtracted, we can write that in the form of division.

Now let us divide a 4-digit number by a 1-digit number

➤ For example:

$$\begin{array}{r}
 1712 \\
 5 \overline{) 8560} \\
 \underline{5} \\
 35 \\
 \underline{35} \\
 06 \\
 \underline{5} \\
 10 \\
 \underline{10} \\
 0
 \end{array}$$

STEP - 1

Divide **8** in thousands place by **5**
 $5 \times 1 = 5 (< 8)$ and $5 \times 2 = 10 (> 8)$, So we take **5** $\times 1 = 5$
 Write **1** above **8** as the quotient and **5** below **8** and then subtract. **$8 - 5 = 3$**



STEP - 2

Bring down **5**. We have 35. Divide 35 by 5 : $5 \times 7 = 35$
 Write **7** above **5** as the quotient and **35** below **35** and then subtract. **$35 - 35 = 0$**

STEP - 3

Bring down **6**. $5 \times 1 = 5 (< 6)$ and $5 \times 2 = 10 (> 6)$, So we take **5** $\times 1 = 5$
 Write **1** above **6** as the quotient and **5** below **6** and then subtract. **$6 - 5 = 1$**



STEP - 4

Bring down **0**. We have 10. Divide 10 by 5 : $5 \times 2 = 10$
 Write **2** above **0** as the quotient and **10** below **10** and then subtract. **$10 - 10 = 0$**

REMEMBER

- D - DIVISOR**
- Q - QUOTIENT**
- R - REMAINDER**

CHECK DIVISION BY USING THIS FORMULA:

$D \times Q + R = \text{DIVIDEND}$

2. Division by a 2-digit Number

➤ **EXPLANATION**



In math, **division** is a method used for dividing large numbers into groups or parts. ... Just like all division problems, a large number, which is the **dividend**, is divided by another number, which is called the **divisor**, to give a result called the **quotient**.

STEP TO DIVIDE

$$\begin{array}{r}
 2 \\
 15 \overline{) 3640} \\
 \underline{- 30} \\
 6 \\
 \hline
 24 \\
 15 \overline{) 3640} \\
 \underline{- 30} \\
 64 \\
 \underline{- 60} \\
 4 \\
 \hline
 242 \\
 15 \overline{) 3640} \\
 \underline{- 30} \\
 64 \\
 \underline{- 60} \\
 40 \\
 \underline{- 30} \\
 10
 \end{array}$$

15 in 3 doesn't go, so look at the next digit.

15 goes into 36 two times, so write 2 above 6.
 $15 \times 2 = 30$

Take that 30 away from 36 to get your remainder.
 $36 - 30 = 6$

Next, carry down 4 to make 64.
 15 goes into 64 four times, so put a 4 above 4
 $15 \times 4 = 60$

Take that 60 away from 64 to get your remainder.
 $64 - 60 = 4$

Carry the 0 down to make 40.

15 goes into 40 two times, so write 2 above 0.
 $15 \times 2 = 30$

Take that 30 away from 40 to get your remainder.
 $40 - 30 = 10$

Division involves 5 steps:



D	<u>D</u> ivide
M	<u>M</u> ultiply
S	<u>S</u> ubtract
B	<u>B</u> ring down
R	<u>R</u> epeat or <u>R</u> emainder

STEP 1 DIVIDE

$$963 \div 3$$



$$\begin{array}{r} 3 \\ 3 \overline{) 963} \end{array}$$

The first step is to divide. So, how many times will 3 will go into 9? The answer is 3. So, you put 3 above 9 on the quotient line. You have now divided.

STEP 2 MULTIPLY

The next step is to multiply. You are going to multiply your answer from step one and your divisor. In this example, you are multiplying 3×3 , which equals 9. You write this 9 underneath 9.

$$\begin{array}{r} 3 \\ 3 \overline{) 963} \\ \underline{9} \end{array}$$

Changing your Tomorrow


STEP 3 SUBTRACT

Next you are going to subtract. You will work the problem $9 - 9$. The answer in this example is 0.

$$\begin{array}{r} 3 \\ 3 \overline{) 963} \\ \underline{9} \\ 0 \end{array}$$

STEP 4 BRING DOWN

AND

STEP 5 REPEAT

Now first bring down 6 and repeat the same followed by 3. So let us do..... till we get 0 as the remainder.

$$\begin{array}{r}
 3 \quad 2 \quad 1 \\
 \overline{) 963} \\
 \underline{9} \\
 06 \\
 \underline{06} \\
 03 \\
 \underline{03} \\
 0
 \end{array}$$

➤ For example:

$$652 \div 14$$

$$\begin{array}{r}
 466 \\
 \overline{) 6524} \\
 \underline{56} \\
 92 \\
 \underline{84} \\
 84 \\
 \underline{84} \\
 0
 \end{array}$$

STEP 1

$6 < 14$, So we take 65

Divide 65 by 14

$14 \times 4 = 56 (< 65)$ and $14 \times 5 = 70 (> 65)$

So we take **14** $\times 4 = 56$

STEP 2

Multiply $14 \times 4 = 56$. Write 56 below 65 and 4 as the quotient above 5.

STEP 3

Subtract $65 - 56 = 9$

STEP 4

Bring down 2 so it becomes 92.

REPEAT THE ABOVE 4 STEPS

UNTILL WE HAVE NO MORE DIGITS TO BRING DOWN.

What is division ?

Division is a way to solve problems with large numbers. Basically, these are problems you cannot do in your head.

Here's a trick to mastering division. Use the acronym DMSB, which stands for:

$$\begin{array}{r} 34 \\ 2 \overline{)68} \\ \underline{-6} \\ 08 \\ \underline{-0} \\ 8 \end{array}$$

$$4 \times 2 = 8$$

D = Divide

M = Multiply

S = Subtract

B = Bring down

This sequence of letters can be hard to remember, so think of the acronym in the context of a family:

Dad, Mother, Sister, Brother.

3. Division by a 2-digit Number (Word Problems)

➤ EXPLANATION

These sums are language based. It is imperative that you start exploring, investigating and playing with these kinds of sums as early as possible. A **story problem** is a **story** that has numbers in it. In a **story problem** we are trying to figure out the missing number. We have to include all of our important parts of a **story problem** so others can understand our thinking.



➤ For example:

864 people have been invited to a party. The caterer is arranging tables. In each table 12 people can seat. How many tables are needed?

Solution:

To answer this question, we need to divide 864 by 12

$$864 \div 12$$

Number of people invited to a party = 864

Number of people can seat in each table = 12

$$\begin{array}{r}
 72 \\
 12 \overline{) 864} \\
 \underline{84} \\
 24 \\
 \underline{24} \\
 0
 \end{array}$$

Quotient - 72

Remainder - 0

•• 72 tables are needed for 864 people to seat in the party.

-- END--