Topic: Multiplication and Division of Whole Numbers

What is Whole number?

Whole numbers are a set of **numbers** including the set of natural **numbers** (1 to infinity) and the **integer** '0'. A **whole number** is **called whole** because it is not a mixed fraction or any rational **number**, but can be represented as a 'complete **number**'(excluding the negative integers).

Models for multiplication with natural numbers:

The result of a multiplication of two numbers is called a **product**.

The numbers we multiply are called **the factors**.

The first factor is called the **multiplicand** and the second is called **multiplier**.

The multiplication of one-digit numbers is the easiest form of multiplication and must be learned using the *multiplication table* before moving on to more complex examples.

Now, we are going to look at multiplication of one-digit numbers with two-digit numbers.

Two-digit numbers are composed of numerals *ones* and *tens*.

For example, number 45

we can write down like:

$$45=4\cdot10+5\cdot1$$

EXAMPLE:

We are going to start with an example of multiplication of number 8 with 53

Now, we will move on to the multiplication of two-digit numbers.
Let’s take a look at the next example. We will multiply number 71 with number 5

$$
\begin{array}{r}
71 \\
\times 56 \\
\hline
426 \\
+3550 \\
\hline
3976
\end{array}
$$

Multiply a 2 digit number by 2, 3, 4 or 5.

1) 52 x 3 = _____

2) 78 x 4 = _____

3) 35 x 5 = _____

4) 64 x 2 = _____

5) 91 x 3 = _____

6) 57 x 4 = _____

7) 29 x 5 = _____

8) 62 x 3 = _____

9) 78 x 2 = _____

10) 37 x 4 = _____

11) 86 x 3 = _____

12) 59 x 5 = _____

13) 77 x 4 = _____

14) 53 x 4 = _____

15) 68 x 3 = _____

MULTIPLICATION AND DIVISION AS INVERSE OPERATIONS:

Inverse Relationships (A)

Fill in the blanks

5 × 7 = 35	12 × 9 = 108	5 × 6 = 30	8 × 11 = 88
7 × ___ = 35	9 × ___ = 108	6 × ___ = 30	11 × 8 = ___
35 ÷ ___ = 5	___ ÷ 9 = 12	30 ÷ 6 = ___	88 ÷ 11 = ___
35 ÷ 5 = ___	108 ÷ ___ = 9	30 ÷ 5 = ___	___ ÷ 8 = 11
11 × 12 = 132	5 × 10 = 50	12 × 8 = 96	6 × 11 = 66
___ × 11 = 132	10 × 5 = ___	8 × 12 = ___	___ × 6 = 66
___ ÷ 12 = 11	50 ÷ 10 = ___	96 ÷ 8 = ___	___ ÷ 11 = 6
132 ÷ ___ = 12	___ ÷ 5 = 10	96 ÷ 12 = ___	66 ÷ 6 = ___
9 × 8 = 72	12 × 8 = 96	8 × 6 = 48	12 × 12 = 144
8 × 9 = ___	___ × 12 = 96	6 × 8 = ___	12 × ___ = 144
72 ÷ 8 = ___	96 ÷ 8 = ___	48 ÷ 6 = ___	___ ÷ 12 = 12
72 ÷ 9 = ___	___ ÷ 12 = 8	48 ÷ 8 = ___	___ ÷ 12 = 12
11 × 11 = 121	12 × 5 = 60	7 × 12 = 84	7 × 10 = 70
11 × ___ = 121	5 × ___ = 60	12 × ___ = 84	___ × 7 = 70
121 ÷ 11 = ___	___ ÷ 5 = 12	84 ÷ ___ = 7	70 ÷ 10 = ___
121 ÷ ___ = 11	60 ÷ 12 = ___	84 ÷ 7 = ___	70 ÷ 7 = ___
11 × 8 = 88	5 × 5 = 25	6 × 7 = 42	11 × 10 = 110
8 × 11 = ___	___ × 5 = 25	___ × 6 = 42	10 × 11 = ___
88 ÷ ___ = 11	___ ÷ 5 = 5	42 ÷ ___ = 6	___ ÷ 10 = 11
88 ÷ 11 = ___	25 ÷ ___ = 5	___ ÷ 6 = 7	___ ÷ 11 = 10

Division of natural numbers

Division is one of the four basic arithmetic operations in mathematics. It is the opposite operation of multiplication and means splitting something into equal groups. The symbols for division are "/

", "÷" and ":

" .

The division of two numbers has the following form:

"**dividend :**

divisor = quotient".

The first number is called the *dividend*, the *second* is the *divisor* and result is called the *quotient*.
We can divide any number by any number **except zero**. The division by zero is undefined.

Name Date

DIVISION – 3 DIGITS BY 2 DIGITS SHEET 1

Divide these 3 digit numbers by a 2 digit number with no remainders.

1) $14\overline{)364}$ 2) $21\overline{)357}$ 3) $33\overline{)627}$

4) $25\overline{)625}$ 5) $17\overline{)510}$ 6) $24\overline{)816}$

7) $42\overline{)588}$ 8) $34\overline{)170}$ 9) $18\overline{)324}$

10) $54\overline{)324}$ 11) $24\overline{)672}$ 12) $31\overline{)682}$

What is Remainder?

Remainder means something which is ‘left over’ or ‘remaining’.

If you have 9 toffees and you share it

With your four friends. How many toffees will you have?

If you give two toffees each to your friends, you would have shared 8 toffees. Only1 toffee will remain with you, and this leftover of 1 toffee is called the remainder.

Mathematically we can write the above expression as:

9 ÷ 4 = 2 remainder 1

Where 9 is the dividend , 4 is the divisor , 2 is the quotient , and 1 is the remainder.

On dividing 22 by 3.

We get 3 equal parts of 7 , that add up to 21

3 x 7 = 21.

We are left with 1. This 1 is the remainder.

When one number cannot divide another number

Completely , it le get a remainder.

Examples:

18 ÷ 7	Remainder 4
15 ÷ 10	Remainder 5
23 ÷ 6	Remainder 5
46 ÷ 9	Remainder 1
15 ÷ 5	Remainder 0

Properties of Remainder:

- When one number divides another number completely, the remainder is 0.
- The remainder is always less than the divisor. If the remainder is greater than the divisor, it means that the division is incomplete.
- It can be greater than or lesser than the quotient. For example; when 41 is divided by 7, the quotient is 5 and the remainder is 6. Here the remainder is greater than the quotient.

FACTOR:

Numbers that are multiplied together to get a product are called **factors.**

Example 1:

What are the factors of 18?

factor × factor = 18

1 × 18 = 18

2 × 9 = 18

3 × 6 = 18

So, the factors of 18 are 1, 2, 3, 6, 9, and 18. These numbers are also called the **divisors** of 18. *Factors* of a number are also called *divisors* of that same number.

Prime numbers:

A **prime number** is a natural number, greater than 1, that can be divided by only itself and 1. Another definition: A prime number is a positive integer that has exactly two different factors: itself and 1.

Example 2:

Is19 a prime number?

Yes. The only factors of 19 are 1 and 19, so 19 is a prime number. That is, 19 is divisible by only 1 and 19, so it is prime.

Example 3:

Is 27 a prime number?

No. 27 is divisible by other numbers (3 and 9), so it is not prime . The factors of 27 are 1, 3, 9, and 27, so it is not prime .

The only even prime number is 2; thereafter, any even number may be divided by 2. The numbers 0 and 1 are not prime numbers. The prime numbers less than 50 are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, and 47.

Composite numbers:

A **composite number** is a natural number divisible by more than just 1 and itself. Another definition: A composite number is a positive integer that has more than two different factors. The numbers 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, … are composite numbers because they are "composed" of other numbers. The numbers 0 and 1 are not composite numbers. (They are neither prime nor composite.)

Example 4:

Is 25 a composite number?

Yes. 25 is divisible by 5, so it is composite. The factors of 25 are 1, 5, and 25.