SECOND TERM E NOTES

SUBJECT: MATHEMATICS

CLASS: BASIC FOUR

WEEK TOPIC

1. **multiplication of whole number by two digit number**
2. **Square of 1 and 2- digit number**
3. **Division of 2 digit or 3-digit by number up to 9 with or without a remainder**
4. **Common multiples of numbers**
5. **Factors of numbers: HCF**
6. **Estimation**
7. **Money: Addition and subtraction of money**
8. **Money: multiplication and division of money by a whole number**
9. **Money: division of money by whole number**
10. **Profit and loss**
11. **Open sentences**

WEEK ONE

MULTIPLICATION OF NUMBERS BY 2-DIGIT NUMBERS

Example* 1 *multiply 25 by 12

***Method* 1: column form**

2 5
x 1 2

method 2: Expanded form

25 x 12 = 25 x (10 = 2)
= (25 x 10) = (25 x 2)

2 5 0 ⟶ (25 x 10) = 250 + 50

+ 5 0 ⟶ (25 x 2) = 300

3 0 0

5 4 Step 1: Multiply the units

× 2 6

Regroup

3 2 4 = 54 × 6 Step 2: Multiply the tens

+ 1 0 8 0 = 54 × 20 Regroup

1 4 0 4 = 54 × 26

EXERCIES 1: Multiply the following

1. **53 x 50**
2. **97 x 10**
3. **67 x 50**
4. **87 x 20**
5. **57 x 40**
6. **56 x 10**
7. **86 x 20**
8. **99 x 50**
9. **89 x 30**
10. **75 x 40**
11. **84 x 10**
12. **96 x 40**
13. **67 x 50**
14. **64 x 30**
15. **64 x 40**
16. **95 x 20**
17. **84 x 50**
18. **75 x 10**

EXERCISE 2: multiply the following

1. **89 x 46**
2. **45 x 37**
3. **56 x 17**
4. **88 x 32**
5. **36 x 35**
6. **78 x 18**
7. **76 x 26**
8. **29 x 27**
9. **79 x 49**
10. **75 x 46**

Example

25 × 34 = (20 × 34) + (5 × 34)
= 680 + 170
= 850

Exercise 3

Copy and fill the boxes with the correct numerals.

1. 24 × 33 = (20 × 33) + (□□× 33) = □□2. 35 × 48 = (□□× 48) + (□□× 48) = □
3. 47 × 18 = (□□× 18) + (□□× 18) = □□4. 45 × 35 = (40 × 35) + (5 × 35) = □
5. 41 × 25 = (40 × 25) + (□□× 25) = □□6. 29 × 49 = (□□× 49) + (□□× 49) = □
7. 57 × 16 = (□□× 16) + (□□× 16) = □□8. 61 × 25 = (□□× 25) + (□□× 25) = □
9. (12 × 7) + (30 × 7) = □□10. 7 × 82 = (7 × □□) + (7 × 2) □
11. (20 × 8) + (2 × 8) = □□12. 8 × 82 = (8 × □□) + (8 × 2) = □
13. 20 × 42 = (20 × 40) + (20 × 2) = □□14. 50 × 28 = (50 × 20) + (50 × □□) = □

WEEK TWO

BEHAVIOURAL OBJECTIVES: At the end of the lesson, pupils should be able to

- **discover what squares and square roots mean**
- **solve problems involving the calculation of squares of numbers.**

For example $1^2 = 1 \times 1 = 1$ = The square of 1

$2^2 = 2 \times 2 = 4$ = The square of 2

$3^2 = 3 \times 3 = 9$ = The square of 3

The small 2 written at the top side of the given number is the power or index. It is read as one (1) raised to power two (2), i.e. 1^2. 3^2 is read as 3 raised to power 2. Square numbers are also called **perfect squares**.

Multiplication table of 1-digit numbers

Columns →

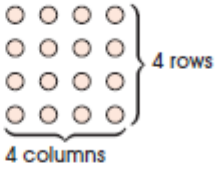
Rows ↓

×	1	2	3	4	5	6	7	8	9
1	(1)	2	3	4	5	6	7	8	9
2	2	(4)	6	8	10	12	14	16	18
3	3	6	(9)	12	15	18	21	24	27
4	4	8	12	(16)	20	24	28	32	36
5	5	10	15	20	(25)	30	35	40	45
6	6	12	18	24	30	(36)	42	48	54
7	7	14	21	28	35	42	(49)	56	63
8	8	16	24	32	40	48	56	(64)	72
9	9	18	27	36	45	54	63	72	(81)

Note: Perfect squares can be arranged in equal numbers of rows and columns.

Examples

$3 \times 3 = 9$

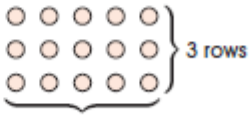


$4 \times 4 = 16$

Examples

Numbers that are not perfect squares cannot be arranged in equal numbers of rows and columns.

$2 \times 3 = 6$



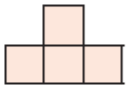
$3 \times 5 = 15$

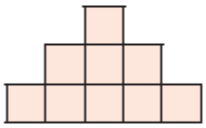
6 and 15 are not square numbers. We cannot have equal numbers of rows and columns for any of them.

Examples

Study the following patterns

1.  → $1 = 1 = 1^2$

2.  → $1 + 3 = 4 = 2^2$

3.  → $1 + 3 + 5 = 9 = 3^2$

A has 1 row of square = 1

B has 2 rows of squares = $1 + 3 = 4 = 2^2$

C has 3 rows of squares = $1 + 3 + 5 = 9 = 3^2$

Examples

Now study the following:

$1 = 1 = 1^2$

$1 + 2 + 1 = 4 = 2^2$

$1 + 2 + 3 + 2 + 1 = 9 = 3^2$

$1 + 2 + 3 + 4 + 3 + 2 + 1 = 16 = 4^2$

Exercise

1. How many rows has a square number 81?
2. How many rows has a square number 25?

SQUARES AND SQUARE ROOTS OF NUMBERS (1- digit and 2 – digit numbers)

Example: 1: find $2^2 = 4^2$ **$=(2 \times 2) + (4 \times 4)$** **$= 4 + 16$** **$= 20$**	**Example 2: find $4^2 - 2^2$** **$= (4 \times 4) – (2 \times 2)$** **$= 16 – 4$** **$= 12$**
Example 3: find $3^2 + 3^2$ **$= (3 \times 3) + (3 \times 3)$** **$= 9 + 9$**	**Example 4: $10^2 - 4^2$** **$= (10 \times 10) – (4 \times 4)$** **$= 100 – 16$**

= 18	= 84

Exercise 1

Find the value of:

1. $4^2 + 6^2$
2. $5^2 – 2^2$
3. $5^2 + 7^2$
4. $10^2 – 5^2$
5. $8^2 + 10^2$
6. $8^2 – 6^2$
7. $2^2 \times 5^2$
8. $3^2 \times 4^2$
9. $4^2 \times 3^2$
10. $5^2 \times 2^2$
11. $6^2 \times 2^2$
12. $2^2 \times 3^2 \times 5^2$
13. $2^2 \times 3^2 \times 5^2$
14. $3^2 \times 2^2 \times 5^2$

SQUARE OF 2-DIGIT NUMBER

The squares of two-digit numbers are (in short form) 102, 112, 122, 133, … 992.

To calculate the squares of two digit numbers we may use any of these methods.

a) Multiply the number by itself, i.e. using multiplication method.

b) Find the square from the square table.

c) Count the dots from the square pattern.

(This method may be too cumbersome at a later stage

Examples

Study the workings to find 142.

Solution: (Multiplication method)

$14^2 = 14 \times 14$

$(10+4) \times (10+4)$

$10(10+4) + (10+4)$

100+40+40+16

=196

Exercise

Solve each of the following:

1. 42 2. 92 3. 102 4. 122

5. 112

6. 152 7. 172 8. 162 9. 182 10. 202

Unit 2

WEEK THREE

DIVISION

BEHAVIOURAL OBJECTIVES: At the end of the lesson, pupils should be able to

CONTENT

Division of 2-digit and 3-digit numbers by numbers up to 9 without remainder

Example 1: 78 ÷ 6

T U

1 3

6 | 7 8

- 6 0 (1 ten x 6)

1 8

- 1 8 (6 units x 3)

0

Example 2: 82 ÷ 3

T U

2 7

3 | 8 2

_ 6 0 → (2 tens x 3)

2 2

_ 2 1 → (7 units x 3)

1 →(Remainder)

Therefore, 82÷3 = 27 remainder 1

Unit 1 Division of 2-digit numbers without remainder (Revision)

Examples

1. $45 \div 9$ 2. $96 \div 4$

Solution

1. $9\overline{)45}$ → 5

45

—

$9 \times 5 = 45$

$45 \div 9 = 5,\ 45 \div 5 = 9$

2. $4\overline{)96}$ → 24

80 → (2 tens × 4)

16

16 → (4 units × 4)

—

Check:

2 tens × 4 = 20 × 4 = 80

4 units × 4 = 16 units

= 1 ten + 6 units

= 10 + 6

∴ 80 + 10 + 6 = 90 + 6

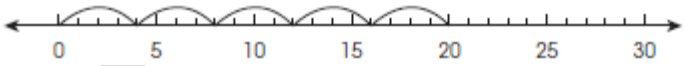
= 96

96 ÷ 4 = 24

Exercise 1

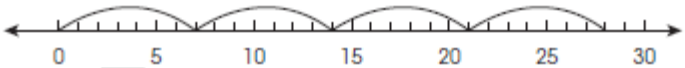
Complete the following:

1.



$20 \div 4 =$ ☐

2.



$28 \div 7 =$ ☐

3. $63 \div 7 =$ ☐ 4. $42 \div 6 =$ ☐ 5. $54 \div 6 =$ ☐ 6. $56 \div 7 =$ ☐

7. $48 \div 8 =$ ☐ 8. $28 \div 4 =$ ☐ 9. $49 \div 7 =$ ☐ 10. $72 \div 8 =$ ☐

11. $65 \div 5 =$ ☐ 12. $52 \div 4 =$ ☐ 13. $84 \div 6 =$ ☐ 14. $90 \div 6 =$ ☐

15. $84 \div 7 =$ ☐ 16. $78 \div 6 =$ ☐ 17. $46 \div 2 =$ ☐ 18. $75 \div 3 =$ ☐

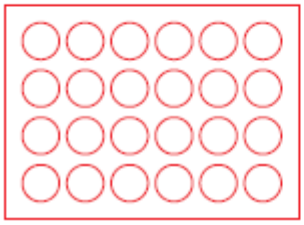
19. If a carton contains 6 bottles, how many such cartons will contain 90 bottles?

20. Share 63 sweets equally among 9 children. How many sweets will each child receive?

Examples

Study the following calculations.

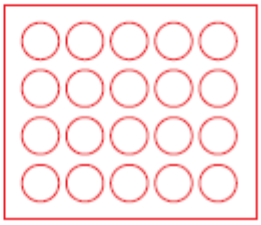
1. $24 \div 6$



How many sixes are in 24?

$\therefore 24 \div 6 = 4$

2. $20 \div 4$



How many fours are in 20?

$\therefore 20 \div 4 = 5$

3. $35 \div 7$

How many sevens are in 35? $\therefore 35 \div 7 = 5$

Exercise 2

Copy and complete the following. The first is done for you.

1. $\frac{1}{2}$ of 16 + $\frac{1}{3}$ of 21 = [8+7] = [15]

2. $\frac{1}{4}$ of 28 − $\frac{1}{6}$ of 30 = ☐ + ☐

3. $\frac{1}{5}$ of 90 + $\frac{1}{9}$ of 90 = [+] = ☐

4. $\frac{1}{8}$ of 32 + $\frac{1}{4}$ of 80 = ☐ + ☐

5. $\frac{1}{5}$ of 35 + $\frac{1}{7}$ of 42 = [+] = ☐

6. $\frac{1}{8}$ of 72 − $\frac{1}{9}$ of 63 = [9−7] = ☐

7. $\frac{1}{6}$ of 72 − $\frac{1}{8}$ of 32 = [−] = ☐

8. $\frac{1}{9}$ of 81 − $\frac{1}{5}$ of 45 = [−] = ☐

Activity

36 pupils are going for excursion. There are eight-seater minibuses to carry them.

a) How many pupils will fill each bus? **b)** How many pupils will remain?

From the activity, we need to find:
'how many eights there are in 36' i.e. 36 ÷ 8
36 ÷ 8 means how many eights are there in 36?
Using multiplication facts:
8 × 4 = 32, 36 – 32 = 4
∴ 36 ÷ 8 = 4 remainder 4

Thus, 4 pupils will fill each mini bus and 4 pupils will remain.

Examples

Calculate and give the remainder.

1. 78 ÷ 8 **2.** 73 ÷ 5

Solution

Method 1

1. 78 ÷ 8
Using multiplication fact
8 × 9 = 72, 78 – 72 = 6
∴ 78 ÷ 8 = 9 remainder 6

Method 2

```
   9
8) 78
 – 72   (9 units × 8)
   6    Remainder
```

∴ 78 ÷ 8 = 9 remainder 6

Method 1

2. 73 ÷ 5
Using multiplication fact

14	73
× 5	– 70
70	3

∴ 73 ÷ 5 = 14 remainder 3

Method 2

```
   14
5) 73
 – 50   (1 ten × 5)
   23
 – 20   (4 units × 5)
    3   Remainder
```

∴ 73 ÷ 5 = 14 remainder 3

Exercise

A. Calculate and give the remainder.

1. 21 ÷ 9 2. 38 ÷ 4 3. 87 ÷ 4 4. 82 ÷ 6
5. 78 ÷ 7 6. 72 ÷ 7 7. 29 ÷ 9 8. 57 ÷ 7
9. 68 ÷ 8 10. 73 ÷ 6 11. 35 ÷ 3 12. 64 ÷ 6
13. 88 ÷ 9 14. 73 ÷ 4 15. 89 ÷ 2 16. 77 ÷ 4
17. 87 ÷ 9 18. 97 ÷ 8 19. 98 ÷ 6 20. 99 ÷ 5

B. Solve the following:

1. 73 nuts are shared among five children. Each child receives the same number of nuts:
a) How many nuts did each child receive? b) How many nuts remain?

2. Korede shared out □65 among 8 pupils. Each pupil is given the same amount of money:
a) How much did each pupil receive? b) How much is remaining?
3. Audu bought a sack of sweet potatoes weighing 50 kg. He divided the potatoes into bags, so that each bag held 3 kg of potatoes.
a) How many complete bags of sweet potatoes did he get from his sack?
b) How many kg of sweet potato remains?
4. A box contains 87 notebooks. They are given out to 9 pupils equally.
a) How many notebooks did each pupil receive?
b) How many notebooks are remaining

Division of 3-digits numbers without remainder

Example

834 ÷ 3 means 'how many threes are there in 834? To find 834 ÷ 3 start with the hundreds:
8 (hundreds) ÷ 3 = 2 (hundreds), remainder 2 (hundreds)
Take the remainder, 2 (hundreds), and add to the tens:
2 (hundreds) = 20 (tens); 20 (tens) + 3 (tens) = 23 (tens)
23 (tens) ÷ 3 = 7 (tens), remainder 2 (tens)
Take the remainder, 2 (tens) and add to the units:
2 (tens) = 20 (units); 20 (units) + 4 (units) = 24 units
24 (units) ÷ 3 = 8 units
" 834 ÷ 3 = 278

Solution
278
3 834
– 600 □ (2 hundreds × 3)
234
– 210 □ (7 tens × 3)
24
– 24 □ (8 units × 3)

Example

Calculate the following:
205 ÷ 5
Solution
2 (hundreds) ÷ 5 = 0 (hundred), remainder 2 (hundreds)
Take the remainder, 2 (hundreds) and add to the tens:
2 hundreds = 20 (tens); 20 (tens) + 0 (ten) = 20 (tens)
20 (tens) ÷ 5 = 4 (tens), remainder 0

5 (units) ÷ 5 = 1 unit, remainder 0
" 205 ÷ 5 = 41
Working
41
5 205
– 200 □ (4 tens × 5)
5
– 5 □ (1 unit × 5)

Exercise

A. Calculate the following.

1. 153 ÷ 3 2. 126 ÷ 6 3. 185 ÷ 5 4. 177 ÷ 3 5. 156 ÷ 6
6. 132 ÷ 4 7. 144 ÷ 4 8. 148 ÷ 4 9. 138 ÷ 6 10. 152 ÷ 4
11. 171 ÷ 9 12. 224 ÷ 4 13. 105 ÷ 7 14. 102 ÷ 3 15. 465 ÷ 5
16. 8 984 17. 5 555 18. 9 399 19. 9 981 20. 6 828
21. 7 777 22. 4 712 23. 2 516 24. 4 636 25. 8 888

B. Solve the following.

1. The money contributed by a group of 6 pupils for cake baking is □426. How much did each pupil contributes?
2. Onome is paid □705 for a five day working week. How much is she paid for each day?
3. How many 8-litre kegs can be filled from a drum of water containing 928 litres?
4. A log of wood 522 metres long is sawn into pieces 9 m long. How many such pieces are there?
5. A book has 312 pages. How many days will it take to read
i) 8 pages a day? ii) 6 pages a day?

Exercise

1. **Divide 70 by 5**
2. **Divide 78 by 6**
3. **Divide 304 by 4**
4. **Divide 981 by 9**
5. **Divide 205 by 3**
6. **Divide 420 by 9**
7. **A box holds 3o tins. How many boxes can be filled with 810 tins?**
8. **One packet contains 10 pencils. How many packets do 470 pencil fill?**
9. **How many minutes are there in720 seconds**

10. The product of three numbers is 540. The first number is 5 and the second number is 9. What is the third number?

WEEK FOUR

LEAST COMMON MULTIPLES (LCM)

BEHAVIOURAL OBJECTIVES: At the end of the lesson, pupils should be able to

→

- **find the multiples of numbers**
- **find common multiples of numbers**
- **find the lowest common multiple by listing the multiples of numbers**
- **find the lowest common multiple by calculation.**

CONTENT

LEAST COMMON MULTIPLES (LCM)

Revision of multiples of numbers

Multiples of a number e.g. 4 are those numbers that 4 can divide without remainder.

Multiples of 4 are: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40 etc. The first multiple of a number is the number itself. Other multiples are obtained by repeated addition of the number.

Every number has unlimited number of multiples.

Example 1:

Find the least common multiples of 2 and 3

The multiples of 2 are: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

The multiples of 3 are: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36

Thus the common multiples of 2 and three are 6, 12, 18 and 24

Examples

Multiples of 2 = 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 …

3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30 …

5 = 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 …

We can use repeated addition or multiplication to find the multiples. Here the first five multiples of 6 and 7 are found by using addition. Multiples of 6 are 6, 6 +6, 6 + 6 + 6, 6 + 6 + 6 + 6, 6 + 6 + 6 + 6 + 6
= 6, 12, 18, 24, 30…
Multiples of 7 = 7, 7 +7, 7 + 7 + 7, 7 + 7 + 7 + 7, 7 + 7 + 7 + 7 + 7
= 7, 14, 21, 28, 35…
Here the first five multiples of 6 and 7 are found by using multiplication.
Multiples of 6 = 6 □□1 6 □□2 6 □□3 6 □□4 6 □□5
= 6, 12, 18, 24, 30
Multiples of 7 = 7 □□1 7 □□2 7 □□3 7 □□4 7 □□5
= 7, 14, 21, 28, 35 …
Here the sixth multiple of 3 and 8 are found by using multiplication.
6th multiple of 3 = 3 □□6 = 18
6th multiple of 8 = 8 □□6 = 56

Exercise

A. Write down the first ten multiples of
1. 9 2. 10 3. 12 4. 7 5. 14
B. Find the 5th multiple of
1. 4 2. 11 3. 6 4. 15 5. 20
C. Copy and complete the statements with the correct numerals.
1. 12 is a multiple of 4 and □□□□2. 84 is a multiple of 7 and □
3. 90 is a multip2le of 9 and □□4. 108 is a multiple of 9 and □
5. 45 is a multiple of □□and □

Example

Here the first three common multiples of 3 and 4 have been found.
Solution
Multiples of:
3 are: 3 6 9 12 15 18 21 24 27 30 33 36…
4 are: 4 8 12 16 20 24 28 32 36 40…
The first three common multiples of 3 and 4 are: 12, 24, 36.

Exercise 1

Write down the first three common multiples of these series of numbers:
1. 6 and 9 2. 4 and 8 3. 2, 4 and 6 4. 8 and 16 5. 10 and 15
6. 7 and 14 7. 3, 6 and 9 8. 5 and 10 9. 4 and 12 10. 5 and 20

Exercise 2

Look at the following numbers in the box.
2 3 4 8 10 12 18 24 27 30 32 36
Which of these numbers are common multiples of:
1. 2 and 3 2. 3 and 4 3. 3 and 6 4. 4 and 8 5. 5 and 10

LCM of numbers from common multiples

EXAMPLES

1. The LCM of 4 and 6 has been found here.
Multiples of:
4 = 4 8 12 16 20 24 28 32 36…
6 = 6 12 18 24 30 36…
Common multiples of 4 and 6 are 12 24 36…
From 12, 24 and 36, the smallest or least of the common multiple is 12.
Therefore, LCM of 4 and 6 = 12
2 . The LCM of 8 and 12 has been found here.
8 = 8 16 24 32 40 48 56 …
12 = 12 24 36 48 60 …
Common multiple: 24 48…
From 24 and 48, the least of the common multiple is 24
□□LCM = 24
3. The LCM of 6 and 9 has been found here.
6 = 6 12 18 24 30 36…
9 = 9 18 27 36…
Common multiples are: 18 36…
From 18 and 36, the least of the common multiple is 18
□□LCM = 18

Exercise
Find the LCM of these pair of numbers by first finding their common multiples.
1. 3 and 4 2. 4 and 8 3. 3 and 5 4. 2 and 9 5. 4 and 6
6. 6 and 5 7. 2 and 3 8. 3 and 8 9. 4 and 5 10. 6 and 9
11. What is the least weight of garri that can be weighed into 3 kg or 5 kg bags without any remainder?
12. What is the smallest length of a string that can be cut into pieces of 2 cm or 9 cm without any remainder?
The smallest of these multiples (i.e. the least) is 6
We say that the least common multiples of 2 and 3 is 6.
That is L.C.M of 2 and 3 is 6

LCM of numbers by calculation (Using Prime Number Division Method)
What is a prime number? A prime number is a number that has two factors, one and

itself. In other words any number that can be divided by only one and itself is a prime number.

Prime numbers are: 2 3 5 7 11 13 17 19 …

We will discuss this in detail when we come to factors. Note that 1 is a factor of every number but not a prime number.

Finding LCM by calculation

Method 1: Prime number division (by prime factors)

Divide the given numbers by prime numbers. If the prime number can divide only one number, start until the numbers are completely divided without remainder. The LCM is the product of the prime numbers.

50

Examples

Study how the LCM of the following numbers has been found.

1. 8 and 12 =

2	8, 12
2	4, 6
2	2, 3
3	1, 3
	1, 1

LCM = 2 □□2 □□2 □□3

= 24

2. 6, 8 and 16 =

2	6, 8, 16
2	3, 4, 8
2	3, 2, 4
2	3, 1, 2
3	3, 1, 1
	1, 1, 1

LCM = 2 □□2 □□2 □□2 □□3

= 48

Exercise 1

Find the LCM of:

1. 12 and 18 2. 10 and 12 3. 12 and 24 4. 6, 8 and 12 5. 12, 18, and 24 6. 6, 8 and 10 7. 4, 6 and 8 8. 9 and 27 9. 3, 4 and 9 10. 8, 10 and 12

Method 2

Examples

Study how the LCM of the following numbers has been found.

1. 8 and 12

8 = 2 8
2 4
2 2
1
12 = 2 12
2 6
3 3
1
8 = 2 ×□□2 ×□2
12 = 2 ×□□2 ×□□3
LCM = 2 ×□□2 ×□2 ×□□3
= 24
Pick all the prime factors of the first and the second numbers. Find the product.
2 . 8, 9 and 15

8 = 2 ×□□2 ×□□2
9 = 3 ×□□3
15 = 3 □×□5
LCM = 2 □×□2× □□2× □□3×3 ×□□5
= 360

51

Exercise 2

Find the LCM of:
1. 10 and 20 2. 5 and 15 3. 14 and 21 4. 8 and 9 5. 8 and 9
6. 14, 21 and 28 7. 24 and 30 8. 12, 16 and 24 9. 15, 20 and 30 10. 9, 15

EXERCISE

Find the by listing the multiples of:

1. **2 and 5**
2. **3 and 4**
3. **3 and 5**
4. **4, 2 and 6**
5. **2 and 7**
6. **2 and 12**
7. **3 and 7**
8. **3 and 12**
9. **2, 3 and 5**

10. **2 and 10**

11.**2, 4 and 6**

12.**3 and 15**

13.**4 and 7**

14.**4 and 7**

WEEK FIVE

HIGHEST COMMON FACTOR (HCF)

BEHAVIOURAL OBJECTIVES: At the end of the lesson, pupils should be able to

- **find the factors of numbers**
- **identify prime numbers**
- **Work out the common factors and highest common factors of numbers**

CONTENT

HIGHEST COMMON FACTOR (HCF)

REVISION OF FACTORS OF NUMBERS

Factors are just the numbers that divide into another number exactly without a remainder.

Examples

Factors of 6

To find the factors, begin multiplying two numbers starting with 1.

1 × 6 = 6 nothing else can be multiplied

2 × 3 = 6 to give 6.

$ Factors of 6 are 1, 2, 3, 6

6 can be divided by all the factors exactly without a remainder.

Factors of 12

1 × 12 = 12 2 × 6 = 12 3 × 4 = 12

No other numbers can be multiplied to give you 12. So the factors of 12 are 1, 2, 3, 4, 6, 12.

So 12 can be divided by all the factors exactly without a remainder.

Exercise 1

Write down all the factors of these numbers using the examples to guide you.

1. 9 2. 10 3. 12 4. 16 5. 18 6. 20

7. 56 8. 63 9. 70 10. 32 11. 60 12. 96

Common factors of numbers

Study the example carefully.

The factors of 12 are: 1 , 2 , 3 , 4, 6 and 12

The factors of 18 are: 1 , 2 , 3 , 6 , 9 and 18
The common factors are 1, 2, 3, 6 because these factors are factors of both numbers as you can see.

Exercise

1. Find all the common factors of both numbers.
a) 25 and 30 b) 18 and 27 c) 12 and 24 d) 9 and 27
2. Copy and complete this table in your notebook.

Numbers	Common factors
a) 6 and 21	
b) 14 and 21	
c) 8 and 20	
d) 10 and 25	
e) 10 and 30	

3. Find the common factors of these numbers.
a) 12 and 15 b) 15 and 25 c) 14 and 28 d) 6, 8 and 10 e) 28, 24 and 30
f) 12 and 28 g) 18, 24 and 42 h) 56, 80, 72 i) 4, 8 and 12 j) 8, 16 and 24

HCF of numbers from common factors

Examples

1. Study the examples to find the HCF of 12 and 16.

12 = 1 × 12 **16 = 1 × 16**
2 × 6 **2 × 8**
3 × 4 **4 × 4**

Factors are 1 , 2 , 3, 4 , 6, 12 Factors are 1 , 2 , 4 , 8, 16

Common factors = 1, 2, 4

Highest Common Factor is 4 because it is the highest factor among the common factors.
We write HCF = 4

2. Study the examples to find the HCF of 16 and 24.

16 = 1 × 16 **24 = 1 × 24**
2 × 8 **2 × 12**
4 × 4 **3 × 8**
4 × 6

Factors are 1 , 2 , 4 , 8 , 16 Factors are 1 , 2 , 3, 4 , 6, 8
The common factors of these numbers 16 and 24 are 1, 2, 4, 8
The Highest Common Factor (HCF) for 16 and 24 is 8

We write HCF = 8

Exercise

1. Using the above method find the HCF of each pair of numbers.
a) 8 and 10 b) 12 and 20 c) 25 and 35 d) 20 and 50 e) 18 and 36
f) 60 and 100 g) 18 and 20 h) 25 and 50 i) 27 and 63 j) 20 and 100

2. Find the highest common factors of these pairs of numbers.
a) 9 and 12 b) 5 and 15 c) 12 and 15 d) 12 and 16 e) 16 and 20
f) 10 and 12 g) 16 and 18 h) 5, 10, and 15 i) 4, 5 and 30 j) 18, 21 and 27

The product of 2 and 3 is; 2 x 3 = 6
2 and 3 are factors of 6

The factors of a number are numbers that divide the number without a remainder

EXAMPLE
Find the common factors of 24 and 36

24 = 1 x 24
= 2 x 12
= 3 x 8
= 4 x 6

36 = 1 x 36
= 2 x 18
= 3 x 12
= 4 x 9
= 6 x 6

Factors of 24 are: 1, 2, 3, 4, 6, 8, 12, 24
Factors of 36 are: 1, 2, 3, 4, 6, 9, 12, 18, 36
Common factors of 24 and 36 are: 1, 2, 3, 4, 6, 12
The highest common factor is 12.

EXERCISE
Find the HCF of:
1. **6 and 9**
2. **6 and 27**
3. **21 and 14**
4. **12 and 18**
5. **6 and 21**
6. **6 and 15**
7. **24 and 60**

8. 18 and 30

9. 14 and 16

10. 6 and 10

WEEK SIX

ESTIMATION

Rounding off decimals to the nearest whole number

BEHAVIOURAL OBJECTIVES: At the end of the lesson, pupils should be able to

- **round whole numbers to the nearest 10, 100**
- **Round decimals to the nearest whole numbers**
- **estimate the sums and differences of whole numbers and decimals**
- **estimate the product of two numbers**
- **solve word problems involving estimation**

CONTENT

ESTIMATION

Rules for rounding off decimals to the nearest whole number

When the rounding off decimals to the nearest whole number, look at the digit in the tenths place.

1. **If this digit is 5 or greater than 5, replace the digits after the decimal point by zero and add 1 to the digit in the units place**
2. **If this digit is less than 5, replace the digits after the decimal point by zero.**

Note: '≈' means 'is approximately equal to'

ROUNDING WHOLE NUMBERS

Consider these numbers:

10 20 30 40 50 60 70 80 90

Each of these numbers are multiples of 10 and each number has zero in its unit place. These numbers (i.e. multiples of 10) are round numbers.

Consider these numbers:

11 12 13 14 15 16 17 18 19 21 24 25 etc

These numbers are called non-rounded because the digits in the unit place is greater than zero.

Non-rounded numbers can be replaced by the nearest multiples of 10, 100. This is called rounding.

We can use the number line to round numbers to the nearest 10 and 100. We can also round without using the number line.

Rounding to the nearest 10

Examples

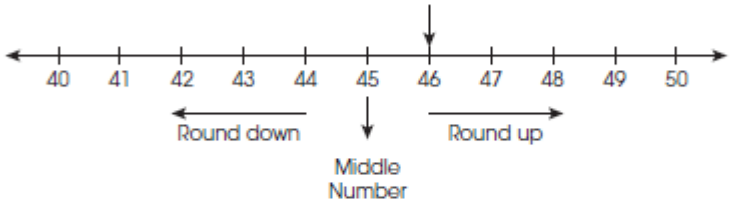
Round to the nearest 10.

1. 46 2. 22

Solution

Using number line

1.

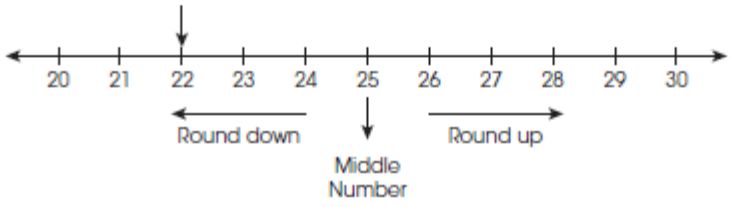


The middle number is less than 46 (6 > 5).

46 is nearer 50 than to 40,

∴ 46 is rounded to 50 to the nearest 10.

2.



The middle number is greater than 22 (2 < 5)

22 is nearer to 20 than to 30,

∴ 22 is rounded to 20 to the nearest 10.

Without using a number line

These solutions do not use the number line.

1. T U

4^1 6^0

6 > 5

Step 1: Find the place you are rounding to. We are rounding to nearest 10. The number under ten is 4.

Step 2: Look at the digit to the right of 4. If the digit is less than 5, round down, but if the digit is greater than 5, round up to 1 and add it to 4 i.e. 4 + 1 = 50

∴ 46 is rounded to 50 to the nearest 10.

2. T U

2 2

2 < 5

The digit to the right of 2 is less than 5. Round down to zero.

∴ 22 is rounded to 20 to the nearest to 10.

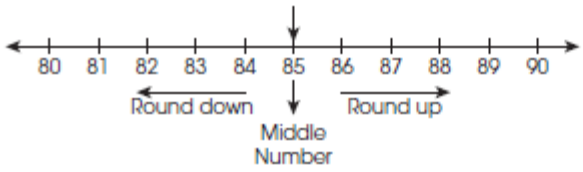
Examples

Round these numbers to the nearest 10.

1. 85 2. 35

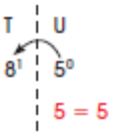
Solution

1.



85 is halfway (middle number) between 80 and 90

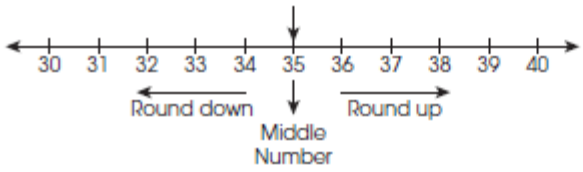
∴ 85 is rounded to 90 to the nearest 10.



The digit to the right of 8 is 5. Since 5, 6, 7, 8 and 9 are rounded up, round 5 up to 1 and add to 8. 8 + 1 = 90

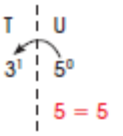
∴ 85 is rounded to 90 to the nearest 10.

2.



35 is halfway (middle number) between 30 and 40

∴ 35 is rounded to 40 to the nearest 10.



The digit to the right of 3 is 5. Round up to 1 and add to 3 i.e. 3 + 1 = 40

∴ 35 is rounded to 40 to the nearest 10.

Exercise 1

Round these numbers to the nearest 10.

1. 12	2. 87	3. 89	4. 84	5. 36
6. 92	7. 51	8. 81	9. 42	10. 48
11. 73	12. 17	13. 55	14. 99	15. 79

Rounding decimals to nearest whole numbers

Decimals can also be rounded to the nearest whole numbers with and without using a number line.

Examples

Example: round off the following decimal numbers to the nearest whole numbers.

6.7 ≈ 7 to the nearest whole number

6.3 ≈ 6 to the nearest whole number

17 ≈20 to the nearest ten

EXERCISE 1.

Write to the nearest whole number

1. **4.7**
2. **1.1**
3. **7.9**
4. **8.6**
5. **0.9**
6. **13.2**

WEEK SEVEN

Money

Addition of money

BEHAVIOURAL Objectives: At the end of the lesson, pupils should be able to

Convert money from one unit to another

Shop and collect the correct change

Add money

Subtract money

Solve word problems involving money.

CONVERSION INVOLVING UNITS OF MONEY

Note

100 k = □1.00

When changing kobo to Naira we divide the given amount by 100.

Examples

1. 520k = 520/100 = □5.20k

= □5.20

2. 890k = 890/100 = □8.90k

= □8.90

Exercise 1

Convert the following to Naira.

1. 638k = 2. 750k = 3. 430k = 4. 970k = 5. 257k =

6. 1 008k = 7. 3 450k = 8. 1 520 = 9. 17 000k = 10. 28 640k =

Examples

When converting Naira to kobo, we multiply by 100.

1. □8.00 = 8 × 100 = 800k 2. □17.50 = 17.50 × 100 = 1750k

or □8.00 = 800k

Example: find the sum of N4.36, N3.79 and N4.82

N	K
4.	36
+ 3.	7 9
+	4. 8 2
12.	9 7

EXERCISES

Add up

1. **N56.00, N24.70 and N32.55**
2. **N32.20, N174.30 and N132.30**
3. **N91.00, N152.10 and N184.20**
4. **N241.80, N378.35 and N29.46**
5. **Fin the sum, of N168.00 and N276.00**
6. **Find the sum of N128.10, N78.30 and N8.05**
7. **I have N1000 in my pocket and my father gave me N174.20 more. How much do I have altogether?**

Subtraction of money

Example 1

What is the difference between N167.50 and N345.00?

N	K
345.00	
-167.	50
177.	50

EXERCISE 2

1. **Find the difference between N406.60 and N322.20**
2. **Find the different between N270 and N162.30**
3. **Subtract N236.44 from N475.00**
4. **I have N150.00 and I bought a spoon for N85. How much is my change?**
5. **How much more is N147.50 greater than N112.80**
6. **How much more is N36.00 than N278.00**

WEEK EIGHT

PROBLEM ON MULTIPLICATION OF MONEY

BEHAVIOURAL Objectives: At the end of the lesson, pupils should be able to

Find the costs of more than one commodity using a shopping centre

Multiply money by a whole number

CONTENT

PROBLEM ON MULTIPLICATION OF MONEY

EXAMPLE

Multiplication involving money

Examples

1. 65k × 8 = 520k
= 5 Naira 20 kobo
= #5.20

2. #11.24
× 6
#67.44

Note: The naira sign has two digits to the right of the decimal point in these examples.

Exercise 1

Simplify these. Follow the examples.

1. 199k × 6 2. 186k × 8 3. 159k × 4 4. 167k × 7
5. 148k × 13 6. 137k × 21 7. 167k × 18 8. 154k × 19

9. # K
4 32
× 6

10# K
8 66
× 8

11.# K
13 26
× 9

12.# K
16 13
× 7

13. #12.62 × 8 14. #27.04 × 5 15. #31.78 × 6 16. #76.21 × 10
17. #17.83 × 6 18. #48.56 × 4 19. #29.37 × 7 20. #81.42 × 8

169

Exercise 2

Find the cost of these items.

1. 5 meters of white poplin at □320.00 per meter.
2. 20 kg of yam flour at □150.00 per kg.
3. Taxi fare for 16 people at □150.00 per person.
4. 9 school chairs at 300 Naira per chair.
5. 8 school uniforms at □955.00 per uniform.
A man earns □535.00 a day. How much does he earn in
6. 2 days 7. 6 days 8. 9 days 9. 10 days
A trader sells a packet of rulers for □625.00 each. How much money does he receive if he sells
10. 3 packets of rulers 11. 5 packets of rulers
12. 8 packets of rulers 13. 10 packets of rulers

Find the cost of 3 books at N91.55 each.

Solution

N91. 55
× 3
N274.65

EXERCISE

1. **N5.52 x 4**
2. **N4.75 x 6**
3. **N4.75 x 6**
4. **N5.91 x 8**
5. **N12.37 x 6**
6. **A bag of salt costs N585.40. how much will I pay for 5 bags?**
7. **What is the cost of 6 meters of while poplin at N212. 85 per meter?**
8. **Find the cost of 7 chairs if one chair costs N423.50**

WEEK 9

DIVISION OF MONEY

BEHAVIOURAL Objectives: At the end of the lesson, pupils should be able to Divide money by a whole number.

CONTENT

DIVISION OF MONEY

Examples

1. #1.68 ÷ 7 =

#0.24

or 168/ 7 k =

24k

2. Divide □18.24 by 8

#2.28

8 #1 8.2 4

– 1 6/

2 2

– 1 6

6 4

6 4

0 0

Unit 3 Division involving money

Exercise 1

Follow the examples and work out the following problems.

1. □119 ÷ 7 2. 2 Naira 25 kobo ÷ 9 3. □16.50 ÷ 30

4. □38.40 ÷ 6 5. □42 ÷ 20 6. 1 610k ÷ 5

7. □29.04 ÷ 4 8 . 10 Naira 23 kobo ÷ 3 9. 17 Naira ÷ 10

10. 98 Naira 1 kobo ÷ 9 11. #11.76 ÷ 7 12. □84.32 ÷ 8

13. □52.32 ÷ 6 14. □73.25 ÷ 5 15. □90.16 ÷ 4

Find the cost of one item.

16. 10 lollipops cost □150.00 17. 8 eggs □240.00 18. 9 safety pins cost □27.63

19. 7 sports shorts cost □1 520.20 20. 20 cups of garri cost □650.00

21. Six children paid the same amount of money totaling □1 605.00 to travel on a bus. How much did each child contribute?

22. The cost of petrol for eight return journeys from village to a town is □2 000.00. What is the cost of petrol for one return journey?

Puzzle corner

A hen and 7 chickens cost □1 720.00. The same hen and 10 similar chickens cost □2 140.

Find the cost of:

23. 3 chickens 24. a hen and a chicken 25. 7 chickens

26. a hen 27. 10 chickens 28. a chicken

Mixed exercises on multiplication and division of money

Exercise 2

Copy and complete this table.

Money	Multiply by	Divide by
1. 185 kobo	6	7
2. 13 naira 5 kobo	8	5
3. □16.24	4	8
4. □25.40	20	10
5. 9 Naira 90 kobo	7	9

Find the cost of these.

6. 5 notebooks at □45.00 each 7. 20 litters of petrol at □97 per liter

8. 38 meals at □300.00 per meal

9. 8 pens at □250 each and 4 bottles of ink at □120 per bottle

10. 6 pairs of shorts □1 850 per pair of shorts and 5 shirts at □1 950.00 per shirt

Find the cost of one item.

11. 10 torch batteries at □125.00 12. 9 metres of chino material costs □1 774.80

13. 7 head ties cost □2 200.00 14. 6 pieces of plantain cost 420 Naira 50 kobo

15. 4 erasers cost □42.80

Two pencils cost □16.36 and three baskets cost □335.00.

16. Find the cost of 1 pencil. 17. What is the cost of 3 pencils?

18. What is the cost of 5 pencils? 19. What is the cost of 5 baskets?

20. Find the cost of 7 baskets. 21. What is the cost of 1 b

Example

Four children were given n624.40 to share equally. how mcuch will each of them. Get?

Solution

Note that N624.00 = 62400k

= N624.00 x 4

= N156.10

EXERCISES

1. **Divide N1.68 by 4**
2. **Divide N2.25 by 9**
3. **Divide N44.80 by 8**
4. **Divide N11.76 by 7**
5. **610k by 5**
6. **Five boys are to share N615.55 equally. How much will each receive?**

WEEK TEN

PROFIT AND LOSS

BEHAVIOURAL Objectives: At the end of the lesson, pupils should be able to:

1. **Discover the meaning of cost price and selling price**
2. **Find the profit of any given item sold**
3. **Find the loss of any given item sold.**

CONTENT

Meaning of cost price and selling price

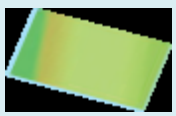
When you go to the market, you see some people buying and some are selling. A farmer produces rice, beans, vegetables etc to sell. The market woman buys from the farmer to resell. The price at which the market woman buys from the farmer is the cost price and the price at which the market woman sells in the market is the selling price.

Cost price = Price at which the article is bought (C.P)

Selling price = Price at which article is sold (S.P)

There is profit or gain when the selling price is more than the cost price.

There is loss when the cost price is more than the selling price.



Activity

Provide a few items that can be bought and sold in the market.
Group the pupils into those buying.
Group the pupils into those selling
Let them do buying and selling to discover the concept of gain and loss.
Copy and fill in the table to show the amount gain or loss

Item	Cost Price	Selling Price	Gain	Loss
1.				
2.				
3.				
4.				
5.				
6.				

Profit

Examples

1. Goods which cost # 560.50were sold for #784.30. Find the profit.
C.P = #560.00
S.P = #784.30
Profit = S.P – C.P
= #784.30
– 560.50
□223.80

2. Bola bought five tubers of yams for #2 670.50 and sold it for #3 000.80. What
is the profit?
C.P = #2 670.50
S.P = #3 000.80
Profit = S.P – C.P
= #3 000.00
– 2 670.00
□330.00

A man bought a leather bag for N350.00 and sold it for N360.00. Will he have more money or less money with him?

Solution
Selling price = N460.oo
Cost price = - N350.00
Profit(gain) = N110.00

Note: profit or gain = selling price – cost price

Exercise 1

Copy and complete the table.

	Cost Price	Selling Price	Profit
1.	□358.30	#420.80	
2.	□518.40	#602.50	
3.	□1750.48		□50.02
4.	□7623.14	□8100.60	
5.	□6350.39	□6948.40	
6.	□2150.70	□2370.60	
7.	□5340.35		□354.45
8.	□960.50	□990.30	
9.	□4330.75	□4542.13	
10.	□8956.45		□155.90

Exercise 2

Word problems on profit

1. A trader bought 30 eggs for □225. Two of the eggs were broken. She sold the rest of the eggs at □15.00 each. What was her profit?

2.A woman bought a bunch of 15 plantains for □840.00. She gave three to a friend and sold the rest at □80.00 each. How much did she gain?

3. A chicken was bought for □500.00. A profit of □105 was made when it was sold. What is the selling price?

4. A basketful of pawpaws was sold for □1 500.00 at a profit of □400.00. What was the cost price?

5. Margarine bought at □5 000.00 for 50 kg was sold at □120.00 per kg. What was the profit on the 50 kg?

6. I bought fifty kilograms of pineapples for □7 500. I sold them at □220.00 a kilogram. Find my profit.

7. Mr Ojo bought a bicycle for □9 080. He sold it at a profit of □1 080. How much was paid for the bicycle?

8. A woman bought two hundred eggs at two for □25. Five of them were broken. She sold the rest at three for □50. What was her gain?

9. A carpenter built a cupboard and sold it for □3 060. The materials cost him □1 286. He calculated the labor at □1 047.75. What was his profit?

10. A bookshop manager bought 200 books at □370 each. He sold half of them at □400.00 each, a quarter at □410.00 each and the rest at □430.00 each. What was his profit?

Loss
Examples
A loss is realized when the selling price is less than the cost

1. A trader bought goods for □2 500 and sold them for □2 000.
Find his loss
C.P = □2 500
S.P = □2 000
loss = C.P – S.P
= □2 500 – □2 000
= □2 500
– 2 000
□□□□500

2. If a lady bought a wrist watch for N800 and sold it for N600. Will he have money or less money with her?

Solution
The selling is price is less than. Therefore, she will have less money with her. That is, she sold at a loss.

Cost price of wrist watch = N800.00
Selling price = N600.00
Loss N200.00

3. A piece of cloth was bought for □10 200. It was sold out after a long time for □9 850. What was the loss?
C.P = □10 200
S.P = □ 9 850
loss = C.P – S.P
= □10 200
– 9 850
□□ 350

Exercise 1

Copy and complete the table.

	Cost Price	Selling Price	Loss
1.	□4050.60	□3580.30	
2.	□2014.50	□1976.10	
3.	□19403.40		□443.60
4.	□2780	□2250	
5.	□1780.40	□1630.50	
6.	□2356.80	□2068.30	
7.	□1740		□66.00
8.	□1367.04	□1256.80	
9.	□8740.70	□7350.90	
10.		□1740.61	□539.30
11.	□7350.40	□7000.30	

Exercise 2

Word problems

1. A carpenter sold a dining table at □3 060. Materials cost him □1 286 and workmanship was □1 047.75. What was his profit?

2. Mr. Chukwu bought a bicycle for □8 000 and sold it at a loss of □800 to Mr Onu. How much did Mr. Onu pay?

3. By selling a measure of garri for □125.00, a trader gained □35.00. What was the cost price of the garri per measure?

4. A keg of 15-litre kerosene was bought by a trader at the petrol station for □855.00. She sold it as □60.00 per litre. What was her profit or loss?

5. 15 litters of groundnut oil was bought for □1 500. The family used 2 litters for cooking. The rest was sold at □125 per litre. Calculate the profit or loss.

6. A lady sold some provisions for □274.05 at a profit of □20.30. What is the cost price?

7. A trader bought electric torches at □2 880 per dozen. He sold them at □220 each. How much profit or loss did he make?

8. If I sell for □60 some goods which cost □53 each, calculate my profit on 1 article and on 27 articles.

9. Mallam Jimoh bought 100 kg of sugar for □1 600. He sold it at □15 per kg. Find the profit or loss.

WEEK 11

OPEN SENTENCE

BEHAVIOURAL OBJECTIVES: At the end of the lesson, pupils should be able to:

- **identify the meaning of open sentences**
- **review work done on addition and subtraction involving open sentences**
- **review work done on multiplication and division involving open sentences**
- **use letters in replacing empty box to solve simple equations**
- **solve word problems involving simple equation**

Meaning of open sentences

Closed and open sentences

Study the following mathematical statements:

13 + 6 = 19 23 + 12 = 35
42 − 20 = 22 63 − 49 = 14
7 × 5 = 35 11 × 12 = 132
40 ÷ 5 = 8 120 ÷ 10 = 12

The mathematical statements above are called closed number sentences.
Closed number sentences can either be true or false.

Examples

15 + 7 = 22 (True mathematical statement) 18 + 3 = 19 (False mathematical statement)
3 × 6 = 12 (False mathematical statement) 42 ÷ 6 = 7 (True mathematical statement)

Study each of the following mathematical statements:

{}+ 9 = 13 11 +{} = 25 {}− 4 = 11 20 –{} = 7
{}× 5 = 15 4 ×{} = 24 {} ÷ 6 = 5 48 ÷{} = 12

In each of the statement above, there is a missing number called unknown represented by
. They are called open sentences.
An open sentence is a mathematical statement that involves equality signs and a missing
quantity represented by that the four arithmetic operations of addition, subtraction,
multiplication and division can be applied to solve.
Open sentences can either be true or false depending on the value .

Exercise

A. Write True (T) or False (F) for each of the following closed number sentences.

1. 15 + 16 = 31 2. 54 + 4 = 68 3. 18 + 10 = 38 4. 51 + 47 = 98
5. 29 + 60 = 82 6. 42 + 54 = 84 7. 55 − 23 = 33 8. 54 − 11 = 43
9. 64 − 43 = 21 10. 98 − 45 = 53

B. Write True (T) or False (F) for each of the following open sentences if is replaced by 4.

1. + 2 = 9 2. + 3 = 7 3. + 7 = 12 4. − 3 = 1

5. 12 − = 7 6. 8 − = 4 7. 4 × = 16 8. × 2 = 10

9. ÷ 2 = 2

Unit 2 Operation of addition and subtraction involving open sentences (Revision)

Examples

Here the number represented by in each of the following has been found.

1. + 14 = 36 2. 12 + = 8 3. − 4 = 30 4. 15 − = 9

Solution

1. + 14 = 36 can be interpreted as "what can be added to 14 to get 36?"

+ 14 = 20 + 16

+ 14 = 20 + 2 + 14

+ 14 = 22 + 14

= 22

Check:

22 + 14 = 36

Short method

If + 14 = 36

then = 36 − 14

= 22

$ = 22

Check:

22 + 14 = 36

2. $12 + \square = 30$ can be interpreted as "To what 12 must be added to get 30?"

$12 + \square = 20 + 10$
$12 + \square = 12 + 8 + 10$
$12 + \square = 12 + 18$
$\square = 18$

Check:
$12 + \boxed{18} = 30$

Short method
If $12 + \square = 30$
then $\square = 30 - 12$
$= 18$
$\therefore \square = 18$

Check:
$12 + \boxed{18} = 30$

Note: Since the problem is addition, the number is subtracted from each other to find $\square$.

3. $\square - 4 = 8$ can be interpreted as "what number minus 4 gives 8?"

$\square - 4 = 12 - 4$
$\square = 12$

Check:
$12 - 4 = 8$

Short method
If $\square - 4 = 8$
then $\square = 8 + 4$
$= 12$

Check:
$12 - 4 = 8$

Note: The numbers 8 and 4 are added to get the number represented by $\square$.

4. $15 - \square = 9$ can be interpreted as 'when a number is subtracted from 15, the answer is 9'

$15 - \square = 9$
$15 - \square = 15 - 6$ [$15 = 9 + 6$]
$\square = 6$

Check:
$15 - 6 = 9$

Short method
If $15 - \square = 9$
then $\square = 15 - 9$
$= 6$

Check:
$15 - 6 = 9$

Note: 9 is subtracted from 15 to get the number represented by $\square$.

Exercise

A. Find the number represented by $\square$ in each of the following.

1. $9 + \square = 16$	**2.** $\square + 25 = 34$	**3.** $\square + 3 = 14$
4. $8 = 5 + \square$	**5.** $\square + 17 = 25$	**6.** $7 + \square = 13$
7. $23 = 8 + \square$	**8.** $64 + \square = 11$	**9.** $53 = 19 + \square$
10. $\square + 16 = 63$	**11.** $56 = \square + 29$	**12.** $116 + \square = 122$

Teaching tips
Guide the pupils to use the counting on and counting backward in solving the addition and subtraction. It will make the work faster and easier.

B. Find the number represented by $\square$ in each of the following.

1. $\square - 16 = 13$
2. $\square - 7 = 23$
3. $19 - \square = 11$
4. $77 = \square - 39$
5. $17 = \square - 59$
6. $\square - 17 = 39$
7. $\square - 21 = 25$
8. $100 - \square = 79$
9. $451 - \square = 184$
10. $350 - \square = 132$

C. Find the number represented by $\square$ in each of the following.

1. $\square + 2\frac{1}{4} = 5$
2. $4.5 + \square = 11.4$
3. $\frac{3}{4} + \square = 2\frac{1}{2}$
4. $\square - 3 = 8\frac{1}{2}$
5. $1\frac{2}{7} + \square = 3\frac{13}{21}$
6. $\square + 1.3 = 5.5$
7. $34.7 = \square - 3.7$
8. $\square - 3.2 = 32.5$
9. $\square - \frac{2}{13} = \frac{9}{13}$
10. $\square - 7.2 = 11.35$
11. $\square + 3\frac{1}{5} = 5\frac{4}{5}$
12. $5\frac{1}{2} - \square = 4\frac{1}{10}$

Unit 3 Operation of multiplication and division involving open sentences (Revision)

Examples

Find the number represented by $\square$ in each of the following:

1. $7 \times \square = 56$
2. $\square \times 4 = 48$
3. $60 \div \square = 12$
4. $\square \div 8 = 9$

Solution

1. $7 \times \square = 56$ can be interpreted as "7 multiplied by a certain number equals 56"

$7 \times \square = 7 \times 8$

$\square = 8$

Check:

$7 \times 8 = 56$

Short method

If $7 \times \square = 56$

then $\square = \frac{56}{7}$

$= \frac{8 \times 7}{7} = 8$

Check:

$7 \times 8 = 56$

2. $\square \times 4 = 12 \times 4$

$\square = 12$

Check:

$12 \times 4 = 48$

Short method

If $\square \times 4 = 48$

then $\square = \frac{48}{4}$

$= \frac{12 \times 4}{4} = 12$

Check:

$12 \times 4 = 48$

Examples

1. $x + 5 = 12$ 2. $y - 12 = 3$ 3. $2m = 14$ 4. $\frac{a}{5} = 6$

Hint: Write a sentence to show the meaning of each equation.

Solution

1. $x + 5 = 12$ can be interpreted as "If a number is added to 5 we get 12"

$x + 5 = 7 + 5$

$x = 7$

Check:

$7 + 5 = 12$

Short method

If $x + 5 = 12$

then $x = 12 - 5$

$= 7$

Check:

$x + 5 = 7 + 5 = 12$

2. $y - 12 = 3$ can be interpreted as "If 12 is subtracted from a number, the answer is 3"

$y - 12 = 3$

$y - 12 = 15 - 12$

$y = 15$

Check:

$15 - 12 = 3$

Short method

If $y - 12 = 3$

then $y = 3 + 12$

$= 15$

Check:

$y - 12 = 15 - 12 = 3$

3. $2m = 14$ ($2m$ means $2 \times m$) can be interpreted as 'what number multiplied by 2 gives 14?'

$2 \times m = 2 \times 7$

$m = 7$

Check:

$2m = 2 \times m = 2 \times 7 = 14$

Short method

If $2m = 14$

then $m = \frac{14}{2}$

$= 7$

Check: $2m = 2 \times m = 2 \times 7 = 14$

4. $\frac{a}{5} = 6$ can be interpreted as 'when a number is divided by 5 we get 6'

$\frac{a}{5} = 6$ $5 \times 6 = 30$

$\frac{a}{5} = \frac{30}{5}$ $30 \div 5 = 6, 30 \div 6 = 5$ $a = 30$

Check: $\frac{a}{5} = \frac{30}{5} = 6$ $5 \times 6 = 30$

Short method

If $\frac{a}{5} = 6$

then $a = 5 \times 6 = 30$

Check: $\frac{a}{5} = \frac{30}{5} = 6$

Exercise

Solve the following equations.

1. $m + 5 = 8$	2. $p + 6 = 13$	3. $d + 8 = 17$	4. $c + 2 = 12$
5. $e + 8 = 18$	6. $5 + x = 9$	7. $1 + q = 25$	8. $12 + t = 30$
9. $m - 6 = 13$	10. $p - 5 = 15$	11. $q - 7 = 21$	12. $k - 12 = 35$
13. $w - 25 = 40$	14. $y - 28 = 51$	15. $x - 9 = 13$	16. $a - 4 = 18$
17. $2a = 12$	18. $4m = 60$	19. $4y = 16$	20. $5n = 30$
21. $\frac{x}{4} = 20$	22. $\frac{a}{3} = 12$	23. $\frac{m}{4} = 11$	24. $\frac{y}{5} = 14$

Unit 5 Word problems

Examples

1. Think of a number, add 7 to it, and the result is 21. Study how the number is found.

Solution

The number I think of + 7 = 21

Let m stand for the unknown number then,

$m + 7 = 21$

$m + 7 = 10 + 10 + 1$

$m + 7 = 11 + 3 + 7$

$m + 7 = 14 + 7$ $m = 14$

Short method

$m + 7 = 21$

$m = 21 - 7$

$= 14$

Check:

$m + 7 = 14 + 7$

$= 21$

2. If 43 is subtracted from a number, we get 38. Study how the number is found.

Solution

Unknown number − 43 = 38

Let x stand for the unknown number, then

$x - 43 = 38$

$x - 43 = 81 - 43$

$x = 81$

Short method

$x - 43 = 38$

$x = 38 + 43 = 81$

Check:

$x - 43 =$ 81

$-$ 43

38

3. I think of a number, multiply it by 3 and the result is 36. Study how the number is found.

Solution

Unknown number × 3 = 36

Let y be the unknown number, then

$y \times 3 = 36$

$y \times 3 = 12 \times 3$

$y = 12$

Check:

$y \times 3 = 12 \times 3 = 36$

Teaching tips

Exercise

1. When 79 is added to a number, we get 124. Find the number.

2. When 71 is added to a number, we get 214. Find the number.

3. When I subtract 19 12 from a certain number, the result is 9 12 . What is the number?

4. When 31 kg of meat is removed from the part of the cow, there is 25 kg left. What is the weight of the cow?

5. A poultry farmer took four crates of eggs to the market. He had 45 eggs left after market hour. How many eggs were sold?

6. When 564 is added to a certain number, the result is 801. Find the number.
7. 6 times an unknown number gives 72. Find the number.
8. When a number is multiplied by 12, we get 108. Find the number.
9. I think of a number, divide it by 8 and get 32. Find the number.
10. A certain number of oranges was shared equally among 6 children. Each child received 14 oranges. How many oranges were shared?