

1. Basics of Arithmetic Operations



▶ 1. Introduction

- Brief explanation of the four basic arithmetic operations:

- ❑ Addition: Combining numbers to get a total.
- ❑ Subtraction: Taking away one quantity from another.
- ❑ Multiplication: Repeated addition of the same number.
- ❑ Division: Splitting a number into equal parts.

► Concepts: Recap of Basic Arithmetic Operations :

- Goal: Ensure students understand the operations and their hierarchy in problem-solving.

1. Addition:

- Example: $123+45+678=?$
- Tip: Line up the numbers and add column by column.

2. Subtraction:

- Example: $905-378=?$
- Tip: Borrow from the left when necessary.



1. Multiplication:

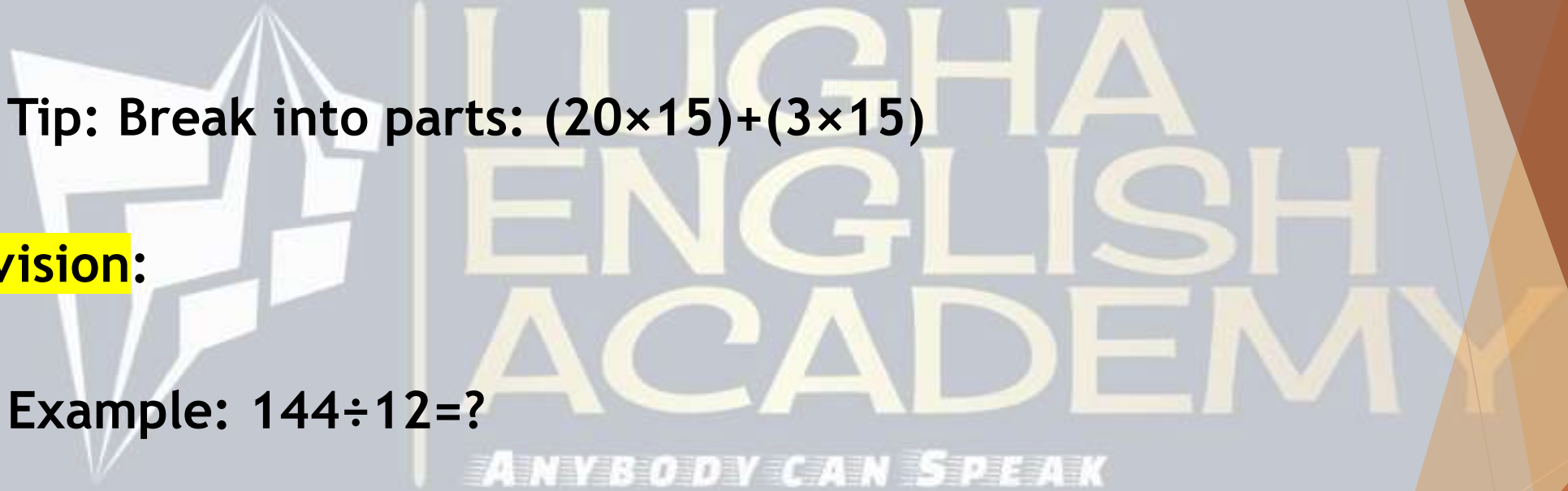
□ Example: $23 \times 15 = ?$

□ Tip: Break into parts: $(20 \times 15) + (3 \times 15)$

2. Division:

□ Example: $144 \div 12 = ?$

□ Tip: Use multiplication facts to find the answer.



► Order of Operations (PEMDAS):

- Explain the order: Parentheses → Exponents → Multiplication/Division → Addition/Subtraction.
- Example: $5+3\times(8-2)=?$
 - Step 1: $(8-2)=6$
 - Step 2: $3\times6=18$
 - Step 3: $5+18=23$

1. **Fill in the Blanks:**

Complete the equation:

$$(5+3) \times __ \div 2 = 16$$

2. **Find the Missing Number:**

$$4 \times __ - 5 = 154$$

3. **True or False:**

1. $6 + (3 \times 4) = 30$

2. $(10 \div 2) + 8 = 13$

4. **Word Problem:**

A store sells apples for Rs.2 each and oranges for Rs.3 each. If you buy 4 apples and 3 oranges, how much do you pay?

► **Exercises for Practice:**

1. $8 + 6 \times 3 - 5$

2. $(12 \div 3) \times (4 + 5)$

3. $18 - (2 \times 5) + 6$

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► Worksheet 1: Quick Mental Math

► Instructions: Solve the following problems mentally. Write only the answers.

1. $25+47=$

2. $100-65=$

3. $8\times6=$

4. $81\div9=$

5. $15+(4\times3)=$

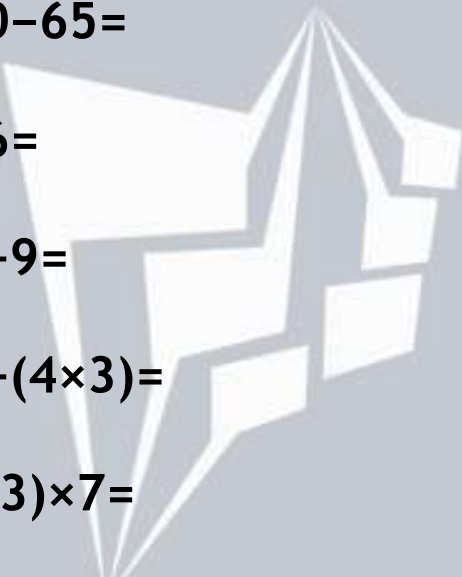
6. $(9\div3)\times7=$

7. $50-(5\times6)=$

8. $7\times(10-3)=$

9. $64\div8+9=$

10. $(12+3)\times(6-2)=$



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► Instructions: Fill in the blanks to complete the equations.

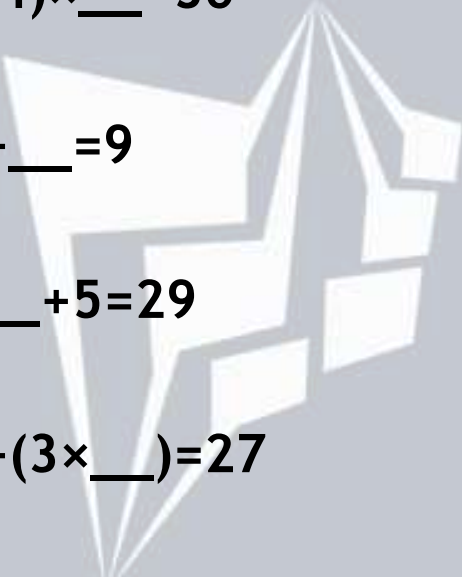
□ $(6+4) \times \underline{\hspace{1cm}} = 50$

□ $36 \div \underline{\hspace{1cm}} = 9$

□ $8 \times \underline{\hspace{1cm}} + 5 = 29$

□ $15 + (3 \times \underline{\hspace{1cm}}) = 27$

□ $100 - (10 \times \underline{\hspace{1cm}}) = 20$



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Order of Operations (PEMDAS)

- ▶ Instructions: Solve these problems step by step using the correct order of operations.

- ❑ $6+3\times 2-4$
- ❑ $(8+2)\times(5-3)$
- ❑ $12\div 4+6\times 2$
- ❑ $(10-3)\times(4+6)\div 5$
- ❑ $20\div(2+3)\times 4$

- ▶ Worksheet 4: Puzzle Problems

- ▶ Instructions: Solve the puzzles and find the missing numbers.

- ❑ $3\times \underline{\hspace{1cm}}+7=25$
- ❑ $(6\times 4)-\underline{\hspace{1cm}}=18$
- ❑ $48\div \underline{\hspace{1cm}}+10=16$
- ❑ $\underline{\hspace{1cm}}+(5\times 2)=20$
- ❑ $8\times(3-\underline{\hspace{1cm}})=16$

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▶ Word Problems

▶ Instructions: Solve the word problems using arithmetic operations.

1. Fida has Rs.50. She spends Rs.20 on a book and Rs.15 on a meal. How much money does she have left?
2. A farmer has 8 rows of apple trees, with 12 trees in each row. How many trees are there in total?
3. A car travels 240 km in 4 hours. How many kilometers does it travel per hour?
4. If a box contains 24 chocolates and is shared equally among 6 friends, how many chocolates does each friend get?
5. A movie ticket costs Rs.7, and a snack combo costs Rs.5. If you buy 3 tickets and 2 snack combos, how much do you spend in total?

► **Instructions: Try solving these tricky problems!**

❑ $(5+10\div2)\times3=$

❑ $(20\div5)+(6\times2)-8=$

❑ A shop sells 3 candies for Rs.2. How much would 18 candies cost?

❑ Find the missing number: $_\div3+7=16$

❑ $(5\times6)-[10\div(2+3)]=$

❑ A shop sells candies for Rs.2 each and chocolates for Rs.5 each. If you buy 3 candies and 2 chocolates, how much change will you get from Rs.20?

❑ Find the missing number:
 $_\times4-10=14$

❑ A marathon is 42 km long. A runner covers 7 km per hour. How long does it take them to finish the marathon?

❑ $100\div[(5\times4)+10]=$

2: Addition and Subtraction Mastery

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► Concepts

► 1. Adding and Subtracting Integers

□ Rules for Addition:

- Adding two positive numbers gives a positive sum.
- Adding two negative numbers gives a negative sum.
- When adding a positive and a negative number, subtract the smaller absolute value from the larger and keep the sign of the larger absolute value.
- Example:
 - $7 + (-3) = 4$
 - $-5 + (-8) = -13$

□ Rules for Subtraction:

- To subtract, add the opposite.
- Example:
 - $8 - 5 = 3$
 - $-7 - (-4) = -7 + 4 = -3$

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► 2. Adding and Subtracting Decimals

- ❑ Align the decimal points.
- ❑ Add or subtract as if they are whole numbers.
- ❑ Place the decimal in the result directly below the aligned decimals.

- Example:

- $12.5 + 3.67 = 16.17$
- $15.8 - 7.45 = 8.35$

▶ 3. Carrying and Borrowing Techniques

□ Carrying in Addition:

- When a column sum exceeds 9, carry the extra digit to the next column.
- Example:
 - $469 + 382469 + 382469 + 382$: Add $9 + 2 = 11$; write 1 and carry 1 to the tens place.

□ Borrowing in Subtraction:

- If a digit in the minuend is smaller than the digit in the subtrahend, borrow 1 from the next left column.
- Example:
 - $503 - 248$: Borrow 1 from the hundreds place to make 13 in the tens place.

► **Worksheet 1: Adding Integers**

► Instructions: Solve these problems.

□ $7+(-3)=$

□ $-5+(-9)=$

□ $-12+15=$

□ $25+(-30)=$

□ $-8+(-4)+6=$

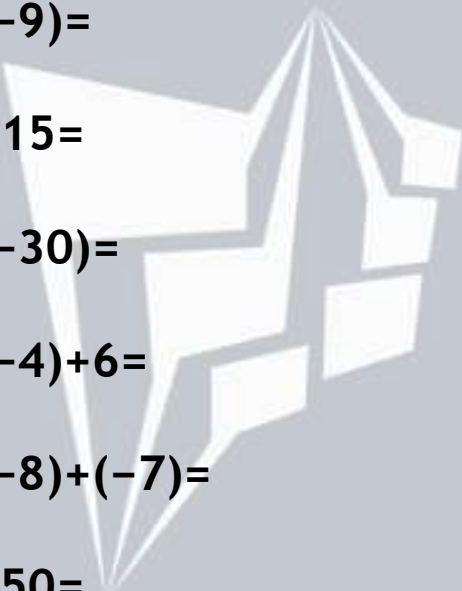
□ $14+(-8)+(-7)=$

□ $-20+50=$

□ $30+(-18)+(-12)=$

□ $-6+(-8)+10=-6$

□ $12+(-15)+5=$



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▶ Worksheet 2: Subtracting Integers

▶ Instructions: Solve these problems.

☐ $10 - 7 =$

☐ $-15 - (-8) =$

☐ $-12 - 5 =$

☐ $20 - (-10) =$

☐ $-6 - (-4) =$

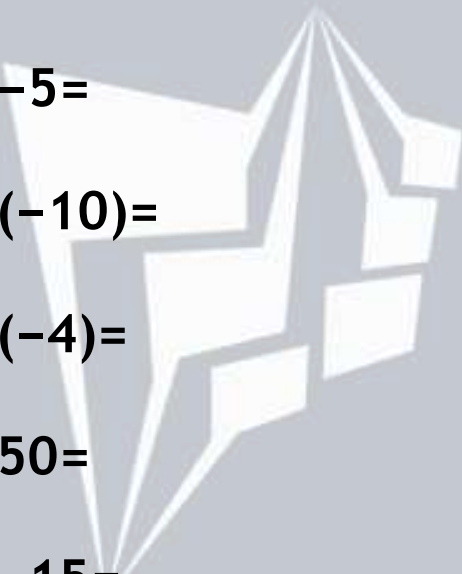
☐ $30 - 50 =$

☐ $-20 - 15 =$

☐ $8 - (-12) - 5 =$

☐ $-5 - 10 - (-2) =$

☐ $15 - (-7) - 20 =$



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► Worksheet 3: Adding Decimals

► Instructions: Solve these problems.

❑ $12.5 + 7.8 =$

❑ $45.62 + 13.79 =$

❑ $8.04 + 2.97 =$

❑ $0.5 + 0.75 + 0.125 =$

❑ $123.45 + 78.9 =$

❑ $16.1 + 2.34 + 5.06 =$

❑ $0.09 + 1.2 =$

❑ $11.5 + 22.35 + 10.45 =$

❑ $3.141 + 2.718 =$

❑ $89.56 + 45.23 =$

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► **Worksheet 4: Subtracting Decimals**

► Instructions: Solve these problems.

1. $15.6 - 7.4 =$

2. $34.78 - 12.45 =$

3. $10.0 - 3.87 =$

4. $25.5 - 7.75 =$

5. $123.4 - 56.78 =$

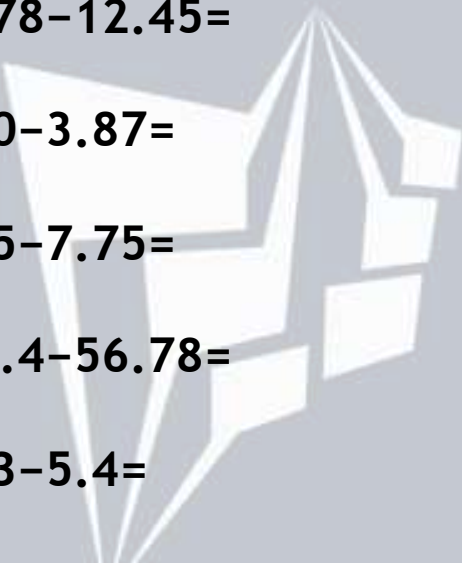
6. $9.03 - 5.4 =$

7. $3.14 - 1.59 =$

8. $78.2 - 45.9 =$

9. $100.0 - 12.34 =$

10. $88.88 - 44.44 =$



► **Worksheet 5: Mixed Problems**

► Instructions: Solve these mixed addition and subtraction problems.

❑ $125+37-45=$

❑ $-12+25-(-10)=$

❑ $45.6-12.3+7.8=$

❑ $-10+(-15)-(-5)=$

❑ $14.5+3.67-7.2=$

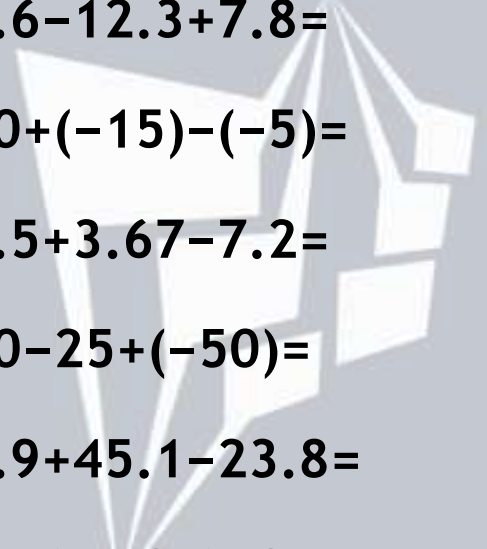
❑ $100-25+(-50)=$

❑ $78.9+45.1-23.8=$

❑ $0.5+(-1.25)+0.75=$

❑ $-20-15+50=$

❑ $3.14+(-2.72)-0.5=$



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3: Multiplication Deep Dive

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► Concepts

► 1. Multiplication of Whole Numbers

- Multiplication is repeated addition.

- Example: $4 \times 3 = 4 + 4 + 4 = 12$

- Tips:

- Use place value for larger numbers (e.g.,
 $25 \times 3 = (20 \times 3) + (5 \times 3) = 75$)

- Apply distributive property: $42 \times 8 = (40 \times 8) + (2 \times 8) = 336$

▶ 2. Multiplication of Decimals

- Align the numbers (ignoring decimals) and multiply as whole numbers.
- Place the decimal point in the product:
 - Total decimal places in factors = Decimal places in product.
 - Example: $2.5 \times 0.4 = 1.00$

▶ 3. Multiplication of Fractions

- Multiply numerators and denominators directly:
 $a/b \times c/d = a \times c / b \times d$
- Simplify fractions when possible.
 - Example: $3/4 \times 2/5 = 6/20 = 3/10$

4. Estimation and Mental Math

- ❑ Estimation: Round numbers to the nearest whole or simpler value before multiplying.

- ▶ Example: $29 \times 31 \approx 30 \times 30 = 900$

- ❑ Mental Math Tips:

- Break into smaller parts:

- $$48 \times 6 = (50 \times 6) - (2 \times 6) = 300 - 12 = 288$$

- Double and halve: $25 \times 16 = (25 \times 8) \times 2 = 200$

▶ Examples:

▶ Whole Numbers

1. $25 \times 12 = ?$

2. $347 \times 6 =$

▶ Solution: Use long multiplication or distributive property:

▶ Decimals

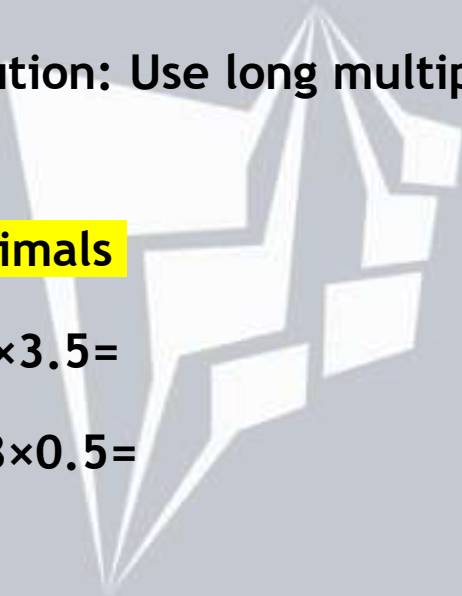
1. $4.2 \times 3.5 =$

2. $.0.8 \times 0.5 =$

▶ Fractions

1. $\frac{2}{3} \times \frac{4}{5} =$

2. $3 \times \frac{5}{8} =$



Real-World Example

1. A pack of 6 pens costs Rs.2.75. What is the cost of 4 packs?

1. Solution: $2.75 \times 4 = 11.00$

2. You're making cookies, and the recipe calls for $\frac{3}{4}$ cup of sugar per batch. How much sugar is needed for 5 batches?

1. Solution: $\frac{3}{4} \times 5 = \frac{15}{4} = 3 \frac{3}{4}$ cups

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▶ **Worksheet 1: Multiplication of Whole Numbers**

▶ Solve the following:

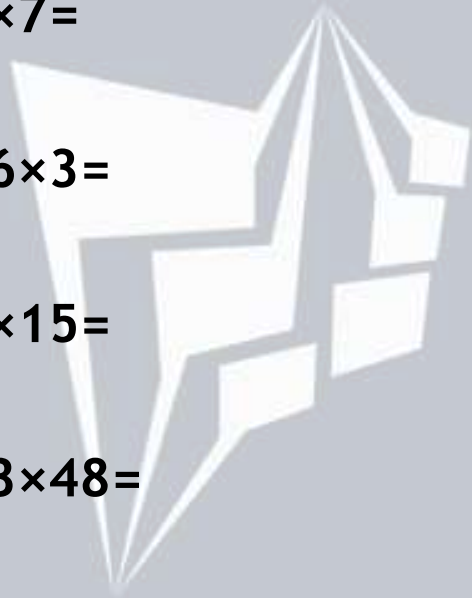
1. $32 \times 7 =$

2. $456 \times 3 =$

3. $24 \times 15 =$

4. $123 \times 48 =$

5. $987 \times 6 =$



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Worksheet 2: Multiplication of Decimals

Solve the following:

☐ $4.5 \times 3.2 =$

☐ $1.25 \times 0.8 =$

☐ $12.3 \times 4.56 =$

☐ $0.75 \times 1.5 =$

☐ $6.28 \times 2.14 =$

Worksheet 3: Multiplication of Fractions

Solve the following:

☐ $\frac{2}{5} \times \frac{4}{7} =$

☐ $\frac{3}{8} \times \frac{5}{6} =$

☐ $2 \times \frac{7}{9} =$

☐ $\frac{11}{12} \times \frac{4}{5} =$

☐ $\frac{5}{6} \times 3 =$

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► **Worksheet 4: Mixed Problems**

► Solve the following:

1. $4.2 \times 7 + 12 \times 5 =$
2. $\frac{3}{5} \times 4 + 2 \times \frac{5}{6} =$
3. Estimate 198×52 by rounding.
4. A pack of 12 pencils costs Rs.1.75. What is the cost of 8 packs?
5. $456 \times 0.75 =$

► **Worksheet 5: Timed Multiplication Drill (2 Minutes)**

1. $7 \times 8 =$
2. $9 \times 12 =$
3. $6 \times 15 =$
4. $14 \times 11 =$
5. $25 \times 16 =$
6. $3 \times 18 =$
7. $45 \times 2 =$
8. $81 \times 3 =$

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► **Worksheet 6: Real-Life Problems (Multiplication Application)**

1. A bag of rice weighs 2.75 kg. If you buy 6 bags, what is the total weight?
2. A car travels 75 miles per hour. How far does it travel in 8 hours?
3. A box contains 24 bottles of water. If each bottle costs Rs.1.15, what is the cost of the entire box?
4. A baker makes 12 muffins per tray. If he bakes 25 trays, how many muffins does he make?
5. A recipe calls for $\frac{3}{4}$ cup of flour per cake. How much flour is needed for 8 cakes?
6. A train travels 62.5 km per hour. How far does it travel in 4.8 hours?
7. A classroom has 30 desks, and each desk has 3 drawers. How many drawers are there in total?
8. A store sells packs of 5 pens for Rs.3.50 each. How much does 12 packs cost?
9. A factory produces 4,500 units per day. How many units are produced in 15 days?
10. A worker earns Rs.18.75 per hour. How much does he earn for 40 hours of work?

➤ **Worksheet 7: Mixed Multiplication Problems:**

- ❑ $72 \times 14 + 32 \times 5 =$
- ❑ $5/6 \times 3 + 12 \times 4.5 =$
- ❑ $25.6 \times 3.45 - 12.5 \times 4 =$
- ❑ Estimate 487×29 by rounding.
- ❑ A store sells notebooks for Rs.3.75 each. How much do 18 notebooks cost?
- ❑ A batch of cookies requires $2/3$ cup of sugar. How much sugar is needed for 15 batches?
- ❑ $45.6 \times 0.7 \times 12 =$
- ❑ A runner jogs 4.5 miles per hour. How far does she run in 6.3 hours?
- ❑ $9/10 \times 2.5 \times 4 =$
- ❑ $1023 \times 567 - 123 \times 45 =$

4: Division Challenges



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► Concepts

► 1. Long Division

- Divide step by step, starting from the leftmost digit.

- Example: $524 \div 4$

- Divide: $5 \div 4 = 1 \rightarrow$ Write 1 above the 5.
- Multiply: $1 \times 4 = 4$
- Subtract: $5 - 4 = 1$ Bring down the 2 $\rightarrow 12$
- Repeat: $12 \div 4 = 3$
- Final result: 131.

► 2. Short Division

- Suitable for smaller numbers or mental math.
- Simplify the steps, directly writing answers above the dividend.
 - Example: $96 \div 6 = 16$



▶ 3. Dividing Decimals

- Move the decimal point in the divisor to the right to make it a whole number, and do the same for the dividend.
- Example: $3.6 \div 0.4 = 36 \div 4 = 9$

▶ 4. Dividing Fractions

- Invert the divisor and multiply:
$$a/b \div c/d = a/b \times d/c$$
- Simplify fractions if possible.
 - Example: $\frac{3}{4} \div \frac{2}{5} = \frac{3}{4} \times \frac{5}{2} = \frac{15}{8}$

▶ Examples

▶ Whole Numbers

1. $936 \div 12 = ?$

□ Solution: Long division → 78

1. $7,248 \div 36 =$

□ Solution: Long division → 201

▶ Decimals

1. $45.6 \div 1.2 =$

□ Solution: $456 \div 12 = 38$

2. $0.72 \div 0.08 =$

□ Solution: $72 \div 8 = 9$

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► Fractions

1. $5/6 \div 2/3 =$

□ Solution: $5/6 \times 3/2 = 15/12 = 5/4 = 1 \frac{1}{4}$

2. $4 \div 7/8 =$

□ Solution: $4 \times 8/7 = 32/7 = 4 \frac{4}{7}$

► Real-Life Example

1. You have 240 candies and want to divide them equally among 8 children. How many candies does each child get?

□ Solution: $240 \div 8 = 30$

2. A cake is cut into $3/4$ inch slices. If the cake is 6 inches long, how many slices can you cut?

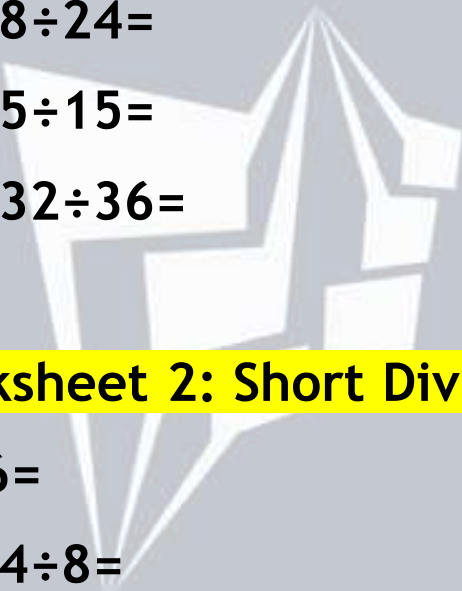
□ Solution: $6 \div 3/4 = 6 \times 4/3 = 24/3 = 8$

► **Worksheet 1: Long Division**

- ❑ $728 \div 8 =$
- ❑ $1,296 \div 12 =$
- ❑ $3,528 \div 24 =$
- ❑ $8,145 \div 15 =$
- ❑ $12,432 \div 36 =$

► **Worksheet 2: Short Division**

- ❑ $96 \div 6 =$
- ❑ $1,024 \div 8 =$
- ❑ $672 \div 21 =$
- ❑ $81 \div 9 =$
- ❑ $144 \div 12 =$



▶ **Worksheet 3: Dividing Decimals**

❑ $7.5 \div 2.5 =$

❑ $45.6 \div 0.6 =$

❑ $3.92 \div 0.08 =$

❑ $12.48 \div 1.2 =$

❑ $0.81 \div 0.09 =$

▶ **Worksheet 4: Dividing Fractions**

❑ $\frac{4}{5} \div \frac{2}{3} =$

❑ $\frac{7}{8} \div \frac{5}{6} =$

❑ $3 \div \frac{9}{10} =$

❑ $\frac{11}{12} \div \frac{4}{5} =$

❑ $\frac{5}{6} \div 2 =$

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► Worksheet 5: Timed Division Drill (5 Minutes)

☐ $56 \div 7 =$

☐ $81 \div 9 =$

☐ $144 \div 12 =$

☐ $225 \div 15 =$

☐ $1,296 \div 24 =$

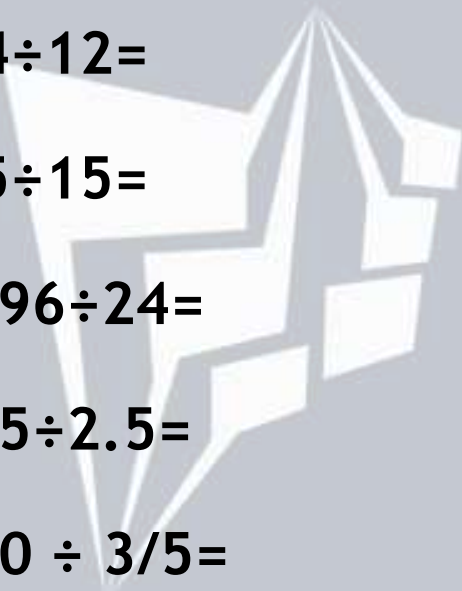
☐ $72.5 \div 2.5 =$

☐ $9/10 \div 3/5 =$

☐ $8/9 \div 4/5 =$

☐ $96 \div 16 =$

☐ $10.08 \div 1.2 =$



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► Worksheet 6: Real-Life Applications

- ❑ A bus travels 360 km in 6 hours. How many kilometers does it travel per hour?
- ❑ You bought 12.5 kg of apples for Rs.25. What is the cost per kilogram?
- ❑ A group of 60 students is divided into teams of 5. How many teams are formed?
- ❑ A container holds 7.2 liters of water. If you pour it into 9 equal glasses, how much water is in each glass?
- ❑ A rope of 48 meters is cut into 16 equal pieces. How long is each piece?
- ❑ A farmer harvests 1,200 kg of wheat and stores it in 30 bags. How much wheat does each bag hold?
- ❑ A box of chocolates contains 24 pieces. If you eat $\frac{1}{6}$ of the chocolates, how many are left?
- ❑ A 10-meter ribbon is divided into pieces that are 0.4 meter each. How many pieces are there?
- ❑ A car consumes 50 liters of fuel to cover 600 km. How far can it travel on 1 liter?
- ❑ A recipe needs $\frac{3}{4}$ cup of sugar for each batch. How many batches can you make with 6 cups of sugar?

► Worksheet 7: Mixed Division Problems

- ❑ $8,436 \div 27 =$
- ❑ $15.75 \div 0.25 =$
- ❑ $\frac{3}{4} \div 2 + 5 \div \frac{7}{10} =$
- ❑ $125 \div 25 \times 8 \div 2 =$
- ❑ Estimate $9,873 \div 31$ by rounding to the nearest 10.
- ❑ A store has 650 liters of milk. If each bottle holds 1.25 liters, how many bottles can be filled?
- ❑ A bag of flour weighs 5 kg. How many 0.25kg packets can be made from it?
- ❑ A baker has 48 cupcakes and wants to pack them in boxes of 6. How many boxes are needed?
- ❑ If $\frac{7}{8}$ of a pizza is shared equally among 4 friends, how much does each friend get?

5: Order of Operations and Problem-Solving

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► Concepts

► Order of Operations (PEMDAS/BODMAS):

1. Parentheses / Brackets
2. Exponents / Orders (e.g., powers and roots)
3. MD (Multiplication and Division - left to right)
4. AS (Addition and Subtraction - left to right)

► Examples:

1. $8+2\times 5$

□ Solution: $8+(2\times 5)=8+10=18$.

2. $(6+3)\div 3+4$

□ Solution: $(6+3)=9, 9\div 3=3, 3+4=7$

3. $12\div (2\times (3+1))$

□ Solution: $(3+1)=4, (2\times 4)=8, 12\div 8=1.5$

4. $5\times 4-(6\div 2)25\times 4-(6\div 2)^{25\times}$

□ Solution: $(6\div 2)=3, 3^2=9, 5\times 4=20, 20-9=11$

5. $(15-5)\times (6\div 3)(15-5)\times (6\div 3)(15-5)\times (6\div 3)$

□ Solution: $(15-5)=10, (6\div 3)=2, 10\times 2=20$

► Exercises

► Basic Order of Operations

1. $4+6\times 2=$

2. $(8+2)\div 5\times 3=(8+2)\div 5\times 3=(8+2)\div 5\times 3=$

3. $9-(3+2)^2=9-(3+2)^2=9-(3+2)^2=$

4. $15\div(3+2)\times 4=15\div(3+2)\times 4=15\div(3+2)\times 4=$

5. $(12\div 4)\times(6-2)=(12\div 4)\times(6-2)=(12\div 4)\times(6-2)=$

► Intermediate Problems

1. $(7+3)\times(9\div 3)-4=(7+3)\times(9\div 3)-4=(7+3)\times(9\div 3)-4=$

2. $18\div(6-3)\times 4+2=18\div(6-3)\times 4+2=18\div(6-3)\times 4+2=$

3. $(5+10\div 2)\times 3-7=(5+10\div 2)\times 3-7=(5+10\div 2)\times 3-7=$

4. $25\div(5+5)\times(8-4)=25\div(5+5)\times(8-4)=25\div(5+5)\times(8-4)=$

► Solve the following problems step-by-step:

❑ $18 \div 3 + 7 \times 2$

❑ $(8 + 6 \div 2) \times 4$

❑ $(12 - 3) \times (5 + 2)$

❑ $36 \div (9 - 3) + 4 \times 2$

❑ $25 \div 5 + 3 \times (2 + 6)$

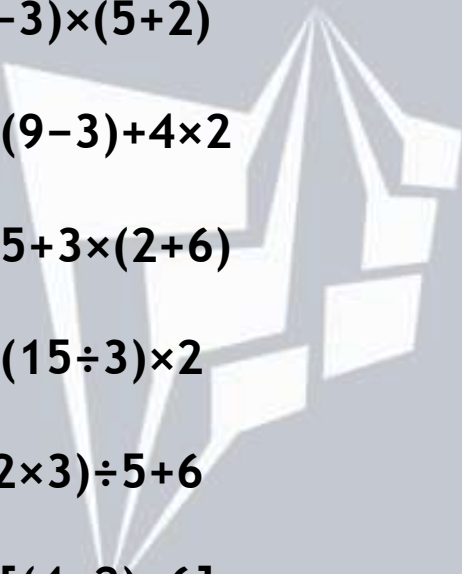
❑ $40 - (15 \div 3) \times 2$

❑ $(7 + 2 \times 3) \div 5 + 6$

❑ $50 \div [(4 \times 2) + 6]$

❑ $15 + (5 \times 3) \div 3 - 4$

❑ $(9 + 4 \times 2) \div 2 \times 3$



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► True or False

☐ $15+3\times4=27$

☐ $(12-6)\div2+8=11$

☐ $24\div8\times3+4=13$

☐ $(20\div4)\times(7-3)=20$

☐ $50\div(5+5)\times(4+1)=25$

☐ $(3+4)\times5=35$

☐ $(12\div3)\times(6-2)=16$

☐ $8\div2\times(2+2)=16$

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► Application Problems

1. A shopkeeper sells 8 pens at Rs.2 each and 4 notebooks at Rs.5 each. How much does the shopkeeper earn in total?
□ Solve: $(8 \times 2) + (4 \times 5) = ?$
2. You have Rs.100. You buy a T-shirt for Rs.25 and a pair of jeans for Rs.45. How much money is left?
□ Solve: $100 - (25 + 45) = ?$
3. A car travels 240 km in 4 hours. How far does it travel in 3 hours at the same speed?
□ Solve: $(240 \div 4) \times 3 = ?$
4. A rectangle has a length of $15 \div 3$ cm and a width of 4×2 cm. What is its area?
□ Solve: $(15 \div 3) \times (4 \times 2) = ?$
5. A baker makes $2\frac{2}{3}$ kg of dough per hour. How much dough does the baker make in 6 hours?
□ Solve: $2\frac{2}{3} \times 6 = ?$

6: Real-Life Applications



► Concepts

❑ Using Arithmetic in Everyday Scenarios

1. Budgeting: Calculating costs, expenses, and savings.
2. Shopping: Determining total costs, discounts, or change.
3. Cooking: Scaling recipes up or down.

❑ Converting Units

1. Length: Inches to centimeters, feet to meters, etc.
2. Weight: Kilograms to pounds, grams to ounces, etc.
3. Volume: Liters to milliliters, gallons to liters, etc.
4. Use multiplication or division based on the conversion factor.

Length Conversions

From	To	Conversion Factor
Inches	Centimeters	1 inch = 2.54 cm
Feet	Meters	1 foot = 0.3048 meters
Miles	Kilometers	1 mile = 1.60934 km
Millimeters	Inches	1 mm = 0.0393701 inches
Meters	Feet	1 meter = 3.28084 feet
Kilometers	Miles	1 km = 0.621371 miles

Weight Conversions

From	To	Conversion Factor
Kilograms	Pounds	1 kg = 2.20462 lbs
Grams	Ounces	1 gram = 0.035274 oz
Pounds	Kilograms	1 lb = 0.453592 kg
Ounces	Grams	1 ounce = 28.3495 grams
Tons	Kilograms	1 ton = 907.184 kg
Kilograms	Milligrams	1 kg = 1,000,000 mg

Volume Conversions

From	To	Conversion Factor
Liters	Milliliters	1 liter = 1000 mL
Gallons	Liters	1 gallon = 3.78541 liters
Milliliters	Liters	1 mL = 0.001 liters

▶ 1. Budgeting Examples

▶ Example 1: Calculating Expenses and Savings

▶ You have Rs.500.

- Rent: Rs.300
- Groceries: Rs.120
- Utilities: Rs.50

▶ Question: How much money is left for savings?

Solution:

$$500 - (300 + 120 + 50) = 500 - 470 = 30$$

Answer: Rs.30 left for savings.

Example 2: Monthly Budget

You earn Rs.1,000 per month.

•You spend 25% on rent, 15% on food, and 10% on transportation.

□ Question: How much do you save each month?

Solution:

- Rent: $1000 \times 25/100 = 250$
- Food: $1000 \times 15/100 = 150$
- Transportation: $1000 \times 10/100 = 100$
- Total Expenses: $250 + 150 + 100 = 500$
- Savings: $1000 - 500 = 500$

Answer: Rs.500 saved.

▶ 2. Shopping Examples

▶ Example 1: Total Costs

▶ You're buying items at a store:

- A book for Rs.12.50
- A notebook for Rs.5.75
- A pack of pens for Rs7.25

▶ Question: What is the total cost?

Solution:

$$12.50 + 5.75 + 7.25 = 25.50$$

Answer: The total cost is Rs.25.50.

▶ Example 2: Discounts

▶ A Rs.60 jacket is on sale with a 20% discount.

Question :What is the discounted price?

Solution:

- Calculate the discount:
 - $60 \times 20/100 = 12$
 - Subtract the discount: $60 - 12 = 48$

Answer: The discounted price is Rs.48.

▶ **Converting Units: Explanation and Examples**

- ▶ Unit conversion is the process of changing a measurement from one unit to another using multiplication or division based on a conversion factor. Below are explanations and examples for length, weight, and volume conversions.

▶ **1. Length Conversion**

▶ **Common Conversion Factors:**

- 1 inch=2.54 cm
- 1 foot=0.3048 m
- 1 mile=1.609 km

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▶ 2. Weight Conversion

▶ Common Conversion Factors:

- 1 kilogram (kg)=2.20462 pounds (lb)
- 1 gram (g)=0.035274 ounces (oz)

▶ 3. Volume Conversion

▶ Common Conversion Factors:

- 1 liter (L)=1000 milliliters (mL)
- 1 gallon (US)=3.785 liters (L)

▶ **Example 1: Miles to Kilometers**

▶ A runner covers 5 miles.

▶ Question: How many kilometers did the runner cover?

Solution:

• Multiply by the conversion factor:

$$5 \times 1.609 = 8.045 \text{ km}$$

Answer: The runner covered 8.045 kilometers.

▶ **Example 2: Grams to Ounces**

▶ A chocolate bar weighs 250 grams.

▶ Question: What is the weight in ounces?

Solution:

• Multiply by the conversion factor:

$$250 \times 0.035274 = 8.8185 \text{ oz}$$

Answer: The chocolate bar weighs 8.8185 ounces.

▶ **Example 3: Milliliters to Liters**

▶ A soda bottle contains 2000 milliliters of soda.

▶ Question: How many liters of soda is this?

Solution:

• Divide by the conversion factor:

$$2000 \div 1000 = 2$$

Answer: The bottle contains 2 liters of soda.

▶ **Example 4: Liters to Milliliters**

▶ A bottle contains 1.5 liters of water.

▶ Question: What is the volume in milliliters?

Solution:

• Multiply by the conversion factor:

$$1.5 \times 1000 = 1500 \text{ mL}$$

Answer: The bottle contains 1500 milliliters of water.

Budgeting Exercises

1. Simple Spending

- ☐ You have Rs.50.
- ☐ You spend Rs.20 on a toy.
- ☐ You spend Rs.15 on snacks.

Question: How much money do you have left?

2. You have Rs.100. You want to buy:

- ☐ A pair of shoes for Rs.45.
- ☐ A book for Rs.25.
- ☐ A snack for Rs.10.

Question: How much money will you have left?

3. Shopping

- ☐ A Rs.60 jacket is on sale with a 25% discount.

Question: What is the sale price?

- ☐ A store is offering "Buy 2, Get 1 Free" on Rs.15 T-shirts.

Question: How much will you pay for 6 T-shirts?

4. Monthly Pocket Money

- ☐ You get Rs.20 each month.
- ☐ You spend Rs.5 on a toy.
- ☐ You save Rs.10.

Question: How much money is left after saving and spending?

► Practice Exercises

- ❑ Convert 72 inches to centimeters.
- ❑ A suitcase weighs 15 kilograms. Convert this to pounds.
- ❑ A recipe calls for 500 milliliters of milk. How many liters is this?
- ❑ A car travels 50 miles. How many kilometers did it travel?
- ❑ A water jug holds 3.5 gallons. How many liters is this?
- ❑ A road trip covers 300 miles. How many kilometers is that?
- ❑ A bag of flour weighs 2 kilograms. How many grams is this?
- ❑ A soda bottle contains 2.5 liters. How many milliliters is that?
- ❑ You buy a piece of fabric that is 100 inches long. How many meters is this?
- ❑ A person weighs 140 pounds. Convert this to kilograms.