Kara

A handy cheat sheet covering fundamental math concepts like adding and multiplying fractions, calculating expenses over different time periods, and understanding cost price, sales price, and GST.

Fractions: Addition and Multiplication

Adding Fractions

To add fractions, they must have a common denominator.

1. **Find the Least Common Denominator (LCD):** The smallest multiple that both denominators share.
2. **Convert Fractions:** Multiply the numerator and denominator of each fraction by the number that makes the denominator equal to the LCD.
3. **Add Numerators:** Add the numerators of the fractions with the common denominator.
4. **Simplify:** Reduce the resulting fraction to its simplest form.

Example:
Add $\frac{1}{3}$ and $\frac{1}{4}$

1. LCD of 3 and 4 is 12.
2. Convert: $\frac{1}{3} = \frac{1 \times 4}{3 \times 4} = \frac{4}{12}$ and $\frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12}$
3. Add: $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$
4. Simplify: $\frac{7}{12}$ is already in simplest form.

Adding mixed numbers example:
$2\frac{1}{2} + 1\frac{1}{3} = ?$
$\frac{5}{2} + \frac{4}{3} = ?$
$\frac{15}{6} + \frac{8}{6} = \frac{23}{6}$
So the answer is: $3\frac{5}{6}$

Multiplying Fractions

Multiplying fractions is straightforward:

1. **Multiply Numerators:** Multiply the numerators of the fractions.
2. **Multiply Denominators:** Multiply the denominators of the fractions.
3. **Simplify:** Reduce the resulting fraction to its simplest form.

Example:
Multiply $\frac{2}{5}$ and $\frac{3}{4}$

1. Multiply Numerators: $2 \times 3 = 6$
2. Multiply Denominators: $5 \times 4 = 20$
3. Result: $\frac{6}{20}$
4. Simplify: $\frac{6}{20} = \frac{3}{10}$

Multiplying mixed numbers example:
$2\frac{1}{2} * 1\frac{1}{3} = ?$
$\frac{5}{2} * \frac{4}{3} = \frac{20}{6}$
So the answer is: $3\frac{2}{6}$ or $3\frac{1}{3}$

Calculating Expenses: Weekly, Monthly, Yearly

Weekly Expenses

Tracking weekly expenses helps in budgeting.

1. **List Expenses:** Identify all expenses for the week.
2. **Calculate Total:** Sum up all the expenses.

Example:
Groceries: $50
Transportation: $20
Entertainment: $30
Total Weekly Expenses: $50 + $20 + $30 = $100

Monthly Expenses

Monthly expenses provide a broader view of spending.

1. **List Expenses:** Include all fixed and variable monthly expenses.
2. **Calculate Total:** Sum up all the expenses.

Estimating from Weekly:
If weekly expenses are $100, then monthly expenses ≈ $100 \times 4 = $400

Important Note: Some months have more than 4 weeks, so a more accurate calculation is $100 * 52 / 12 ≈ $433.33

Yearly Expenses

Yearly expenses give a long-term perspective on finances.

1. **List Expenses:** Include all annual expenses.
2. **Calculate Total:** Sum up all the expenses.

Estimating from Monthly:
If monthly expenses are $400, then yearly expenses = $400 \times 12 = $4800

Cost Price, Sales Price, and GST

Cost Price (CP)

The cost price is the original price of an item before any profit or loss.

Formula:
Cost Price = Purchase Price + Additional Expenses (e.g., transportation, repairs)

Example:
A shopkeeper buys a book for $50 and spends $10 on transportation. The cost price is $50 + $10 = $60

Sales Price (SP)

The sales price is the price at which an item is sold.

Formula:
Sales Price = Cost Price + Profit OR Sales Price = Cost Price - Loss

Example:
If the shopkeeper sells the book (with a cost price of $60) for $80, the sales price is $80. The profit is $80 - $60 = $20.

Goods and Services Tax (GST)

GST is a consumption tax added to the price of goods and services.

Formula:
GST Amount = (Original Price \times GST Rate) / 100
Sales Price with GST = Original Price + GST Amount

Example:
If an item costs $100 and GST is 10%:
GST Amount = ($100 \times 10) / 100 = $10
Sales Price with GST = $100 + $10 = $110