

Azim Premji University

At Right Angles

A RESOURCE FOR SCHOOL MATHEMATICS



Azim Premji
University

MONEY

BY PADMAPRIYA SHIRALI

MONEY

Most children witness the usage of money during purchase transactions at grocery stores or vegetable vendor shops. While the usage of digital payments has increased across the country and in all types of transactions, currency (coins and notes) is still used for various payments such as services offered by maids, cobblers, pavement purchases, vending machines, etc. Also, older people continue to be more comfortable with money transactions.



Through exposure to household activities and talk, children implicitly grasp the concept of exchange of money for goods/services. Basic recognition of coins and notes of small denominations gets built up. They develop ideas of low and high costs though the value of different denominations and money in general will develop slowly over the years.

However, there are challenges that young children face, such as distinguishing between the value of a pile of coins and the number of coins in the pile. Also, the concept of the monetary value of an object is not familiar to all young children. The concept is abstract. If you were to take a 2-rupee coin, there is no intrinsic 'twoness' about it. It must be observed that notes and coins are non-proportional materials (while ganitmala, bundle-sticks, flats-longs-units (FLU) etc. are proportional). Size does not determine the value either, as notes of different denominations are often the same size.

Some children may handle currency of lower denominations when they have to obtain items from a shop. Some families may give piggy banks to their children to develop the idea of saving.

Some children may be given pocket money on a regular basis to plan their expenditure. Children overhear adults talk about prices of vegetables, vehicles, loans for land or houses, EMI payments, etc.

This exposure can be incorporated into classroom discussions.

Class projects with students of class 5 and above can involve planning for the purchase of books needed for the classroom, say, story books. Teachers and students can look at various price lists of puzzles or story books and select needed items. Is it necessary to buy all materials or can some items be bought second hand? Discuss needs and wants, emphasise the need for reuse and reduction of costs.

Plenty of opportunities arise for creating problems from school outings or a visit to a mela involving money.

A teacher can use all the experiences of children to take the topic forward to enhance the conceptual understanding of students about money. The topic is often taught in conjunction with number work involving hundreds and thousands.

Note for the teacher

Some of the currencies, e.g., ₹200 and ₹500 should be introduced after those numbers have been taught in the respective chapters.

Traditionally there used to be a separate chapter on Money, but in Class 3 it has been combined with the numbers chapter.

Activity 1 - Classification of real coins

Level: Class 2,3

It will be good to use real coins for this purpose as students can feel the texture and mass, and notice the colour differences. Ask students to classify the coins as per their choice. This can be done in multiple ways: size, shape, motif, colour or denomination.



Use pictures of the coins and ask students to match the coins with the pictures.

Encourage students to use words and phrases such as *alike*, *different*, *belong to the same group because* and to give reasons.

Ask them to order the coins. This could be in terms of size, number, imprinted year, value, etc.

Activity 2 - Description

Level: Class 2,3

Each student can select a coin (it is better to stick to Indian currency initially and to include a few old coins of different shapes). Encourage the student to describe the coin in terms of its colour, shape, round or straight edges, motif found on the two sides of the coin. Discuss the meaning of head and tail.

Students can do coin rubbings (by placing the coin under a paper and colouring it) and create a poster.

Note: It's important that students observe the following:

1. Some coins are not used anymore.
2. Older coins used to come in different shapes, but new ones are all circular. Is there any advantage to coins having different shapes? Discuss. Why do you think they are all circular now?
3. Coins of the same denomination may have different sizes based on the year. ₹2 & ₹1 are good examples.
4. Coins of different denominations can have the same size - new ₹2 and old ₹1.



Activity 3 - Free Play

Level: Class 2,3

Provide many opportunities for free play with coins. Most students of this age like to engage in pretend purchases at a shop. Let them set up a shop in the classroom using a few items displayed on a table (Pencils, crayons, sketch pens, erasers). Distribute the coins (real/plastic) to students and let them engage in free play



using the coins for making their purchases. It is best to allow them to price the product and figure out the quantities of items for sale. Further discussions can happen about the price of a product and students' awareness of prices of certain products like biscuits, toffees, stationery, clothes, etc.

Design activity: Students can design coins and discuss which part of the coin indicates the denomination. It will increase their observation of variation in shapes, denominations in big numerals, etc.

Activity 4 - Objective: Recording data of sorted coins

Level: Class 2,3

Students can be encouraged to represent the data of sorted coins in the form of a graph using pictorial representations. They can use coin rubbings to make it look authentic. Discuss the various images that they see on the coins.

Multiple graphs can be created based on the different methods of sorting employed by the students.

Coin Graph

Activity 5 - Understand the value of a pile of coins

Level: Class 2,3

Students sort and stack coins, so that coins of the same denomination are in the same stack. Pose the question, 'If you are allowed to use these coins to buy some food, which stack would you choose?'. Let the students identify the stack they wish to take.

Raise questions:

1. Which stack of coins did you choose and why?
2. Did anyone else choose a different stack of coins? If so, why?
3. What problem solving strategies did you use to make your decision?



Through discussion let it emerge that the number of coins does not determine the value of a pile of coins.

Game 1: Who am I?

Ask one student to select any coin without the knowledge of others. Let the other students ask 3 questions which will be responded to with a Yes or No. For example, Is it a silver coin? Is it less than 5?

Students should try to get the answer after they hear the responses.

Activity 6 - Familiarity with the face value of the currency notes Level: Class 2,3

Use coins and currency notes (play money) of all possible denominations that are currently in use in the country. Please note that the relationships between the various denominations in terms of equivalence of value will come in the following level.

Students should use the words rupee, rupees and describe the notes by making comparisons such as 'the ten-rupee note is smaller than the hundred-rupee note'. 'The two hundred-rupee note is orange in colour'.



Activity 7 - To build a sense of the value of 100, 200, 500 rupees Level: Class 3

Children develop a sense of the value of higher denominations when it is translated in terms of their favourite objects or eatables.

The price of one Dairy Milk chocolate is ₹20.

- How many can you buy for ₹100?
- How many for ₹200?
- How many for ₹500?



Activity 8 - Exchange of coins and notes for coins and notes of lower denominations

Level: Class 4

It is assumed that students have worked with place value material that involves the exchange of 10 units for a ten and 10 tens for a hundred prior to this.

While money can be used to reinforce the exchange concept it is to be kept in mind that the hundred rupee units as an exchange for a hundred rupee currency note or ten 1-rupee coins as an exchange for a 10-rupee coin is an abstract idea. The ten or hundred is not visible as in the case of place value materials. Since money is a non-proportional material, it should be used for place value after exposure to proportional material.

Students need to gain confidence and be comfortable with the exchange process before being asked to record it in writing.

For example, 1 hundred = 10 ten rupees, etc.

However, students can be encouraged to articulate their thought process 'I have 15 one-rupee coins. I can exchange ten of them for 1 ten-rupee coin'.

Ask different questions that develop their ability to find equivalent value using other denominations.

- I have a 10-rupee note. Which 2 coins will add up to the same value?
- How many 5-rupee coins are needed to match this 50-rupee note?
- How many 2-rupee coins equal a 10-rupee coin in value?

How many 2-rupee coins equal a 5-rupee coin in value!!!



Activity 9 - Finding equivalent sums

Level: Class 4

Plenty of exercise work can be created in an activity form.

Make a group of 4 students. One person picks at random 2 items, one note and a coin or two notes or two coins. The others have to find different ways of putting together currency of equal value.

Pose questions that have varied answers.

Leela bought a balloon at the mela. She paid for it using six coins. How much might the balloon have cost? What is the largest amount Leela could have paid? What is the smallest amount Leela could have paid?

Students may use their awareness of prices and also of available coin denominations to give reasonable answers. Such questions generate a good deal of discussion in the classroom.

Game 2: Who gets the 500-rupee note?

Make groups of 4 students. Students take turns to throw two dice and sum the numbers. They can collect ten times the sum. If the sum is 9 they collect 9 tens amounting to ₹90.

Each time the amount exceeds ₹100, they exchange the change for a 100-rupee note.

Whoever reaches ₹500 first is the winner.



Activity 10 - Money in operations, Paying the correct amount

Level: Class 4

Materials: Play money, pictures of objects with price tags/real objects like pencils, sketch pens, etc.

By setting up a classroom shop, with items displayed with appropriate price tags, students can be involved in the purchase of items, estimating the amount to be paid, making bills, figuring out change to be given/taken, etc. Each student gets a 500-rupee note.

Raise questions:

- How much have you spent so far?
- How much have you got left?
- How much more money do you need to buy ten pencils?

- If you buy those two pens, how much will you have spent?
- How much will you have left?
- How do you know?
- If pens are on an offer, 'buy one get one free', how many will you get for fifty rupees?

Here is an opportunity for mental calculations and the varied approaches used by students in addition and subtraction problems. Counting on approach is frequently used by shopkeepers. For example, if the item is priced at ₹78 and they receive a 100 rupee note, they may first give ₹2 to make it ₹80 and then 2 tens to make it ₹100.

Pose questions that offer options.

Here are the prices of stationery items. If you were given ₹100 and wished to spend all of it, what items can you buy?



Pose questions that involve comparisons.

Rahul says, 'I have bought 2 items at the mela' One item cost ₹90 more than the other'. What might Rahul have bought?



In higher classes, profit and loss concepts can be brought out.

Many concepts related to the maintenance of adequate stock, high price, cheapness and value for money can be discussed.

Activity 11 - Exposure to a real market

Level: Class 4,5

Students can be asked to accompany their parents for the purchase of groceries, vegetables and fruits. They can be required to maintain a list of the items bought on such a trip and the price paid.

Students may get exposed to the idea of bargains, discounts, gift items that come with some products, the advantage of buying large sized packs, etc.

All these aspects can be discussed in the classroom.

Discussions can bring out connections with other maths topics, for example, the usage of balance/weighing scales, weights, etc, ways of storing products and stacking.



Activity 12 - Understanding a note

Level: Class 5

Students can observe carefully a real note of 100 rupee denomination. Can they make a list of the various pictures and writing that they find on it?

- What picture is shown on the note? Is it a historical building? What do we know about it?
- Is there a picture of any person on it? Who is he/she?
- Are there any other historical artefacts?
- Are there any other designs on the note? Can they describe the designs?
- What type of writing is on the note? What language scripts can be found? Can the students identify all the scripts?

- Are there any numbers on the note? How many types of numbers are there? What do these numbers stand for?
- Does the note indicate the year it is printed?
- What is the promise written on the note? Who signs it?
- Are there any special marks on the note?
- Are there any embossed shapes on 100, 200, 500 rupee notes?

Find out: Does each note have a unique number? What is a watermark?

What are the currencies of other countries?



Activity 13 - Understanding substitutes for money, barter system

Level: Class 5

Students would have also noticed their parents make payments by other means, digital transfer of money.

Encourage them to share the various modes of payment they have observed. Discuss how these methods are used and the advantages of using such methods.

Discuss if there are communities that do not use currency and how they obtain goods and services.

Activity 14 - Understanding the history of currency

Level: Class 5

Bring some old coins that were in use a few years ago like (50, 25, and 10 P coins) and talk about them. It can be a good time to talk about what one could buy with a rupee in the olden days.

Help students to find out information about coins used in earlier times (say about 200 years ago)



Activity 15 - Understanding banks

Level: Class 5

Organise a trip to a local bank.

Discuss the trip with the students and get them to prepare a set of questions to ask the bank official. Students may wonder: 'Where does the bank get its money from?'

'Can children have a bank account?'

'How does an ATM operate?'

Speak to the manager beforehand so that they are prepared to explain in a simple manner the concept of saving, the purpose of keeping money in a bank, interest earned and how banks assist people in giving loans etc.

Discuss how money is earned by people in various ways and is saved.



Activity 16 - Budget planning

Level: Class 5

Most schools celebrate Independence Day or the school day by organising some decorations and purchasing sweets within a certain budget.

Involve the students in planning for such an event, the number of people expected, cost of the decorations like streamers or balloons etc., sweets, refreshments like tea or juice.

Encourage students to make lists of various items and find out the prices.

Does the cost exceed the budget/ If it does, how can they cut it down?



Activity 17 - A Birthday Celebration

Level: Class 5

Each student can work out a list of items to have for a birthday party (sweets, snacks, drinks, plates, tumblers, decorations), the number of guests and calculate the cost of such a party.

Students can share their lists in groups.

Discuss how one can celebrate such events in economical ways, without generating waste. Discuss how people can share resources.

Activity 18 - Making calculated choices

Level: Class 5

Refer to the students' experience of eating at a restaurant or buying food in the school canteen.

Discuss how the adults around them would have selected items to be ordered.

Customers choose between different options like a fixed plate meal or ordering individual items. Some items come in large quantities and are shared amongst 2 or 3 people.

Problem solving: Create problems that develop problem solving skills.

- Shiv and Shravan ordered 4 different items for ₹50 exactly. What could they have ordered?
- Diva bought 2 different items from the snack shop, paid with 2 identical notes and got ₹4 as change. What did she order?
- Can we make snacks at home instead of buying them?

Project: Adopt a pet

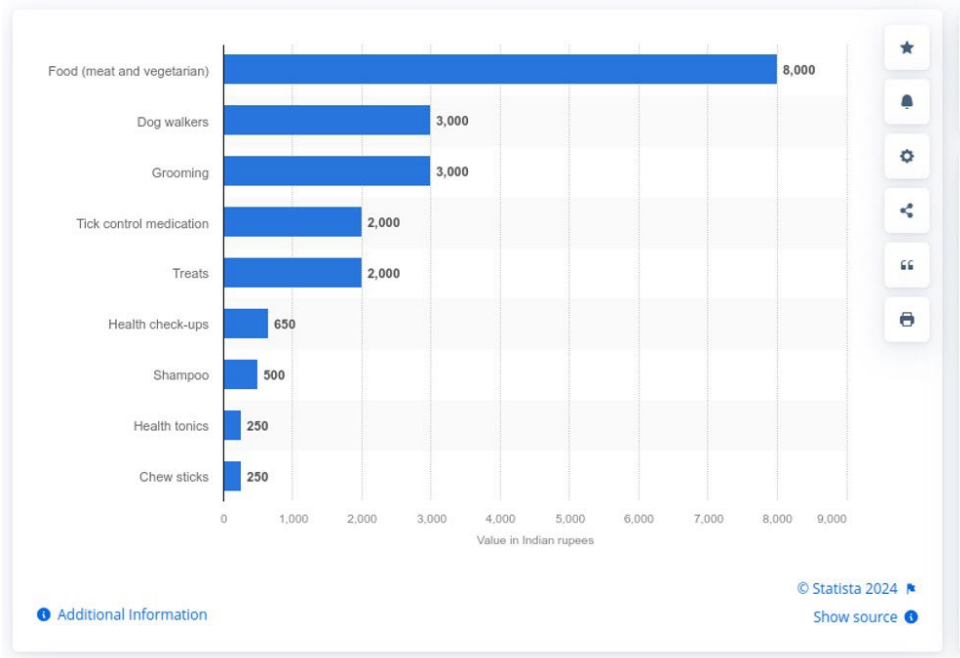
Most children enjoy having a pet or would like to have a pet. Students can evaluate what it would cost for the school to adopt a pet.

Teachers can obtain information about the cost of keeping a pet.



Snacks	Price (₹)
Ginger Tea	15.00
Coffee	20.00
Milk	15.00
Dal Vada	08.00
Medu Vada	15.00
Chilli Bajji	07.00
Banana Bajji	07.00
Aloo Bonda	08.00

Monthly expenditure on pet dogs across India in 2018, by type



<https://www.statista.com/statistics/1031188/india-monthly-cost-pet-dogs/>



Highest currency note ever printed by RBI is ₹10,000

short by Pragma Swastik / 07:51 pm on Wednesday 9 November, 2016

The highest denomination currency note ever printed by the Reserve Bank of India is a ₹10,000 note during the British Raj in 1938. While the note was demonitised in 1946, a new version of the note was introduced in 1954. However, the ₹10,000 note along with ₹1,000 and ₹5,000 notes were demonitised by the then PM Morarji Desai in 1978.

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Acknowledgement

To Swati Sircar and Sneha Titus for their valuable suggestions.



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PADMAPRIYA SHIRALI is part of the Community Math Centre based in Valley School (Bangalore) and Rishi Valley (AP), where she has worked since 1983, teaching a variety of subjects – mathematics, computer applications, geography, economics, environmental studies and Telugu. In the 1990s, she worked closely with the late Shri P K Srinivasan. She was part of the team that created the multigrade elementary learning programme of the Rishi Valley Rural Centre, known as ‘School in a Box.’ She is currently part of the NCERT textbook development group. Padmapriya may be contacted at padmapriya.shirali@gmail.com