

CO-OP NUMERACY FACILITATOR'S GUIDE

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COOPERATIVE MEMBER EDUCATION

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INTRODUCTION TO SECOND EDITION

This second edition to the Co-op Numeracy Facilitator's Guide (formerly entitled Facilitator's Guide for Functional Numeracy) differs from the first edition in the following ways:

1. The original introductory section has been eliminated. The information contained in that section will be transferred to a new edition of the Member Education Handbook.
2. The original unit plans have been edited to eliminate a few terms and directions which were confusing.

The Guide was originally produced by the Member Education Program (MEP) in December 1981, and was to be used by the Co-operative Inspectors for Education (CIEs). The CIEs had been trained to lead numeracy classes for members of agricultural co-ops. The Guide and its companion book, the Learner's Workbook, aim at enabling the farmer-learners to read the produce scale and calculate the receipts which are used when the farmers sell their crops to the co-op.

This idea of teaching such specific numeracy comes from discussions between farmer members and Department of Co-operation (DOC) staff. In those discussions, farmers stated their desire for such practical arithmetic skills. One of their greatest fears is of being cheated when selling their primary source of income--groundnuts.

In actual use, (during the period January 1982 to April 1983), the Guide appears to have been well suited to the task of guiding the CIE novice numeracy instructors. The problems which were encountered were due more to such factors as lack of direct supervision and over reliance on the Learner's Workbook as the primary instructional resource. The MEP staff has subsequently attempted to correct these problems by instituting an improved supervision system and introducing several new instructional techniques (e.g. picture stories, word problems, fun activities, and specific literacy activities) which are to be coordinated with the Learner's Workbook.

The unit-by-unit format of the Co-op Numeracy Facilitator's Guide should be fairly clear to even a new, inexperienced facilitator. The facilitator should complete each unit before moving on to the next. Some units might require more than one session to complete. Other techniques (e.g., the picture stories, etc. referred to above) should be brought in on occasion perhaps at the beginning or end of class in order to make the sessions more varied and lively.

Above all, the facilitator should, in his work with the learners, keep in mind in the following three principles:

1. Make the activities lively and enjoyable,
2. Remember why you have come to the class; to help farmers grasp stronger, practical arithmetic skills and, thereby, to have greater self-confidence.
3. Respect your learners. They are the people who feed your family and pay your salary.

UNIT 1

OBJECTIVE

Co-op farmers will be able to recognize, name and write digits (1 to 9) to a working level of competency.

GROUP ORGANIZATION

1. Plan to organize learners into a single large group until they are able to show a basic grasp of number recognition (1 to 9).
2. Break learner group into small groups (5 in each) for writing practice.

ACTIVITIES

1. Set the climate by encouraging an informal discussion on numbers. Refer to traditional number system and try to focus on the difference between traditional numbers and the number system in use in the co-ops.
2. Use flash cards or the blackboard to carry out a short number recognition drill using question and answer techniques.
3. Write numbers (1 to 9) on the board slowly so as to emphasize hand movements and how to hold the chalk.
4. Encourage each learner to repeat your action until he/she can write numbers (1-9) clearly.- Repeat this until the group can write numbers.
5. Break group up into practice groups of 5 and encourage faster learners to help slower learners.
6. Bring the group together for a short discussion of exercise and to assess group s progress.

FOLLOW UP

You may need to repeat small group practice exercise for slower learners until they are able to master writing digits (1 to 9). However, frequent use of (1 to 9) in work done for subsequent units will help to reinforce what has been learned.

RESOURCES

1. Chalkboard and chalk
2. Flash cards No. 1 to 9 and combinations
3. Teaching pictures from learner workbooks

4. Real objects from immediate surroundings
5. Sand and a stick
6. Number recognition games

TEACHING NOTE

This unit needs to be well mastered before continuing with subsequent units. Many co-op farmer adult learners, while highly motivated, will have some difficulty handling the written part of this unit so they may need a lot of practice at the beginning in holding or handling a writing implement. Encourage the use of bold and large numerals so as to avoid any problems arising out of poor eye-sight.

A similar problem may be encountered by farmers with a Koranic school background who may find it difficult to write from left to right. Again, through practice and by demonstration and explanation, each farmer can be helped to master writing from left to right.

Use the learner's workbook provided as a visual prompt, but do not encourage learners to do any written exercises in them until they have practiced writing elsewhere (paper, blackboard or sand).

UNIT 2 (A)

OBJECTIVE

Co-op farmers will be able to add single-digit numbers (less than 10) completing 12 out of 16 examples in their workbooks correctly.

GROUP ORGANIZATION

1. Start with a single large group to explain and demonstrate the concept of addition (+).
2. Break the learner group into small non-formal groups of up to five people in each for each practice in simple addition.

ACTIVITIES

1. Set the group climate by discussing the need for using simple addition in the context of co-op receipts (money transactions, etc.)
2. Use the black board to show how two simple single-digit numbers can be added together. Use fingers or stones, seeds and groundnuts to help in counting.
3. Repeat examples on the board till the concept of adding two numbers together is understood by the group.
4. Break the group up into non-formal practice groups of between 2 to 5 people and use faster learners as group resource persons
5. Continue practicing simple addition until the slowest member of the group has grasped the mechanics involved.
6. Bring the groups together and by using simple questions and answers and presenting the group with simple blackboard problems find out if they have been able to do simple additions. If many in the larger group are still not able to do this, then repeat this session until they can do simple additions.

FOLLOW UP

Try to encourage the learning group to do more examples at home in between numeracy learning sessions. Frequent repetition will help new skills to be mastered and retained.

RESOURCES

1. Chalkboard and chalk
2. Learner's workbook
3. Sand and a stick
4. Number games (adding scores, etc.)

TEACHING NOTE

Adult learners will vary in their ability to grasp and use new skills and concepts so it is better to over-teach than to under teach. However, be careful not to bore them or they will leave your numeracy group.

Always refer to examples taken from their own experience to show how important it is to know how to add properly. Remind them frequently why they are learning how to add.

UNIT 2(B)

OBJECTIVE

Co-op farmers will be able to subtract single digit numbers (less than 10) completing 8 out of 12 examples in their workbooks correctly.

GROUP ORGANIZATION

1. Start with a large group to explain the concept of subtraction. Use real objects taken from the immediate surroundings to illustrate taking away.
2. Break learner group into smaller practice groups led by a learner who has already grasped the concept of subtraction.

ACTIVITIES

Follow the same sequence as for UNIT 2a on simple addition and keep practicing this until you feel that the whole group has grasped and is able to use subtraction in its simplest form.

FOLLOW UP

Encourage learners to do subtraction at home between sessions, and to try to use subtraction in their daily work.

RESOURCES

1. Chalkboard and chalk
2. Learner's workbook
3. Sand and a stick
4. Teaching chart

TEACHING NOTE

Some learners may have more difficulty grasping the concept of subtraction than of addition, so more time may have to spent doing this

Always use examples taken from their immediate surroundings or their experience to illustrate what they are learning. Remind them frequently why they are learning subtraction.

UNIT 3

OBJECTIVE

Co-op farmers will be able to understand and use the concept of *base* in solving measuring, scaling and weighing problems presented in subsequent units.

GROUP ORGANIZATION

1. Keep the group together and discuss traditional modes of counting using *base 5*. By question and answer, and using examples (i.e. counting cattle) show how *base 10* is like *base 5*.
2. Keep the group together and ask each adult learner to try to explain the concept of *base 10*. Help each learner to clarify his/her thoughts by providing instant corrective feedback.

ACTIVITIES

1. Set the climate initially by discussing an example of the traditional use of *base 5* to count large numbers of objects.
2. By question and answer and by referring back to work done in earlier units, try to clarify the concept of *base 10* (use seeds or nuts, and group them into 10's).
3. Discuss how all units of money and measurement in The Gambia are now based on a system using units of 10 (*base 10*).
e.g. Kilograms
Dalasis
Meters
4. Use the student workbook to show how units of 10 can be easily used to build up larger numbers which are made up of units of 10.
5. Break the group up into smaller discussion groups under a group leader and encourage groups to discuss the concept of *base 10*. Get group to find examples of the use of *base 10* to measure, weigh or work out problems in their lives and daily work.
6. Bring groups together and stress the importance of understanding *base 10* for calculating weight and the value of their groundnuts.

FOLLOW UP

Encourage the group to use the concept of *base 10* in their daily work to see if it helps them to count and keep a record (numerical) of their produce.

RESOURCES

1. Chalk and blackboard
2. Learner's workbook (pencil and rubber)
3. Group leaders
4. Radio program
5. Seeds, groundnuts, etc. for counting exercises
6. Avery scale model

TEACHING NOTE

This is a "critical concept" and needs to be understood well by all learners before you can do many of the remaining units which depend upon this. So it is advisable to spend a long time explaining and discussing this before moving on to unit 4.

Emphasis here has been placed on starting from the learner's experience of handling numbers in groups of 5 (*base 5*) and show that *base 10* is a similar idea, using 10 instead of 5 as the base number.

It is important to illustrate *base 10* in a concrete way using examples taken from their experience (e.g., A very scale, kilogram, money, etc.). Avoid turning this session into an abstract exercise.

UNIT 4

OBJECTIVE

Co-op farmers will be able to correctly name and write numbers 1 to 99.

GROUP ORGANIZATION

1. Keep the group together for an initial discussion and demonstration.
2. Break the group into small question and answer groups of each.

ACTIVITIES

1. Set the climate initially by referring back to units 1 and 3 and encourage learners to tell what they did for these two units.
2. Explain that the numbers they have learned to name and write can be used to name and write larger numbers with 2 digits.
3. Use the blackboard to write some of these larger numbers and try to get the learners to name them.
4. Break the learners up into small groups of 5 and encourage them to write numbers from 50 to 99, and to name them.
5. Go around working groups and help out any which are having problems.
6. Bring the group together and go through numbers up to 99 naming each correctly on the board. Use question and answer to encourage all group members to participate.
7. Allow any learner who can name numbers up to 99 to lead the question and answer drill session.
8. Choose some numbers at random from 1 to 99 and ask each group member if he/she can name the numbers. You will soon know if they are able to do this then you can plan to proceed to the next unit.

FOLLOW UP

Encourage adult learners to write out the whole sequence of numbers (1 to 99) as a take home exercise. Try to get them to bring them to the next session.

RESOURCES

1. Chalk and blackboard
2. Sand and a stick
3. Learner's workbook
4. Seeds, groundnuts, stones or counting sticks
5. Pencils and rubbers
6. Teaching chart (complete series of numerals 1 to 99)

TEACHING NOTE

Many of the older learners may still be having difficulties writing, so it is a good idea to build into this unit a take-home practice exercise. If learners see the relevance of learning the numerals, then they are more likely to want to practice by doing the take-home exercise. Motivation can only be achieved if learners are continually reminded that the numeracy course aims to help them to understand weighing and the calculation of their produce price.

UNIT 5

OBJECTIVE

Co-op farmers will be able to show that they have understood the concept of standard linear scale by using a standard meter stick (or tape-line) to measure 6 common objects to the nearest centimeter.

GROUP ORGANIZATION

1. Start with the whole group seated so that they are clearly able to observe your demonstration and explanation of measuring using a meter stick or tape-line.
2. Break group up into small project groups and encourage them to measure 6 small objects each.

ACTIVITIES

1. Set the climate by discussing traditional methods of measuring short distances. Show how this form of measurement was not "standardized." Refer to the teaching pictures in the learner's workbook to help make your point.
2. Show the group the meter stick or tape-line which you have been provided with and explain how it represents a fixed standard unit of measurement. Show how the stick is then subdivided into smaller fixed units of measurement and how 100 of these make up the meter.
3. Take the meter stick or tape-line and show the group how it can be used to measure short objects precisely. Measure 2 to -3 objects and show the group how you read off the correct measurement to the nearest centimeter on the stick. Write down your measurement on the blackboard for all to see. Repeat this more than 3 times if you feel that learners are having problems understanding what you are doing.
4. Break learners up into 5 " project" groups with a leader from each group. Get the groups to:
 - a) Go out and find a straight piece of wood (branch, reed, etc.
 - b) Use your own marked standard "meter stick" to enable each group to construct its own meter measure.
 - c) Encourage each group to select 6 objects shorter than a meter and to use their own sticks to record the length of each object.
 - d) Each object's length will be measured in centimeters recorded on a sheet of paper provided (one per group).
 - e) Encourage the group leaders to give each member of the group a chance to carry out measurement of at least one object. Each group member will also be encouraged to write down his/her own measurement.

5. Bring all groups together for a discussion of each group's project results and encourage all group members to make a contribution. Assess the learners' abilities to understand a simple measuring scale by asking members at random, to explain how they would measure an object. Use this to decide if you will repeat the project or continue to the next unit.

FOLLOW UP

Encourage farmers to discuss informally the merits of using fixed scale to measure objects and try to generate a discussion at the next bantaba group about measurement.

RESOURCES

1. Chalk and blackboard
2. Learner's workbook
3. Real objects in the immediate surroundings
4. 5 pieces of paper (pencils and rubbers)
5. Bantaba discussion group
6. Reed, tree branch, or straight stick cut to 1 meter

TEACHING NOTE

It is important to allow adult learners sufficient time to make the "meter stick" and to carry out the measuring project fully. Each participant should be encouraged to use a meter stick to make at least one measurement on his/her own. Frequent practice of measurement skills will help retention of this important step in the numeracy program.

Encourage a full discussion of each group's results at the end to allow as many participants as possible to make a contribution to the discussion.

UNIT 6

OBJECTIVE

Co-op farmers will be able to recognize, name, and write numbers up to 999 to a level which will enable them to read a 1 ton scale without difficulty.

GROUP ORGANIZATION

1. Bring learners together into a single large group; and demonstrate and explain what they will be doing.
2. Break the group up into small groups for practice in writing and naming numbers.

ACTIVITIES

1. Set the climate by going back over what they have learned for units 1 and 4. Explain that numbers continue beyond 100. Show learners that numbers range from 100 to 1000 in a logical way.
2. Use blackboard to build up a sequence from *100* to *200* showing learners that this is really the same as building up numbers in sequence from 1 to *100*.
3. Use the blackboard or flash cards to drill number recognition. Hold up a card with a number above 100 and ask learners to name it. Repeat this randomly until most of the group seem to have grasped what you are doing.
4. Break the larger group up into small groups and encourage group leaders to continue the process until all learners are able to recognize and name most numbers.
5. Use the exercise in the learner's workbook to help to reinforce the learners' responses.
6. If you have a teaching chart with numbers up to 999, use this to continue the number recognition drill.
7. Bring groups together and discuss the session. Try to see if the learners were able to recognize numbers up to 999 by giving them a short oral test at random. Be prepared to continue with this unit until learners can recognize numbers reasonably well.

FOLLOW UP

Try to encourage learners to write out a series of numbers (if 100 to 200 or 300 to 400) and to bring these with them to the next session.

RESOURCES

1. Blackboard and chalk
2. Flash cards (100 to 999) 3 sets of 1 to 9
3. Exercise from learner's workbook
4. Sand and a stick
5. Teaching chart with a number series up to 999

TEACHING NOTE

This unit is very similar to units 1 & 4 and can be taught in a variety of ways. What is important is to give the slowest learners a chance to catch up with those who will obviously find this quite easy to do. Therefore, time should be given to allow learners to get a lot of practice.

Some learners will have problems dealing with large numbers like those being dealt with in this unit, so it would be useful to try to find examples, from their experience where such numbers are in use (e.g. Avery scales, kilometers, serial numbers on equipment, etc.). Use such examples to help learners to appreciate the need to use larger numbers.

UNIT 7

OBJECTIVE

Co-op farmers will be able to use a meter scale to measure 6 objects in their immediate surroundings which are longer than 1 meter. They will show they have been able to do this by correctly measuring 4 out of 6 objects to the nearest centimeter and recording their measurements on the piece of paper provided.

GROUP ORGANIZATION

1. Start by bringing the learners together to demonstrate and explain what will be done.
2. Break them up into smaller project groups of 3 to 5 persons to carry out their measurement project.

ACTIVITIES

1. Set the climate by referring back to unit 5 and encourage the group to describe what they did. Use a meter stick constructed for the project in unit 5 to show them how to measure objects longer than a meter. Discuss traditional ways of measuring longer distances emphasizing that by using a meter stick we can get a more accurate measure.
2. Tell the group that they will be doing the same as they did for their measurement projects on objects less than 1 meter. Encourage them to repeat the same exercise writing down measurements as they complete them, on a piece of paper provided.
3. Break the group up under group leaders and encourage them to select objects in their immediate surroundings for measurement. Walk around and help groups needing help.
4. Bring the groups together again and encourage each group to discuss what they have done. Emphasize the relevance of this unit to achieving the final goal. Say how important it is to be able to read a scale and how important it is to have a fixed unit of measurement.

RESOURCES

1. Meter sticks
2. Paper and pencil
3. Real objects over 1 meter for measuring (i.e. doors, house, gardens, etc.).

TEACHING NOTE

This unit is very similar to unit 5 and will probably require less time to do. It is important to emphasize the need for accurate measurement with a standard meter measure. Encourage learners to work together in groups and to give each learner a chance to carry out a measurement task. Do not spend a lot of time on this unit, but make sure each learner is able to read the scale to the nearest centimeter and to record his/her measurement on the piece of paper provided.

UNIT 8

OBJECTIVES

Co-op farmers will be able to:

1. Explain the purposes of the co-op tariff tables.
2. Use the tariff table.

ACTIVITIES

1. Explain that today's lesson will deal with the use of the co-operative weighing tables. Show the group examples of the weighing tables and ask whether anyone in the group knows how to read them. Ask whoever does to come to explain how they are used.
2. Ask participants to give their ideas about the purpose of the table. That is, why do co-ops use these tables? What do the various figures represent? After the participants have expressed their own ideas, give your own explanation, as follows:

Purpose of tariff tables : To clearly demonstrate how much money should be paid to a co-op farmer for the amount of groundnuts he brings to the secco. In this way, all farmers are paid according to identical weights and are paid no more and no less than anyone else bringing the same amount of groundnuts.

3. The participants and facilitator should compare their ideas on this subject. A consensus is reached about the purpose(s) of the tariff table.
4. Ask participants whether the tariff rate is in fact always the same. That is, has it ever changed from year to year? If so, why? Participants give their own ideas on the subject. The facilitator then explains that the tariff changed between the 1981/82 and 1982/83 seasons from D.50/kg to D.52/kg. The facilitator asks participants whether they feel this is an asset to the farmer. The facilitator explains the difficult position of government when it wants to pay more to the farmer while having to sell its groundnuts on the world market at a lower price.
5. Explain that the participants should now practice the use of the tariff tables so they will be able to accurately determine the amount of money they should receive. To do so, the facilitator will first demonstrate the use of the table. Then, each participant will be given an opportunity to practice.
6. Use a large version of the table to demonstrate a few sample problems. For example:
 - a. "If I brought a net weight of 10 kilograms of nuts to the scale, I would receive how much money?" (Answer = D5.20)
 - b. "If I brought 100 kilograms, I would receive how much money?" (Answer = D52.00)
 - c. "If I brought 110 kilograms, I would receive how much money?" (Answer = D57.20)

7. Ask one or two participants to calculate the same type of simple problems. The facilitator invites other participants to help those who are demonstrating, if necessary.
8. Ask participants to divide into small groups so that members can help each other calculate some more sample problems. The facilitator then provides several more tariff table problems and participants calculate these problems--helping each other if necessary. Individual participants can be asked to come in front of the class to demonstrate their calculations for the others.
9. After practicing several problems in this way, the facilitator asks participants to now work individually. Each person should calculate one or two tariff table problems alone. The facilitator checks the performance of each individual to determine how much they have or have not learned. In this way, the facilitator can identify which participants need additional help and exactly what type of help is needed.
10. Schedule a suitable time to meet with those who need help and extra practice in the use of the tariff table. Faster participants should be encouraged to help slower participants in their spare time.
11. Give several more problems to participants to be completed for homework. The facilitator will check homework problems in a future class meeting.

UNIT 9

OBJECTIVE

Using a model of the Avery scale, co-op farmers will be able to read, add up and write down the weight readings from two scales correctly 4 out of 5 times.

GROUP ORGANIZATION

1. Start by bringing the learners together into one large group.
2. Break learners up into small groups of 3 to 5 people to carry out a group exercise in reading Avery scale correctly and adding up the quantities on each scale.
3. Organize the learning group and take them to the nearest secco for demonstration and practice on a real Avery scale.

ACTIVITIES

1. Set the climate by referring back to unit 6 on numbers up to 999. Refresh learners' memories on how to name and write numbers from 1 to 500. Quickly refresh learners' memories concerning *base 10* to understand how to read weights on the Avery scale. Don't spend too long on this.
2. Refer back to units 5 & 7 on using the meter stick for measuring. Say how the Avery Scale has a scale like the one on the meter stick, only it is used to measure weight and not length. Show them the Avery scale model and explain the calibration on each scale. Show them how the scale is calibrated in 50's up to 500 (or 1,000 for 1 ton scales).
3. Hold up the model scales and explain how they work by setting the scales for different weights and balancing them off using the smaller unit 10 scale. Explain how when groundnut sacks are placed on the Avery scale weighing platform the two scales are then set by moving weighted pointers along the top scale first and then along the bottom scale until it balances. Alter the scale readings on the model several times and ask learners if they can work out what the total reading should be. It is important to stress the need to read the top scale first in units of 10. Show how the total weight is obtained by adding

FOLLOW UP

If weighing operations are being performed at the secco, participants might travel with their copies of the tariff tables to the secco to observe how the tariff tables are being used. Participants can examine the receipts of their friends to check the accuracy of the amounts paid.

RESOURCES

1. Copies of tariff tables for all participants
2. Large copy of tariff table for display to the whole class the number on the top scale to the number on the bottom scale. Stress that this is what happens all the time.
3. Try to repeat this several times asking question to find if learners understand. At this point learners may ask questions about why the weighted markers are moved either one way or the other. They will think that this is done to cheat by altering the real weight which is being read on the scale. This is a difficult, but important question and shows that learners still have not understood how the Avery scale works. This is the best teaching aid and should be used if this problem is a serious one in your group. It may help to go back to unit 8 which tries to explain how weight and balance relate. Do not attempt to avoid this problem if it occurs as this is an important concept that needs to be explained if the farmer:) are to gain confidence in using the Avery scale.
4. Break the group into 5 small groups and allow them to discuss the working of an Avery scale and to work out some simple problems involving the reading of scales and the writing ,and reading of correct totals.
5. Bring the groups together and go over what has been covered by making sure that learners have understood. Note any problems which still exist and decide whether to repeat the unit or not.

FOLLOW UP

Arrange to take the group to a secco to observe the use of an Avery scale. This may be difficult to organize because of distance and lack of transport. So if this is not possible, try to be at a local secco yourself to explain to farmers as they come in with produce how the Avery scale works. If you cannot do this, then ask a secco manager to help farmers by showing them how scales work, and by answering their questions.

RESOURCES

1. Slates and chalk
2. Avery scale model and pointers
3. Learner's workbook
4. Real Avery scale
5. Blackboard and sponge

TEACHING NOTE

This is an important unit in that this unit is what farmers have asked for in their needs assessment. It could present difficulties in teaching only if earlier units were not done or done badly. It is a real need to communicate to the learners concepts like weight, balance and scale, and how the Avery scale works. If these concepts are not clearly understood, then learners will continue to have problems understanding and believing how Avery

scale is being used to weigh their produce. Perhaps the best way of helping to convince farmers that they are not being cheated is to thoroughly discuss the matter until their doubts are removed.

UNIT 10

OBJECTIVE

Co-op farmers will be able to recognize, name and write numbers 1000 to 5000 correctly.

GROUP ORGANIZATION

1. Keep the group together for an initial discussion, review and numbers drill.
2. Break the group up into small discussion and work groups.

ACTIVITIES

1. Set the climate initially by quickly reviewing units 4 and 6 by randomly writing up on a slate or board numbers from 100 to 1000. Use a question and answer drill to do this and get as many learners involved as possible.
2. Explain how they have learned to name and write numbers up to 1000 but that numbers can be written and named beyond 1000. Refer, by asking for examples from the learners, to where numbers are written that are larger than 1000 (i.e., co-op]receipt numbers, vehicle millimeter readings, machine numbers, etc.
3. Use the blackboard and encourage learners to use their slates to build up numbers sequentially 1000 to 5000. Explain how this can be done as simply and logically as writing numbers: from 1 to 99 or from 100 to 1000. Repeat any board work till you are confident that learners have understood what you are doing.
4. Use a guide question and answer drill to find out if your group has grasped the idea of numbers from 1000 to 5000.
5. Break the group up into smaller working groups after explaining what you want them to do. Set a group exercise which will give learners practice at writing and naming numbers from 1000 to 5000. Make sure you move around the groups to correct any errors and provide slower learners with assistance.
6. After 15 to 20 minutes, bring the group together and discuss the exercise. Try to draw attention to any writing problems observed during small group practice and go through these using a slate to show learners the corrections.
7. Bring group together again and discuss the unit, making a note of any special difficulties.

FOLLOW UP

Encourage learners to work on workbook examples in their own time. They use slates and chalk to form "out of session" working groups to practice these skills.

RESOURCES

1. Board, chalk and duster
2. Fruit and stones
3. Sand and a stick
4. Slates and chalk
5. Learner's workbook
6. Chart (examples of single and double digit additions)

UNIT 11

OBJECTIVE

Using a simple system of pictorial symbols, co-op farmer will be able to identify and name correctly the different entries on a new co-op receipt form.

GROUP ORGANIZATION

1. Keep the group together and introduce the topic with a short discussion on the difficulties farmers are having reading the co-op receipt forms.
2. Break the group up into smaller groups for group discussion and work on the co-op entry forms.

ACTIVITIES

1. Set the climate by initiating a discussion around the problems faced by illiterate farmers in understanding co-op receipt forms. Use the receipt form diagram on the back of the facilitator's; board to show them an example. Ask around the group to see if ,any member can read and understand co-op receipts.
2. Use the learner's workbook and turn to the prepared illustration with visual symbols showing different types of entries on a receipt form. By question and answer, involve the whole group in recognizing what these symbols stand for. Be careful to explain clearly what each symbol represents; and explain to the learners that the symbols are only being used to help them to understand receipt entries and that they do not normally appear on the forms. Take care not to make this explanation too abstract.
3. Using the board and workbook and a question and ,answer drill, see if all the learners have understood the symbols on the receipt in the workbook. Repeat this till you are satisfied that all the learners have understood. Use a slate or blackboard to do a picture drill of the symbols. Draw a symbol on the board, and by holding it up, ask the learners to come up to the board to point out where on the receipt the symbol belongs.
4. Break the group up into small working groups and encourage learners to discuss the entries on the receipt form. You might try to see if learners can draw the symbols correctly onto a blank receipt form. However, you may find that many learners will not be able to do this, so don't force them to do so.
5. Bring the group together and quickly drill the symbols which were learned and see if all the learners have understood.

FOLLOW UP

Encourage the learners to look at co-op receipt forms: received by friends and neighbors and to try to explain to their friends what the entries are.

RESOURCES

1. Blackboard and duster
2. Receipt form on the board
3. Slates and chalk

TEACHING NOTES

A very careful explanation of the symbols used will be necessary before trying to explain how they relate to the co-op produce receipt. Don't get into numerical entries yet, as the object of this unit is to explain what each column (area) on the receipt is used for.

UNIT 12 (A)

OBJECTIVE

- a) Co-op farmers will be able to add single digit numbers (greater than 10) completing 8 out of 12 examples in their workbooks correctly.
- b) Co-op farmers will be able to add double digit numbers completing 8 out of 12 examples in their workbooks correctly.

GROUP ORGANIZATION

1. Start with the whole group assembled and review unit 2a. Use bottle tops, fruit, stones, etc., to carry out a simple review of unit 2a. Explain what they will be doing.
2. Break them up into small working groups with slates and chalk.

ACTIVITIES

1. Review simple addition of single digits (unit 2a) using real objects on the ground. Use a stick on sand to do some simple additions. Revise the meaning of (+).
2. Use the board or a slate to do some simple additions of single digits adding up to more than 10. Get a learner to show the group how this is done.
3. Use the preceding single digit examples to introduce simple adding of double digits. Do several examples which involve carrying. Throughout your demonstration take special care to correctly place numbers one under the other in straight columns. Place the (+) sign in the correct position where learners can see the function it plays in this kind of calculation. Repeat several examples on the ground and on the board and involve learners in working these out.
4. Get individual learners to work on simple additions and move among the group correcting obvious writing and calculation errors.
5. Before breaking groups up into small working groups for practice, remind the group how important it is to be able to add properly in order to understand how their produce receipts are worked out.
6. Break the group up into smaller groups and encourage each learner to do a simple single digit addition and one double digit addition. Move around helping and guiding learners who may be having difficulties. Remember to correct any writing errors.
7. Encourage any learner to come forward to lead a short drill on numbers from 1000 to 5000. This

will tell you if the group has grasped the idea or if you should give more time to the unit (repeat the unit).

FOLLOW UP

Encourage learners to write out a short sequence of numbers in the thousands as a take-home exercise.

RESOURCES

1. Blackboard, chalk and duster
2. Slates
3. Sand and sticks
4. Chart (numbers 1000 -5000)
5. Learner's workbook
6. Paper and pencils

TEACHING NOTE

Emphasis should be given to helping learners develop the clearest way to help them identify numbers over 1000. If they have already understood units 4 and 6, this should not be too difficult to do. However, careful attention and time should still be given to the correct writing of numbers as many of the older group members who may also be attending Koranic school may still be confusing co-op type numerals with Arabic ones. If this problem is still apparent then a special session just on number writing would be useful at this stage.

UNIT 12 (B)

OBJECTIVE

Co-op farmers will be able to add double digit numbers (greater than 10) and be able to use a simple system of carrying. They will be able to do 8 out of 12 examples in their workbooks correctly.

GROUP ORGANIZATION

1. Keep the whole group together for an explanation and demonstration of what they will do.
2. Break group up into smaller practice groups after explaining what you want them to do.

ACTIVITIES

1. Review unit 12a and explain how when numbers add up to more than 10, you have to carryover a 1 to the next column in order to do a simple addition. Use the traditional counting system as an example of how farmers traditionally counted cattle or objects adding up to more than 10. For each unit of 10 the farmer uses a stick or a stone which is carried over from one hand to another to remind him that he has counted ten. 2 sticks or stones then represent 20 cattle, etc. Show how carrying in addition is really a similar process and is also to remind that you have counted ten. Show this on the board or on the sand by placing the units and tens columns in between vertical lines and show how you are really doing two separate single digit sums, only you carryover a "stick or stone" to the next sum for every ten you add in the first column. A very careful explanation is needed here so as to make sure that this idea is understood.

e.g.

(1)	stick/stone	-10
2	5	
+ 3	5	
<hr/>		
6	0	

Do as many examples with the group as you think necessary before breaking them up into small groups.

2. Break them up into smaller practice groups after explaining what you want them to do. Move around groups helping out the slower learners.
3. Bring them together and ask learners to come forward to show the group how to do additions with carrying.
Make a note of any problems or difficulties. Correct writing errors all the time.

FOLLOW UP

Encourage learners to take slates home to practice addition with carrying. Tell them to see if they can find any local examples of people using additions with carrying.

RESOURCES

1. Board, chalk and dusters
2. Slates
3. Workbooks
4. Sand and a stick
5. Stones/sticks
6. Chart of additions with carrying

TEACHING NOTE

It is important to try to relate this concept to a traditional method of counting and to make this less abstract than it seems to be. Use a lot of real examples taken from village life to try to put over the idea of carrying for every unit of 10. Correct any Arabic writing problems.

UNIT 12 (C)

OBJECTIVE

- a) Co-op farmers will be able to add three single digit numbers the same way as they were able to add two single digit numbers for unit 12a.
- b) Co-op farmers will be able to add three numbers of 2 and 3 digits without carrying. They will be able to do 8 out of 13 examples in their workbooks correctly.

GROUP ORGANIZATION

1. Keep the group together until you have explained and demonstrated what you want them to do.
2. Break the group up into smaller practice groups.

ACTIVITIES

1. Quickly review units 12a and 12b and explain that they will be learning to do similar calculations for this unit. Show them on the sand or a board how it is easy to add the single digit numbers together (in a column).
2. Do several examples getting the adult learners to work out their own examples and to show these to the assembled group. Correct writing mistakes as they occur.

$$\begin{array}{r} \text{e.g.} \quad 6 \\ \quad \quad 3 \\ \quad \quad + 1 \\ \hline \quad \quad 10 \end{array}$$

3. Show them how it is just as easy to add 3 single and double digit numbers and emphasize how important it is to keep numbers in their correct vertical columns.

$$\begin{array}{r} \text{e.g.} \quad 23 \\ \quad \quad 3 \\ \quad \quad 12 \\ \hline \quad \quad 38 \end{array}$$

4. Break the group up into small practice groups and encourage each person to do as many of both kinds of calculations as he/she is able to in 20 minutes. Move around groups correcting mistakes and assisting learners.

5. Bring them together and discuss any problems or difficulties they had. Make a note of the group's understanding of this before deciding to go on to the next unit.

FOLLOW UP

Encourage learners to use slates and chalk to practice these new skills in their own time.

RESOURCES

1. Board and chalk
2. Sand and a stick
3. Workbooks
4. Slates

TEACHING NOTE

These units repeat and extend what was learned in previous units and so will not need a lot of time. It is important, however, to get every adult learner to realize the importance of writing numbers in straight columns. Koranic school learners will probably need special help with this.

UNIT 12 (D)

OBJECTIVE

Co-op farmers will be able to add three numbers of one, two and three digits, with carrying and be able to correctly complete 8 out of 12 examples in their workbooks.

GROUP ORGANIZATION

1. Start with the group together and explain what you want them to do.
2. Break the larger group into small practice groups and move from group to group giving assistance and answer questions.

ACTIVITIES

1. Set the climate by reviewing the previous unit's work. Explain how the learner will now be able to add three numbers easily with carrying. If necessary, explain the concept of carrying again to the group using examples of the traditional method used to carry 10. Refer back to the work done in unit 12b.
2. Do three to four examples of addition of three numbers with carrying. Emphasize the need to show clearly the number of "sticks" being carried. Remind the group to enter numbers in the correct vertical column.
3. Break the group into small work groups and encourage them to work through the examples provided in their workbooks. Move from group to group correcting and answering questions.
4. Bring the group together and have one person from each practice group come out to do one of the examples from the workbook on a slate. Encourage comments and a discussion on any problems arising out of this exercise.

FOLLOW UP

Encourage learners to complete all the examples in their workbooks and to show these to you before the next session.

RESOURCES

1. Blackboard, chalk and duster
2. Slates
3. Workbooks
4. Sand and a stick

TEACHING NOTE

This unit should not be very difficult if the previous units (12a to c) were done well. However, there is still a need to make the learners aware of the relevance of this unit in achieving the course goal which is to be able to correctly work out and understand the entries on the produce receipt. Always relate each unit to where the learners want to go.

UNIT 13 (A)

OBJECTIVE

Co-op farmers will be able to subtract one and two digit numbers from two and three digit numbers without borrowing and will be able to complete 8' out of 12 examples in their workbooks correctly.

GROUP ORGANIZATION

1. Keep learners in one large group until you have explained and demonstrated what they will do.
2. Break group up into small practice groups.

ACTIVITIES

1. Bring the group together and set climate by reminding them of work done for unit 2b. Using stones, bottle tops, or fruit, review the operation of (-). A quick drill will help refresh memories. Let students come forward and do a subtraction on the sand.
2. Show farmers how easy it is to do the same for subtractions using one and two digit numbers and two and three digit numbers. Use the board and their slates to do some examples. Encourage individual learners to come forward and work out problems for other group members to follow. Correct any obvious writing errors and make sure to stress the need to keep numbers in clear separated vertical columns.

e.g.	$\begin{array}{r} 18 \\ -6 \\ \hline 12 \end{array}$	$\begin{array}{r} 27 \\ -14 \\ \hline 13 \end{array}$	$\begin{array}{r} 817 \\ -16 \\ \hline 801 \end{array}$
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3. Avoid using numbers that involve using carrying at this stage. Break groups up into smaller practice groups after explaining what you want them to do. Let them work at a variety of problems for 20 minutes while you move from group to group correcting mistakes.
4. Bring groups together and discuss any obvious problems. Stress the need to keep numbers in separate columns and to write answers under the appropriate column.

FOLLOW UP

Encourage groups to take slates and workbooks home for more practice.

RESOURCES

1. Board, chalk and duster
2. Slates

3. Workbooks

4. Stones, fruit and other objects

5. Sand and a stick

UNIT 13 (B)

OBJECTIVE

Co-op farmers will be able to subtract one and two digit numbers from two and three digit numbers using a system of borrowing and will be able to complete 8 out of 12 examples in their workbooks correctly.

GROUP ORGANIZATION

1. Keep the group together until you complete explanation and demonstration.
2. Break the group up into practice groups of 3 to 5 people in each.

ACTIVITIES

1. Set the climate by referring back to the previous unit on subtraction. Explain that not all subtractions are so easy and some need to use a system like the system used for carrying in addition. Stress that although this is a similar idea it works differently. Borrowing is when you need to take a unit of 10 and bring it from the second column to the first column to enable you to do a subtraction when the number at the top of the column is smaller than the number below. Emphasize that this is only done when the top number is smaller than the one below.

e.g.

(1)	- Borrow (1)	(1)	- Borrow
230		240	
-15		-115	
<hr/>		<hr/>	
215		125	

2. Do a lot of examples until you feel learners have grasped the idea of borrowing. Show also that if you borrow 10 (1) you need to return 10 (1) to the bottom of the same column from which you borrowed. This is a difficult concept to explain and will need a lot of practice from you before learners will understand.
3. Only when you are sure that learners have really understood borrowing and returning should you break them into practice groups. Give them a lot of practice, emphasizing the need for each individual to do his own thinking and his own examples.
4. Bring the group together to find out how well they have been able to do the examples. Discuss their problems and decide if you will continue or revise this unit next time.
5. Do some subtractions on the receipts provided.

FOLLOW UP

Encourage a lot of extra discussion and work on this. Allow them to take slates home.

RESOURCES

1. Blackboard, chalk and duster
2. Workbooks
3. Sand and a stick
4. Slates

TEACHING NOTE

This is a very difficult concept to teach and you need to be very clear and consistent in the way you work through examples. Do a lot of examples with the learners until you think they know how to borrow and return. There are many different ways of teaching this. Try the one you think works.

UNITS 14 AND 15

OBJECTIVES

- 14) After carrying out 4 measurements using a meter rule, co-op farmers will be able to understand and use a decimal point to express a fraction of a whole unit (1 meter).
- 15) Co-op farmers will be able to use a decimal point correctly to write fractions (weight and money) to the nearest decimal point.

ACTIVITIES

1. Set the climate by referring to unit 7 (measuring objects longer than 1 meter). Use a meter stick to show how when you measure anything, you cannot always write down the measurement in whole units. Show the learners by carrying out a measurement that you can use a decimal point (.) to give a fraction, or a part of a meter. Be careful to distinguish a decimal point from any other points they may be familiar with.
2. Carry out some measurements of surrounding objects and encourage learners to come around you and note down your measurement to the nearest centimeter using a decimal point.

e.g. 2.34 meters 2.35 meters
 2.82 meters, etc.

3. Break group up into practice groups and give them each a meter rule and encourage them to continue the exercise. Have them carry out 4 measurements writing them down in decimal fractions of a meter.
4. Bring the group together and, using the diagrams in the learner's workbook, show them how money and weights can also be written using a decimal point. Use dalasis and bututs to write down 0.25, 0.50, 0.75, 1.00 and show them how these numbers express $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and a whole. Do not write down fractions as this will be too difficult.
5. Discuss the whole idea of decimals and say how weights on the co-op receipts are often expressed as decimals. Show learners an example of weights entered as decimals. Keep explaining till you are sure the idea is clear. Refer to the tariff weight chart and get them to use this to calculate the value in decimals of fixed weights of produce.

FOLLOW UP

Encourage farmers to go out and find examples of weights and measurements written in decimals and to write these down. Get them to work out different values for different weights using the tariff weight chart provided.

UNIT 16

OBJECTIVE

Co-op farmers will be able to understand and add up tare weights expressed in decimals, and enter these correctly on the co-op receipt forms provided.

GROUP ORGANIZATION

1. Keep the group together until you have finished explaining what you want them to do.
2. Break the group up into small practice groups to do the exercise from the workbook.

ACTIVITIES

1. Refer back to the previous two units and review decimal notation. Explain how weights entered on their produce receipts are in decimals. Show them an example of a produce receipt form with decimal entries. Get them to try to add up the amounts entered to check if it is correct.
2. Explain what "tare weight" is and say how tare weights are fixed by government and are the same everywhere. Show how tare weight is now 2.5 kilograms. Say that this is meant to be the weight of an empty large sack and is subtracted from the total weight before the money value of the contents of a sack is calculated. Show how, by adding 2.5 kilos for each sack, a total tare weight is obtained which is subtracted from the weight of the total.
3. At this point it is important to discuss the idea of tare weight thoroughly before continuing. Many farmers do not understand this idea and feel they are being cheated.
4. Show them examples of completed produce receipts with tare weights calculated and encourage adult learners to check the additions to see if they are correct. Do some simple additions for different numbers of sacks using 2.5 kilos as the tare weight. Subtract examples from total weight.
5. Break groups up and encourage them to work through examples in their workbooks.
6. Bring them together to discuss any problems they still have with tare weights. Make a note of these and decide whether to repeat the unit or continue.

FOLLOW UP

Encourage them to check tare weight deductions on receipts belonging to their friends or neighbors. Encourage them to show other farmers that the entries are on a produce receipt.

RESOURCES

1. Board and chalk
2. Produce receipts
3. Workbooks
4. Slates

UNIT 17

OBJECTIVE

Co-op farmers will be able to read and add up two separate readings on an Avery scale and enter this in the right place on a new co-op receipt form so as to be able to use this to correctly work out the total value for the weight of produce entered.

GROUP ORGANIZATION

1. Keep the group together for a general discussion about receipts and their relation to the Avery scale.
2. Break group up and let groups use readings on the Avery scale model to fill in receipt forms correctly using tariff tables and using tare weights to deduct the correct amount from the total weight before calculating the correct value for each weighed amount of produce.

ACTIVITIES

1. Set the climate by showing how all the preceding units have helped to bring them to this point. Emphasize the need to be accurate in calculating weights and values and to be careful to work out any weights and values entered in their receipt forms before accepting them. Discuss the usefulness of knowing how to use numbers to do this.
2. Work through produce receipt entries (correct and incorrect ones) and encourage learners to be critical of entries until they have checked these for accuracy. Do several examples.
3. Break learners into groups and encourage them to correctly fill in and work out their own produce receipt forms. Move around groups and check these and help those who are still having problems. Stress the importance of entering quantities in the right place and writing clearly.
4. Bring groups together again and discuss any difficulties they may be having. Make a note of these and repeat the unit if necessary.

FOLLOW UP

Take group to the nearest secco and observe entries being made on produce receipts. With the secco manager's permission, have the group check produce receipt entries of farmers leaving the weighing point. If this cannot be done then encourage group members to go to do this individually at their local secco. Explain the nature of the exercise to the secco manager to avoid giving offense. If it can be arranged, test each group member on the Avery scale and get him/her to fill in a produce receipt correctly.

RESOURCES

1. Board and chalk
2. Produce receipts
3. Workbooks
4. Secco weighing point

TEACHING NOTE

This is the final unit of a functionally very specific numeracy course. Your learners should by this time be reasonably confident with writing and using numbers in this context. However, some may still need help. Many will also soon forget these new skills because there is little or no opportunity outside this course to practice them. Don't be discouraged and keep going.