Have students work in pairs, with each student forming a **different odd number** using the cubes. Then ask them to join the two together. Place the Joining Odd Numbers transparency on the overhead. Record for each pair: the odd number formed by student 1, the odd number formed by student 2, the new number which resulted from joining the two odd numbers, and the the final result (even or odd).

When each pair has shared their information, ask what pattern the students see. Lead them to understand that **two odd numbers will combine to form an even number** as you record this information in the space provided below the chart. This chart may then be enlarged and posted in the room for reinforcement.

4. Distribute one Even and Odd Game, 2 number cubes, and 2 small game markers to each pair of students. Place the Rules for the Even and Odd Game transparency onto the overhead and read the directions out loud. Copy the information on how many spaces to move onto the board. Using a transparency game board, choose two students and model how to play the game. To be sure students understand the directions, ask a student to explain how to play in his/her own words. Then allow time for pairs to play several games. As a conclusion, discuss results of their games out loud, focusing on even/odd language and concepts.

5. Ask students to orally review concepts about even and odd numbers. Distribute copies of Even and Odd Numbers to each student. Ask students to write what they know about even numbers and then give some examples. Then, have them write what they know about odd numbers and give some examples. **(Note:** For students with little English proficiency, you may want to work individually with them and record information as they illustrate odd and even with manipulatives.)

6. The Even and Odd Activity Sheet may be completed as class work or assigned to work on at home as a review activity. If the activity is to be taken home, be sure to do one example in each section so that students have a model to follow. **(Note:** For students with little English proficiency, you may want to ask for responses from the whole class as you write them on the overhead or model with manipulatives.)

Count by 5s

7. Give each student a hundreds board (TR) and a pile of two-sided counters. Place a transparency copy of the hundreds board on the overhead. Tell students that you will cover every **fifth** number on the board. (This is a good way to review ordinal numbers taught in objective 10.) Beginning with 1, point and model counting the numbers in order with the students, "first, second, third, fourth, **fifth.**" As you say the word fifth, place a counter on the number 5 and ask students to do the same. Beginning

with the number 6, point and model counting the next five numbers in the same way , "first, second, third, fourth, **fifth**," ending with the number 10 as the fifth number. Ask students to place a counter on 10 as you model on the overhead. Continue in this manner covering the numbers 15, 20, 25, and 30 together. Ask students which number will be covered next if you continue in the same way. (Elicit 35.) Ask students to work with a partner to cover every fifth number through 100. When they have finished, review correct responses on the transparency, allowing different students to come up and cover the next 2 numbers as you continue the pattern. Tell students that when we cover every fifth number, we are **"counting by fives."** Say, "we will count by 5s." Encourage students to read each of the covered numbers orally as you point to the transparency. (Students will not be able to read the numbers from their own boards since their counters are not transparent!) Say, "5, 10, 15, 20, 25..." Ask students what they notice about the numbers when we count by 5s. (Elicit an understanding that numbers in the counting by 5s sequence all end in either 5 or 0.)

8. Use a large wall-mounted number line to allow students to come up and point to numbers in the counting by 5s sequence, beginning with 5 and counting through 50 and then 100. As one student points, ask the class to read the numbers out loud together.

9. Ask students when it might be helpful to count by fives. (Counting by 5s is the same as counting the value of a group of nickels.) Put a random pile of transparent nickels on the overhead and model *counting by 5s to find the total value. Write the total value, reminding students to write ¢ after the* answer. Give each pair of students an envelope with a different random amount of nickels inside and a Counting Coins sheet. Each envelope should be numbered as 1, 2, 3... Ask each group to count the total value of the nickels in their envelope by counting by 5s. Have them record the total value beside the correct envelope number on their recording sheet. **For example**, envelope 1 should be recorded beside number 1, envelope 2 beside number 2 on the recording sheet... (Use a transparency recording sheet to model, if necessary.) Walk around as students work to be sure that they are recording the values in the correct place on their papers. When students have finished their first envelope, have them trade envelopes and repeat the procedure, counting the nickels by 5s and recording their value in the correct place on their papers. Have students continue trading until they have counted all envelopes. Compare answers and have students help each other recount the coins in any envelope where the total values were not correct.

10. Give each group of students a random pile of base ten unit cubes (approximately 20 - 40). Ask each group to guess the number of counters they have, without counting them, and write their guess on a piece of paper. Ask students to put the cubes into piles of 5, as you model how to do this on the overhead. Then ask students how you might quickly count the total number of cubes. (Count by 5s.) Have each group count by 5s to find the total number and compare this to their guess. Help students determine who was closest to their guess.

Place a random pile of pennies on the overhead. Say, "I want to know the total value. I can count each of the pennies, 1..2..3..4..5..6.., but it will take a long time. Ask if there is a faster y to find the total value. Acknowledge students' ideas, such as counting by 2s, and model on the overhead. Lead them to see that pennies can be put into piles of 5 and then counted by 5s to find the total value. Model this procedure. Give each group of students a random pile of pennies. Have them put the pennies into piles of 5 and then count by 5s to find the total value of the coins.

Count by 10s

Each of the activities above (6-9) can be modified slightly to teach counting by 10s.

- In activity 6, students will place counters on every **tenth** number and then look at the pattern created by numbers in the counting by 10s sequence. (Numbers in the counting by 10 sequence all end in 0.)
- Activity 7 can be repeated, pointing to and counting numbers in the 10s sequence.
- Activity 8 can be repeated using dimes instead of nickels.
- Activity 9 can be modified by asking students to place their cubes into piles of 10, counting by 10s to find the total, and recording the amount on the Counting Coins sheet.
- Students may also find the total value of a random pile of nickels by putting them into piles of 2 (two nickels equal 10¢) and then counting by 10s.

Joining Even Numbers

Student 1	Student 2	New Number	Result

What pattern do you see?_____

_____

_____

Transparency/Wall Poster

Joining Odd Numbers

Student 1	Student 2	New Number	Result

What pattern do you see?_____

_____

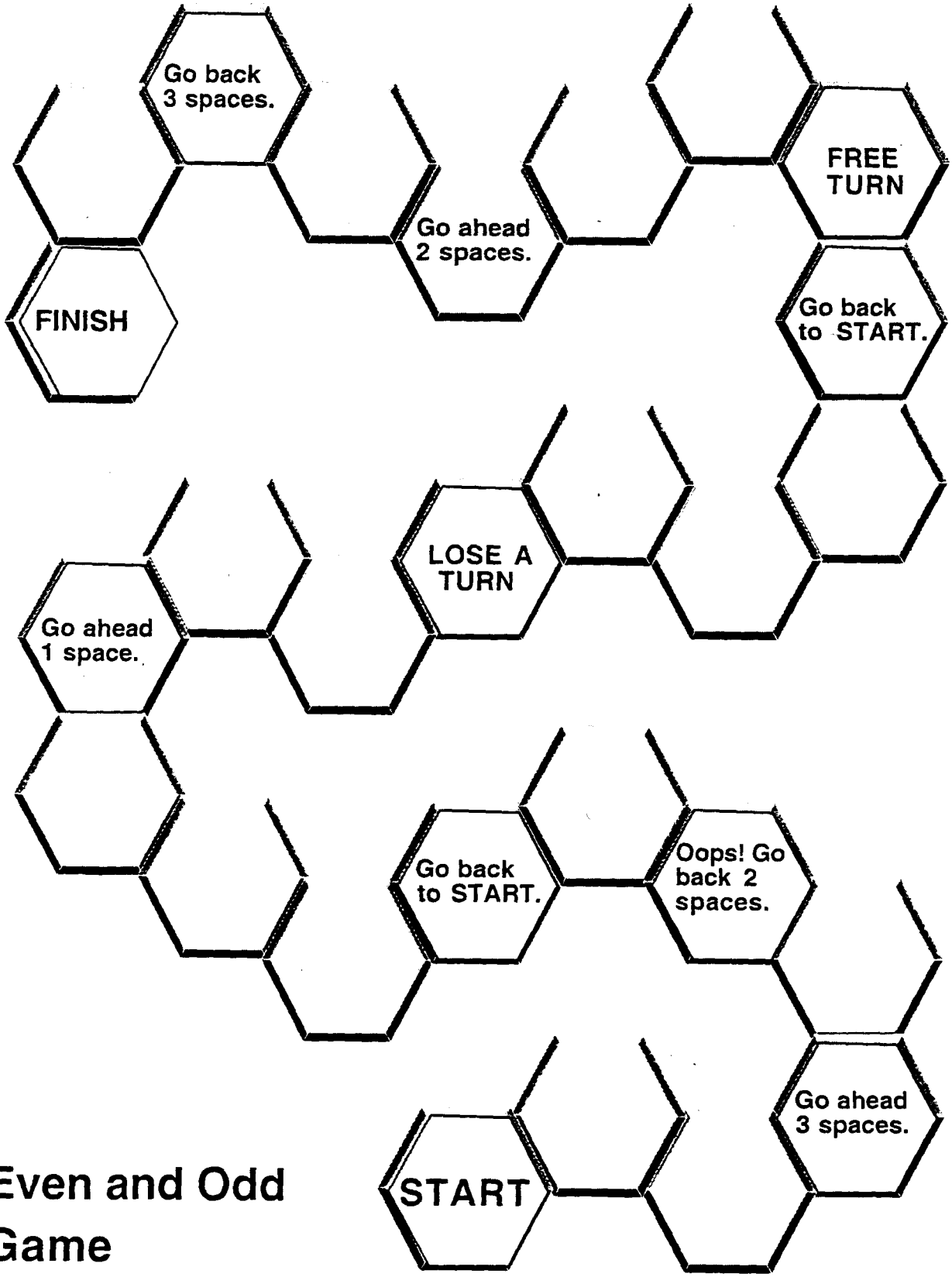
_____

Rules for the Even and Odd Game

1. Both players put markers on the START box.
2. The first player rolls the number cubes.

> **Move 1** space if the two numbers are **even.**
>
> **Move 2** spaces if the two numbers are **odd**.
>
> **Move 3** spaces if one number is **even** and one number is **odd**.

3. Players take turns.
4. If a player lands on a white shape, follow the directions.
5. The first player to reach FINISH is the winner! (Player must land exactly on the finish space.)



Even and Odd Game

Name _____

Even and Odd Numbers

Even numbers are _____

_____

_____

_____.

Here are 10 even numbers: _____, _____, _____, _____,

_____, _____, _____, _____,

_____, _____

Odd numbers are _____

_____

_____

_____.

Here are 10 odd numbers: _____, _____, _____, _____

_____, _____, _____, _____

_____, _____

Name _____

Even and Odd Activity Sheet

Put a ☐ around **even** numbers. Put a ○ around **odd** numbers.

72	25	91	67	21
34	83	58	49	
14	26	13	50	100
0	11	36	4	9

Read and then choose a number to write on each line.

1. Write any **odd** number less than 10. _____
2. Write any **even** number greater than 10. _____
3. Write any **odd** number greater than 50. _____
4. Write any **even** number less than 35. _____
5. Write any **odd** number less than 40. _____

Think about today's date.
Is the number *odd* or *even*? _____

Name _____ Date _____

Counting Coins

Count to find the total value of the coins. Write the value on the line.

Envelope Number	Total Value
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Objective 10: Read and write multiples of 2, 5, and 10; identify multiples of each above 100.

Vocabulary

multiple

Materials

number line

Transparencies:

Multiples

Student Copies:

Discovering the Multiples of 2, 5, and 10
Multiples of 2, 5, and 10

Language Foundation

1. Help students understand the word **multiple** by explaining that the prefix "multi" means *many*. Ask students if they know other words beginning with this prefix. Other examples are multicolored, multicultural, multimedia, multinational, multipurpose, multilink, etc.

Mathematics Component

1. In this objective, begin by reviewing concepts learned in the previous objective about sequences of numbers counting by 2s, 5s, and 10s. Leave each counting sequence on the board - **do not erase**! Write on the board:

   count by 2s ⟶ 2, 4, 6, 8, 10, 12, 14, ___, ___

   Ask students to name the next two numbers. (Use the number line if students need to look at the numbers. Elicit 16 and 18.) Next, write:

   count by 5s ⟶ 5, 10, 15, 20, 25, 30, 35, ___, ___

   Ask students to name the next two numbers. (40, 45) Then write:

   count by 10s ⟶ 10, 20, 30, 40, 50, ___, ___

   Ask students to name the next two numbers. (60, 70)

   * Point to a large wall-mounted number line and review the first few counting numbers (**0**, 1, 2, 3, 4...), **emphasizing 0 as the starting point**. (Note: The concept of 0 and its placement on the number line were in an earlier objective.)

   Point to the numbers in the counting by 2s sequence on the board. Write 0 **before** the 2. Write "multiples of 2" after the list as follows:

   count by 2s ⟶ **0**, 2, 4, 6, 8, 10, 12, 14, 16, 18... ⟶ **multiples** of 2

   Explain that when we start with 0 and count by a number we are listing multiples of that number. Repeat this procedure for the other two sequences on the board, emphasizing 0 as you write it.

   count by 5s ⟶ **0**, 5, 10, 15, 20, 25, 30, 35, 40, 45... ⟶ **multiples** of 5

   count by 10s ⟶ **0**, 10, 20, 30, 40, 50, 60, 7... ⟶ **multiples** of 10

2. Distribute the Discovering the Multiples of 2, 5, and 10 student activity sheet. Read the directions with the students and then have them work in pairs to complete the activity. When they have finished, discuss the students' observations as a group, leading them to understand that:

   - multiples of 2 end in 0, 2, 4, 6, or 8.
   - multiples of 5 end in 0 or 5.
   - multiples of 10 end in 0.

   Place the transparency Multiples on the overhead and review the information together. This page may be enlarged and posted in the room or used for review throughout the year.

3. Place a random group of numbers (approximately 15-20) which are each less than 100 on the board. Ask students, "What do we know about multiples of 2?" (Multiples of 2 end in 0, 2, 4, 6, 8 or 0.) Have students find numbers on the board which are multiples of 2 and circle them. Repeat this procedure with multiples of 5 and 10, using squares and triangles to mark them. Then, erase the first set of numbers and repeat the procedure with a set of numbers which are all greater than 100.

4. List the first five multiples of 2 (0, 2, 4, 6, 8) on the board. Ask, "Are these all of the multiples of 2?" If necessary, model other multiples of 2 until students can verbalize that multiples of 2 continue on and on just like counting numbers. List the first five multiples of 5 (0, 5, 10, 15, 20) on the board. Ask, "Are these all of the multiples of 5?" Model other numbers until students can verbalize that multiples of 5 continue on and on just like counting numbers. Repeat this procedure for multiples of 10. Lead students to understand that all sets of multiples go on and on.

5. Distribute copies of the Multiples of 2, 5 and 10 activity sheet. (If needed, place the Multiples transparency on the overhead for students to use as reference.) Have students complete the activity, discussing with a partner, as needed.

Name _____ Date _____

Discovering the Multiples of 2, 5 and 10

Work with a partner. **Read** carefully and **write** your answers on the lines.

1. Write the first 15 numbers which are multiples of 10.
   (**Remember**: Start with 0 and count by 10s.)

— — — — — — — — — — — — — — —

What patterns do you see? (Hint: Look at the **end** of each number.)

_____
_____
_____
_____

Is 990 a multiple of 10? **Why**?

_____
_____
_____

2. Write the first 15 numbers which are multiples of 5.
   (Remember: Start with 0 and count by 5s.)

— — — — — — — — — — — — — — —

What patterns do you see? (Hint: Look at the **end** of each number.)

Is 1536 a multiple of 5? **Why**?

3. Write the first 15 numbers which are multiples of 2.
(Remember: Start with 0 and count by 2s.)

— — — — — — — — — — — — — — —

What patterns do you see? (Hint: Look at the **end** of each number.)

Is 538 a multiple of 2? **Why**?

Multiples

When we start with 0 and count by a number we are writing multiples.

Examples: multiples of 2 → 0, 2, 4, 6, 8...

multiples of 3 → 0, 3, 6, 9,12...

- Multiples of 2 end in 0, 2, 4, 6, or 8.

  Examples: 30, 12, 14, 6, 158

- Multiples of 5 end in 0 or 5.

  Examples: 5, 30, 65, 210

- Multiples of 10 end in 0.

  Examples: 10, 50, 70, 490

Name _____

Multiples of 2, 5, and 10

1. List the first ten numbers which are multiples of 5.

_____, _____, _____, _____, _____, _____, _____, _____, _____, _____

2. List the first ten numbers which are multiples of 10.

_____, _____, _____, _____, _____, _____, _____, _____, _____, _____

3. List the first ten numbers which are multiples of 2.

_____, _____, _____, _____, _____, _____, _____, _____, _____, _____

4. Draw a circle ○ around all of the multiples of 5.
   Draw a square □ around all of the multiples of 2.
   Draw a triangle △ around all of the multiples of 10.

15	68	12	36	257	625	180
50	492	500	8	105	44	
24	2	470	88	16	202	5

5. Multiples of 2 **end** in ___, ___, ___, ___, ___.

   Multiples of 5 **end** in ___, ___.

   Multiples of 10 **end** in ___.

Answer Key
Obj. 10

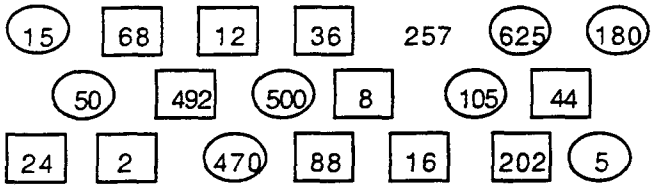
Discovering Multiples of 2, 5 and 10

1. 0, 2, 4, 6, 8, 10, 12, 14, 16, 18
   What patterns do you see? All numbers end in 0, 2, 4, 6, or 8.
   Is 538 a multiple of 2? Yes, because it ends in 8.

2. 0, 5, 10, 15, 20, 25, 30, 35, 40, 45
   What patterns do you see? All numbers end in 0 or 5.
   Is 1536 a multiple of 5? No, because it does not end in 0 or 5.

3. 0, 10, 20, 30, 40, 50, 60, 70, 80, 90
   What patterns do you see? All numbers end in 0.
   Is 990 a multiple of 10? Yes, because it ends in 0.

Multiples of 2, 5, and 10

1. 0, 5, 10, 15, 20, 25, 30, 35, 40, 45
2. 0, 10, 20, 30, 40, 50, 60, 70, 80, 90
3. 0, 2, 4, 6, 8, 10, 12, 14, 16, 18
4. 

5. Multiples of 2 **end** in: 0, 2, 4, 6, or 8
   Multiples of 5 **end** in: 0 or 5
   Multiples of 10 **end** in: 0

Objective 11: Complete a sequence of multiples of 2, 3, 4, 5, and 10 (orally and in writing) of 10 or fewer consecutive numbers to 99.

Vocabulary

more
less
missing
pattern
sequence

Materials

number line

Transparencies:

Number Patterns
Look for a Pattern

Student Copies:

Writing Number Patterns
More Number Patterns

Language Foundation

1. After you write the number sequence on the overhead or chalkboard in #1 of the mathematics component, point to the blank lines in the sequence as you say **"missing"**, indicating that there is nothing there. Numbers are missing. As you proceed through the lesson, they will learn how to find the missing numbers.

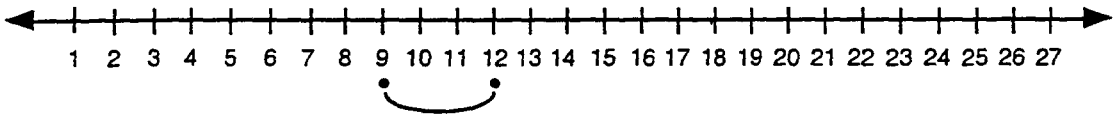
2. Relate the word **sequence** to the word **order** as used previously in other lessons. In this lesson, the sequence or order of numbers will depend on the **pattern** being described.

3. Review words as necessary and encourage students to use them during class by saying them as often as you can.

Mathematics Component

Number sequences using "__ more" as a pattern:

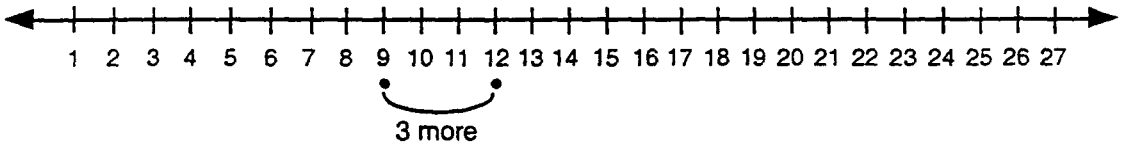
1. Place the Number Patterns transparency on the overhead. Using the number line at the top of the page, briefly review the concept of more and less on the number line. Remind students that moving to the right results in a number that is **more** and moving to the left results in a number that is **less.** Write the following number sequence in the middle of the page: 9, 12, 15, 18, ___, ___, 27. Tell students that some numbers are missing and you need to find and write the missing numbers. Explain that a special pattern was used to write these.
   - Tell students that you can use the number line to find out what the pattern is and then write missing numbers.
   - Point to the first number in the sequence (9) and then point to 9 on the number line.
   - Put a small dot below the number 9.
   - Repeat the same procedure for the second number in the sequence (12).



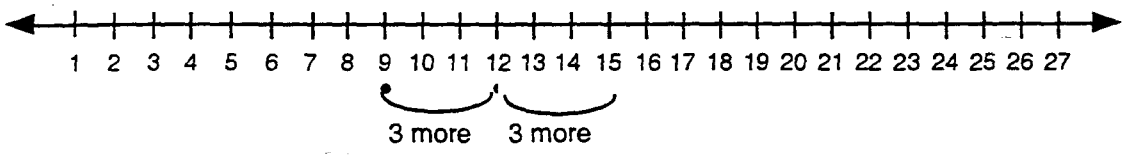
9, 12, 15, 18, ___, ___, 27

Pattern: _____

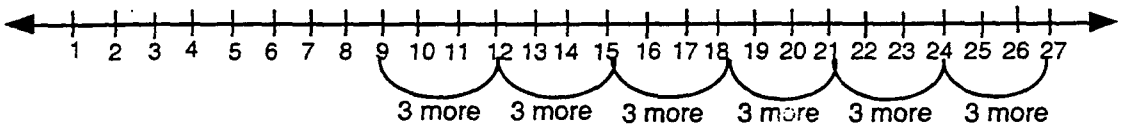
   - Draw a loop from the number 9 to the number 12 as shown above.
   - Point to the 9 with the tip of a pencil. Show that moving to 10 would be one jump on the number line as you say, "one." Point to 11 and show that 11 would be two jumps as you say, "two." Point to the 12 as you say, "three."
   - Recount and then write **"3 more"** beneath the loop.



   - Point to the third number in the sequence (15), locate it on the number line, and put a small dot below the number 15.
   - Draw a loop from the number 12 to the number 15 and write "3 more" as shown below .



- Using a pencil tip, point to 12 and count the number of jumps needed to reach 15 saying, "one, two, three" as you count.
- Repeat the same procedure for the next number in the sequence (18), drawing a third loop from 15 to 18.
- Ask students what **pattern** they see? (The pattern is "3 more.")
- Write "3 more" on the line beside the word pattern. (**Note**: The use of "3 more" as a pattern reinforces the vocabulary (more and less) introduced in objective 5. Some students may realize that this can also be written as "add 3.")
- Repeat the first four numbers in the sequence and say, "If the pattern **"3 more"** continues, what would we write **after** 18?" (21)
- If students have difficulty saying the next number in the sequence, model various responses on the board by drawing loops and checking to see if the "3 more" pattern continues.
- Draw a loop to 21 and write "3 more" beneath it.
- Count to check the pattern and write 21 on the line as the first **missing number** in the sequence: 9, 12, 15, 18, **21**, ___, 27.
- Repeat the same procedure for 24, drawing an additional loop on the number line, checking the pattern, and writing 24 as the next number in the sequence: 9, 12, 15, 18, **21**, **24**, 27.
- Point to the last number in the sequence (27) and put a small dot under 27 on the number line.
- Tell students they must **make sure the pattern continues** for all numbers!
- Count from 24 to 27 to check the pattern and draw a final loop to the number 27.



Pattern: 3 more

9, 12, 15, 18, **21** , **24** , 27

- Clear the previous sequence off the transparency and repeat the above procedure for the following sequence:

2, 6, 10, 14, ___, ___, 26

Number sequences using "__ less" as a pattern:

- Repeat the same procedure as described above for the following sequences, helping students understand that the pattern being described is "___ **less**" since they are moving to the left on the number line.

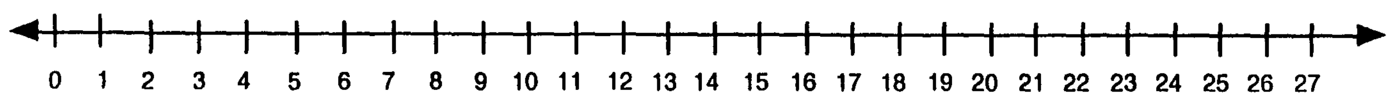
25, 23, 21, 19, ___, ___, ___, 11, 9 **Pattern:** 2 less

27, 23, 19, ___, ___, ___, 3 **Pattern:** 4 less

1. Pass out individual copies of Writing Number Patterns. Read the directions together and allow students to complete the activity, discussing their work with a partner as needed. (**Note**: A large wall-mounted number line may be needed as reference for some students.)

2. The Look for a Pattern transparency may be used to provide additional practice in looking for patterns, filling in number sequences, and naming numbers orally. Put the transparency on the overhead and cover all but the first problem. Ask students to work with a partner to find the pattern and decide which numbers would go in the circles to complete the pattern. After students have had time to work on the problem with a partner, ask if anyone can tell you the pattern and the missing numbers. Encourage oral discussion to the extent possible, depending on students' oral language proficiency. Include students who have not developed English language proficiency by allowing them to write the missing numbers on the transparency rather than naming them orally. More Number Patterns may be assigned as additional reinforcement.

Number Patterns



Pattern: ______________________________

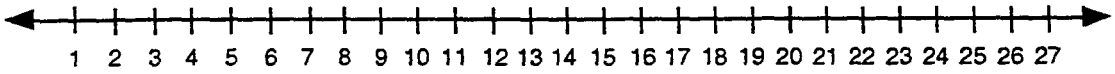
Name _____

Writing Number Patterns

- Put a dot below the first number of the number sequence.
- Connect the dot ⌣ to the second number in the sequence, and so on...
- Write the pattern on the line.
- Write the missing numbers.

Remember: The pattern can be **more** or **less**

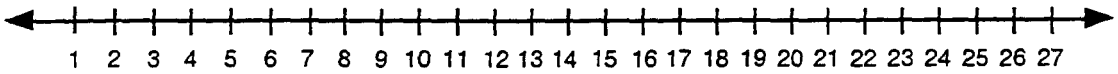
1)



5, 8, 11, ___, ___, ___, ___, 26

Pattern: _____

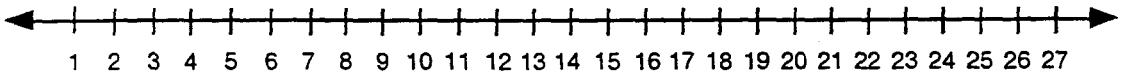
2)



1, 6, 11, ___, ___, 26

Pattern: _____

3)



25, 21, 17, ___, ___, ___, 1

Pattern: _____

- Study each number sequence.
- Try to find the pattern.
- Write the pattern on the line. (Use **more** or **less**.)
- Write the missing numbers.

1) 30, 40, 50, ___, ___, ___, ___, 100

Pattern: _____

2) 55, 50, 45, ___, ___, ___, 25, 20

Pattern: _____

3) 72, 74, 76, ___, ___, ___, ___, 86, 88

Pattern: _____

4) 87, 83, 79, ___, ___, 67, 63, 59

Pattern: _____

5) 40, 37, 34, 31, ___, ___, ___, ___, 16

Pattern: _____

6) 21, 25, 29, ___, ___, ____, 45

Pattern: _____

7) 49, 54, 59, 64, ___, ___, ___, ___, 89

Pattern: _____

8) 37, 35, 33, 31, ___, ___, ___, 23

Pattern: _____

9) 19, 29, 39, ___, ___, ___, 79, 89

Pattern: _____

10) 61, 64, 67, ___, ___, ___, 79, 82

Pattern: _____

Look for a Pattern

Write the missing numbers. Say the numbers.

1) 0 — 5 — 10 — ◯ — ◯ — 25 — ◯ — ◯

2) 22 — 24 — 26 — 28 — ◯ — ◯ — ◯ — ◯

3) 56 — 52 — 48 — ◯ — ◯ — ◯ — 32 — 28

4) 76 — 79 — 82 — ◯ — ◯ — 91 — 94 — ◯

5) 80 — 70 — 60 — ◯ — ◯ — ◯ — ◯ — ◯

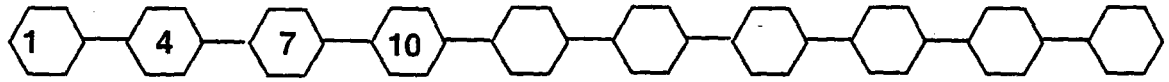
6) 33 — 37 — 41 — 45 — ◯ — ◯ — ◯ — 61

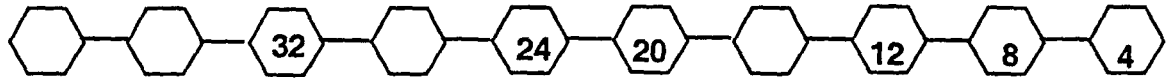
7) 53 — 58 — 63 — ◯ — ◯ — ◯ — 83 — ◯

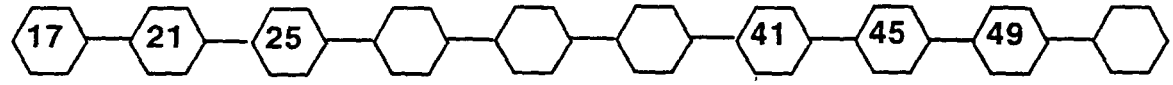
Name _____

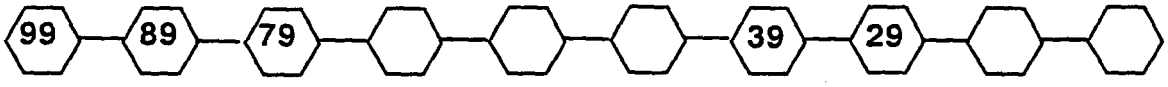
More Number Patterns

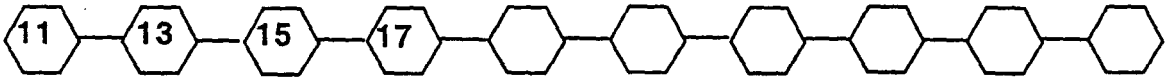
Write the missing numbers in the ⬡.

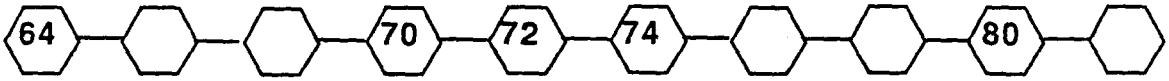
1) 

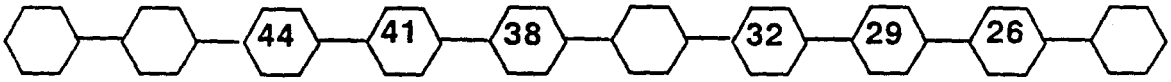
2) 

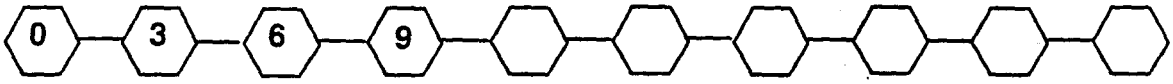
3) 

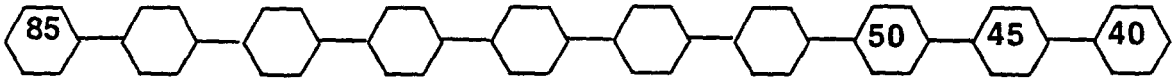
4) 

5) 

6) 

7) 

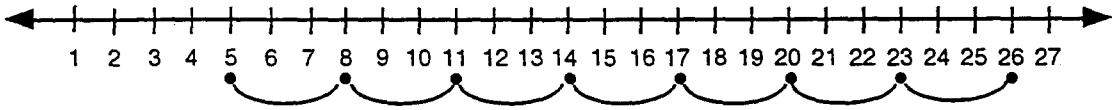
8) 

9) 

Answer Key
Obj. 11

Writing Number Patterns

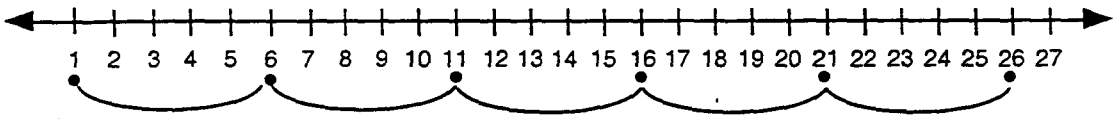
1)



5, 8, 11, 14, 17, 20, 23, 26

Pattern: 3 more

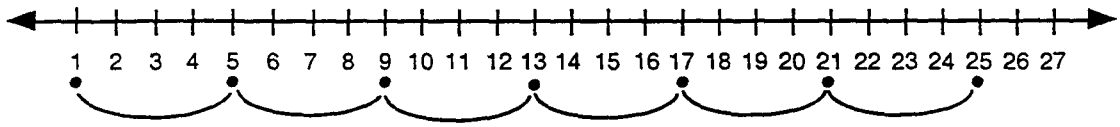
2)



1, 6, 11, 16, 21, 26

Pattern: 5 more

3)



25, 21, 17, 13, 9, 5, 1

Pattern: 4 less

1) 30, 40, 50, 60, 70, 80, 90, 100
Pattern: 10 more

2) 55, 50, 45, 40, 35, 30, 25, 20
Pattern: 5 less

3) 72, 74, 76, 78, 80, 82, 84, 86, 88
Pattern: 2 more

4) 87, 83, 79, 75, 71, 67, 63, 59
Pattern: 4 less

5) 40, 37, 34, 31, 28, 25, 22, 19, 16
Pattern: 3 less

6) 21, 25, 29, 33, 37, 41, 45
Pattern: 4 more

7) 49, 54, 59, 64, 69, 74, 79, 84, 89
Pattern: 5 more

8) 37, 35, 33, 31, 29, 27, 25, 23
Pattern: 2 less

9) 19, 29, 39, 49, 59, 69, 79, 89
Pattern: 10 more

10) 61, 64, 67, 70, 73, 76, 79, 82
Pattern: 3 more

Look for a Pattern

1) 0, 5, 10, 15, 20, 25, 30, 35

2) 22, 24, 26, 28, 30, 32, 34, 36

3) 56, 52, 48, 44, 40, 36, 32, 28

4) 76, 79, 82, 85, 88, 91, 94, 97

5) 80, 70, 60, 50, 40, 30, 20, 10

6) 33, 37, 41, 45, 49, 53, 57, 61

7) 53, 58, 63, 68, 73, 78, 83, 88

More Number Patterns

1) 1, 4, 7, 10, 13, 16, 19, 22, 25, 28

2) 40, 36, 32, 28, 24, 20, 16, 12, 8, 4

3) 17, 21, 25, 29, 33, 37, 41, 45, 49, 53

4) 99, 89, 79, 69, 59, 49, 39, 29, 19, 9

5) 11, 13, 15, 17, 19, 21, 23, 25, 27, 29

6) 64, 66, 68, 70, 72, 74, 76, 78, 80 82

7) 50, 47, 44, 41, 38, 35, 32, 29, 26, 23

8) 0, 3, 6, 9, 12, 15, 18, 21, 24, 27

9) 85, 80, 75, 70, 65, 60, 55, 50, 45, 40

Objective 12: Recognize, identify, and record the value of a nickel, a dime, a quarter, a half-dollar, and a dollar. Describe the relationship among coins and bills.

Vocabulary

coin
penny
pennies
nickel
dime
quarter
half-dollar
dollar
cent
¢
$
value
regroup

Materials

base ten blocks
plastic coins
overhead set of coins
number cubes

Transparencies:

- Learning About Money
- Money
- Money(completed)
- Directions for the Money Trading Game
- Coin Values

Student Copies:

- Money
- Money Trading Game
- Coin Board
- Coin Values
- Writing Money

Language Foundation

1. Some students may already know the value of the coins but not their English names. Other students may not know the values. You will need to tailor this lesson to the meet the needs of your students.

2. Introduce the word **value** after students learn how much each coin/bill is worth. Towards the end of #1 in the mathematics component, tell students that the value of a nickel is five pennies; the value of a dime is ten pennies; and so on. Have students repeat after you.

Mathematics Component

1. Using base ten blocks, show students a unit cube saying, "one" and a rod saying, "ten". Review place value concepts by asking how many units it takes to make a rod. (10) Explain that they will use ones and tens to talk about money.
   - Pass out an assortment of plastic coins to each pair of students.
   - Using an overhead set of coins and the Learning About Money transparency, place 1 penny on the transparency under the column labeled, "Coin." Tell them this is called a **penny** or one cent.
   - Ask students to find the same coin and hold it up. Explain that this is like a unit cube. Fill in the remaining columns beside the penny as shown below, emphasizing how to say and write this amount.

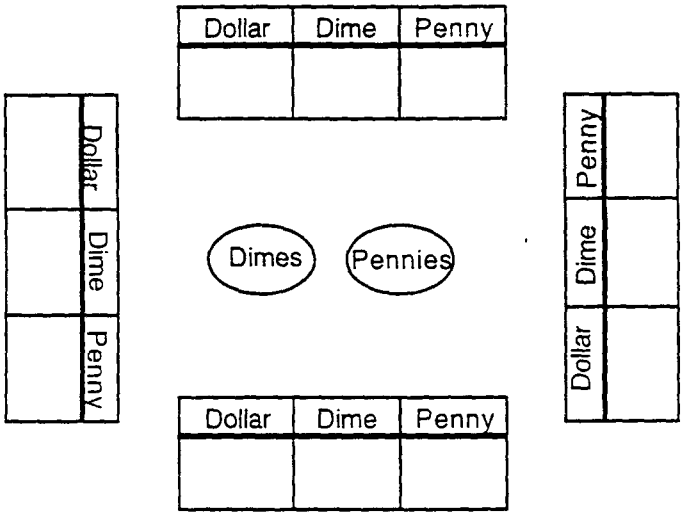
Coin	How many pennies?	We say...	We write...
1¢	1 penny	a penny **or** one cent	1¢
10¢	10 pennies	a dime **or** ten cents	10¢

NOTE: **Skip over** the second line which will be used to record information about a nickel.

- Put 10 pennies beside the chart, counting them (one cent, two cents, three cents,...) as you place them.
- Explain that ten cents is the same as a **dime**, placing an overhead dime in the appropriate place on the chart. Remind students that when we had 10 unit cubes, we could regroup them for a rod. Tell them that when we have 10 pennies, we can regroup them for a dime.
- Ask students to find a dime and hold it up. Ask, "How many pennies make 1 dime?" (Elicit 10 as you fill in "10 pennies" in the appropriate column.) Explain that we **say** "a dime or ten cents" as you fill in the appropriate column. Ask students to repeat the words. Say we **write** 10c, as you show the way to record this amount on the chart.
- Review the information recorded for the penny and the dime, asking students to repeat. Tell students that there are other coins with special values. Repeat the procedure above with the **nickel**, **quarter**, **half-dollar**, and **dollar**. NOTE: An overhead dollar bill should be used for a dollar with the following information: 100 pennies, a dollar, $1.00. Explain to students that we do **not** say "100 cents" for a dollar even though that is its value.

2. Distribute an assortment of coins to each pair of students and the Money student activity sheet. Using the Money transparency, review coin value as you ask students to find each coin and then help you fill in the appropriate information for each amount of money. A Money transparency/wall poster with the completed information is provided for review/reinforcement.

3. Give each student a Money Trading Game sheet. Tell them that they are going to play a trading game using money.
   - Tell students that they will work in groups of 4. Give each group a number cube to share. (Position students facing each other as shown below with a container of pennies and dimes between them. **Note**: If flat surfaces are unavailable, students may need to work on the floor.)



   - Remind students that they have played this game before using base ten blocks.
   - You may want to model with a student before they begin playing in groups.
   - Remind students that:
     -the first person to trade for a dollar bill is the winner.
     -you have the dollar bills and **they must ask you** to come over and make the final trade.

   Variation: A more difficult version of the game would be playing it in reverse. Students would start with $1 and subtract each amount to see who loses all of their money first. That person would then be the winner.

4. Give each pair of students a Coin Board (TR), an assortment of coins, and a Coin Values activity sheet. Place the Coin Values transparency on the overhead. Model using the Coin Board to find and write equivalent coin values. Have students work with a partner to complete the activity, using the coin boards as needed to solve each problem. When students have finished, review answers together as a group.

5. Write the following words on the board: penny, nickel, dime, quarter, half-dollar, and dollar. Ask students to number from 1 to 10 on a piece of paper. Place a single overhead coin or a dollar on the overhead in random order asking students to choose its name from the word bank on the board and copy it onto their paper. Go over answers together clarifying any questions students may have.

6. Distribute the Writing Money student activity sheet. Ask students to choose the word from the Word Bank which matches each coin value. Check the first column to make sure students have chosen the correct word. Then, for additional writing practice if needed, let students copy the words again in the next two columns.

Learning About Money

Coin/Bill	How many pennies?	We say...	We write...

Name _____

Money

Coin/Bill	How many pennies?	We say...	We write...
penny			
nickel			
dime			
quarter			
half dollar			
dollar			

Money

Coin/Bill	How many pennies?	We say...	We write...
penny	1 penny	a penny **or** one cent	1¢
nickel	5 pennies	a nickel **or** five cents	5¢
dime	10 pennies	a dime **or** ten cents	10¢
quarter	25 pennies	a quarter **or** twenty-five cents	25¢
half-dollar	50 pennies	a half-dollar **or** fifty cents	50¢
dollar	100 pennies	a dollar	$1.00

Money Trading Game

Dollar	Dime	Penny
		

Directions for the Money Trading Game

Players will take turns. Each player will:

1. Roll a number cube.
2. Take the number of pennies shown on the cube.
3. Put the coins in the penny column.
4. Give the number cube to the next player.
5. Continue until one player can trade for a dollar bill. (Ask the teacher to make this final trade.)
6. The player with the dollar bill is the winner!

Remember:

* As soon as you have ten pennies, trade them in for a dime!
* If you see someone miss a trade, show them and take one of their pennies!

Coin Board

 50¢ half-dollar	 25¢ quarter	 10¢ dime	 5¢ nickel	 1¢ penny

Name _____

Coin Values

1	nickel	=	_____	pennies
1	dime	=	_____	pennies
1	quarter	=	_____	pennies
1	quarter	=	_____	nickels
1	half-dollar	=	_____	pennies
1	half-dollar	=	_____	nickels
1	half-dollar	=	_____	dimes
1	half-dollar	=	_____	quarters
1	dollar	=	_____	pennies
1	dollar	=	_____	nickels
1	dollar	=	_____	dimes
1	dollar	=	_____	quarters
1	dollar	=	_____	half-dollars

Name _____

Writing Money

Word Bank

nickel quarter half-dollar
penny dime
dollar

Directions: Choose a word from the word bank that matches each coin value. Then write each word in the first column. (You will use the words more than once.) Use the other column to copy the word for practice.

1) 50¢ _____ _____

2) 10¢ _____ _____

3) 1¢ _____ _____

4) 25¢ _____ _____

5) $1.00 _____ _____

6) 5¢ _____ _____

7) one cent _____ _____

8) twenty-five cents _____ _____

9) fifty cents _____ _____

10) ten cents _____ _____

11) five cents _____ _____

Answer Key
Obj. 12

Learning About Money

(See sample chart in teacher directions for activity 1.)

Money

(See completed transparency master provided in the lesson.)

Coin Values

1	nickel	=	5	pennies
1	dime	=	10	pennies
1	quarter	=	25	pennies
1	quarter	=	5	nickels
1	half-dollar	=	50	pennies
1	half-dollar	=	10	nickels
1	half-dollar	=	5	dimes
1	half-dollar	=	2	quarters
1	dollar	=	100	pennies
1	dollar	=	20	nickels
1	dollar	=	10	dimes
1	dollar	=	4	quarters
1	dollar	=	2	half-dollars

Writing Money

1. half-dollar
2. dime
3. quarter
4. quarter
5. dollar
6. nickel
7. penny
8. quarter
9. half-dollar
10. dime
11. nickel

Objective 13: Find the value of a mixed set of coins. Find and record a variety of ways to show a given amount of money.

Vocabulary

value
worth
fewest
price
price tag
counting on
decimal point

Materials

price tags
coins
dollar bills
ten dollar bill
hundreds boards

Transparencies:

- Hundreds Board
- Count the Money
- Coin Board
- Place Value Board
- Fair Trade

Student Copies:

- How Much Money? - Activity 1
- How Much Money? - Activity 2
- Count the Money
- Coin Board
- Money Place Value Board
- Fair Trade

Language Foundation

1. Extend the conversation modeled in the previous lesson with the word **value** to introduce the word **worth**: The value of a dime is ten pennies. How much is a dime worth? It is worth 10 pennies. Write this on the overhead or chalkboard as you say it and have students repeat after you.

2. The Count the Money activity shows price tags. Bring in some **price tags** to show students who may not be familiar with them. Explain that the money amount indicated on the tag is the **price** of the item.

Mathematics Component

This objective will take more than one day.

1. Pass out a hundreds board (TR) to each student. Place the Hundreds Board transparency on the overhead.
   - Put 1 dime and 3 pennies on the overhead. Tell students that they will use the hundreds board to find the total value of the money.
   - Ask students how much the dime is worth. (10¢)
   - Have them put their fingers on the 10 on the hundreds board as you model on the transparency.
   - Model **counting on** from there (eleven, twelve, thirteen) for the three pennies. Say, "I have 13¢."

   Repeat the procedure with 2 dimes and 2 pennies.
   - Have them put their fingers on 10 for the first dime.
   - Remind students of the pattern they learned when counting by 10s.
   - Point to the 20 for the second dime and ask students to do the same. Model **counting on** from there (twenty-one, twenty-two) for the two pennies. Say, "I have 22¢."

   Continue this process with several other amounts, adding in nickels and quarters as students appear ready. Pass out individual copies of How Much Money? - Activity 1. Do the activity together, first writing the value of each coin and then going back and **counting on** to find the total value. Clarify through the use of the hundreds board as needed. How Much Money? - Activity 2 may be assigned as homework.

2. - Distribute individual copies of Count the Money and place the Count the Money transparency on the overhead.
   - Read the directions for the first part of the activity out loud.
   - Ask students to name the first coin. (quarter) Write 25¢ beneath the quarter on the transparency.
   - Ask students to name the second coin (dime) and write10¢ below the coin.
   - Repeat this procedure for the remaining two coins, writing the amount below each. (10c, 1¢)
   - Tell students that you want to find the total value of the coins.
   - Go back to the first coin and model **counting on** as you point to each coin in order and combine the amounts by saying, "25, 35, 45, 46."
   - Say, "This is 46¢." Write 46¢ on the price tag to the right of the problem.
   - Review this procedure again, explaining that you keep adding together the value of the coins as you go across the row.
   - Model the second problem, as needed.
   - Allow students to work in pairs to complete the first activity.

- Read the directions for the second activity out loud.
- Explain that now the price is written on the price tag and they need to find the coins to make that amount.
- Model your thinking for the first problem out loud. Point to a dime and then **count on**, pointing to each of the the three pennies as you say "11, 12, 13."
- Draw a circle around the dime and three pennies.
- Model a second problem, as needed.
- Ask students to complete the second activity, comparing their answers with a partner.
- Have students model solutions to both activities on the overhead, emphasizing **counting on** as a method for finding total value.

3. Have students work in pairs. Distribute a Coin Board and an assortment of coins to each pair of students. Place the Coin Board transparency on the overhead.
   - Model putting 12¢ on the board by placing 1 dime in the appropriate column, saying "10" and then **counting on** (11, 12) as you place two pennies in the appropriate columns. Say, "I have 12¢."
   - Ask students to work with their partner to make 27¢ on their boards.
   - Have students tell you the ways they made 27¢, recording each on the chalk board as follows:

     2 dimes and 7 pennies

     2 dimes, 1 nickel, and 2 pennies

     1 dime, 2 nickels, and 7 pennies, etc.
   - Ask which group used the **fewest** coins.
   - Have students help you **regroup** until all of the methods match the one with the fewest number.
   - Ask them to clear their boards and then make 45¢ using the fewest coins.
   - Compare to see if all students agree. If not, have them help you **regroup** until all methods match the one with the fewest number.
   - Repeat this procedure with 38¢ and 16¢.
   - Write 25¢ on the chalk board.
   - Explain that they will now make 25¢ in different ways.
   - Tell them to first make 25¢ **with the fewest coins.** (1 quarter)
   - Compare the different ways that students made 25¢ and ask which group used the fewest coins.
   - Repeat this procedure four more times asking students to make 25¢ in the following ways:
     - with 3 coins (2 dimes and 1 nickel)
     - with 4 coins (3 nickels and 1 dime)
     - with 7 coins (2 dimes and 5 pennies)
     - with 21 coins (1 nickel and 20 pennies)
   - Model each solution.
   - Have students make 36¢ with 3 coins, 4 coins, 5 coins, 6 coins, and 12 coins.

- When they have finished, ask if anyone can make 36¢ with a different number of coins and allow them to model on the overhead. (Another solution: 2 dimes, 2 nickels, and 6 pennies would use10 coins.)

5. Distribute a Money Place Value Board (TR), an assortment of coins, a dollar bill, and a ten dollar bill to each pair of students.
   - Using the Place Value Board transparency, remind students that only certain base ten blocks can go in each column - ones, tens,...
   - Put the Money Place Value Board transparency on the overhead and discuss what kind of coins can go in the first two columns - pennies and dimes.
   - Ask students to make 9¢ on their boards. Have a student demonstrate using overhead coins.
   - Record this amount as 9¢ in the recording box at the bottom of the transparency and have the students do the same **with pencil** on their boards.
   - Have students make13¢ on their boards and then check answers, reminding students to regroup ten pennies for one dime.
   - **Clear** the recording area and record this new amount as 13¢.
   - Continue with several other amounts less than one dollar until students are comfortable with this procedure.
   - Then ask students to place "one dollar and 23 cents" on their boards, regrouping whenever possible. Have one student model this amount on the overhead as one dollar, 2 dimes and three pennies.
   - Point to the decimal point on the place value mat and explain that this is called a **decimal point** and it is used to separate the dollars from the coins when we record the total value of the money.
   - Place a decimal point in the recording box at the bottom of the transparency, pointing out that the dollar goes on the left and the coins on the right.
   - Explain that when using a decimal point, a dollar sign is written in **front** of the number.
   - Write $1.23 in the recording box.
   - Read the amount as "one dollar **and** twenty three cents," pointing to each part and emphasizing the word **and** as you point to the decimal point.
   - Repeat this same procedure with the following amounts of money: $1.37, $1.40, $1.80, and $1. 08.
   - Point out the difference in recording $1.80 and $1.08, reminding students that when using decimal notation, the number of dimes and pennies **must** be recorded even if it is 0.
   - Say, "Put eleven dollars and thirty-six cents on your boards."
   - Have students record this amount of money on their mats using decimal notation. ($11.36)
   - Discuss responses, clarifying any misunderstandings.
   - Repeat this procedure for $10.60 and ask students to record this amount.
   - Check answers by modeling on the overhead. Remind students that a number must be recorded in each column, even if it is 0.
   - Continue practicing until students are able to record amounts through $12.00 accurately.

6. Place 54¢ on the Money Place Value Board transparency.
   - Model recording this amount as 54¢ in the recording box at the bottom of the page.
   - Explain that for amounts under one dollar, the decimal notation used in the activity above may also be used to record the amount of money.
   - Place the word **or** in the recording box beside 54¢ and show $0.54.
   - Repeat this procedure for 32¢, writing 32¢ **or** $0.32 in the recording box.
   - Have students practice placing several amounts less than one dollar on their mats, recording each value in two different ways.

   Be sure to emphasize that either answer is acceptable for amounts of money under $1.00; however, the decimal point and dollar sign must be used for amounts over one dollar. (**Note:** You may want to show students that a shorter way of writing just dollar amounts would be $10, $15, $4...)

7. Distribute a copy of the Fair Trade student activity sheet, an assortment of coins, and a dollar bill to each pair of students. Review the meaning of the word **"fair"**.
   - Model the first problem by counting out the designated coins (10 dimes) on the overhead.
   - Hand a dollar to one student in the class.
   - Tell the student you will trade your coins for his/her dollar. Make the trade and then ask the students if this was a **"fair trade"**. As they respond, circle yes.
   - Help the students verbalize why this **is** a fair trade. (The10 dimes are the same value as the dollar.) Model the second problem in the same way, circling no, and ask students why this is **not** a fair trade. (The value of the coins is 95¢ - less than the value of the dollar.)
   - Have students work with a partner to decide if trading the coins for the dollar would be a fair trade for the remainder of the problems.
   - As they begin, **remind** them that yes is fair and no is not fair.

Name _____

How Much Money?
Activity 1

quarter
25¢

dime
10¢

nickel
5¢

penny
1¢

Count the money. Write how much money.

1. 

_____ _____ _____ _____ _____ _____

2. 

_____ _____ _____ _____ _____

3. 

_____ _____ _____ _____ _____

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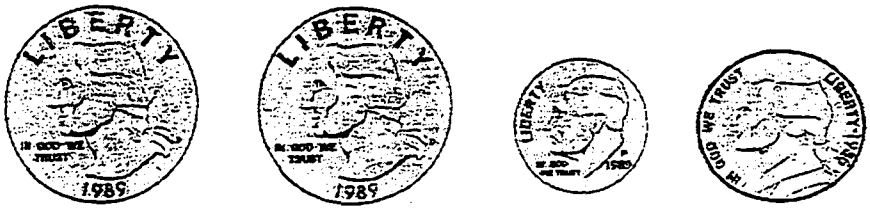

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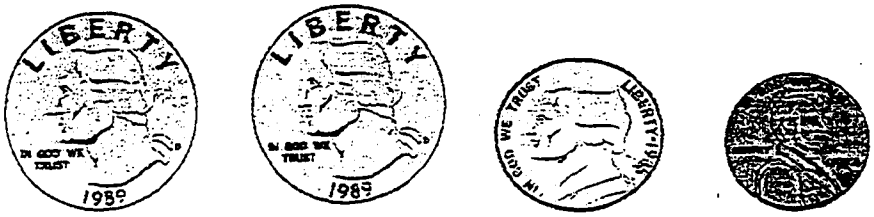


6.

7.

Name _____

How Much Money?
Activity 2

1. 

_____ _____ _____ _____ _____ _____

2. 

_____ _____ _____ _____ _____

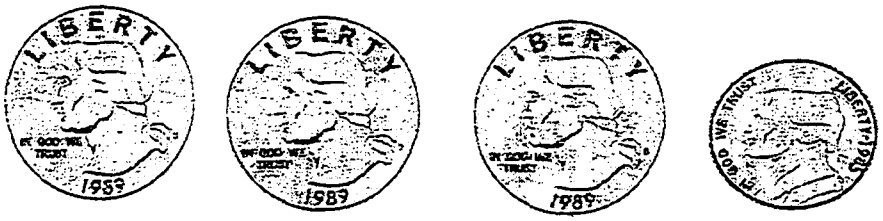
3. 

_____ _____ _____ _____ _____ _____

4. 

_____ _____ _____ _____ _____

5.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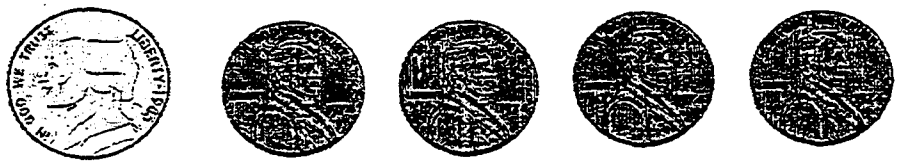
IN GOD WE TRUST
LIBERTY 1989

_____ _____ _____ _____ _____ _____

8.


LIBERTY
IN GOD WE TRUST
1989
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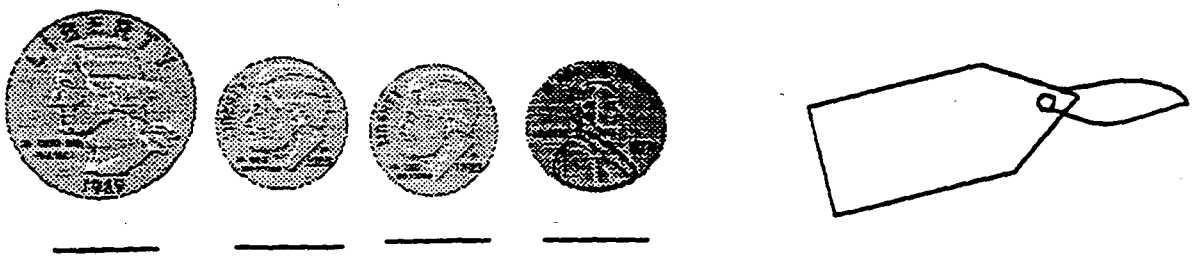
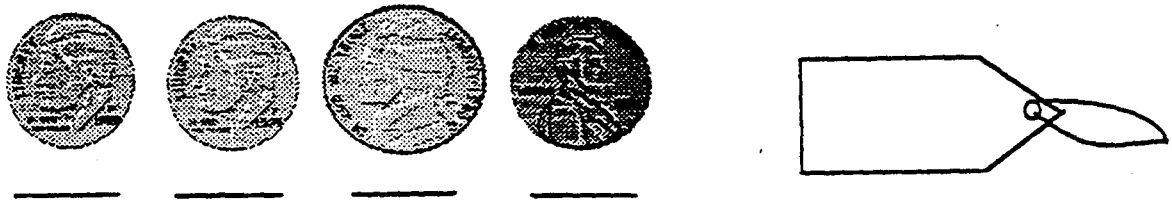
IN GOD WE TRUST
LIBERTY 1989

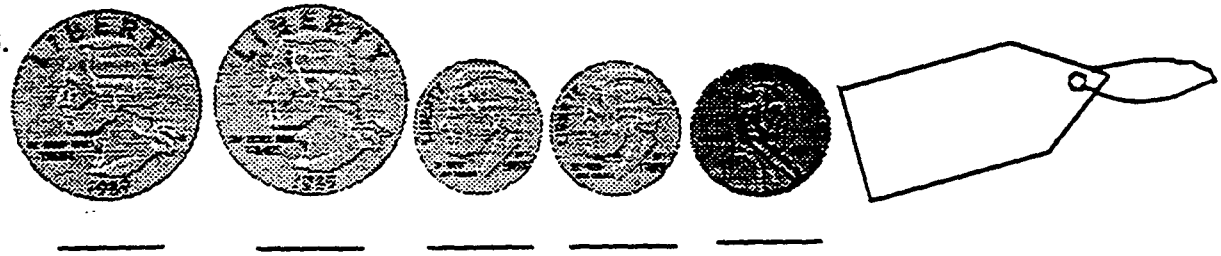
_____ _____ _____ _____ _____ _____

Count the Money

Count the money. Write the price.

1. 

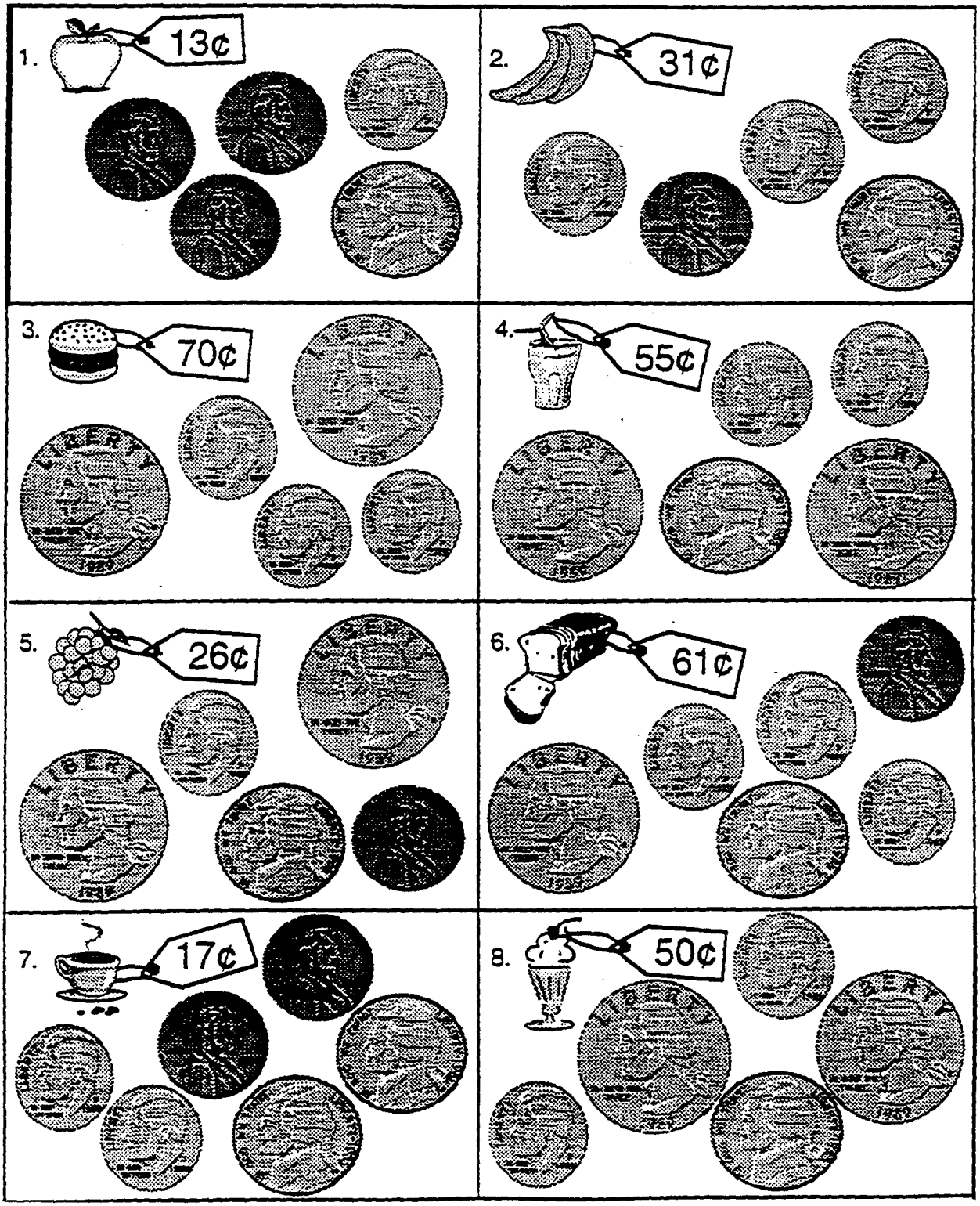
2. 

3. 

4. 

5. 

Circle the coins to make the price.



Coin Board

				
50¢ half-dollar	25¢ quarter	10¢ dime	5¢ nickel	1¢ penny

Money Place Value Board

 ten dollars	 one dollar	 dime	 penny

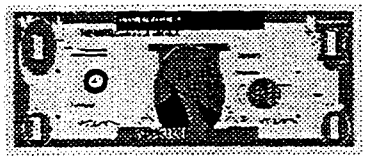
Recording Box

Fair Trade

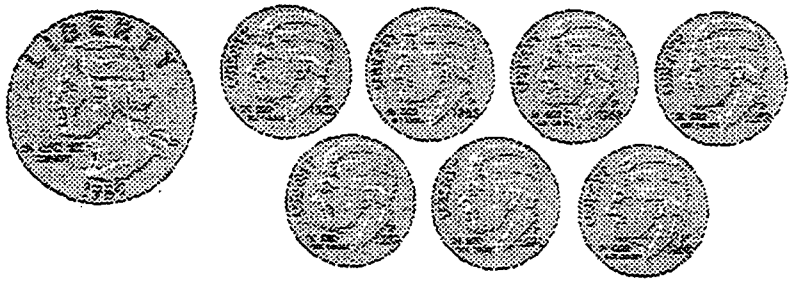
Is it a fair trade? Yes *fair*. No *not fair*. Circle yes or no.

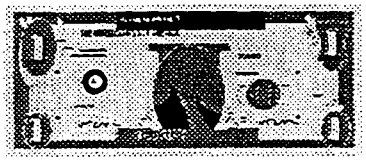
Remember: 100 pennies = 1 dollar

1. 

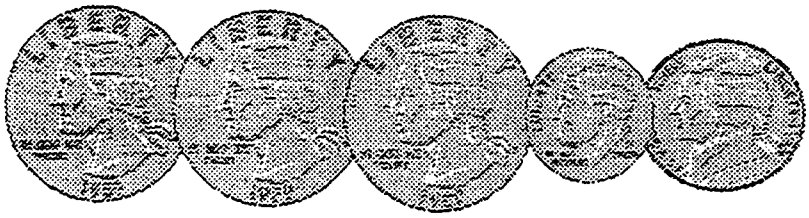


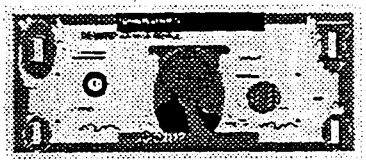
Yes No

2. 

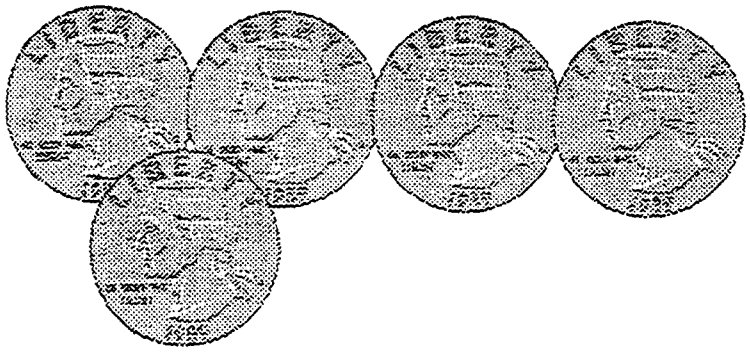


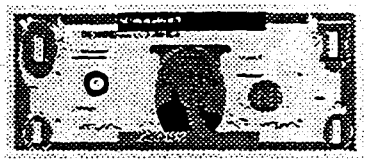
Yes No

3. 



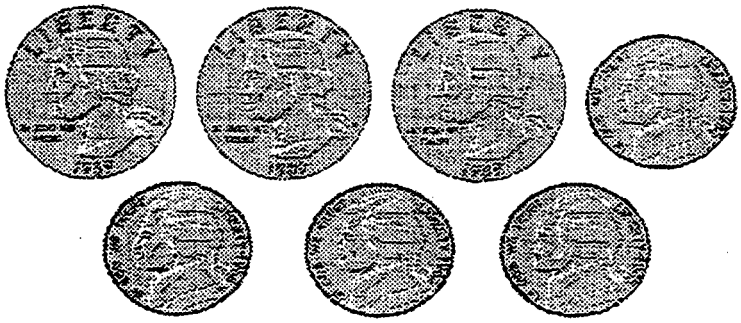
Yes No

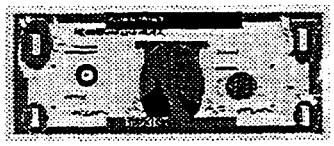
4. 



Yes No

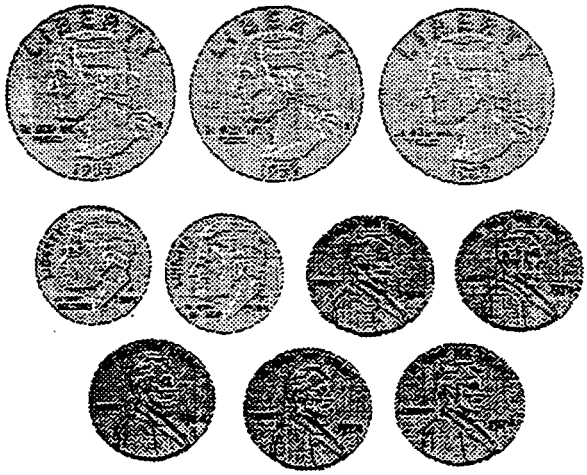
5.





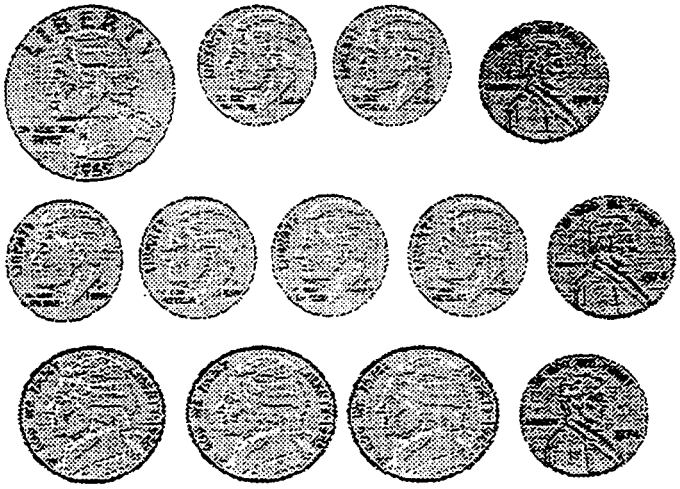
Yes No

6.



Yes No

7.



Yes No

Answer Key
Obj. 13

How Much Money?
Activity 1

1. 10¢ 1¢ 1¢ 1¢ 1¢ — 14¢
2. 10¢ 5¢ 5¢ 5¢ — 25¢
3. 25¢ 10¢ 10¢ 5¢ — 50¢
4. 25¢ 25¢ 10¢ 5¢ — 65¢
5. 25¢ 25¢ 5¢ 1¢ — 56¢
6. 25¢ 10¢ 10¢ 1¢ 1¢ — 47¢
7. 25¢ 10¢ 5¢ 1¢ 1¢ 1¢ — 43¢

Fair Trade

1. yes
2. no
3. no
4. yes
5. no
6. yes
7. yes

How Much Money?
Activity 2

1. 10¢ 10¢ 10¢ 1¢ 1¢ — 32¢
2. 5¢ 5¢ 5¢ 1¢ — 16¢
3. 10¢ 10¢ 5¢ 5¢ 5¢ — 35¢
4. 25¢ 10¢ 5¢ 1¢ — 41¢
5. 25¢ 25¢ 25¢ 5¢ — 80¢
6. 10¢ 5¢ 5¢ 1¢ 1¢ — 22¢
7. 5¢ 1¢ 1¢ 1¢ 1¢ — 9¢
8. 25¢ 25¢ 25¢ 25¢ 5¢ — $1.09

Count the Money

1. 25¢ 10¢ 10¢ 1¢ — 46¢
2. 10¢ 10¢ 5¢ 1¢ — 26¢
3. 25¢ 25¢ 10¢ 10¢ 1¢ — 71¢
4. 25¢ 25¢ 25¢ 5¢ — 80¢
5. 25¢ 10¢ 1¢ 1¢ — 47¢

Count the Money (Page 2) Circle should include:

1. 1 dime, three pennies
2. 3 dimes, 1 penny
3. 2 quarters, 2 dimes
4. 2 quarters, 1 nickel
5. 1 quarter, 1 penny
6. 1 quarter, 3 dimes, 1 nickel, 1 penny
7. 1 dime, 1 nickel, 2 pennies
8. 2 quarters

Objective 14: Make change by counting on up to $20. Use a calculator to make change up to $20.

Vocabulary

change
count on
count by 10s
value
fewest

Materials

calculators
overhead calculator
pen with price tag (37¢)
coins and dollar bills
overhead & plastic

Transparencies:

Hundreds Board
Making Change

Student Copies:

Making Change
Calculator Change

Language Foundation

1. Review vocabulary from previous lessons. Remind students that **few** means not many; a small number. In this lesson, students will be making change using the fewest amount of coins possible.

2. Some students may know how to use a calculator; others may not. You may want to adjust #3 to fit the past experiences of your students.

Mathematics Component

Warm-up: A quick review of coin values and coin notation is suggested before beginning this lesson. For example, show 1 dime and 4 pennies on the overhead. Identify each of the coins, tell the value of each coin and then give the total value. Remind students that this amount may be written as 14¢ or $0.14.

1. Show students a pen and tell them that it costs 37¢ to buy the pen. (If you can, put a "price tag" on the pen.)
   - Pretend to search your pockets and tell students that you do not have any coins to pay for the pen.
   - Show a transparent dollar bill and ask if this is enough money. Elicit that it is more than enough.
   - Explain that when you give too much money, you need to get back some **change** so that you do not pay too much for what you are buying.
   - Tell students that today they will use "**count on**" to find how much change.
   - Hold up the pen again and write 37¢.
   - Place a hundreds board transparency (TR) on the overhead and point to 37.
   - Remind students that you are going to pay with $1.00 and point to 100 on the hundreds board.
   - Tell students that we can find the change by counting from 37¢ to $1.00. Explain that on the hundreds board we count from 37 to 100.
   - Model "**counting on**" from 37 by: pointing to and **saying 38** (as you place one transparent penny on the screen), pointing to and **saying 39** (as you place a second transparent penny on the screen), and pointing to and **saying 40** (as you place a third transparent penny on the screen.)
   - As you point to the three pennies on the overhead ask students, "How many pennies did it take to go from 37¢ to 40¢?" (3)
   - As you point to the $1.00 you pay with ask, "Is this enough change if I pay with $1.00?" (No, to find the correct change we need to count from 37¢ to $1.00.)
   - Pose the question. "How can we finish making change for $1.00?" Elicit several responses.
   - Explain that if we continue to count on by 1s to 100, it will take a long time. To make it faster, when we get to 40 we can **count by 10s** until we reach 100. Remind students that a dime is 10¢.
   - Begin at 40, point and **say 50** (as you place a dime on the sceen), point and **say 60** (as you place a second dime on the screen), and so on until you reach 100 and place a sixth dime on the screen.
   - Ask students to help count the dimes and tell the total value. (60¢)
   - Say, "The pen costs 37¢. I pay with $1.00. How much is the change?" Help students understand that you add the 60¢ and the 3¢ to get 63¢. Say, "The change is 63¢."
   - Give each group of students a pile of coins. Have them work with you to do several more problems such as counting on from 42¢ to make change for 50¢, counting on from 83¢ to make change for $1.00, and counting on from 55¢ to make change for $1.00.

2. Tell students that people usually prefer to have fewer coins in their pockets. Ask why this might be true. Elicit several ideas. Pass out copies of the Making Change activity to each student. Tell students to **use the fewest coins possible to make change**. Use a transparency copy to discuss the example. Then model the process by working the first problem together. Ask students to do the remaining problems, discussing their work with a partner. Check answers together allowing students to demonstrate their solutions.

3. Tell students that today we have tools that can help us do math. One of those tools is a **calculator**. Ask how many of the students have used a calculator as you hold one up. Lead a short discussin on **why** a calculator is useful in math. (Responses will probably include the idea that calculators are fast.)
   - Put a transparent calculator on the overhead.
   - Tell students that the calculator can be used to find how much change to give back.
   - Go back to problem 5 on the Making Change activity. Write the change (11¢) on the board. Pass out calculators to each student and show how to turn them on.
   - Tell them to first enter the amount of money they **pay with**. Model how to enter 1.00 or 100 and have students do the same.
   - Ask them to hit the "-" key once as you model. Have students enter .89 or 89. Model how to hit "=" and have students do the same.
   - Have students compare the answer to the 11¢ on the board. Write 100 - 89 = 11.
   - Practice with $3.75 from $10.00 and $12.30 from $20.00.
   - Have students use calculators to check Part II of the Making Change activity.
   - Pass out copies of the Calculator Change Activity.
   - Read the directions and model the first problem. Remind students to enter the amount in the "pays with" column **first** and then subtract the price. (Students will need to complete this in class if they do not have calculators at home.)

Making Change

Count to make change. Show the coins.

Price	Pays with	Change	Which coins? (Use the fewest)
1. 45¢	$1.00		
2. 53¢	$1.00		
3. 64¢	$1.00		
4. 26¢	$1.00		
5. 89¢	$1.00		
6. 75¢	$1.00		
7. 12¢	$1.00		
8. 97¢	$1.00		
9. 41¢	$1.00		
10. 30¢	$1.00		

Calculator Change

Price	Paid with	Change

Answer Key
Obj. 14

Making Change

(Typing of coins used will vary. Most students will find it easier to use pennies, nickels, and dimes, and making change by counting on. You may want to discuss which method would use the **fewest** coins when students have completed the assignment.)

1. 55¢
2. 47¢
3. 36¢
4. 74¢
5. 11¢
6. 25¢
7. 88¢
8. 3¢
9. 59¢
10. 70¢

Objective 15: Model, name, and write fractional parts of regions (1/2, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10, 1/12).

Vocabulary

fraction
divide
whole
part
out of
half
halves
third
fourth
fifth
sixth
tenth
twelfth
equal
unequal
denominator
numerator

Materials

bunch of bananas
bundle of pencils.
(some sharpened, some colored)
graph paper and markers
blank paper
unit blocks or connecting cubes
scissors
Denominator Cards
Fraction Bars

Transparencies:

Boys / Girls

Student Copies:

Fractions(R1-R5)

Optional Activities:

construction paper, five different colors
each cut into five 3x18-inch strips
large envelopes

Language Foundation

1. Review the concept of **dividing** (breaking, separating, cutting) things, including numbers, into equal parts. Show this through examples such as folding paper in half, cutting a piece of fruit, or dividing objects into equal groups.

2. Help students remember the difference between **numerator** and **denominator**. The *bottom number* tells how many parts the thing is divided into. *Divide* starts with *D* and so does *denominator*. The *top number* tells the *number of parts* of the whole thing we are talking about. *Number* starts with *N* and so does *numerator*. A wall chart with a large fraction showing these words with explanations will also help.

3. When discussing **unequal** parts, point out that the prefix *un* means "not". Ask for and give students other words beginning with *un* such as unfriendly, unhappy, and unsafe.

Mathematics Component

Note: Students should explore fractional parts using as many different models as possible. The terminology for *one whole*, *the whole*, or *one* should also be introduced informally at the same time.

Discuss sharing among two friends. How would we divide a candy bar, cookies, marbles, etc. equally?

---

1. Have four students (3 girls and 1 boy) come to the front of the room. Say "We have a **group** of students. The **whole** group has 4 students. There is 1 boy in this group of students." Use the Boys/Girls transparency to record $\frac{1}{4}$ under "Boys". "The symbol $\frac{\quad}{4}$ is used to tell us to divide into **equal** parts. When the sign has a number beneath it, it means to divide into that number of equal parts. How many parts do we have in this whole group?" (4) Explain that each part is called a "fourth". Write the word "fourth" on the overhead pointing out the word four with the th added. Tell them the "th" means to divide and the 4 tells us how many equal parts to divide into. As you point to each member of the group say "__(Name) is one-fourth of the group, __(Name) is one-fourth of the group, etc. Tell the students that these numbers are called **fractions**. (Write the word and a few examples of other fractions) Repeat for girls: $\frac{3}{4}$.

   Repeat this procedure with groups/sets of objects to represent other fractions. Pick from the following examples:

   - Hold up a bunch of bananas. Pull off 2 bananas. Ask: "What **fraction** of the bananas did I pull off? What **fraction** of the bananas do I have now?"
   - Make a bundle of pencils, some sharpened and some unsharpened. Ask: "What fraction of the pencils are sharpened? Unsharpened? Are __(a color)? Have new erasers?"
   - Use the class as a whole. Choose groups such as position in the family (oldest, youngest, middle, only), favorite flavor of ice cream, favorite meal of the day (breakfast, lunch, dinner), etc. to create fractions representing the class. Have students use graph paper and markers to outline a row as long as the number of students in the class and color in the appropriate number of squares. For example, $\frac{4}{12}$ like vanilla ice cream, $\frac{1}{12}$ like strawberry ice cream, and so on.

   - Pass out sets of Fraction Bars® to each pair of students. Have each pair find the 13 orange bars and arrange them in order from a 0 bar to the whole bar as you do it on the overhead. Ask them how many parts each orange bar is divided into (12) and how to write this (12). Remind them that 12 equal parts are called twelfths. Repeat for the white bars (tenths), red bars (sixths), purple bars (fifths), blue bars (fourths), yellow bars (thirds), and green bars (halves). Have each student choose two bars (each a different color). Have them write the fraction for each of their bars.

Show the $\boxed{\frac{}{5}}$ Denominator Card. Ask how many equal parts are in this fraction. (5) Remind them that 5 equal parts are called fifths. Repeat with sixths, tenths, etc..

2. Show the students a sheet of paper. Explain that the sheet is a whole rectangle. Write **1** on the board. Fold the rectangle in half and cut on the fold. Ask: "How many same-size parts of the rectangle do I have now?" (2) Tell them that each of the two equal parts is called a half. Record $\frac{1}{2}$ on the board. Put the the parts together and ask: "What do I have?" (1 whole) Write $\frac{2}{2} = 1$. Explain that **two of two equal parts makes one whole**. Show them a rectangle cut into 2 unequal parts. Ask them how many equal parts there are. Discuss that when the parts are *unequal*, we do not have fractions and can't use 2 to describe the parts. Repeat the procedure for thirds, fourths, etc. until the students understand that fractional notation indicates division into **equal** parts.

3. Pass out the Fraction Bars®. Have the students find the 7 red bars. Ask how many equal pieces each bar is divided into. Write 6 on the overhead. Remind them the six says the bar is divided into sixths. Write the word ***denominator*** on the overhead (or use the wall chart suggested in the language Foundation #2) and explain the number under the line is called the denominator and tells us the number of parts something is divided into. Ask what makes each one of these bars different. (The number of pieces that are colored.) Put the 4/6 bar on the overhead. Tell them that four of the six parts are shaded. Repeat 4 **out of** 6 are shaded. Write $\frac{4}{6}$. Tell them that the four which tells the number of pieces we are talking about is called the ***numerator***. Write the word on the overhead or use the chart and repeat the words. Ask them to find the bar that has two pieces out of six colored. Write $\frac{2}{6}$. Display the zero bar (no parts colored) and ask what they think you should write. ($\frac{0}{6} = 0$) Write $\frac{6}{6}$ and ask the students to find the card that shows this fraction. Write $\frac{6}{6} = 1$ explaining that when the numerator and denominator are the same, we are talking about all the parts or the whole thing which is one.

Worksheets R1–R5 provide students with further practice in shading parts of a whole, writing fractions in English as well as identifying numerators and denominators. Read and explain the directions before assigning for classwork or homework.

Optional Activity

This activity can be used to introduce students to fractions as parts of whole. Each student needs five 3-by-18-inch strips of construction paper in five different colors, scissors, and a large envelope. Ask students to take a strip of a particular color, fold it in half, and cut it into two pieces. Have them label each piece $\frac{1}{2}$. Review the reason for the notation. (The whole is divided into two pieces and each piece is one of two equal pieces.) Then choose a different color for fourths, eighths, and sixteenths. Leave the remaining colored strip whole and label it 1 or 1/1. Each student now has a set of fraction strips to use. Having them cut and label the pieces helps them relate the fractional notation to the concrete pieces.

Boys	Girls

$\frac{}{12}$	$\frac{}{10}$	$\frac{}{6}$
$\frac{}{2}$	$\frac{}{3}$	$\frac{}{4}$
$\frac{}{5}$	$\frac{}{\quad}$	$\frac{}{\quad}$

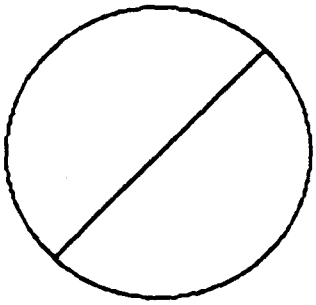
Name_____

Date_____

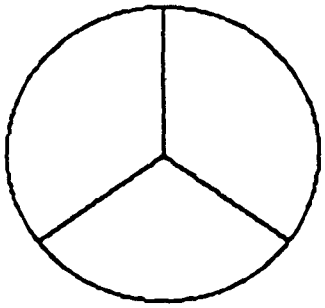
FRACTIONS

Color in the following fractions:

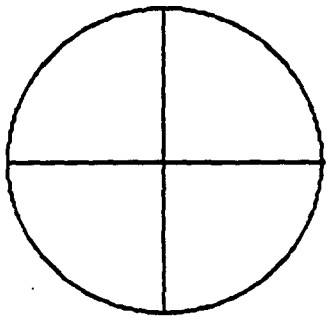
1. $\frac{1}{2}$



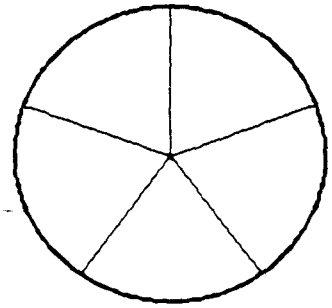
2. $\frac{1}{3}$



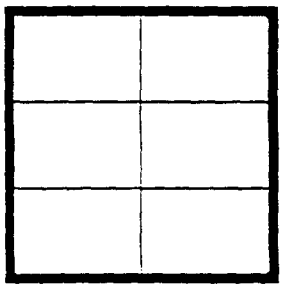
3. $\frac{3}{4}$



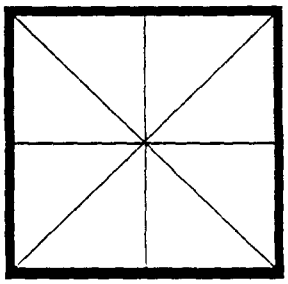
4. $\frac{3}{5}$



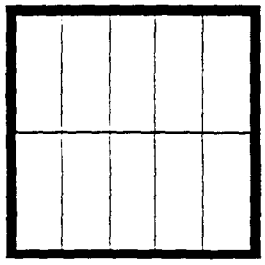
5. $\frac{1}{6}$



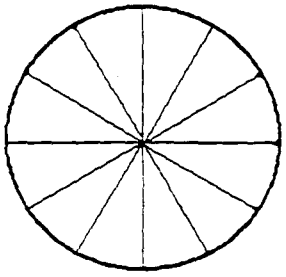
6. $\frac{5}{8}$



7. $\frac{5}{10}$



8. $\frac{3}{12}$

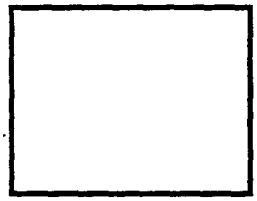
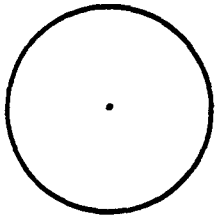
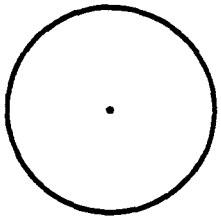


Name _____ R-2

Date _____

FRACTIONS

Draw and color in each fraction. Write the name of the fraction in English words.

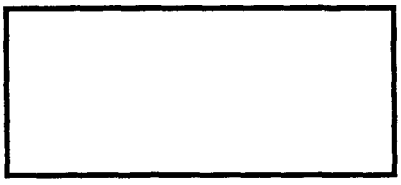
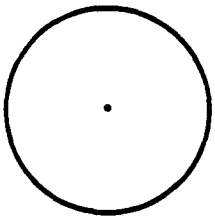
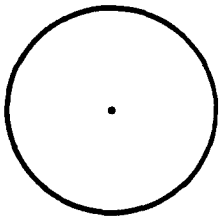
 1) $\frac{1}{4}$ _____	 2) $\frac{1}{8}$ _____
 3) $\frac{1}{3}$ _____	 4) $\frac{5}{6}$ _____
 5) $\frac{2}{2}$ _____	 6) $\frac{1}{5}$ _____

Name _____ R-3

Date _____

FRACTIONS

Draw and color in each fraction. Write the name of the fraction in English words.

 1) $\frac{1}{2}$ _____	 2) $\frac{1}{3}$ _____
 3) $\frac{3}{4}$ _____	 4) $\frac{4}{5}$ _____
 5) $\frac{2}{8}$ _____	 6) $\frac{1}{6}$ _____

Name _____ R-4

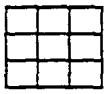
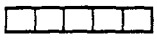
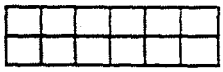
Date _____

In the following picture, 4 out of 5 parts are colored.

$$\frac{\text{number of colored parts}}{\text{number of parts}} \quad \frac{4}{5}$$

(four-fifths)

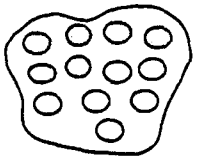
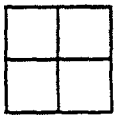
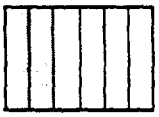
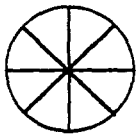
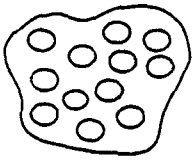
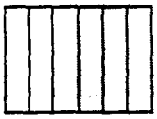
Write the fraction for the colored amount of the shape.

 1. _____	 2. _____	 3. _____
 4. _____	 5. _____	 6. _____
 7. _____	 8. _____	 9. _____
 10. _____	 11. _____	 12. _____
 13. _____	 14. _____	 15. _____

The fraction for the colored part of each figure is $\frac{1}{4}$ (one fourth).

numerator **1**
denominator **4**

Write the fraction for the shaded amount and complete each sentence.

 _____ 1. The numerator is _____ . 2. The denominator is _____ .	 _____ 3. The numerator is _____ . 4. The denominator is _____ .
 _____ 5. The _____ is 2. 6. The _____ is 6 .	 _____ 7. The denominator is _____ . 8. The numerator is _____ .
 _____ 9. The _____ is 12. 10. The numerator is _____ .	 _____ 11. The numerator is _____ . 12. The denominator is _____ .

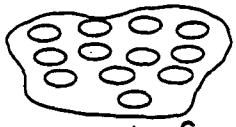
13. The _____ tells how many equal parts are in a whole.
14. The _____ tells how many of these parts are shaded.
15. The "bottom number" of a fraction is the _____.
16. The "top number" of a fraction is called the _____.

Answer Key
Obj. 15

R-4

1. $\frac{2}{3}$
2. $\frac{3}{6}$
3. $\frac{7}{10}$
4. $\frac{5}{8}$
5. $\frac{3}{4}$
6. $\frac{1}{6}$
7. $\frac{6}{10}$
8. $\frac{6}{6}$
9. $\frac{6}{7}$
10. $\frac{0}{9}$
11. $\frac{11}{12}$
12. $\frac{1}{10}$
13. $\frac{1}{5}$
14. $\frac{11}{12}$
15. $\frac{1}{3}$

R-5

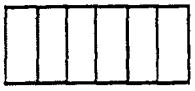


$\frac{6}{12}$

1. The numerator is 6 .
2. The denominator is 12 .

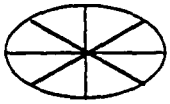
$\frac{3}{4}$

3. The numerator is 3 .
4. The denominator is 4 .



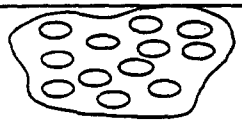
$\frac{2}{6}$

5. The numerator is 2 .
6. The denominator is 6 .



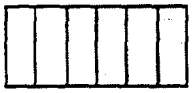
$\frac{0}{8}$

7. The denominator is 8 .
8. The numerator is 0 .



$\frac{7}{12}$

9. The denominator is 12.
10. The numerator is 7 .



$\frac{4}{6}$

11. The numerator is 4 .
12. The denominator is 6 .

13. The denominator tells how many equal parts are in a whole.
14. The numerator tells how many of these parts are shaded.
15. The "bottom number" of a fraction is the denominator.
16. The "top number" of a fraction is called the numerator.

Objective 16: Identify and compare fractional parts.

Vocabulary

equal
compare
greater than
less than
<, >, =
denominators
numerators
size

Materials

rulers
pattern blocks
fraction circles
fraction bars
overhead fraction bars
> and < Wall Posters

Transparencies:

Which Show Fourths?

Student Copies:

Comparing Fraction Bars
Comparing Fraction Circles
Comparing Pattern Block Fractions
Comparing Fraction Lines
Comparing Collections

Language Foundation

1. Review vocabulary from previous lessons as necessary.

2. Some students may have difficulty hearing and pronouncing the "s" and "th" sounds, especially at the end of words. Have students listen as you write and say fraction words throughout this lesson. Students will need lots of practice hearing and saying fraction words. Usually, listening comprehension comes before correct pronunciation.

3. You may need to review the word **compare**, meaning how things are the same or how they are different. In this lesson, students will be looking at the **size** of the shaded parts of fractions to help them make the comparisons.

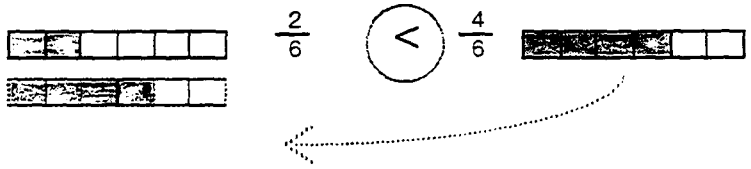
Mathematics Component

Warmup Option: Review fractional parts using the Which Show Fourths? transparency. Have students work with a partner to find the correct examples of fourths. (a., e., f., g.) Then have the groups share and explain why some are **not** fourths.

Note: Even though the activities below use fraction bars to model the concept, substituting other area, linear, and group models is recommended. See examples at the end of this lesson.

1. Pass out the Fraction Bars. Put the **2/6** transparency Fraction Bar on the overhead. Have students find the matching fraction bar and name it. Write the fraction next to the overhead bar. Ask them to explain the meaning of the fraction. Elicit that the bar is divided in six **equal** parts with two parts shaded/colored. Put the **4/6** fraction bar to the **right** of the 2/6 notation. Ask students to locate and identify the fraction. Record the fraction to the **left** of the bar.

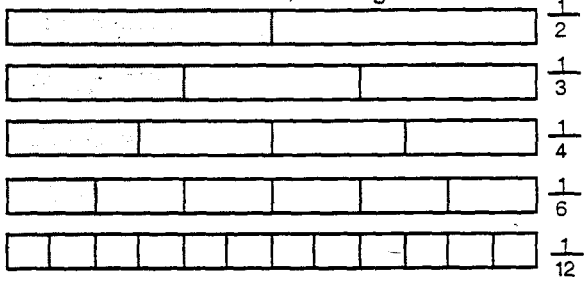
Tell the students that we are going to **compare** the two fractions. Draw a circle in between the two fractions. Ask which fraction is **less** (You can line up the two fraction bars, if necessary). Have the students justify their answer. Elicit that both bars are divided into sixths, the 2/6 bar has two parts colored and that the 4/6 has four parts colored so 2/6 is **less than** 4/6. Remind students of the symbols used to compare numbers: <, >, or =. (> and < Wall Posters are included for your convenience.) Write < in the circle.



Leave the notations on the transparency and use the same procedure to compare other sixths. Lead the students to notice that when the denominators are the same, they only have to compare the numerators. (Make sure to make comparisons using all the symbols.)

Tell the students that you want to compare 5/12 and 11/12 and that you want to write the greater fraction first. Have them help you write the equation $\frac{5}{12} < \frac{11}{12}$. Use the fraction bars to prove that 11/12 is greater. Compare other fractions with like denominators until you are sure they understand the concept.

2. Have the students get the fraction bars for **1/2, 1/3, 1/4, 1/6**, and **1/12.** Place the **1/2** fraction bar transparency on the overhead and write the fraction next to it. Follow the same procedure as you line up the fractions in the order shown below, starting with 1/2.



Tell the students to compare the colored/shaded portions. Help them generalize a rule relating the denominator and the size of the colored/shaded portion. Elicit the larger the denominator the smaller the colored/shaded portion. Write $\frac{1}{15}$ and $\frac{1}{12}$ on a transparency. Ask if 1/15 is **greater** or **less** than 1/12. (Less) Encourage students to justify their answer orally and/or modeling with bars.

Write $\frac{1}{40}$ and $\frac{1}{35}$ on the overhead and ask the students to compare the fractions and tell you what symbol should go between them. $\left(\frac{1}{40} < \frac{1}{35}\right)$

Have the students compare 2/3, 2/5, and 2/10 using faction bars or fractions circles. Does the "rule" still fit? (Yes, because you are using the same number of pieces from each fraction. Thirds are greater than fifths or tenths.

3. Comparing Fractions Bars can be assigned as independent practice after you read the directions with the students. Check and discuss each of the answers with the group using the appropriate model for that practice sheet.

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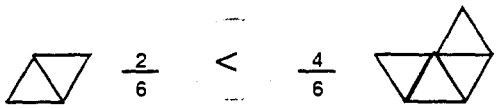
FYI - It is recommended that a variety of models be used to teach this concept. Any or all of the following manipulatives may be used along with fractions bars.

Other Models:

- **Fraction Circles** - Students will have to work in groups of two more in order to compare fractions with like denominators. To compare 2/6 and 4/6, one student would put together 2 sixths pieces and another would put together 4 sixths pieces and then compare them.

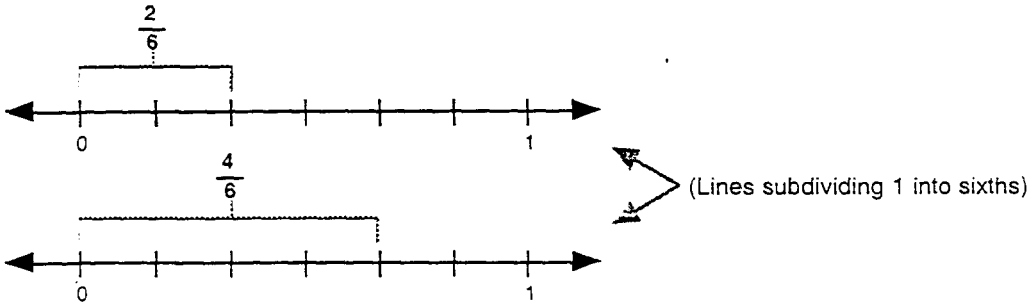
  Comparing Fraction Circles can be assigned as independent practice after you read the directions with the students. Check and discuss each of the answers with the group using the appropriate model for that practice sheet.

• **Pattern Blocks**-If students have used pattern blocks before they have discovered that when the yellow hexagon is used as the unit/whole, it takes six green triangles to cover it. Therefore, the value of a green triangle is 1/6 of the yellow hexagon. Other fractions can be modeled by changing the block used as the whole, e.g. if the trapezoid is the unit/whole the green triangles are thirds.



Comparing Pattern Block Fractions can be assigned as independent practice after you read the directions with the students. Check and discuss each of the answers with the group using the appropriate model for that practice sheet.

• **Linear Model**-Students compare lengths by simply drawing line segments on paper and **equally** subdividing them using a ruler. See illustration below.



Comparing Fraction Lines can be assigned as independent practice after you read the directions with the students. Check and discuss each of the answers with the group using the appropriate model for that practice sheet.

• **Set Model**-Students can compare fractions that name part of a group. In the example below, 2 out of 6 shapes are triangles (2/6) and 4 out of 6 shapes are circles (4/6).

Ex. $\boxed{\Delta\Delta OOOO}$ $< \frac{2}{6}$ $\frac{4}{6}$

Comparing Collections can be assigned as independent practice after you read the directions with the students. Check and discuss each of the answers with the group using the appropriate model for that practice sheet.