**IU3: PERFORMANCE OBJECTIVES AND ASSESSMENT**

**INTRODUCTION**
After analyzing the learners, their environment, and instructional goal during instructional unit 1, the task analysis and instructional objectives in unit 2, it is now time to introduce the performance objectives and assessments of the instructional unit. In order to complete unit 3, a performance objective was derived for each of the steps in the first level analysis. Each performance objective consists of a condition (CN), a behavior (B), and a criterion (CR). In order the check for understanding of each performance objective, an assessment is designed accordingly. Each assessment may be testing for one or more performance objectives and more than one assessment item may exist for each performance objective as well.

**OVERVIEW**

**Organizational Goal**
7th grade students will master the objectives and skills on the TAKS test

**Instructional Goal**
After completing an interactive unit on fractions, decimals, and percents, 7th grade students in Miss Knisely’s math class will demonstrate their mathematical understanding of the relationship between parts and wholes.

**Performance Objectives & Assessments (See table below)**
While the learner completes the unit they will be completing the assessment question next to each step of the performance objective. Once they understand and pass each question then they can move on to the following step. Once all steps are complete, then they may test the total understanding by the post-test and second half of the anticipatory guide questions.

**Pre-Test (See below)**
Due to the mathematical nature of the unit, it is necessary for the learners to have mastered skills previously. A short assessment was created to verify understanding of the entry level skills required which consist of distinguishing between fraction, decimals, and percents; ability to read, write, and comprehend English as well as basic educational math terminology; and the knowledge of how to add, subtract, multiply, and divide. It is assumed the only skill needing pre-tested is recalling how to divide.

**Anticipatory Guide (See below)**
In order to motivate learners as well as prepare them for the unit, an anticipatory guide was created to be completed prior to and after completion of the unit.

**Post Test (See below)**
Found below. A short post-test was created to test the overall mastery of the unit which mimics the problem that the learner will master throughout the instructional unit to practice.

**Post Test Rubric (See below)**
A post-test rubric was created in order to show a breakdown of mastery of each performance objective within the main objective of the unit for the post test assessment after completion of the unit. The learner will not be guided through the post-test with steps as they are through the unit so the learner will be graded on the rubric based on completing the appropriate steps learned throughout the unit.
## Instructional Unit on Parts & Wholes using fractions, decimals, and percents

### PERFORMANCE OBJECTIVES

**CN = CONDITION, B = BEHAVIOR, CR = CRITERIA**

<table>
<thead>
<tr>
<th>Instructional Goal</th>
<th>Instructional Goal with Performance Context</th>
<th>Assessment</th>
</tr>
</thead>
</table>
| After completing an interactive unit on fractions, decimals, and percents, 7th grade students in Miss Knisely's math class will demonstrate their mathematical understanding of the relationship between parts and wholes | Given interactive lessons on parts and wholes related to fractions, decimals, and percents and a story problem (CN), students will understand, plan, solve, and check their work to the problem (B), without any error (CR). | 1. Pre-test  
2. Anticipation Guide  
3. Following assessments to test each step  
4. Post-test question and rubric to grade overall understanding after completion of unit |

### Steps in Instructional Goal  

<table>
<thead>
<tr>
<th>Performance Objectives</th>
<th>Assessment</th>
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</table>
| I. Understand the Problem | A1. Read the following problem.  
In a classroom every 3 out of 5 students are female. What percent of students are not female?  
a. 0.20  
b. 40%  
c. 60%  
d. 3/5  

A2. What information would you circle? (select all that apply)  
a. 3  
b. 5  
c. 3 out of 5  
d. none of the above  

A3. What information would you underline? (select all that apply)  
a. Classroom  
b. Not female  
c. Female  
d. Percent  

A4. What form are the numbers given in the story problem?  
a. Fraction  
b. Decimal  
c. Percent  
d. I do not know  

A5. What form are the numbers |
II. Plan to Solve the Problem

<p>| | |</p>
<table>
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</thead>
</table>
| A. Given key information, paper and pencil (CN), the student will determine and write the information of the parts versus wholes by drawing a picture to represent the story problem out of boxes and circles (B), without any assistance or error (CR). | A1. What is the “part” of this problem?  
   a. 2 females  
   b. 3 females  
   c. 5 females  
   d. 8 females |
| B. Given the key information, a picture, pencil and paper (CN), the student will draw a FDP table and write the given information into the correct column of the FDP table (B), without any assistance or error (CR). | A2. What is the “whole” amount in this problem?  
   a. 2 males  
   b. 3 females  
   c. 5 total people  
   d. 8 total people |
| C. Given the key information input into the FDP (CN), without assistance or error (CR), the | A3. Which picture accurately describes the story problem?  
   a. 1 circle and 2 boxes  
   b. 2 circles and 1 box  
   c. 3 circles and 5 boxes  
   d. 5 boxes and 2 circles |

B1. What column do you put the given information from the story problem into?  
   a. fraction (F)  
   b. decimal (D)  
   c. percent (P)  

<table>
<thead>
<tr>
<th>F</th>
<th>D</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

C1. What must you do next?  
   a. Convert a fraction to a decimal and then a percent
<table>
<thead>
<tr>
<th>Student will decide what they must convert</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fraction to decimal &amp; percent</td>
</tr>
<tr>
<td>• Decimal to percent &amp; fraction</td>
</tr>
<tr>
<td>• Percent to fraction &amp; decimal (B).</td>
</tr>
</tbody>
</table>

| b. Convert a decimal to a percent and then a fraction |
| c. Convert a percent to a fraction and then to a decimal. |
| d. I do not know                                     |

### III. Solve the Problem

**Student will be doing 1 of the following:**
**EITHER A, B, or C depending on decision**

A. Given a paper and pencil, an FDP table, and a picture of parts and wholes (CN), without any assistance or error (CR), the student will

- Divide the fraction into a decimal and write the answer into the FDP table.
- Move the decimal 2 places to the right, add a percent sign, and write the answer into the FDP table (B).

B. Given a paper and pencil, an FDP table, a picture of parts and wholes (CN), without any assistance or error (CR), the student will

- Draw a place value chart and write the decimal.
- Create a fraction. Numerator will be the numbers in place value chart. Denominator will be the place value where the last digit lies in place value table. Simplify and fill in FDP table.
- Move the decimal 2 places to the right, add a percent sign, and write the answer into the FDP table (B).

**Student will be doing 1 of the following:**
**EITHER A, B, or C depending on decision**

A1. Convert the fraction 4/5 into a decimal and select your answer

- a. 0.20
- b. 0.40
- c. 0.60
- d. 0.80

A2. The following decimal 0.95 is equivalent to what percent?

- a. 0.95%
- b. 9.5%
- c. 95%
- d. 950%

B1. Draw a place value chart below.

B2. Write the decimal (0.95) into the place value chart.

B3. The decimal 0.95 equivalent to what fraction?

- a. 0
- b. 9.5%
- c. 95%
- d. 950%

B4. The decimal 0.95 is equivalent to what percent?

- a. 0.95%
- b. 9.5%
- c. 95%
- d. 950%
C. Given a paper and pencil, an FDP table, a picture of parts and wholes (CN), without any assistance or error (CR), the student will
  - Move the decimal 2 places to the left, remove the percent sign, and write the answer into the FDP table (B).
  - Draw a place value chart and write the decimal.
  - Create a fraction. Numerator will be the numbers in place value chart. Denominator will be the place value where the last digit lies in place value table. Simplify and fill in FDP table.

C1. The percent 95% is equivalent to what decimal?
   a. 95.0
   b. 9.50
   c. 09.50
   d. 0.95

C2. Draw a place value chart below.

C3. Input the decimal 0.95 into the place value chart.

C4. The following decimal 0.95 is equivalent to what fraction?
   a. 4/5
   b. 9/20
   c. 19/20
   d. 9/5

IV. Check Answer & Work

A. Given paper and pencil, the calculations and conversions between fractions, decimals, and percents (CN), the student will write in the missing fields in the FDP table (B), without any error or assistance (CR).

B. Given a completed FDP table, a picture of the problem, and comprehension of parts and wholes (CN), without any error or hesitation (CR), the student will select the correct answer by
  - Verify their answer in the FDP table is listed as a multiple choice answer option.
  - Verify that their answer makes sense with the picture initially drawn.
  - Verify that if they work backwards they will get what they started with (B).

B1. Given the completed FDP table above, select the correct answer choice from the initial story problem.

STORY PROBLEM
In a classroom every 3 out of 5 students are female. What percent of students are not female?
   a. 0.20
   b. 40%
   c. 60%
   d. 3/5

B2. Does your answer make sense?
   a. Yes
   b. No
**PRE-TEST (2 SAMPLE QUESTIONS)**
Using your previous knowledge of division, answer the following questions using paper and pencil and show your work.
1. \(4156 \div 12 = ?\)

2. \(7852 \div 25 = ?\)

**POST-TEST (2 SAMPLE TAKS FORMATTED QUESTIONS)**
Using the knowledge gained from the interactive instructional unit and practice of another similar TAKS question, please complete the following 2 questions. Do not forget to document and show each step as you solve the problem. See the rubric below for grading.
*The following test items are previous TAKS questions and were retrieved online from a sample released TAKS test*

1. Mrs. Newsome said that 1/8 of the faculty at Long High School had attended the school as teenagers. Which decimal and percent are equivalent to 1/8?
   - F. 0.18, 18%
   - G. 0.125, 12.5%
   - H. 1.8, 180%
   - J. 1.25, 125%

2. The circle graph below shows the materials in U.S. landfills.
   ![Materials in U.S. Landfills](image)

Which of the following statements is NOT supported by the graph?
   - F. Paper and other trash make up more than ½ of U.S. landfills.
   - G. Rubber and leather and food and yard waste make up ¼ of U.S. landfills.
   - H. The amount of plastic is triple the amount of metal in U.S. landfills.
   - J. The amount of paper is more than twice the amount of metal in U.S. landfills.
**POST-TEST RUBRIC**

The following will be used to evaluate the students understanding of the steps in solving math story problems involving parts and wholes in a fraction, decimal, and percent conversion situation.

<table>
<thead>
<tr>
<th>Overall Task</th>
<th>Skill Performed</th>
<th>Points Possible</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understand the Problem</strong></td>
<td>Underlines and circles correct information from story problem.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Able to distinguish between fractions, decimals, and percents in problem versus in answer options.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eliminates information and multiple choice options.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Plan to Solve the Problem</strong></td>
<td>Distinguishes portions of an entire amount - what a part is versus the whole amount</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accurately enters given information into FDP Table</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Correctly plans how to solve the problem</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Solve the Problem</strong></td>
<td>Solves problem correctly following steps A B or C</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td><strong>Check Answer &amp; Work</strong></td>
<td>Selects correct answer</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shows proof that they worked backwards and verified the answer makes sense</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**ANTICIPATORY GUIDE**

Please select the statement, by marking an (X) in the appropriate field, if you agree with **before** the training and **after** the training.

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____</td>
<td>_____</td>
<td>I underline and circle key numbers and information prior to planning how to solve a problem.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I eliminate key information from a problem and from the answer choices prior to solving a problem.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I determine the type of number I have in my problem as well as in my answer (ex- fraction, decimal, or percent) prior to solving a problem.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I identify the part versus whole amounts in a story problem prior to solving.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I draw a picture to the best of my ability of the story problem prior to solving.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I set up and input given information into a FDP table prior to solving.</td>
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<tr>
<td>_____</td>
<td>_____</td>
<td>I decide what I need to do and make a plan prior to solving a story problem.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I know how to convert a fraction into a decimal and percent.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I know how to convert a decimal into a percent and fraction.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I know how to convert a percent into a decimal and fraction.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I check my work by working backwards.</td>
</tr>
<tr>
<td>_____</td>
<td>_____</td>
<td>I verify that my answer makes sense in the real world.</td>
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SUMMARY
A performance objective was created for the goal of the instructional unit. Each of the tasks identified in the first level analysis, which are seen as the major steps within accomplishing the main goal, were each given a performance objective. In order to test each performance objective, at least one or more assessment item was designed to assess the level of understanding of each performance objective that builds up to the main goal and objective of the instructional unit.

In order to effectively accomplish the goal of the instructional unit, there are some entry level skills that are needed. Therefore, a short and quick entry level assessment was created. A learner is unable to begin until they can get the correct answers confidently on the entry level assessment. In addition, an anticipatory guide was created in which the learner will answer the same questions prior to and after completion of the unit. The goal of this is to allow the learner to see all the skills that must be mastered in order to successfully complete the unit and to see the relevance of the tasks they will be asked to master. The goal of the anticipatory guide being completed after completion will be for the learner to see what they have learned. A rubric was created in order to assess the level of understanding as the learner completes the unit. A short post-test was created to measure mastery of the overall performance objective.

Now that the performance objectives and assessments have been created, the next unit will cover the instructional strategy to be used. An instructional strategy will be designed in order to get the learners to master each performance objective created. In addition, appropriate media and instructional materials will be selected and designed.

REFERENCES