

# Concepts and Applications

*Second Grade through Sixth Grade*

## Description

**DIBELS Math: Concepts and Applications** is a standardized measure designed to assess students' progress in the basic skills of understanding mathematical concepts and vocabulary and applying that knowledge to solve mathematical problems. It can be administered individually or to groups. Students write their answers to problems under standardized conditions and time limits which are dependent on grade level.

Concepts and Applications is designed as a general outcome measure, simple to administer and score, time-efficient, and sensitive to improvement. To administer Concepts and Applications, the examiner must have a copy of the standardized directions given in this document, and one copy of the student worksheet for each student. To score Concepts and Applications, the examiner must have a copy of the matching teacher key.

## Materials

- A copy of the student worksheets for each student.
- Teacher Key
- Stopwatch or timer
- Pencils for students

## Grade-Level Time Limits for Worksheets

Each worksheet has multiple pages. The time limits are for the entire worksheet, not each page.

| Grade | Time Limit per Worksheet |
|-------|--------------------------|
| 2     | 5 minutes                |
| 3     | 12 minutes               |
| 4     | 10 minutes               |
| 5     | 14 minutes               |
| 6     | 16 minutes               |

## Administration Directions

1. Provide each student with a pencil and a student worksheet. Hand out the worksheets face-down to each student. As you are handing out the worksheets, say, ***I am going to hand out a math worksheet. Please leave the paper face-down and wait for further instructions.***

2. OPTIONAL: Use the following instructions if the worksheets have not been labeled with student names. If you have already labeled the worksheets with student names, then you can skip this step. The purpose of this step is to prevent the students from taking time to write their name during the timed test administration. **Say, *Leave the paper face-down, but write your name on the back.***
3. Read the following specific directions to the student(s). Indicate the correct number of minutes based on the grade level of the worksheet you are administering. See Grade-Level Time Limits for Concepts and Applications Worksheets, above. ***We're going to do a math worksheet that will take 5 (10, 12, 14, or 16) minutes. There will be several types of math problems. Look at each problem carefully before you answer it. Some problems may have multiple parts. When I say 'begin,' turn the page over and start with the first problem. Try to solve each problem. If you cannot solve a problem, skip it and go on to the next one. If you reach the end of the page, go on to the next page. If you reach the end of the packet, stop and put your pencil down. Are there any questions?***
4. Say ***"Begin"*** and start your stopwatch.
5. Monitor students and use reminders as needed.
6. At the end of 5 (10, 12, 14, or 16) minutes, say ***"Stop, and put your pencils down."***
7. Collect all the Concepts and Applications worksheets.

## Reminders

These reminders may be used as often as needed:

- If a student is not working the problems across the rows, or is skipping problems without trying to solve them, say, ***"Try to solve each problem."***
- If a student stops working before the test is done, say, ***"Keep doing the best work you can."***
- If a student asks you to provide a word for him/her or help with the task, say, ***"Just do your best."***
- Words and test items cannot be read to the student when doing a standardized administration.

## Directions for Scoring

1. When scoring a Concepts and Applications form, you will need a copy of the Teacher Key for that form.
2. There are 16–20 problems on a form, each in individual sections. In the lower-right portion of the box, you will find a small legend which describes how to score the problem. The scoring is either based on the number of correct digits in the answer or if the student provided the exact answer, depending on the type of problem.
3. All scoring should be done on the student worksheet, not the Teacher Key.
4. For each problem that the student completed or attempted, write down the number of points he or she received for that problem. To make it clear which marks are yours, either use a pen, place your marks in a consistent location, or circle your marks.
5. Add the total points possible in each page and note that number in the margin. Add the page totals together to get the student's total score, and record that score on the top of the page in the space provided.
6. The final score is the total score from the one student worksheet.

**Determining the number of points the student receives on each problem:**

- On the Teacher Key, each problem includes a small chart in the lower right corner which displays the points possible for that problem. The left-hand column of the chart represents the number of digits that the student got correct in the answer or the number of lines, segments or boxes for exact answer problems. The right-hand column displays the number of points the student receives. There may be multiple components for each problem.
- The digits eligible for receiving points are the digits in the answer that are displayed on the Teacher Key. There are four main rules for determining points.
  - Correct digits:** The correct digits are counted as the total number of digits in the answer which are both correct and in the correct location. Which specific digits are correct does not matter for the purpose of determining the number of points to assign (e.g., in a 3-digit answer, getting the 1st and 3rd digits correct results in the same number of points as getting the 1st and 2nd digits correct).

The rules are the same as the rules for Computation worksheets, please refer to the Computation examples for additional scoring guidance. With addition, subtraction, and multiplication, look for the correct digits from right to left. With division, look for correct digits from left to right. For ratios and time, look on either side of the colon from left to right for the correct digits.

- Exact answer–points per line:** Each line in the problem is assigned points. The student answer must be correct on each of the lines in order to get points. If there are multiple lines in a problem, it is possible for a student to receive partial credit. For example, a student may have a correct answer on 2 out of the 3 lines. Each number on the left represents the number of lines in a specific problems and the corresponding number on the right is the number of points.

**For example:****Teacher Key:**

2. How many shares is the rectangle divided into? 3 shares.

**Student Example 2a:**

2. How many shares is the rectangle divided into? 3 shares.



1

**Example 2a:** The student correctly responded with the answer of 3 and received 1 point.

**Student Example 2b:**

2. How many shares is the rectangle divided into? 4 shares.



0

exact answer,  
points per line 1 | 1

**Example 2b:** The student did not provide the correct answer and he/she does not receive any points for the problem.

3. **Exact answer–points per box:** Each box in the problem is assigned points. The student answer must be correct in a box in order to get points. If there are multiple boxes in a problem, it is possible for a student to receive partial credit. For example, the student may have a correct answer in 2 out of the 3 boxes. Each number on the left represents the number of boxes in a specific problems and the corresponding number on the right is the number of points.

**For example:**

**Teacher Key:**

5. Compare the fraction in Box 1 with the fraction in Box 2. Fill in the blank with > (greater than), = (equal to), or < (less than):

| Box 1         | >, =, < | Box 2         |
|---------------|---------|---------------|
| $\frac{3}{4}$ | >       | $\frac{2}{4}$ |
| $\frac{3}{8}$ | <       | $\frac{7}{8}$ |

exact answer, 1 | 2  
points per box 2 | 4

**Student Example 3a:**

5. Compare the fraction in Box 1 with the fraction in Box 2. Fill in the blank with > (greater than), = (equal to), or < (less than):

| Box 1         | >, =, < | Box 2         |
|---------------|---------|---------------|
| $\frac{3}{4}$ | >       | $\frac{2}{4}$ |
| $\frac{3}{8}$ | <       | $\frac{7}{8}$ |

4

**Example 3a:** The student provided correct responses in both boxes and received 4 points for the problem.

**Student Example 3b:**

5. Compare the fraction in Box 1 with the fraction in Box 2. Fill in the blank with > (greater than), = (equal to), or < (less than):

| Box 1         | >, =, < | Box 2         |
|---------------|---------|---------------|
| $\frac{3}{4}$ | >       | $\frac{2}{4}$ |
| $\frac{3}{8}$ | >       | $\frac{7}{8}$ |

2

**Example 3b:** The student provided a correct response to the first comparison in the first box, but did not provided a correct response to the second comparison in the second box. He/she received 2 points for the problem.

**Student Example 3c:**

5. Compare the fraction in Box 1 with the fraction in Box 2. Fill in the blank with > (greater than), = (equal to), or < (less than):

| Box 1         | >, =, < | Box 2         |
|---------------|---------|---------------|
| $\frac{3}{4}$ | <       | $\frac{2}{4}$ |
| $\frac{3}{8}$ | >       | $\frac{7}{8}$ |

0

**Example 3c:** The student did not provide any of the correct answers and he/she does not receive any points for the problem.

4. **Exact answer—points per segment:** Each segment in the problem is assigned points. The student answer must be correct in a particular segment in order to get points. Each number on the left represents the number of segments in a specific problems and the corresponding number on the right is the number of points.

**For example:**

**Teacher Key:**

12. Draw two line segments that are parallel:



exact answer,  
points per segment  
(line segments and parallel)  $\begin{array}{c|c} 1 & 1 \\ 2 & 2 \end{array}$

**Student Example 4a:**

12. Draw two line segments that are parallel:



2

**Example 4a:** The student provided two line segments and lines that were parallel. He/she receives 2 points for the problem; 1 point for drawing line segments and 1 point for drawing them parallel.

**Student Example 4b:**

12. Draw two line segments that are parallel:



1

**Example 4b:** The student provided two line segments, but did not provide lines that were parallel. He/she received 1 point for the problem because he/she drew line segments.

**Teacher Key:**13. Write the following in expanded form: **43,797**

$$40,000 + 3,000 + 700 + 90 + 7$$

|                                  |   |   |
|----------------------------------|---|---|
| exact answer,                    | 1 | 1 |
| points per segment               | 2 | 2 |
| (each part of the expanded form) | 3 | 3 |
|                                  | 4 | 4 |
|                                  | 5 | 5 |

**Student Example 4c:**13. Write the following in expanded form: **43,797**

$$40,000 + 3,000 + 700 + 90 + 7$$

(5)

**Example 4c:** The student provided correct responses for all of the segments. He/she wrote 40,000, which is one correct segment, 3,000, a correct segment, 700, a correct segment, 90, a correct segment, and 7, a correct segment. He/she received 5 points for this problem.

**Student Example 4d:**13. Write the following in expanded form: **43,797**

$$4,000 + 3,000 + 700 + 97$$

(2)

**Example 4d:** The student provided a correct responses to two segments. The two segments that were correct were 3,000 and 700. He/she received 2 points for the problem.

**Additional Scoring Rules**

5. **“or equivalent”:** If the student provides a response other than what is written on the scoring sheet and it is correct, give them credit.

**Teacher Key:**

3. List three numbers that are multiples of 4:

$$\underline{8} \quad \underline{12} \quad \underline{16} \text{ or equivalent}$$

|                 |   |   |
|-----------------|---|---|
| exact answer,   | 1 | 2 |
| points per line | 2 | 4 |
|                 | 3 | 6 |

**Example 5a:** If the student writes a different multiple of 3 and the answer is correct, then award him or her points for having the exact answer on that particular line.

**Error Pattern Analysis (Optional):**

The Concepts and Applications materials include recording form for each grade, for the purpose of recording benchmark scores. In addition, those recording forms include a chart that describes the problems that appear on each worksheet. That chart can be used to analyze certain types of error patterns. To use the chart, make the following marks. Red ink is recommended, to make it easy to distinguish the markings.

1. If the student got the problem correct, circle the problem number on the chart.
2. If the student got the problem incorrect or partially incorrect, mark an X over the problem number on the chart.
3. If the student did not reach the problem or skipped the problem, leave the problem number blank. If the last problem that the student attempted on the sheet was not completed, leave it blank.
4. If the student left other problems partially done, mark an X over those numbers.
5. Any error patterns that cannot be tracked with the chart can still be written in as notes.