Nevada DEPARTMENT OF EDUCATION

GRADE 3

Nevada

# Instructional Materials

FOR THE

# CRITERION REFERENCED TEST

## Grade 3

## MATHEMATICS

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Dear Educators,

The following materials, developed as a collaborative effort between the Nevada Department of Education and WestEd, a nonprofit research, development, and service agency, are designed to be used as part of a guided instructional activity to support student performance on items aligned to the Common Core Standards.

We have provided p-values (the proportion of students who got the item correct) for the multiple-choice items that were field tested in the 2011-2012 administration. The p-values indicate how students performed on the items. In addition, we are providing the percentage of students selecting each response option. The p-values, combined with the item-level percentages by response option, provide valuable data to the field as to what types of errors students are making. For mathematics, no p-value is reported if that item did not appear on the field test. In mathematics, some field test items have been used as a model to mirror the content being assessed and therefore the p-values are based on the field test version of the item and not the actual item as it appears in these materials. These items are indicated by an asterisk. To further understanding of constructed-response items, scoring guides and annotated student examples have been included.

While these materials can provide students with practice in answering assessment items, we believe it is critical that these materials be used to help students understand the elements of the state assessment and guide them in the use of effective strategies that will support their ability to comprehend and take a variety of assessments. If you choose, however, to use these support documents solely as a practice activity, we highly recommend that you go back over each item with students and investigate each response to better understand their knowledge of the assessment.

**Vocabulary Knowledge**
The Nevada Department of Education believes that students are not thoroughly being taught the content vocabulary of the Nevada Mathematics Content Standards. For example, equation, expression, coordinate, function, histogram, analyze, and justify are terms used in the assessments at grade-appropriate levels.

Students in Nevada, therefore, must have repeated experiences with **speaking, listening**, **reading**, and **writing** the vocabulary of the standards. Students should be able to use the vocabulary of the standards when they are engaged in classroom discussion, read them in assessments, and effectively use the vocabulary in their writing.

**Types of Questions and Support Documents**
The mathematics assessment includes two types of questions—multiple-choice questions for all grades (3 – 8 and high school) and constructed-response questions for grades 4 – 8.

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To help prepare students for constructed-response questions, we have provided you with:

1. the student checklist (included in the student test booklet at grades 4 and 5)
2. the general student rubric (included in the student test booklet at grades 6 – 8)
3. item-specific rubrics
4. annotated student work

With the use of these materials, students can become familiar with the different types of questions used on the state and future assessments. They can learn to use the checklist or rubric to determine if they have answered the constructed-response questions completely. Familiarity with the tools provided as part of the assessment and the vocabulary of the standards can result in less anxiety on the part of students and teachers. (Please note that the student checklist and general rubric can be on the walls of your classroom throughout the school year. As you assign constructed-response questions, students can use these tools as they develop their answers.)

**Depth of Knowledge (DOK) Levels -** In addition to measuring a broad spectrum of mathematics content domains, the types of questions included in these instructional materials allow for the assessment of different levels of cognitive complexity. The Nevada Proficiency Examination Program in mathematics includes items to assess three Depth of Knowledge levels. These DOK levels are based on descriptions developed by Dr. Norman Webb and adapted for Nevada's mathematics assessments. We suggest that you engage students in question writing so they not only can recognize these levels of complexity, but can begin to formulate them as well. The following are the three DOK levels used on Nevada's mathematics assessments:

> **DOK Level 1: Recall** - Level 1 requires the recall of facts or use of basic skills. A level 1 item consists of literal recall from text, paraphrasing, or simple understanding of a single word or phrase. A level 1 item may require a simple connection between sentences, which may be considered a very basic inference.
>
> **DOK Level 2: Use of Concepts and Skills** - Level 2 requires comprehension and mental processing of text or portions of text. A level 2 item includes the engagement of some mental processing beyond recalling or reproducing a response. A level 2 item requires the application of skills and concepts. Some important concepts are covered but not in a deeply complex way.
>
> **DOK Level 3: Strategic Thinking and Problem Solving** - Level 3 requires abstract reasoning, critical thinking, and/or the application of abstract concepts to new situations.

We hope that interaction with these instructional support materials will lead to lowered anxiety and better understanding of the assessment task that is being presented to students. If you have questions about the mathematics materials or how to embed this information into your curriculum, please contact Tracy Gruber at tgruber@doe.nv.gov.

Cindy Sharp
Nevada Department of Education

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Name: _____

# Mathematics
# Grade 3

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**This booklet contains mathematics questions for you to answer. For the questions, you will be given four answer choices—A, B, C, and D. You are to choose the correct answer from the four choices. Each question has only one right answer.**

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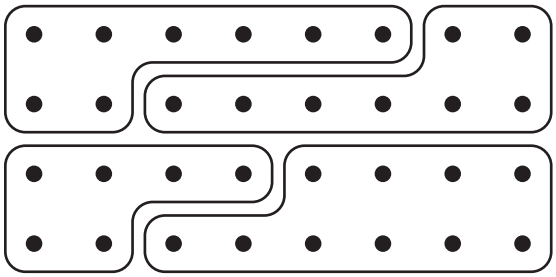
**1** There are 54 roses in flower vases. The same number of roses is in each flower vase. Which expression could be used to represent the total number of roses by showing the number of flower vases and the number of roses in each vase?

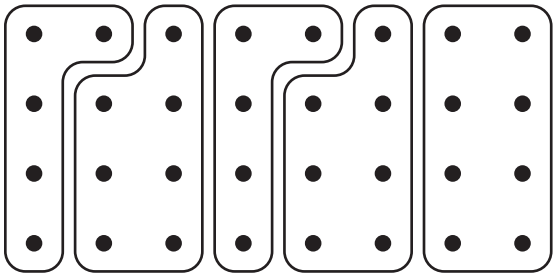
**A** $6 \times 9$
**B** $7 \times 8$
**C** $9 + 9 + 9 + 9 + 9 + 9 + 9$
**D** $10 + 10 + 10 + 10 + 10 + 4$

**2** A machine printed 32 posters. The same number of posters were printed each minute. Which picture could model the number of posters printed each minute and the number of minutes until all the posters were printed?

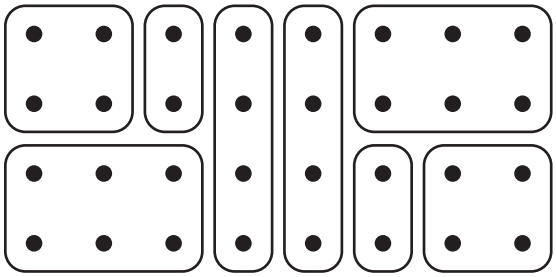
**A**



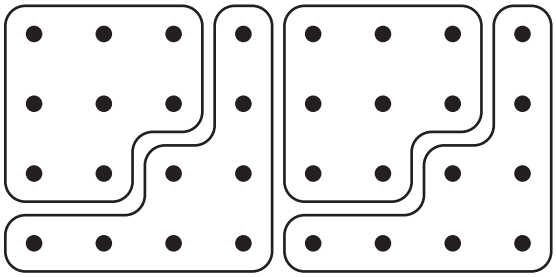
**C**



**B**



**D**



Go On

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**3** A train carrying people to work makes several stops.

- 29 people get off the train at its first stop.
- 4 **more** people get off the train at its second stop than got off at its first stop.

What is the total number of people who got off the train at its first stop and second stop?

**A** 33 people
**B** 37 people
**C** 54 people
**D** 62 people

**4** Jodi used a rule to make the pattern shown below.

**6 10 14 18 22**

The pattern continues. Which statement about the pattern is true?

**A** Each number in the pattern can be evenly divided by 2 because the first number in the pattern is even and Jodi's rule for the pattern is add 4 .
**B** Each number in the pattern can be evenly divided by 4 because the first number in the pattern is even and Jodi's rule for the pattern is add 4 .
**C** Each number in the pattern can be evenly divided by 2 because the first number in the pattern is even and Jodi's rule for the pattern is add 6 .
**D** Each number in the pattern can be evenly divided by 3 because the first number in the pattern is even and Jodi's rule for the pattern is add 6 .

**5** Which number has the same value when it is rounded to the nearest 10 as when it is rounded to the nearest 100 ?

**A** 1,392
**B** 1,396
**C** 1,406
**D** 1,442

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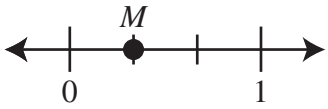
**6** Look at the number line below.




Which fraction **best** describes the location of point *M* ?

**A** $\frac{1}{6}$

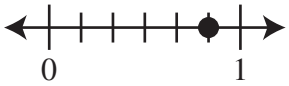
**B** $\frac{1}{4}$

**C** $\frac{1}{3}$

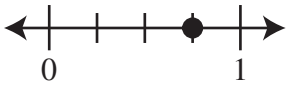
**D** $\frac{1}{2}$

**7** Which number line shows a point located at $\frac{3}{4}$ ?

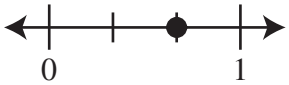
**A**




**B**




**C**




**D**

**8** Which number is equivalent to the fraction $\frac{8}{8}$ ?

**A** 1
**B** 2
**C** 8
**D** 16

Go On

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**9** The pictograph below shows the number of bagels sold at a shop on each of 3 days.

**Bagels Sold**

| Day | Number of Bagels |
|---|---|
| Friday | |
| Saturday | |
| Sunday | |

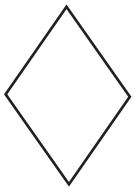
| Key |
|---|
| = 4 bagels |

How many **fewer** bagels were sold on Friday than the total number sold on Saturday and Sunday?

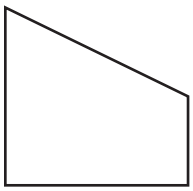
**A** 6 bagels
**B** 12 bagels
**C** 24 bagels
**D** 28 bagels

**10** Which shape is **not** a rhombus or a rectangle?

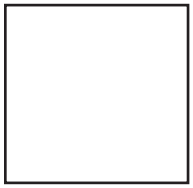
**A**



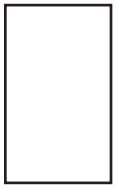
**C**



**B**



**D**



Go On

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You may want to go back and check your answers or answer questions you did not complete.

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# Appendix I

# Scoring Support Materials

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## Correct Answers for Multiple-Choice Items

### Item Level Data

| Item Number | Strand | DOK | P-value |
|---|---|---|---|
| 1* | 1 | 1 | 0.44 |
| 2 | 1 | 2 | 0.43 |
| 3* | 1 | 2 | 0.47 |
| 4 | 2 | 2 | 0.47 |
| 5 | 1 | 1 | 0.27 |
| 6 | 1 | 1 | 0.25 |
| 7* | 1 | 1 | 0.50 |
| 8 | 1 | 1 | 0.33 |
| 9* | 5 | 2 | 0.52 |
| 10* | 4 | 1 | 0.33 |

P-value is the proportion of students who got the item correct

*This is an item that was developed for these Instructional Materials, and it mirrors content assessed from an item field tested in the 2011-2012 test administration. The p-value and percentages reported here are based on the p-value and percentages of the item from the 2011-2012 field test.

### Percentage of Students Selecting a Given Response

| A | B | C | D |
|---|---|---|---|
| 44% ✓ | 10% | 16% | 31% |
| 25% | 19% | 13% | 43% ✓ |
| 25% | 24% | 4% | 47% ✓ |
| 47% ✓ | 34% | 10% | 9% |
| 28% | 27% ✓ | 26% | 19% |
| 7% | 30% | 25% ✓ | 37% |
| 13% | 50% ✓ | 21% | 15% |
| 33% ✓ | 5% | 32% | 30% |
| 21% | 19% | 52% ✓ | 7% |
| 26% | 37% | 33% ✓ | 4% |

✓ = Correct Answer

**Detailed objectives for Content Standards and Depth of Knowledge (DOK) descriptions can be found on the Nevada Department of Education web site.**

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# Appendix II

# Administrative Support Materials

## Grade 3

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**Name:** _____

# Answer Document

## Mathematics

| | | | | |
|---|---|---|---|---|
| 1. | A | B | C | D |
| 2. | A | B | C | D |
| 3. | A | B | C | D |
| 4. | A | B | C | D |
| 5. | A | B | C | D |
| 6. | A | B | C | D |
| 7. | A | B | C | D |
| 8. | A | B | C | D |
| 9. | A | B | C | D |
| 10. | A | B | C | D |

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GRADE

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