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NM-MSSA

NM-MSSA Math
PRACTICE TEST ANSWER KEY
Grade 3

Item Number	Key	Standards
1	C	3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
2	B	3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
3	D	3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7*.
4	A	3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[1] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[2] [1] Excludes compound units such as cm^3 and finding the geometric volume of a container [2]Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).
5	A	3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. 3.NF.A.2.B Represent a fraction a/b on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a/b* and that its endpoint locates the number *a/b* on the number line.
6	A,E	3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
7		3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1] [1] See Glossary, Table 2.

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Item Number	Key	Standards
8	B	3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
9	D	3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
10	B	3.OA.B.5 Apply properties of operations as strategies to multiply and divide.[2] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)* [2] Students need not use formal terms for these properties.
11	B	3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[3] [3] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in conventional order when there are no parentheses to specify a particular order (Order of Operations).
12	C	3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[3] [3] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in conventional order when there are no parentheses to specify a particular order (Order of Operations).
13	D	3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
14		3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[3] [3] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in conventional order when there are no parentheses to specify a particular order (Order of Operations).

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Item Number	Key	Standards
15	C	3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*
16	C	3.OA.B.5 Apply properties of operations as strategies to multiply and divide.[2] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)* [2] Students need not use formal terms for these properties.
17	D	3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
18	D	3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. 3.NF.A.3.D Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
19	D	3.MD.C.7 Relate area to the operations of multiplication and addition. 3.MD.C.7.C Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.
20	A	3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1] [1] See Glossary, Table 2.
21	A	3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. 3.NF.A.3.C Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*
22	C	3.MD.C.7 Relate area to the operations of multiplication and addition. 3.MD.C.7.C Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

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Item Number	Key	Standards
23	B	3.NF.A.1 Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by a parts of size 1/*b*.
24		3.MD.C.7 Relate area to the operations of multiplication and addition. 3.MD.C.7.B Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
25	B	3.MD.C.7 Relate area to the operations of multiplication and addition. 3.MD.C.7.C Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b* + *c* is the sum of *a* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning.
26	D	3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
27	C	3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. 3.NF.A.2.B Represent a fraction *a*/*b* on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.
28	A	3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
29	D	3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. 3.NF.A.3.D Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
30	C	3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

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Item Number	Key	Standards
31		3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. 3.NF.A.3.D Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
32	C	3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
33	D	3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*
34	B	3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
35	C	3.G.A Reason with shapes and their attributes.
36	D	3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*
37	A	3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

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#7

Scoring Rubric

Score	Description
2	for correct answers to part a, 30 × ☐ = 150 or **equivalent**, and part b, **5** (tanks)
1	for correct answer to one part or for correct answer to part b based on an incorrect answer in part a
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Rubric Block: ID:2 Author, Proctor, Scorer, Test-constructor, Tutor

a. 30 × ☐ = 150

b. There are 5 fish tanks.

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#14

Concepts and Procedures Scoring Rubric

Score	Description
4	The student earns 4 points.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Concepts and Procedures Training Notes:

Part a 2 points for correct answer, **4** (sheets of stickers), with sufficient explanation to show understanding of solving multi-step word problems

OR

1 point for correct answer with incomplete or no explanation

or

1 point for sufficient explanation to show understanding of solving multi-step word problems, with incorrect or no answer

Part b 2 points for correct answer, **2** (packs of stickers), with sufficient explanation to show understanding of solving multi-step word problems

OR

1 point for correct answer with incomplete or no explanation

or

1 point for sufficient explanation to show understanding of solving multi-step word problems, with incorrect or no answer

Mathematical Practices Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Mathematical Practices Training Notes:

1 point for making sense of problems (does not show evidence of using any of the extraneous information)

1 point for ensuring the solution makes sense (compares the estimated amounts to the actual amounts)

Exemplary Response:

a. 4 sheets of stickers, $3 \times 8 = 24$, $24 \div 6 = 4$

b. 2 more packs of stickers, He will need 4 sheets of stickers for each of the 4 bags $4 \times 4 = 16$. He will need 16 sheets of stickers in all. There are 8 sheets of stickers in each pack. $16 \div 8 = 2$. So he will need to buy 2 more packs of stickers.

c. No, he is not correct. $25 + 15 = 40$, $18 > 15$, so $25 + 18 > 40$. Wyatt spent more than $40 on the cake and balloons.

OR

$25 + 18 = 43$, $43 > 40$ So Wyatt is not correct.

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#24

Concepts and Procedures Scoring Rubric:

Score	Description
4	The student earns 6 points.
3	The student earns 4 or 5 points.
2	The student earns 2 or 3 points.
1	The student earns 1 point.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

Part a 2 points for correct answer, **8 (square feet)** with sufficient work or explanation to show understanding of finding the area of a rectangular figure

OR

1 point for correct answer with insufficient or no explanation

or

for sufficient explanation to show understanding of finding the area of a rectangular figure, with incorrect or no answer

Part b 2 points for correct answer, **24 (square feet)** with sufficient work or explanation to show understanding of finding the total area of two rectangular figures

OR

1 point for correct answer with insufficient or no explanation

or

for sufficient explanation to show understanding of finding the total area of two rectangular figures, with incorrect or no answer

Part c 2 points for correct answer, **18 (feet)** with sufficient work or explanation to show understanding of finding the perimeter of a rectangular figure

OR

1 point for correct answer with insufficient or no explanation

or

for sufficient explanation to show understanding of finding the perimeter of a rectangular figure, with incorrect or no answer

Mathematical Practices Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

1 point for abstracting a given situation (uses the appropriate measurements for each part of the problem)

1 point for using quantitative reasoning (correctly computes the areas and perimeter for the problem)

Exemplary Response:

a. 8 (square feet) $2 \times 4 = 8$

b. 24 (square feet) $3 \times 4 = 12$, $12 + 12 = 24$

c. 16 (feet) $4 + 4 + 5 + 5 = 18$

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#31

Concepts and Procedures Scoring Rubric:

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Concepts and Procedures Training Notes:

Part b 2 points for correct number sentence, $\frac{2}{3} > \frac{2}{5}$, or equivalent with sufficient explanation to show understanding of comparing fractions with the same numerator by reasoning about their size

OR

1 point for correct number sentence with insufficient or no explanation

or

for sufficient explanation to show understanding of comparing fractions with the same numerator by reasoning about their size with incorrect or no number sentence

Mathematical Practices Scoring Rubric

Score	Description
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Mathematical Practices Training Notes:

1 point for constructing an argument (sufficient explanation of how fractions can be compared only when they refer to the same whole)

Exemplary Response:

a. Mason cannot use the models because they are not the same size. They do not show the same whole.

b. $\frac{2}{3} > \frac{2}{5}$. The numerators are the same, so I compared the denominators. $3 < 5$. A smaller denominator means each part of the whole is greater. So, $\frac{2}{3} > \frac{2}{5}$.