Computer-Based Released Items
Grade 3 Mathematics
Spring 2018

The spring 2018 grade 3 Mathematics test was administered in two formats: a computer-based version and a paper-based version.

- Released items from the **computer-based version** of the test are available online at mcas.pearsonsupport.com/released-items. The computer-based released items are collected in a mini test called an ePAT (electronic practice assessment tool). Items in the ePAT are displayed in TestNav 8, the testing platform for the computer-based tests.

- Released items from the **paper-based version** of the test are available in PDF format on the Department's website at www.doe.mass.edu/mcas/testitems.html.

This document provides information about each released item from the *computer-based test*, including: reporting category, standard covered, item type, item description, and correct answer (for certain selected-response and short-answer items only). Information about unreleased operational items is also presented here, along with scoring rubrics for constructed-response questions.

A Note about Testing Mode

Most of the operational items on the grade 3 Mathematics test were the same, regardless of whether a student took the computer-based version or the paper-based version. In some instances, the wording of a paper item differed slightly from the computer-based version. In places where a technology-enhanced item was used on the computer-based test, that item was typically replaced with one or more alternative items on the paper test. These alternative items sometimes assessed the same standard as the technology-enhanced item, or other standards from the same reporting category.

Grade 3 Mathematics
Spring 2018 Computer-Based Released Operational Items:
Reporting Categories, Standards, Item Descriptions, and Correct Answers

CBT Item No.*	ePAT Item No.*	Reporting Category	Standard	Item Type**	Description	Correct Answer***
1	1	*Number & Operations—Fractions*	3.NF.A.02	SR	Determine the fraction that is plotted on a given number line.	D
3	2	*Number & Operations in Base Ten*	3.NBT.A.01	SA	Round a three-digit whole number to the nearest ten.	140
7	3	*Operations & Algebraic Thinking*	3.OA.C.07	SR	Use division or a related multiplication fact to solve a word problem.	C
8	4	*Measurement & Data*	3.MD.B.03	SR	Solve a one-step "how many more" problem using a given bar graph.	B
10	5	*Measurement & Data*	3.MD.C.07	SR	Select the two expressions that can be used to find the total area of two adjacent rectangles.	*see page 4*
11	6	*Number & Operations—Fractions*	3.NF.A.03	SR	Determine the fraction that is equivalent to a given fraction model.	A
12	7	*Geometry*	3.G.A.01	SR	Determine which figure has the attributes of two given shapes.	C
15	8	*Number & Operations—Fractions*	3.NF.A.01	CR	Determine the relationships between the number of equal parts and the number of wholes in a word problem.	
18	9	*Measurement & Data*	3.MD.B.04	SR	Use a ruler to determine the length of a given figure to the nearest fourth of an inch.	A
21	10	*Measurement & Data*	3.MD.A.01	SR	Identify the time given on an analog clock using a digital clock.	A
22	11	*Operations & Algebraic Thinking*	3.OA.D.09	SR	Determine the terms of a numerical pattern and identify a feature that all the terms share.	B
27	12	*Operations & Algebraic Thinking*	3.OA.B.06	SA	Write a multiplication equation that can be used to solve an equal groups problem.	*see page 4*
29	13	*Operations & Algebraic Thinking*	3.OA.A.02	SR	Determine which word problem can be solved using a given division expression.	D
30	14	*Operations & Algebraic Thinking*	3.OA.D.08	SA	Solve a two-step word problem using multiplication and addition.	9
31	15	*Number & Operations in Base Ten*	3.NBT.A.03	SR	Solve a word problem by multiplying a one-digit whole number by a two-digit multiple of ten.	D
32	16	*Measurement & Data*	3.MD.A.02	SR	Estimate the mass of one amount of an item based on a given figure showing the mass for a different amount of the same item.	B
35	17	*Number & Operations in Base Ten*	3.NBT.A.02	CR	Add and subtract two- and three-digit numbers and demonstrate the relationship between addition and subtraction with an equation.	
37	18	*Geometry*	3.G.A.02	SA	Create a fraction model for a unit fraction by determining the number of parts needed and how many parts should be shaded.	*see page 5*
38	19	*Operations & Algebraic Thinking*	3.OA.B.05	SA	Complete the steps needed to use the distributive property to solve a multiplication equation.	*see page 5*
39	20	*Measurement & Data*	3.MD.C.06	SA	Find the area of a given figure by counting units or multiplying length and width.	48

*"CBT Item Number" refers to the position of the item on the operational computer-based test. This is the item number that DESE refers to when reporting student results for a CBT item. "ePAT Item Number" refers to the position of the item in the 2018 released item set for grade 3 Mathematics, found online at mcas.pearsonsupport.com/released-items.

**Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).

***Answers are provided here for selected-response and short-answer items only. Correct answers for technology-enhanced (TE) items can be found on pages 4–5 of this document. Sample responses and scoring guidelines for any constructed-response items will be posted to the Department's website later this year.

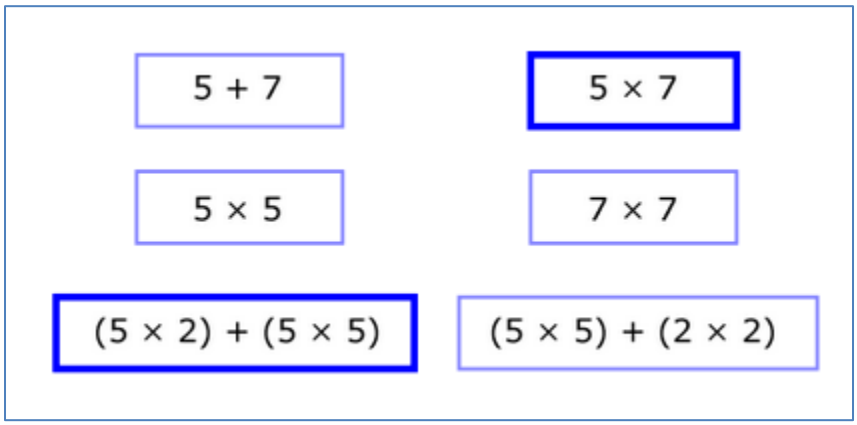
Grade 3 Mathematics
Spring 2018 Computer-Based Unreleased Operational Items:
Reporting Categories, Standards, and Item Descriptions

CBT Item No.*	Reporting Category	Standard	Item Type**	Description
2	*Operations & Algebraic Thinking*	3.OA.A.03	SR	Solve a word problem involving division of two whole numbers.
4	*Operations & Algebraic Thinking*	.OA.C.07	SA	Determine the products and quotients of given multiplication and division facts.
5	*Number & Operations in Base Ten*	3.NBT.A.02	SR	Solve a real-world problem by subtracting two three-digit whole numbers.
6	*Number & Operations—Fractions*	3.NF.A.03	SA	Write a comparison of two given unit fractions.
9	*Operations & Algebraic Thinking*	3.OA.D.09	CR	Find and justify the next number in a given pattern and explain a feature of the pattern.
13	*Operations & Algebraic Thinking*	3.OA.A.04	SA	Write an equivalent division equation for a given multiplication equation.
14	*Measurement & Data*	3.MD.C.07	SR	Determine the equation that can be used to find the area of a figure with a given length and width.
16	*Number & Operations—Fractions*	3.NF.A.03	SR	From a given set of fractions, determine the fraction that is not equivalent to the other fractions.
17	*Operations & Algebraic Thinking*	3.OA.A.01	SR	Determine how a two-digit product can be expressed as equal groups of equal numbers of objects.
19	*Measurement & Data*	3.MD.D.08	SA	Determine the length of one rectangle given its width and the fact that it has the same perimeter as a second rectangle that is labeled with its length and width.
20	*Operations & Algebraic Thinking*	3.OA.D.08	SR	Determine the most reasonable solution to a word problem involving multiplication of two whole numbers.
23	*Operations & Algebraic Thinking*	3.OA.B.05	SA	Use the distributive property to complete a multiplication equation.
24	*Number & Operations in Base Ten*	3.NBT.A.01	SR	Determine which expression with rounded numbers will give the best estimate when adding two whole numbers.
25	*Number & Operations—Fractions*	3.NF.A.02	SA	Plot a point at the location of a fraction on a given partitioned number line.
26	*Measurement & Data*	3.MD.B.04	SA	Interpret a line plot with data in whole numbers and mixed numbers.
28	*Measurement & Data*	3.MD.C.05	CR	Find the area of a given rectangle made of equal-sized square units and justify whether the areas of two other rectangles are equal or not.
33	*Geometry*	3.G.A.01	SR	Identify the true statement about the mathematical names of a set of given shapes.
34	*Number & Operations in Base Ten*	3.NBT.A.03	SR	Find the products of one-digit whole numbers multiplied by two-digit multiples of 10.
36	*Number & Operations—Fractions*	3.NF.A.02	SR	Identify the fraction that is plotted on a given number line.
40	*Geometry*	3.G.A.02	SR	Determine which figure with part of its area shaded represents a given unit fraction.

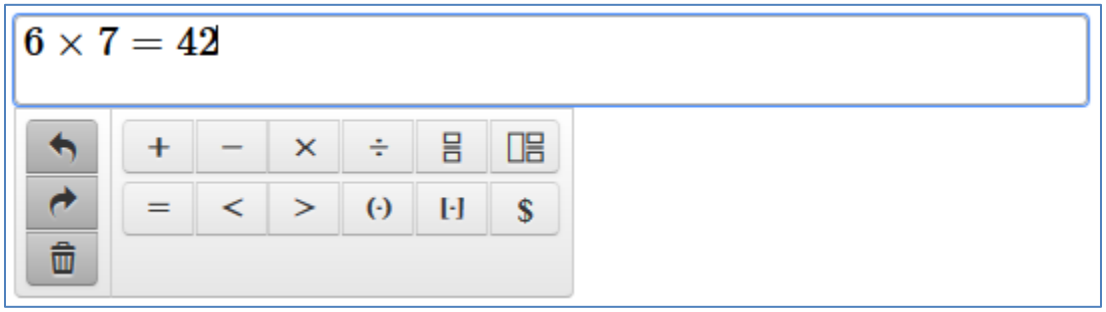
*"CBT Item Number" refers to the position of the item on the operational computer-based test. This is the item number that DESE refers to when reporting student results for a CBT item.

**Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).

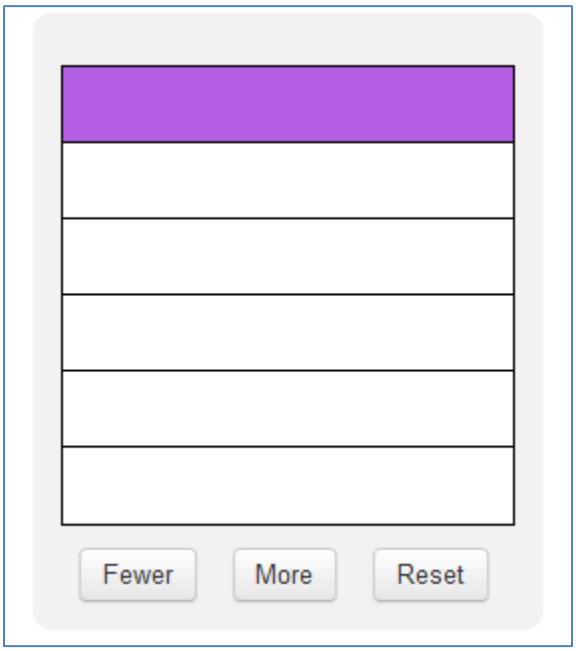
Correct Answer for CBT Item #10: Technology-Enhanced Item



Correct Answer for CBT Item #27: Technology-Enhanced Item



Correct Answer for CBT Item #37: Technology-Enhanced Item



Correct Answer for CBT Item #38: Technology-Enhanced Item

$9 \times 7 = 9 \times (5 + \boxed{2})$

$9 \times 7 = (9 \times 5) + (9 \times \boxed{2})$

$9 \times 7 = 45 + \boxed{18}$

$9 \times 7 = \boxed{63}$

Rubric for CBT Item #15: Constructed Response

Scoring Guide	
Score	Description
3	The student response demonstrates an exemplary understanding of the Numbers and Operations - Fractions concepts involved in understanding a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts and understanding a fraction *a*/ *b* as the quantity formed by *a* parts of size 1/ *b*. Given a number of fractional parts, the student correctly determines the number of wholes and, given a number of wholes, the student correctly determines the number of fractional parts.
2	The student response demonstrates a good understanding of the Numbers and Operations - Fractions concepts involved in understanding a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into *b* equal parts and understanding a fraction a/b as the quantity formed by *a* parts of size 1/*b*. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 2 points.
1	The student response demonstrates a minimal understanding of the Number and Operations - Fractions concepts involved in understanding a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts and understanding a fraction *a*/ *b* as the quantity formed by *a* parts of size 1/ *b*. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 1 point.
0	The student response contains insufficient evidence of an understanding of Number and Operations - Fractions concepts involved in understanding a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts and understanding a fraction *a*/ *b* as the quantity formed by *a* parts of size 1/*b* to merit any points.

Rubric for CBT Item #35: Constructed Response

Scoring Guide	
Score	Description
3	The student response demonstrates an exemplary understanding of the Number & Operations in Base Ten concepts involved in fluently adding and subtracting within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. The student correctly adds and subtracts within 1000 and demonstrates a relationship between addition and subtraction with equations.
2	The student response demonstrates a good understanding of the Number & Operations in Base Ten concepts involved in fluently adding and subtracting within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 2 points.
1	The student response demonstrates a minimal understanding of the Number & Operations in Base Ten concepts involved in fluently adding and subtracting within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 1 point.
0	The student response contains insufficient evidence of an understanding of the Number & Operations in Base Ten concepts involved in fluently adding and subtracting within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction to merit any points.