New York State
EDUCATION DEPARTMENT
Knowledge › Skill › Opportunity

New York State Testing Program
Grade 7
Mathematics Test

Released Questions

2022

New York State administered the Mathematics Tests in May 2022 and is now making approximiately 75% of the questions from these tests available for review and use.

New York State Testing Program
Grades 3–8 Mathematics

Released Questions from 2022 Exams

Background

As in past years, SED is releasing large portions of the 2022 NYS Grades 3–8 English Language Arts and Mathematics test materials for review, discussion, and use.

For 2022, included in these released materials are at least 75 percent of the test questions that appeared on the 2022 tests (including all constructed-response questions) that counted toward students' scores. Additionally, SED is also providing a map that details what each released question measures and the correct response to each question. These released materials will help students, families, educators, and the public better understand the tests and the New York State Education Department's expectations for students.

Understanding Math Questions

Multiple-Choice Questions

Multiple-choice questions are designed to assess the New York State P–12 Learning Standards for Mathematics. Mathematics multiple-choice questions will be used mainly to assess standard algorithms and conceptual standards. Multiple-choice questions incorporate both the grade-level standards and the "Standards for Mathematical Practices." Many questions are framed within the context of real-world applications or require students to complete multiple steps. Likewise, many of these questions are linked to more than one standard, drawing on the simultaneous application of multiple skills and concepts.

Short-Response Questions

Short-response questions require students to complete tasks and show their work. Like multiple-choice questions, short-response questions will often require multiple steps, the application of multiple mathematics skills, and real-world applications. Many of the short-response questions will cover conceptual and application standards.

Extended-Response Questions

Extended-response questions ask students to show their work in completing two or more tasks or a more extensive problem. Extended-response questions allow students to show their understanding of mathematical procedures, conceptual understanding, and application. Extended-response questions may also assess student reasoning and the ability to critique the arguments of others. The scoring rubric for short and extended constructed-response questions can be found in the grade-level Educator Guides at http://www.nysed.gov/state-assessment/grades-3-8-ela-and-math-test-manuals.

New York State P–12 Learning Standards Alignment

The alignment(s) to the New York State P–12 Learning Standards for Mathematics is/are intended to identify the primary analytic skills necessary to successfully answer each question. However, some questions measure proficiencies described in multiple standards, including a balanced combination of procedure and conceptual understanding. For example, two-point and three-point constructed-response questions require students to show an understanding of mathematical procedures, concepts, and applications.

These Released Questions Do Not Comprise a "Mini Test"

To ensure it is possible to develop future tests, some content must remain secure. This document is *not* intended to be representative of the entire test, to show how operational tests look, or to provide information about how teachers should administer the test; rather, its purpose is to provide an overview of how the test reflects the demands of the New York State P–12 Learning Standards.

The released questions do not represent the full spectrum of the standards assessed on the State tests, nor do they represent the full spectrum of how the standards should be taught and assessed in the classroom. It should not be assumed that a particular standard will be measured by an identical question in future assessments.

Name: _____

New York State Testing Program

2022 Mathematics Test Session 1

Grade 7

April 26–28, 2022

RELEASED QUESTIONS

Grade 7 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5,280 feet
1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilogram
1 kilogram = 2.2 pounds
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallon
1 liter = 1,000 cubic centimeters

FORMULAS

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$

Session 1

TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice.
- You have been provided with mathematics tools (a ruler, a protractor, and a calculator) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.

1 Based on a weather report, the probability that it will rain tomorrow is 0.13. Which word describes the likelihood that it will rain tomorrow?

A certain

B impossible

C likely

D unlikely

2 Two stores each advertise a discount on the same type of watch. At both stores, the original price of the watch was $35.00.

- Store A discounts the price of the watch by 20%.
- Store B discounts the price of the watch by 15%.

How much less is the discounted price of the watch at Store A than the discounted price of the watch at Store B ?

A $1.75

B $5.00

C $5.25

D $7.00

GO ON

4 A spinner has five equal-sized sections colored blue, red, orange, yellow, and green. The arrow on the spinner was spun 50 times during an experiment. The results are shown in the table below.

RESULTS OF EXPERIMENT

Color	Frequency
Blue	12
Red	15
Orange	6
Yellow	10
Green	7

Based on the results, what is the experimental probability that on any one spin, the arrow will land on the red section?

A $\frac{1}{15}$

B $\frac{1}{5}$

C $\frac{3}{7}$

D $\frac{3}{10}$

5 Which expression is equivalent to $-3(2x - 8) + 4x$?

A $-2x - 8$

B $-2x + 24$

C $-10x - 8$

D $-10x + 24$

GO ON

9 The data set shown below represents the distribution of daily high temperatures in a city for 8 days.

79, 73, 72, 70, 72, 66, 81, 75

What is the median daily high temperature, in degrees Fahrenheit, in the city?

A 71

B 72.5

C 73

D 73.5

10 The menu at an ice cream store is shown below.

ICE CREAM MENU

Size	Flavor	Topping
Small	Vanilla	Dip
Medium	Chocolate	Sprinkles
Large	Strawberry	Crunch Coat

How many different choices of one size, one flavor, and one topping can be made from the menu?

A 3

B 9

C 18

D 27

GO ON

11 The cost for 10 ounces of organic blueberries is $\$2.70$. Which equation can be used to determine x, the cost, in dollars, for 30 ounces of organic blueberries?

A $\frac{10}{2.7} = \frac{x}{30}$

B $\frac{2.7}{10} = \frac{30}{x}$

C $\frac{10}{2.7} = \frac{30}{x}$

D $\frac{2.7}{30} = \frac{x}{10}$

19 Which expression has the same value as the expression shown below?

$$-\frac{3}{8}-\frac{7}{8}$$

A $\frac{3}{8}+\frac{7}{8}$

B $-\frac{3}{8}+\frac{7}{8}$

C $\frac{3}{8}+\left(-\frac{7}{8}\right)$

D $-\frac{3}{8}+\left(-\frac{7}{8}\right)$

20 A chef made 150 cups of chili and sold 60% of it. A serving size of the chili is $1\frac{2}{3}$ cups. How many servings of chili were sold?

A 36

B 54

C 90

D 100

21 At sunset, a thermometer had a reading of 4°F. During the night, the temperature decreased 15°F. After the decrease, what is the total number of degrees that the temperature must change for the thermometer to read 0°F?

A 4°F

B 11°F

C 15°F

D 19°F

25 A gardener uses a total of 61.5 gallons of gasoline in one month. Of the total amount of gasoline, $\frac{3}{5}$ was used in his lawn mowers. How many gallons of gasoline did the gardener use in his lawn mowers in the one month?

A 12.3

B 24.6

C 26.5

D 36.9

26 A machine in a factory makes $2\frac{1}{4}$ pounds of nails in $1\frac{1}{2}$ hours. At what rate, in pounds per hour, does the machine make nails?

A $\frac{2}{3}$

B $\frac{3}{4}$

C $1\frac{1}{2}$

D $3\frac{3}{4}$

28 The table below shows a proportional relationship between x and y.

x	y
0.50	0.750
1.25	1.875
3.00	4.500
6.75	10.125

What is the constant of proportionality for the relationship between x and y?

A 0.25

B 0.50

C 1.50

D 1.75

GO ON

31 Mr. Jensen purchased an airline ticket on a web site. The original price of the airline ticket was $473.00. He used a coupon code to receive a 20% discount. A sales tax of 12% was applied after the discount. What was the total purchase price of the airline ticket after the discount, including sales tax?

A $105.92

B $332.99

C $423.81

D $529.76

32 What is the value of $12.5 - \frac{31}{2} + 1\frac{1}{4}$?

A -20.25

B -17.25

C $-\frac{17}{4}$

D $-\frac{7}{4}$

33 On a map, two cities are 2.8 inches apart. The map has a scale of 1 inch to 25 miles. How far apart, in inches, would the same two cities be on a map that has a scale of 1 inch to 40 miles?

A 1.20

B 1.60

C 1.75

D 1.80

STOP

Grade 7
2022
Mathematics Test
Session 1
April 26–28, 2022

Name: _____

New York State Testing Program

2022 Mathematics Test Session 2

Grade 7

April 26–28, 2022

RELEASED QUESTIONS

Grade 7 Mathematics Reference Sheet

CONVERSIONS

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1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilogram
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FORMULAS

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$

Session 2

TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice or writing your response.
- You have been provided with mathematics tools (a ruler, a protractor, and a calculator) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.
- Be sure to show your work when asked.

34 Katelyn wants to buy a $\$75.00$ skateboard. She has $\$25.00$ saved so far. She mows lawns to make extra money and earns $\$20.00$ for each lawn she mows. Which inequality can be used to determine the number of lawns, x, she needs to mow to have enough money to buy the skateboard?

A $25 + 20x \leq 75$

B $25 + 20x \geq 75$

C $20 + 25x \leq 75$

D $20 + 25x \geq 75$

35 A coach compared the heights of the players on two different teams. The data set is shown in the table below.

HEIGHTS OF PLAYERS ON TWO TEAMS

Team A Player Heights (inches)	76	68	73	65	60	63	69	76
Team B Player Heights (inches)	63	73	64	70	70	67	75	62

Based on these data, which statement is true?

A The mean height of the players on Team B is greater than the mean height of the players on Team A.

B The mean height of the players on Team A is greater than the mean height of the players on Team B.

C The median height of the players on Team B is greater than the median height of the players on Team A.

D The median height of the players on Team A is greater than the median height of the players on Team B.

36 What is the value of the expression below?

$$-36 \div 9 + 3(-7) + 2$$

A -23

B -19

C 9

D 15

37 A cook uses $1\frac{3}{4}$ teaspoons of salt to make $3\frac{1}{2}$ pounds of pasta. What is the unit rate, in teaspoons per pound, at which the cook uses salt to make pasta?

A $\frac{1}{2}$

B 1

C $1\frac{3}{4}$

D 2

38 The expression $48y - 16$ represents the perimeter, in feet, of a square. Which expression represents the length, in feet, of each side of the square?

A $12y - 4$

B $12y - 16$

C $24y - 8$

D $48y - 4$

39 The equation $y = 4.3x$ can be used to determine the total cost, y, in dollars, of x pounds of apples. What does the number 4.3 represent in the equation?

A the number of apples in 1 pound

B the number of apples in x pounds

C the cost of 1 pound of apples

D the cost of x pounds of apples

40 Which expression is equivalent to the expression shown below?

$$2 + 3(2x + 5)$$

A $7 + 6x$

B $17 + 2x$

C $17 + 6x$

D $25 + 10x$

41 A teacher surveys a random group of students about their preference for doing classwork online or on paper. The results are shown in the table below.

STUDENT CLASSWORK PREFERENCE

Preference	Number of Students
Online	17
Paper	8

Based on the results, how many students out of 350 will **most likely** have a preference to do their classwork online?

Show your work.

Answer _____ students

42 Marcy is buying prizes to give away at a fundraiser, as described below.

- She has $250.00 to spend.
- She buys 13 movie passes for $9.50 each.
- She buys 3 gift cards valued at $25.00 each.
- She will use the rest of the money to buy candy bars that cost $1.75 each.

What is the greatest number of candy bars she can buy with the rest of the money?

Show your work.

Answer _____ candy bars

GO ON

43 At a company, a copy machine prints 175 pages in 5 minutes. If the number of pages printed is proportional to the time, in minutes, what is the unit rate?

Show your work.

Answer _____ pages per minute

44 A cook removes a package of food from a freezer and begins to defrost the package.

- The initial temperature of the package of food is $-15^{\circ}\mathrm{F}$.
- At noon, the temperature of the package of food has increased to $35^{\circ}\mathrm{F}$.

What is the total change in temperature, in degrees Fahrenheit, for the package of food?

Show your work.

Answer _____ $^{\circ}\mathrm{F}$

GO ON

45 The members of a school club are selling tickets for a fundraiser. The goal for the fundraiser is to earn $50.00 each day from ticket sales. The list below shows the percent of the goal reached each day.

- On the first day, the members earned 90% of their daily goal.
- On the second day, the members earned 6% more than their daily goal.
- On the third day, the members earned 14% less than their daily goal.

How much money, in dollars, did the members earn from ticket sales on all three days?

Show your work.

Answer $ _____

46 A student incorrectly simplifies an expression. The expression and the student's work are shown below.

$5 - \left(\frac{40}{5}\right)$

Step A: $5 + \left(\frac{-40}{-5}\right)$

Step B: $5 + 8$

Step C: 13

In which step did the student first make an error? Be sure to include the correct value of the expression in simplest form in your answer.

Explain your answer.

47 Ms. Boi spent a total of $\$175.00$ for 4 admission tickets and for parking at a baseball game. The cost of each admission ticket was the same amount, including tax. The cost of parking was $\$25.00$. Write an equation that can be used to determine t, the cost, in dollars, of each admission ticket, including tax.

Equation _____

What was the cost, in dollars, of each admission ticket, including tax?

Show your work.

Answer $ _____

48 A company manufactures water bottles. The list below describes the number of water bottles manufactured in three months.

- February: 4,100 water bottles
- March: 7% more water bottles than in February
- April: 500 more water bottles than in March

What is the percent increase, to the nearest percent, in the number of water bottles the company manufactured from February to April?

Show your work.

Answer _____ %

STOP

Grade 7
2022
Mathematics Test
Session 2
April 26–28, 2022

THE STATE EDUCATION DEPARTMENT

THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234

2022 Mathematics Tests Map to the Standards

Grade 7 Released Questions

Question	Type	Key	Points	Standard	Cluster	Multiple Choice Questions	Constructed Response Questions	
						Percentage of Students Who Answered Correctly (P-Value)	Average Points Earned	P-Value (Average Points Earned ÷ Total Possible Points)
Session 1								
1	Multiple Choice	D	1	CCSS.Math.Content.7.SP.C.5	Statistics and Probability	0.75		
2	Multiple Choice	A	1	CCSS.Math.Content.7.RP.A.3	Ratios and Proportional Relationships	0.74		
4	Multiple Choice	D	1	CCSS.Math.Content.7.SP.C.7b	Statistics and Probability	0.49		
5	Multiple Choice	B	1	CCSS.Math.Content.7.EE.A.1	Expressions and Equations	0.65		
9	Multiple Choice	B	1	CCSS.Math.Content.6.SP.A.3	Statistics and Probability	0.48		
10	Multiple Choice	D	1	CCSS.Math.Content.7.SP.C.8b	Statistics and Probability	0.48		
11	Multiple Choice	C	1	CCSS.Math.Content.7.RP.A.2c	Ratios and Proportional Relationships	0.54		
19	Multiple Choice	D	1	CCSS.Math.Content.7.NS.A.1c	The Number System	0.64		
20	Multiple Choice	B	1	CCSS.Math.Content.7.EE.B.3	Expressions and Equations	0.42		
21	Multiple Choice	B	1	CCSS.Math.Content.7.NS.A.1b	The Number System	0.72		
25	Multiple Choice	D	1	CCSS.Math.Content.7.NS.A.3	The Number System	0.63		
26	Multiple Choice	C	1	CCSS.Math.Content.7.RP.A.1	Ratios and Proportional Relationships	0.54		
28	Multiple Choice	C	1	CCSS.Math.Content.7.RP.A.2b	Ratios and Proportional Relationships	0.59		
31	Multiple Choice	C	1	CCSS.Math.Content.7.RP.A.3	Ratios and Proportional Relationships	0.63		

32	Multiple Choice	D	1	CCSS.Math.Content.7.EE.B.3	Expressions and Equations	0.5		
33	Multiple Choice	C	1	CCSS.Math.Content.7.G.A.1	Geometry	0.4		
Session 2								
34	Multiple Choice	B	1	CCSS.Math.Content.7.EE.B.4b	Expressions and Equations	0.59		
35	Multiple Choice	B	1	CCSS.Math.Content.7.SP.B.4	Statistics and Probability	0.5		
36	Multiple Choice	A	1	CCSS.Math.Content.7.EE.B.3	Expressions and Equations	0.81		
37	Multiple Choice	A	1	CCSS.Math.Content.7.RP.A.1	Ratios and Proportional Relationships	0.52		
38	Multiple Choice	A	1	CCSS.Math.Content.7.EE.A.1	Expressions and Equations	0.5		
39	Multiple Choice	C	1	CCSS.Math.Content.7.RP.A.2b	Ratios and Proportional Relationships	0.34		
40	Multiple Choice	C	1	CCSS.Math.Content.7.EE.A.1	Expressions and Equations	0.51		
41	Constructed Response		2	CCSS.Math.Content.7.SP.A.2	Statistics and Probability		0.78	0.39
42	Constructed Response		2	CCSS.Math.Content.7.NS.A.3	The Number System		1.32	0.66
43	Constructed Response		2	CCSS.Math.Content.7.RP.A.2b	Ratios and Proportional Relationships		1.63	0.81
44	Constructed Response		2	CCSS.Math.Content.7.NS.A.1c	The Number System		1.1	0.55
45	Constructed Response		2	CCSS.Math.Content.7.EE.B.3	Expressions and Equations		0.89	0.45
46	Constructed Response		2	CCSS.Math.Content.7.NS.A.2b	The Number System		0.9	0.45
47	Constructed Response		2	CCSS.Math.Content.7.EE.B.4a	Expressions and Equations		0.75	0.38
48	Constructed Response		3	CCSS.Math.Content.7.RP.A.3	Ratios and Proportional Relationships		0.9	0.3

*This item map is intended to identify the primary analytic skills necessary to successfully answer each question. However, some questions measure proficiencies described in multiple standards, including a balanced combination of procedural and conceptual understanding.