NYS ED.gov

New York State
EDUCATION DEPARTMENT
Knowledge › Skill › Opportunity

New York State Testing Program
Grade 6
Mathematics Test

Released Questions

2023

New York State administered the Mathematics Tests in May 2023
and is 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 2023 Exams

Background

As in past years, SED is releasing large portions of the 2023 NYS Grades 3–8 English Language Arts and Mathematics test materials for review, discussion, and use.

For 2023, included in these released materials are at least 75 percent of the test questions that appeared on the 2023 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 Next Generation 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.

One-Credit Constructed-Response Questions

One-credit constructed-response questions require students to complete a task and provide only their final answer. These one-credit questions will often require multiple steps, assessing procedural skills, as well as conceptual understanding and application. While students may show how they arrived at their final answer, only the final answer will be scored.

Two-Credit Constructed-Response Questions

Two-credit constructed-response questions require students to complete tasks and show their work. These two-credit 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.

Three-Credit Constructed-Response Questions

Three-credit constructed-response questions ask students to show their work in completing two or more tasks or a more extensive problem. These three-credit response questions allow students to show their understanding of mathematical procedures, conceptual understanding, and application. Three-credit response questions may also assess student reasoning and the ability to critique the arguments of others. The scoring rubric for all 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 Next Generation Learning Standards Alignment

The alignment(s) to the New York State P–12 Next Generation 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-credit and three-credit 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 Next Generation 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.

姓名：_____

纽约州测试计划
数学测试
第1部分

6年级
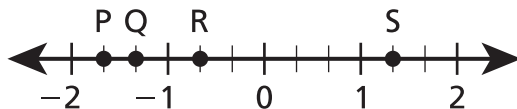
2023年5月2–4日

RELEASED QUESTIONS

参加本次考试的提示

以下是一些建议，可以帮助你做到最好：

- 仔细阅读每一道题目，在做出选择前思考答案。
- 你已获得了数学工具（一把尺子和一个量角器）和参考表供你在考试中使用。由你决定各工具及参考表将在何时有用。你应当在认为数学工具和参考表对你答题有帮助时使用它们。

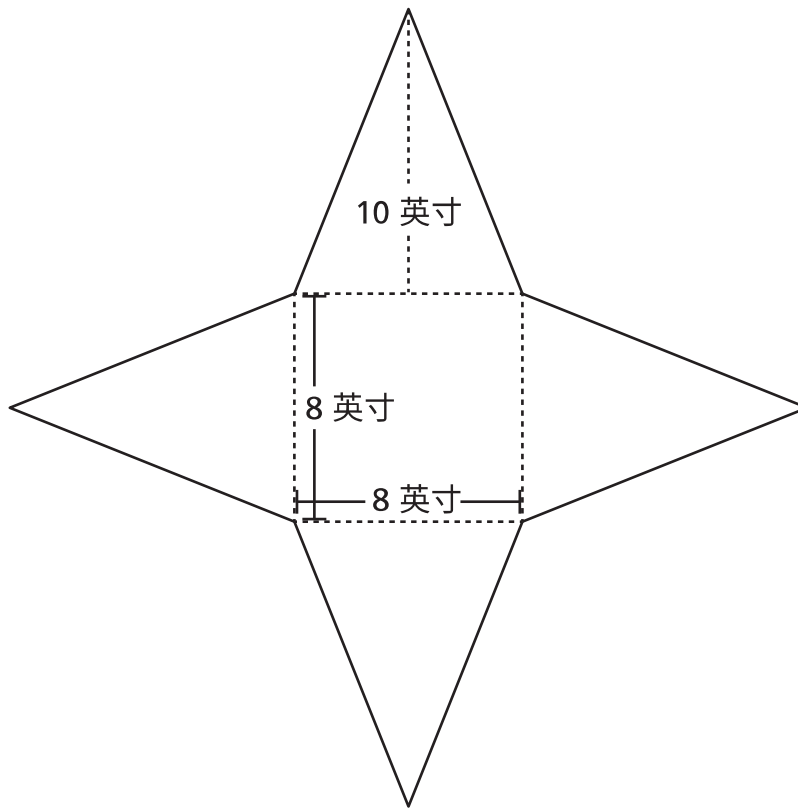**2** 以下所示的数轴上绘制的是点P、Q、R和S。

哪个点代表数值$-1\frac{1}{3}$的位置?

A 点P

B 点Q

C 点R

D 点S

3 一个糕饼店店主每天要烤制450块饼干。哪一个方程式可以用来确定店主在任何天数（d）内所烤制的饼干数量（c）?

A $c = d + 450$

B $d = c + 450$

C $450d = c$

D $450c = d$

继续

7 一个直立四角锥的展开图如下图所示。

这个四角锥的表面积是多少平方英寸?

A 64

B 80

C 224

D 384

12 哪个表达式等同于比8和y的乘积少14？

A　$14 - 8y$

B　$14 - \dfrac{y}{8}$

C　$8y - 14$

D　$\dfrac{y}{8} - 14$

13 9和12的最小公倍数是多少？

A 3

B 36

C 72

D 108

14 表达式 $\dfrac{3(7-2)+5^3}{2}$ 的值是多少？

A 15

B 17

C 70

D 72

15 下图显示了矩形内的一个阴影三角形。
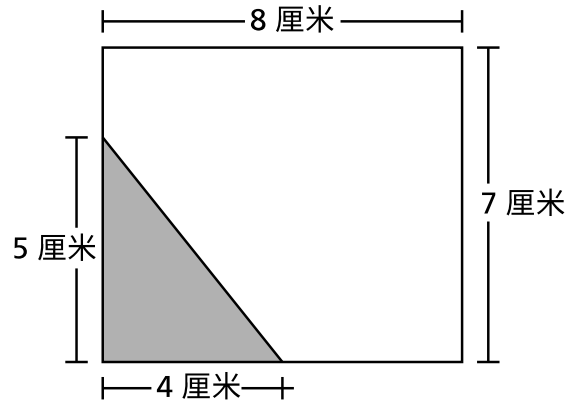
矩形中**没有**阴影的部分的面积是多少平方厘米?

A　36

B　46

C　56

D　66

17 卢卡斯在度假期间以英尺为单位记录了四项活动的海拔高度。下表显示了每项活动相对于海平面的海拔高度。

活动海拔高度

活动	海拔高度
骑自行车	83 英尺
开车	–122 英尺
徒步旅行	456 英尺
游泳	–17 英尺

哪个活动的海拔高度最接近海平面?

A 骑自行车

B 开车

C 徒步旅行

D 游泳

18 以下显示了一个表达式。

$$5z + (9 \div 3)$$

这个表达式中变量的系数是多少?

A 5

B z

C 9

D 3

21 坐标平面上画了一个四边形，四个点分别为 A(−4, 8)、B(6, 8)、C(6, 4) 和 D(−4, 4)。边 AB 的长度是多少个单位？

A 2

B 6

C 10

D 16

22 当$b = 7$和$c = 4$时，表达式$5b + c^3$的值是多少？

A   24

B   47

C   76

D   99

24 哪个表达式等同于$8(2a + 3b) - 2b$？

A $16a + b$

B $16a + 8b$

C $16a + 22b$

D $16a + 24b$

30 用x来表示变量，下图所示的数轴上画的是哪个不等式？
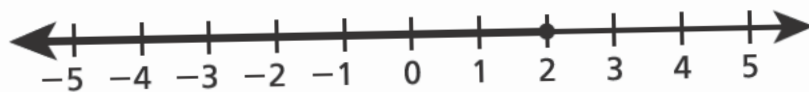
A $x > 2$

B $x < 2$

C $x \geq 2$

D $x \leq 2$

停止

6年级

2023
数学测试
第1部分
2023年5月2–4日

Grade 6

2023
Mathematics Test
Session 1
May 2–4, 2023

姓名：_____

Chinese (Simplified) Edition
Grade 6 2023
Mathematics Test
Session 2
May 2–4, 2023

纽约州测试计划
数学测试
第2部分

6年级

2023年5月2–4日

RELEASED QUESTIONS

参加本次考试的提示

以下是一些建议，可以帮助你做到最好：

- 仔细阅读每一道题目，在做出选择或写下答案前思考答案。
- 你已获得了数学工具（一把尺子、一个量角器和一台计算器）和参考表供你在考试中使用。由你决定各工具及参考表将在何时有用。你应当在认为数学工具和参考表对你答题有帮助时使用它们。
- 回答时务必写出你的演算过程。

31 数字60是哪个数字的75%？

    A   45

    B   80

    C   120

    D   125

32 下表显示了一个学校的教师人数与学生人数的比率。教师和学生的比率是恒定的。表格中缺少三个数字。

教师和学生

教师人数	2	?	8	12	?
学生人数	5	15	?	30	75

哪个表格显示了上表中正确的缺失数字？

A

教师和学生

教师人数	2	6	8	12	37
学生人数	5	15	16	30	75

C

教师和学生

教师人数	2	12	8	12	72
学生人数	5	15	11	30	75

B

教师和学生

教师人数	2	6	8	12	30
学生人数	5	15	20	30	75

D

教师和学生

教师人数	2	6	8	12	32
学生人数	5	15	20	30	75

继续

33 以下显示的是一个直立矩形棱柱。
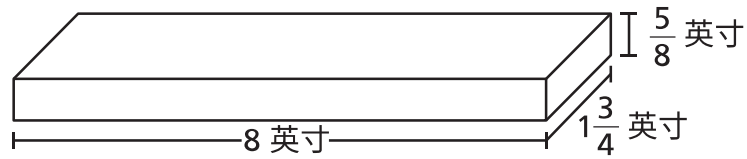
直立矩形棱柱的体积是多少立方英寸？

A $6\frac{3}{4}$

B $8\frac{3}{4}$

C $10\frac{3}{8}$

D $14\frac{5}{8}$

34 码数与英里数的比率为3,520 : 2。5英里等于多少码？

A 1,760

B 5,280

C 7,040

D 8,800

35 哪个表达式等同于 $4(3m+1)$ ？

    A $7m+1$

    B $7m+5$

    C $12m+1$

    D $12m+4$

36 马克在60分钟内跑了8英里。如果马克继续以同样的速度跑步，他需要多少分钟才能跑完12英里?
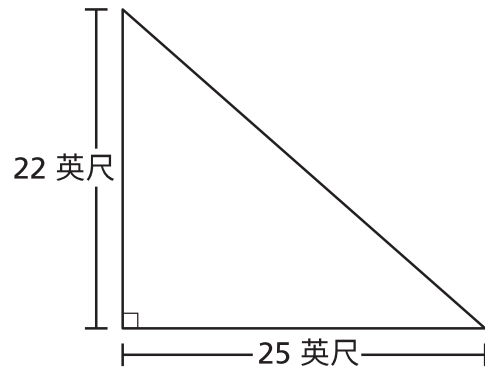
    A   48

    B   72

    C   90

    D   96

继续

37 这道题值1个学分。

以下显示的是一个直角三角形。

该直角三角形的面积是多少平方英尺？

答案 _____ 平方英尺

38 这道题值1个学分。

下面列出了两个州各自的最低记录温度。

−27°华氏度和−35°华氏度

用<、>、≤或≥写出一个语句来比较两个州的记录温度。

答案 _____

这道题值1个学分。

一组形状如下所示。
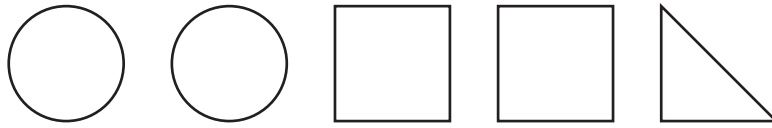
圆圈的数量与形状总数的比率是多少？

答案 _____

40 这道题值2个学分。

李 通过将三个拼块并排放在一起（拼块之间没有任何空隙），做成一个长方形的拼块图案。下面的列表描述了每个拼块的形状和放置的顺序。

- 第一块拼块的形状是正方形，边长为 x 英寸。

- 中间的拼块形状是一个长方形，宽度为 x 英寸，长度为 $3x$ 英寸。

- 第三个拼块的形状是一个正方形，边长为 x 英寸。

拼块图案的周长是 60 英寸。拼块图案中 x 的值是多少？

写出你的演算过程。

答案 _____ 英寸

41 **这道题值2个学分。**

下面的清单显示了同一种蜡烛在两家不同商店的售价。

- 商店ABC以$12.00的价格出售6支这样的蜡烛。
- 商店XYZ以$14.00的价格出售8支这样的蜡烛。

哪家商店出售的蜡烛的单价更低？

解释你是如何确定你的答案的。

42 这道题值2个学分。

一个盒子内含$8\frac{1}{4}$杯麦片。一份麦片是$\frac{3}{4}$杯。盒子里有多少份麦片？

写出你的演算过程。

答案 _____ 份

43 这道题值2个学分。

表达式$7 \times (5 - 3)^3 - 20 \div 4$的值是多少?

写出你的演算过程。

答案 _____

44 **这道题值2个学分。**

下面的表格显示了汽车A和汽车B行驶的距离与时间的比率。

<table>
<tr><td colspan="2">汽车 A</td></tr>
<tr><td>时间
（小时）</td><td>距离
（英里）</td></tr>
<tr><td>2</td><td>130</td></tr>
<tr><td>4</td><td>260</td></tr>
<tr><td>6</td><td>390</td></tr>
</table>

<table>
<tr><td colspan="2">汽车 B</td></tr>
<tr><td>时间
（小时）</td><td>距离
（英里）</td></tr>
<tr><td>3</td><td>186</td></tr>
<tr><td>5</td><td>310</td></tr>
<tr><td>7</td><td>434</td></tr>
</table>

如果两辆车都保持它们的速度，8小时后，A车和B车行驶的距离（以英里为单位）差多少？

写出你的演算过程。

答案 ＿＿＿＿＿＿＿＿ 英里

继续

45 这道题值2个学分。

一个海运集装箱呈直立矩形棱柱的形状，其底部面积为 42平方英尺。集装箱的高度为 $5\frac{3}{4}$英尺。

海运集装箱的体积是多少立方英尺？

写出你的演算过程。

答案 _____ 立方英尺

46 **这道题值3个学分。**

洛根完成家务就能挣钱。下图表示他完成的家务数量 *x* 和他赚的钱 *y* 之间的关系。

做家务的收入
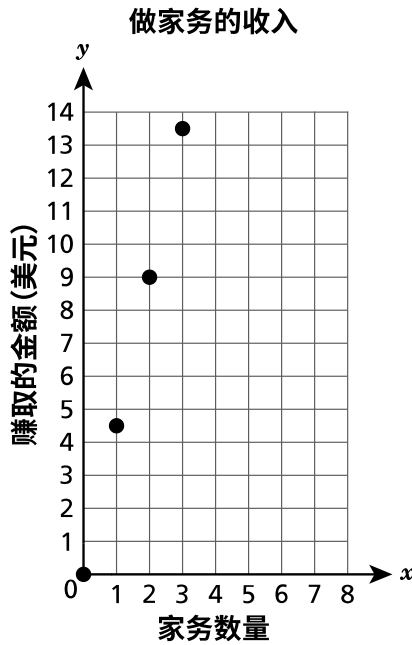
根据该图，解释洛根完成的家务数量与他所赚的钱之间的关系。确保在你的答案中指明相依变量和自变量。

解释你的答案。

_____

_____

_____

确定洛根在完成9项家务后将获得的总金额。

答案 $ _____

停止

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Question	Type	Key	Points	Standard	Cluster	Secondary Standard(s)	Multiple Choice Questions Percentage of Students Who Answered Correctly (P-Value)	Constructed Response Questions Average Points Earned	P-Value (Average Points Earned ÷ Total Possible Points)
					Session 1				
2	Multiple Choice	B	1	NGLS.Math.Content.NY-6.NS.6c	The Number System		0.6313		
3	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.9	Expressions and Equations		0.4641		
7	Multiple Choice	C	1	NGLS.Math.Content.NY-6.G.4	Geometry		0.4141		
12	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.2a	Expressions and Equations		0.4894		
13	Multiple Choice	B	1	NGLS.Math.Content.NY-6.NS.4	The Number System		0.4402		
14	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.1	Expressions and Equations		0.6059		
15	Multiple Choice	B	1	NGLS.Math.Content.NY-6.G.1	Geometry		0.2707		
17	Multiple Choice	D	1	NGLS.Math.Content.NY-6.NS.7c	The Number System	NGLS.Math.Content.NY-6.NS.5	0.6673		
18	Multiple Choice	A	1	NGLS.Math.Content.NY-6.EE.2b	Expressions and Equations		0.5137		
21	Multiple Choice	C	1	NGLS.Math.Content.NY-6.G.3	Geometry		0.5655		
22	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.2c	Expressions and Equations		0.6058		
24	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.3	Expressions and Equations		0.4951		
30	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.8	Expressions and Equations		0.4636		
					Session 2				
31	Multiple Choice	B	1	NGLS.Math.Content.NY-6.RP.3c	Ratios and Proportional Relationships		0.6013		
32	Multiple Choice	B	1	NGLS.Math.Content.NY-6.RP.3a	Ratios and Proportional Relationships		0.5538		
33	Multiple Choice	B	1	NGLS.Math.Content.NY-6.G.2	Geometry		0.5475		
34	Multiple Choice	D	1	NGLS.Math.Content.NY-6.RP.3b	Ratios and Proportional Relationships	NGLS.Math.Content.NY-6.RP.3d	0.5502		
35	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.3	Expressions and Equations		0.4899		
36	Multiple Choice	C	1	NGLS.Math.Content.NY-6.RP.3b	Ratios and Proportional Relationships		0.6124		
37	Constructed Response		1	NGLS.Math.Content.NY-6.G.1	Geometry			0.5400	0.5400
38	Constructed Response		1	NGLS.Math.Content.NY-6.NS.7b	The Number System			0.5679	0.5679
39	Constructed Response		1	NGLS.Math.Content.NY-6.RP.1	Ratios and Proportional Relationships			0.6482	0.6482
40	Constructed Response		2	NGLS.Math.Content.NY-6.EE.7	Expressions and Equations	NGLS.Math.Content.NY-6.EE.3		0.4131	0.2065
41	Constructed Response		2	NGLS.Math.Content.NY-6.RP.2	Ratios and Proportional Relationships			0.3635	0.1818
42	Constructed Response		2	NGLS.Math.Content.NY-6.NS.1	The Number System			0.3784	0.1892
43	Constructed Response		2	NGLS.Math.Content.NY-6.EE.1	Expressions and Equations			0.4028	0.2014
44	Constructed Response		2	NGLS.Math.Content.NY-6.RP.3b	Ratios and Proportional Relationships			0.3767	0.1884
45	Constructed Response		2	NGLS.Math.Content.NY-6.G.2	Geometry			0.3540	0.1770
46	Constructed Response		3	NGLS.Math.Content.NY-6.EE.9	Expressions and Equations	NGLS.Math.Content.NY-6.RP.3b		0.2549	0.0850

*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.