



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 approximately 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：\_\_\_\_\_



*Chinese (Traditional) Edition*

*Grade 6 2023*

*Mathematics Test*

*Session 1*

*May 2–4, 2023*

# 紐約州測驗計劃 數學考試 第1卷


# 6年級

2023年5月2–4日

**RELEASED QUESTIONS**

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# 第 1 卷

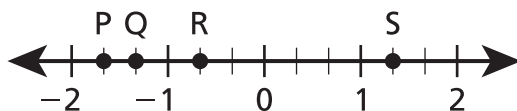


## 應考建議

以下建議可協助你充分發揮實力：

- 在作答之前，請仔細閱讀每一試題，好好思考後再作答。
- 本次考試提供數學工具（一把尺和一個量角器）和一張參考資料讓你使用。你可以自行決定何時使用各個工具和參考資料。考試當中你隨時可以使用數學工具和參考資料來協助你答題。

- 2 以下所示的數軸上繪製了點P、Q、R和S。



哪個點代表數值 $-1\frac{1}{3}$ 的位置？

- A 點 P
- B 點 Q
- C 點 R
- D 點 S

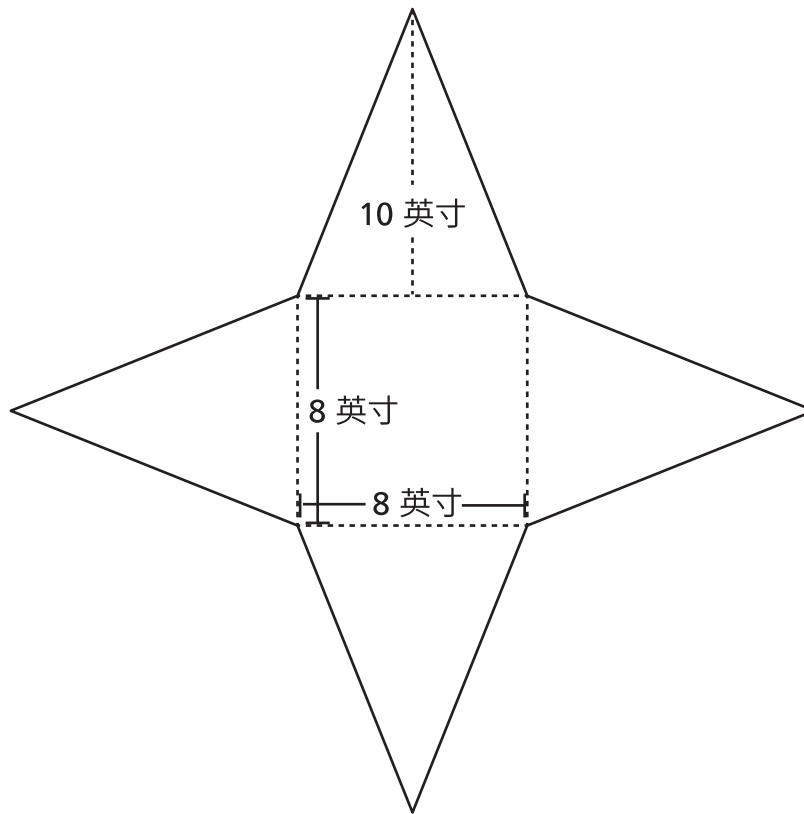
- 3 一個麵包店老闆每天要烘烤450塊餅乾。哪一個方程式可以用來確定老闆在任何天數 ( $d$ ) 下所烘烤的餅乾數量 ( $c$ ) ？

- A  $c = d + 450$
- B  $d = c + 450$
- C  $450d = c$
- D  $450c = d$

繼續

7

一個正四角錐的展開圖如下圖所示。



這個四角錐的表面積是多少平方英寸？

- A 64
- B 80
- C 224
- D 384

繼續



12

哪個運算式相當於比8和 $y$ 的乘積少14？

A  $14 - 8y$

B  $14 - \frac{y}{8}$

C  $8y - 14$

D  $\frac{y}{8} - 14$

繼續

**13** 9 與 12 的最小公倍數是多少？

**A** 3

**B** 36

**C** 72

**D** 108

**14** 運算式  $\frac{3(7-2) + 5^3}{2}$  的值是多少？

**A** 15

**B** 17

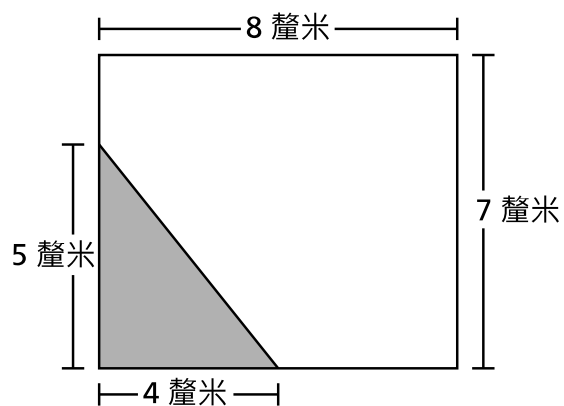
**C** 70

**D** 72

**繼續**

15

下圖顯示的矩形內有一個陰影三角形。



請問該矩形中沒有陰影部分的面積是多少平方釐米？

- A 36
- B 46
- C 56
- D 66

繼續

17

路卡斯以英尺為單位，再度假期間記錄了四項活動的海拔高度。下表顯示每項活動相對於海平面的海拔高度。

活動海拔高度

活動	海拔高度
騎自行車	83 英尺
開車	-122 英尺
徒步旅行	456 英尺
游泳	-17 英尺

哪個活動的海拔高度最接近海平面？

- A 騎自行車
- B 開車
- C 徒步旅行
- D 游泳

18

下面顯示一個表達式。

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

這個運算式中變數的係數是多少？

- A 5
- B  $z$
- C 9
- D 3

**繼續**

21

在座標平面上畫一個四邊形，四個點分別為 $A(-4, 8)$ 、 $B(6, 8)$ 、 $C(6, 4)$ 和 $D(-4, 4)$ 。邊 $AB$ 的單位長度是多少？

A 2

B 6

C 10

D 16

繼續

**22** 當 $b = 7$ 和 $c = 4$ 時，運算式 $5b + c^3$ 的值是多少？

**A** 24

**B** 47

**C** 76

**D** 99

**24** 哪個運算式相當於 $8(2a + 3b) - 2b$ ？

**A**  $16a + b$

**B**  $16a + 8b$

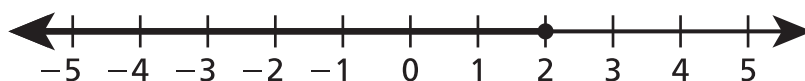
**C**  $16a + 22b$

**D**  $16a + 24b$

**繼續**

30

用 $x$ 來表示變數，下圖數軸上所繪製的是哪個不等式？



- A  $x > 2$
- B  $x < 2$
- C  $x \geq 2$
- D  $x \leq 2$

**停止作答**

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**6年級**

**2023**

**數學測驗**

**第 1 卷**

**2023年5月2–4日**

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*Chinese (Traditional) Edition*

*Grade 6 2023*

*Mathematics Test*

*Session 2*

*May 2–4, 2023*

# 紐約州測驗計劃 數學考試 第2卷

# 6年級

2023年5月2–4日

**RELEASED QUESTIONS**

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## 第 2 卷



### 應考建議

以下建議可協助你充分發揮實力：

- 在作出選擇或寫下答案之前，請仔細閱讀每一試題，好好思考後再作答。
- 本次考試提供數學工具（一把尺、一個量角器和一個計算器）和一張參考資料供你使用。你可以自行決定何時使用各個工具和參考資料。考試當中你隨時可以使用數學工具和參考資料來協助你題。
- 如果有相關要求，請寫出你的計算過程。

31

數字60是哪個數字的75%？

- A 45
- B 80
- C 120
- D 125

32

下表顯示一個學校的教師人數與學生人數的比。教師和學生的比是恒定的。表格中遺失三個數字。

教師和學生

教師人數	2	?	8	12	?
學生人數	5	15	?	30	75

哪個表格顯示上表中正確的遺失數字？

教師和學生

A

教師人數	2	6	8	12	37
學生人數	5	15	16	30	75

教師和學生

C

教師人數	2	12	8	12	72
學生人數	5	15	11	30	75

教師和學生

B

教師人數	2	6	8	12	30
學生人數	5	15	20	30	75

教師和學生

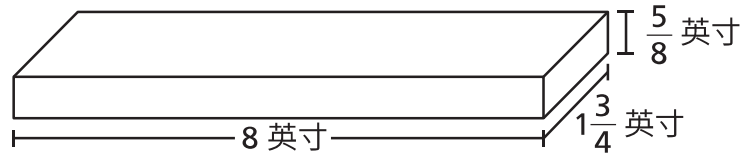
D

教師人數	2	6	8	12	32
學生人數	5	15	20	30	75

繼續

33

下圖顯示的是一個直立矩形棱柱。



該直立矩形棱柱的體積是多少立方英寸？

- A  $6\frac{3}{4}$
- B  $8\frac{3}{4}$
- C  $10\frac{3}{8}$
- D  $14\frac{5}{8}$

34

碼數與英里數的比為3,520: 2。5英里等於多少碼？

- A 1,760
- B 5,280
- C 7,040
- D 8,800

繼續

**35** 哪個運算式相當於 $4(3m + 1)$ ？

**A**  $7m + 1$

**B**  $7m + 5$

**C**  $12m + 1$

**D**  $12m + 4$

**36** 馬克在60分鐘內跑了8英里。如果馬克繼續以同樣的速度跑步，他需要多少分鐘才能跑完12英里？

**A** 48

**B** 72

**C** 90

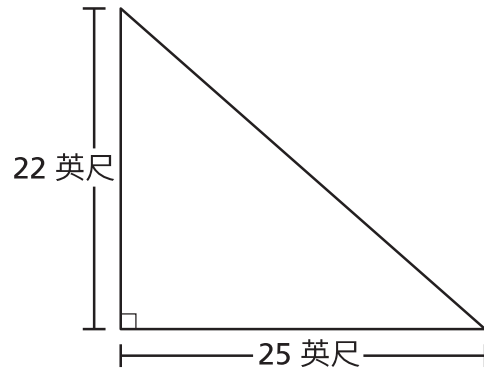
**D** 96

**繼續**

37

答對這道題可獲得1個積分。

以下是一個直角三角形。



該直角三角形的面積是多少平方英尺？

答案 \_\_\_\_\_ 平方英尺

繼續

38

答對這道題可獲得1個積分。

下面列出兩個州各自的最低溫度記錄。

$-27^{\circ}\text{F}$ 和 $-35^{\circ}\text{F}$

用 $<$ 、 $>$ 、 $\leq$ 或 $\geq$ 寫出一個語句來比較兩個州的溫度記錄。

答案 \_\_\_\_\_

繼續



39

答對這道題可獲得1個積分。

一組形狀如下所示。



圓圈的數量與形狀總數的比是多少？

答案 \_\_\_\_\_

繼續

答對這道題可獲得2個積分。

李藉由將三個拼塊並排放在一起（拼塊之間沒有任何空隙），做成一個長方形的拼塊圖案。下面的清單描述每個拼塊的形狀和放置的順序。

- 第一塊拼塊的形狀是正方形，邊長為 $x$ 英寸。
- 中間的拼塊形狀像一個長方形，寬度為 $x$ 英寸，長度為 $3x$ 英寸。
- 第三個拼塊的形狀像一個正方形，邊長為 $x$ 英寸。

拼塊圖案的周長是60英寸。拼塊圖案中 $x$ 的值是多少？

請寫出你的計算過程。

答案 \_\_\_\_\_ 英寸

繼續

答對這道題可獲得2個積分。

下面的清單顯示同一種蠟燭在兩家不同商店的售價。

- 商店ABC以\$12.00的價格出售6支這樣的蠟燭。
- 商店XYZ以\$14.00的價格出售8支這樣的蠟燭。

哪家商店出售的蠟燭的單價較低？

請解釋你是如何確定自己的答案的。

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42

答對這道題可獲得2個積分。

一個盒子裡有 $8\frac{1}{4}$ 杯麥片。一份麥片是 $\frac{3}{4}$ 杯。盒子裡有多少份麥片？

請寫出你的計算過程。

答案 \_\_\_\_\_ 份

繼續

43

答對這道題可獲得2個積分。

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

請寫出你的計算過程。

答案 \_\_\_\_\_

繼續

答對這道題可獲得2個積分。

下面的表格顯示汽車A和汽車B行駛的距離與時間的比。

汽車 A

時間 (小時)	距離 (英里)
2	130
4	260
6	390

汽車 B

時間 (小時)	距離 (英里)
3	186
5	310
7	434

如果兩輛車都保持其的速率，8小時後，A車和B車行駛的距離（以英里為單位）有多少差異？

請寫出你的計算過程。

答案 \_\_\_\_\_ 英里

繼續

45

答對這道題可獲得2個積分。

一個直立矩形棱柱形狀的船運貨櫃，其底部面積為42平方英尺。船運貨櫃的高度為 $5\frac{3}{4}$ 英尺。船運貨櫃的體積是多少立方英尺？

請寫出你的計算過程。

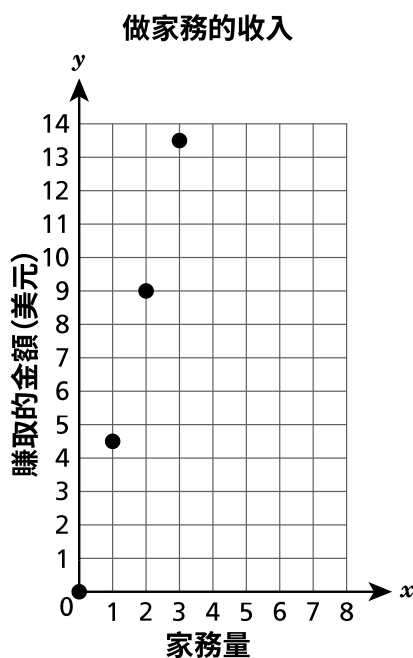
答案 \_\_\_\_\_ 立方英尺

繼續

46

答對這道題可獲得3個積分。

羅根完成家務就能賺錢。下圖表示他完成的家務量 $x$ 和他所賺的錢 $y$ 之間的關係。



根據該圖，請解釋羅根完成的家務量與他所賺的錢之間的關係。請確保在你的答案中指明應變數和自變數。

請解釋你的答案。

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確定羅根在完成9項家務事後將獲得的總金額。

答案 \$ \_\_\_\_\_

**停止作答**



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**6年級**

**2023**

**數學測驗**

**第 2 卷**

**2023年5月2–4日**

**Grade 6**

**2023**

**Mathematics Test**

**Session 2**

**May 2–4, 2023**

**THE STATE EDUCATION DEPARTMENT**  
**THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234**  
**2023 Mathematics Tests Map to the Standards**  
**Grade 6 Released Questions**

Question	Type	Key	Points	Standard	Cluster	Subscore	Secondary Standard(s)	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										
2	Multiple Choice	B	1	NGLS.Math.Content.NY-6.NS.6c	The Number System	The Number System		0.65		
3	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.9	Expressions and Equations	Expressions and Equations		0.46		
7	Multiple Choice	C	1	NGLS.Math.Content.NY-6.G.4	Geometry			0.45		
12	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.2a	Expressions and Equations	Expressions and Equations		0.51		
13	Multiple Choice	B	1	NGLS.Math.Content.NY-6.NS.4	The Number System	The Number System		0.56		
14	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.1	Expressions and Equations	Expressions and Equations		0.65		
15	Multiple Choice	B	1	NGLS.Math.Content.NY-6.G.1	Geometry			0.36		
17	Multiple Choice	D	1	NGLS.Math.Content.NY-6.NS.7c	The Number System	The Number System	NGLS.Math.Content.NY-6.NS.5	0.67		
18	Multiple Choice	A	1	NGLS.Math.Content.NY-6.EE.2b	Expressions and Equations	Expressions and Equations		0.5		
21	Multiple Choice	C	1	NGLS.Math.Content.NY-6.G.3	Geometry			0.56		
22	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.2c	Expressions and Equations	Expressions and Equations		0.63		
24	Multiple Choice	C	1	NGLS.Math.Content.NY-6.EE.3	Expressions and Equations	Expressions and Equations		0.48		
30	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.8	Expressions and Equations	Expressions and Equations		0.45		
Session 2										
31	Multiple Choice	B	1	NGLS.Math.Content.NY-6.RP.3c	Ratios and Proportional Relationships	Ratios and Proportional Relationships		0.61		
32	Multiple Choice	B	1	NGLS.Math.Content.NY-6.RP.3a	Ratios and Proportional Relationships	Ratios and Proportional Relationships		0.6		
33	Multiple Choice	B	1	NGLS.Math.Content.NY-6.G.2	Geometry			0.6		
34	Multiple Choice	D	1	NGLS.Math.Content.NY-6.RP.3b	Ratios and Proportional Relationships	Ratios and Proportional Relationships	NGLS.Math.Content.NY-6.RP.3d	0.59		
35	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.3	Expressions and Equations	Expressions and Equations		0.54		
36	Multiple Choice	C	1	NGLS.Math.Content.NY-6.RP.3b	Ratios and Proportional Relationships	Ratios and Proportional Relationships		0.67		
37	Constructed Response		1	NGLS.Math.Content.NY-6.G.1	Geometry				0.52	0.52
38	Constructed Response		1	NGLS.Math.Content.NY-6.NS.7b	The Number System	The Number System			0.6	0.6
39	Constructed Response		1	NGLS.Math.Content.NY-6.RP.1	Ratios and Proportional Relationships	Ratios and Proportional Relationships			0.69	0.69
40	Constructed Response		2	NGLS.Math.Content.NY-6.EE.7	Expressions and Equations	Expressions and Equations	NGLS.Math.Content.NY-6.EE.3		0.25	0.13
41	Constructed Response		2	NGLS.Math.Content.NY-6.RP.2	Ratios and Proportional Relationships	Ratios and Proportional Relationships			1.09	0.54
42	Constructed Response		2	NGLS.Math.Content.NY-6.NS.1	The Number System	The Number System			1.09	0.55
43	Constructed Response		2	NGLS.Math.Content.NY-6.EE.1	Expressions and Equations	Expressions and Equations			1.07	0.54
44	Constructed Response		2	NGLS.Math.Content.NY-6.RP.3b	Ratios and Proportional Relationships	Ratios and Proportional Relationships			0.93	0.47
45	Constructed Response		2	NGLS.Math.Content.NY-6.G.2	Geometry				0.94	0.47
46	Constructed Response		3	NGLS.Math.Content.NY-6.EE.9	Expressions and Equations	Expressions and Equations	NGLS.Math.Content.NY-6.RP.3b		1.02	0.34

\*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.