



Our Students. Their Moment.

**New York State Testing Program  
Grade 8  
Mathematics Test**

**Released Questions**

**June 2018**

New York State administered the Mathematics Tests in May 2018 and is now making approximately 75% of the questions from these tests available for review and use.



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

## **New York State Testing Program Grades 3-8 Mathematics**

### **Released Questions from 2018 Exams**

#### ***Background***

In 2013, New York State began administering tests designed to assess student performance in accordance with the instructional shifts and rigor demanded by the new New York State P-12 Learning Standards in Mathematics. To help in this transition to new assessments, the New York State Education Department (SED) has been releasing an increasing number of test questions from the tests that were administered to students across the State in the spring. This year, SED is again releasing large portions of the 2018 NYS Grades 3-8 English Language Arts and Mathematics test materials for review, discussion, and use.

For 2018, included in these released materials are at least 75 percent of the test questions that appeared on the 2018 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 of the 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 <https://www.engageny.org/resource/test-guides-english-language-arts-and-mathematics>.

### **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 future valid and reliable tests, some content must remain secure for possible use on future exams. As such, 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. Specific criteria for writing test questions, as well as additional assessment information, are available at <http://www.engageny.org/common-core-assessments>.

Name: \_\_\_\_\_



# *New York State Testing Program*

---

## **2018 Mathematics Test Session 1**

# **Grade 8**

**May 1–3, 2018**

**Released Questions**

Developed and published under contract with the New York State Education Department by Questar Assessment Inc., 5550 Upper 147th Street West, Minneapolis, MN 55124. Copyright © 2018 by the New York State Education Department.

---

**Session 1**

# Grade 8 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

$$C = \pi d \text{ or } C = 2\pi r$$

General Prisms

$$V = Bh$$

Cylinder

$$V = \pi r^2 h$$

Sphere

$$V = \frac{4}{3}\pi r^3$$

Cone

$$V = \frac{1}{3}\pi r^2 h$$

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

---

# 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 In each table,  $x$  represents the input value and  $y$  represents the output value. Which table does **not** represent a function of  $x$ ?

A

$x$	$y$
0	0
1	1
2	2
3	3

C

$x$	$y$
0	3
1	3
2	3
3	3

B

$x$	$y$
3	0
2	1
1	2
0	3

D

$x$	$y$
3	0
3	1
3	2
3	3

- 2 City X has a population of  $3 \times 10^5$  and City Y has a population of  $6 \times 10^6$ . Which statement correctly describes the relationship between the populations of City X and City Y?

- A The population of City Y is 2 times the population of City X.
- B The population of City Y is 20 times the population of City X.
- C The population of City X is 300,000 less than the population of City Y.
- D The population of City X is 3,000,000 less than the population of City Y.

**GO ON**



**3** Which equation describes a linear function?

**A**  $V = s^3$

**B**  $y = \left(\frac{1}{6}\right)x$

**C**  $y = (2)^x$

**D**  $A = \pi r^2$

**4** A system of equations is shown below.

$$5x + 2y = -15$$

$$2x - 2y = -6$$

What is the solution to the system of equations?

**A**  $(-3, 0)$

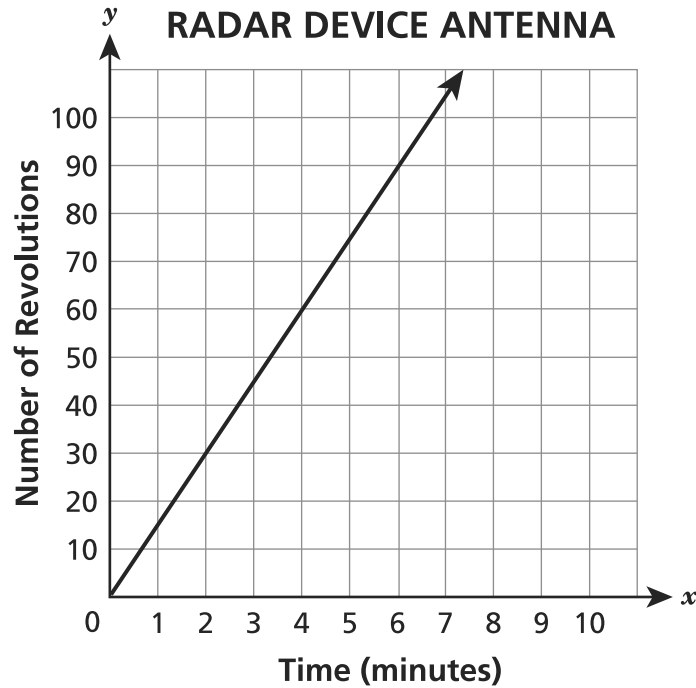
**B**  $(0, -3)$

**C**  $(-3, 6)$

**D**  $(6, -3)$

**6**

A radar device has an antenna that revolves at a constant rate. The graph shows the number of revolutions the device will make over time.



Which table shows the data for an antenna that revolves at exactly twice the rate of the antenna described in the graph?

**ANTENNA #1**

**A**

Time (minutes)	Number of Revolutions
15	315
30	660

**ANTENNA #3**

**C**

Time (minutes)	Number of Revolutions
20	40
25	50

**ANTENNA #2**

**B**

Time (minutes)	Number of Revolutions
18	450
36	900

**ANTENNA #4**

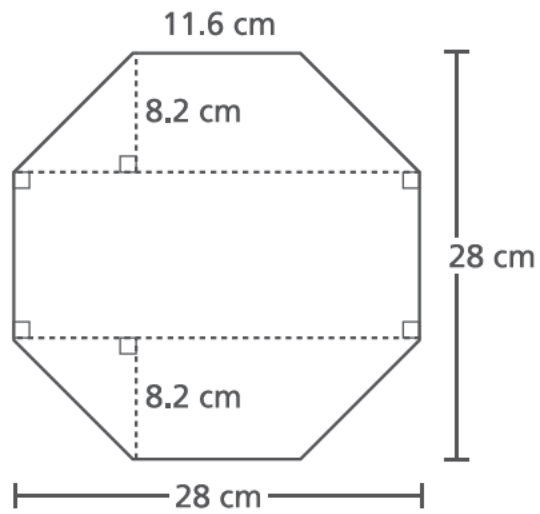
**D**

Time (minutes)	Number of Revolutions
22	660
24	720

**GO ON**

7

The octagon shown below has eight congruent sides. The given measures of the octagon are rounded to the nearest tenth of a centimeter.



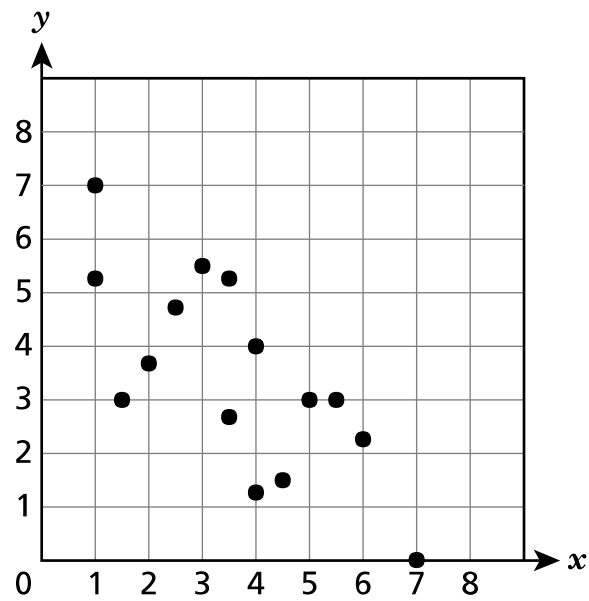
What is the area, to the nearest square centimeter, of the octagon?

- A 392
- B 487
- C 650
- D 720

**GO ON**

8

A set of data is represented on the scatter plot below.



Which equation **best** models the set of data?

**A**  $y = -\frac{3}{4}x + 6$

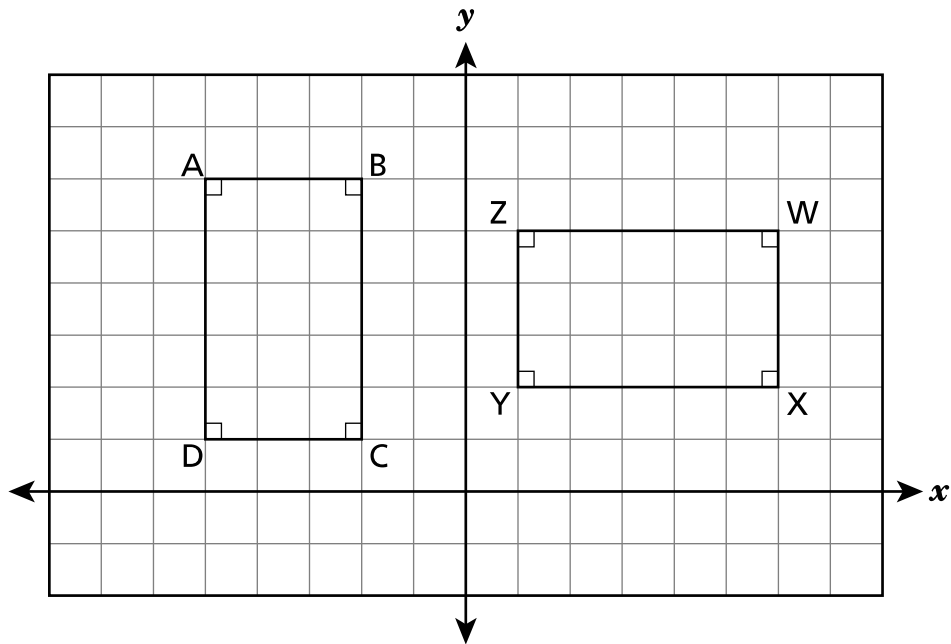
**C**  $y = -6x + \frac{3}{4}$

**B**  $y = \frac{3}{4}x - 6$

**D**  $y = 6x - \frac{3}{4}$

11

On the coordinate plane below, rectangle  $ABCD$  is rotated  $90^\circ$  clockwise about the origin to form rectangle  $WXYZ$ .



Which statement about the relationship between rectangle  $ABCD$  and rectangle  $WXYZ$  is true?

A  $\overline{DA} \cong \overline{YZ}$

C  $\overline{BC} \cong \overline{YZ}$

B  $\overline{DC} \cong \overline{XY}$

D  $\overline{AB} \cong \overline{WX}$

**GO ON**

**14** Which set of ordered pairs  $(x, y)$  could represent a linear function of  $x$ ?

**A**  $\{(-2, 8), (0, 4), (2, 3), (4, 2)\}$

**B**  $\{(1, 2), (1, 3), (1, 4), (1, 5)\}$

**C**  $\{(-2, 7), (0, 12), (2, 17), (4, 22)\}$

**D**  $\{(3, 5), (4, 7), (3, 9), (5, 11)\}$

**15** Which set of angle measures could be the interior angles of a triangle?

**A**  $90^\circ, 90^\circ, 90^\circ$

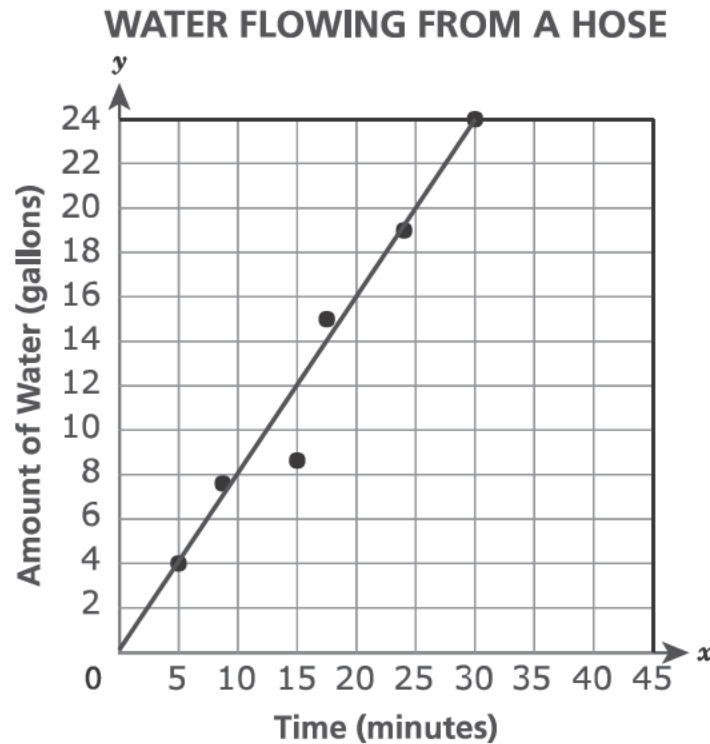
**B**  $80^\circ, 80^\circ, 200^\circ$

**C**  $40^\circ, 50^\circ, 60^\circ$

**D**  $15^\circ, 30^\circ, 135^\circ$

16

The scatter plot below can be used to find the approximate rate at which water flows through a garden hose. The line of best fit for the scatter plot can be described by the equation  $y = \frac{4}{5}x$ .



If the rate, in gallons per minute, continues, approximately how many gallons of water will flow from the hose in 45 minutes?

- A 24
- B 36
- C 39
- D 56

**GO ON**

- 19 Functions W and Z are both linear functions of  $x$ .

**Function W**  
$$y = -\frac{1}{16}x + 30$$

**Function Z**

$x$	0	1	2	3
$y$	15.8	15.76	15.72	15.68

Which statement comparing the functions is true?

- A The slope of Function W is equal to the slope of Function Z.
  - B The slope of Function W is less than the slope of Function Z.
  - C The  $y$ -intercept of Function W is equal to the  $y$ -intercept of Function Z.
  - D The  $y$ -intercept of Function W is less than the  $y$ -intercept of Function Z.
- 20 On a coordinate plane, vertex A for triangle ABC is located at  $(6, 4)$ . Triangle ABC is dilated by a scale factor of 0.5 with the center of dilation at the origin. The resulting image is triangle  $A'B'C'$ . What are the coordinates of vertex  $A'$ ?
- A  $(3, 2)$
  - B  $(12, 8)$
  - C  $(5.5, 3.5)$
  - D  $(6.5, 4.5)$



**23** Triangle BCD is rotated  $180^\circ$  clockwise and then dilated by a factor of 4 centered at the origin. The resulting image is triangle  $B'C'D'$ . Which statement about the two triangles is true?

- A The area of  $\triangle BCD$  is 4 times the area of  $\triangle B'C'D'$ .
- B The perimeter of  $\triangle BCD$  is 4 times the perimeter of  $\triangle B'C'D'$ .
- C The corresponding sides of  $\triangle BCD$  and  $\triangle B'C'D'$  are congruent.
- D The corresponding angles of  $\triangle BCD$  and  $\triangle B'C'D'$  are congruent.

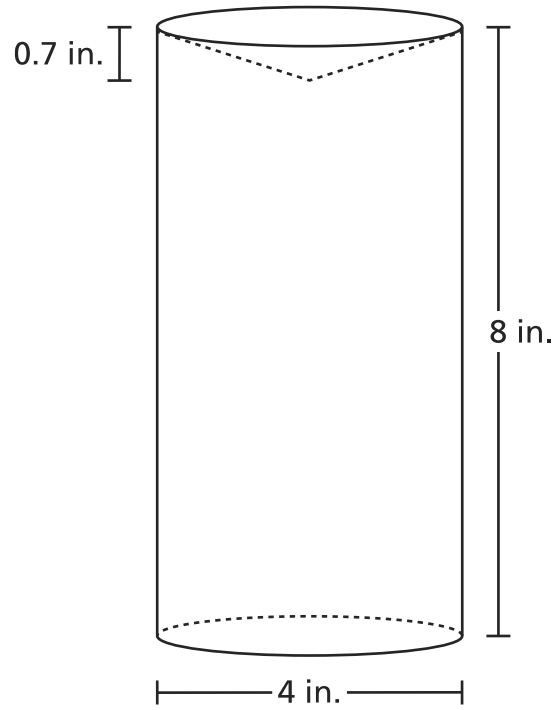
**24** At a local basketball game, all tickets are the same price and all souvenirs are the same price. Mr. Smith bought 2 tickets to this basketball game and 1 souvenir for a total of \$17.25. Ms. Lockhart bought 5 tickets to the same game and 2 souvenirs for a total of \$42.00. How much was a ticket to this game?

- A \$2.25
- B \$7.50
- C \$8.50
- D \$9.75

**GO ON**

26

The object below is made of solid plastic. It is a cylinder with an indentation at the top in the shape of a cone.



What is the volume, to the nearest tenth of a cubic inch, of the plastic object?

- A 103.5
- B 100.4
- C 97.6
- D 91.7

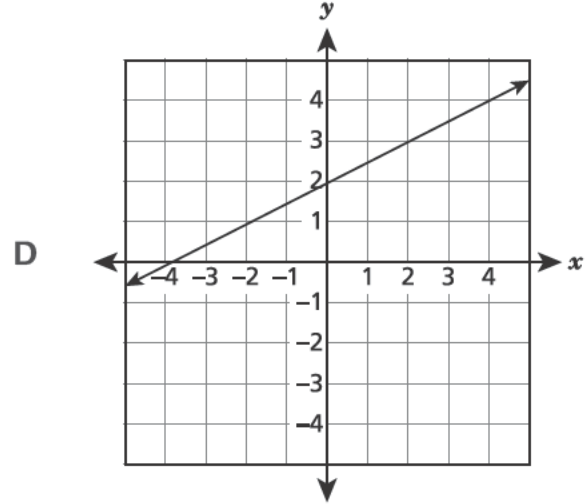
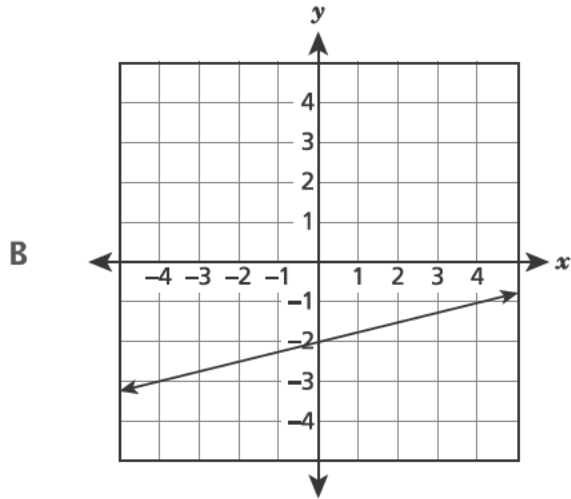
**GO ON**

30

Which function of  $x$  has the **least** value for the  $y$ -intercept?

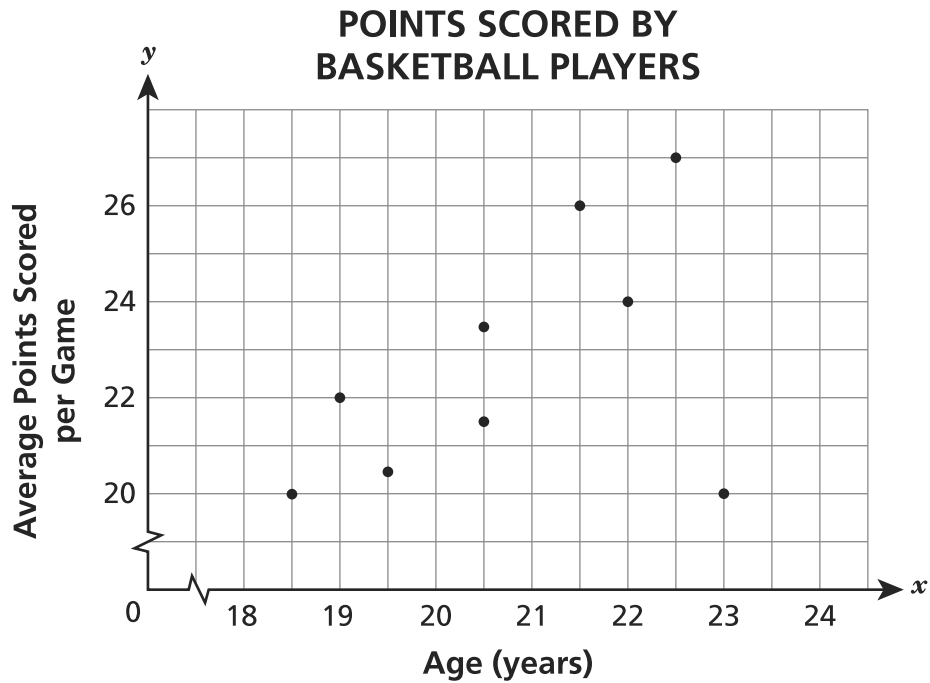
A  $y = -4x + 15$

C  $y = 2x - 3$



31

The scatter plot below shows the average points scored per game by players of different ages in an adult basketball league.



Which statement **best** describes the association between a player's age, in years, and the average points scored per game?

- A There is no association.
- B There is a nonlinear association.
- C There is a positive linear association and one outlier.
- D There is a negative linear association and one outlier.

**32** In city W, the average cost for a gym membership is given by the equation  $y = 34.99x + 49$ , where  $y$  is the total cost, in dollars, for  $x$  months of membership. What is the meaning of the  $y$ -value when  $x = 1$ ?

- A the average sign-up fee for a gym membership
- B the average monthly charge for a gym membership
- C the average total cost for the first month of a gym membership
- D the average total cost for the first two months of a gym membership

**33** What is the volume, in terms of  $\pi$ , for a cylindrical container with a radius of 3.25 centimeters and a height of 10 centimeters?

- A  $65\pi \text{ cm}^3$
- B  $105.625\pi \text{ cm}^3$
- C  $331.83\pi \text{ cm}^3$
- D  $422.5\pi \text{ cm}^3$

**STOP**

---

**Grade 8**  
**2018**  
**Mathematics Test**  
**Session 1**  
May 1–3, 2018

Name: \_\_\_\_\_



# *New York State Testing Program*

---

## **2018 Mathematics Test Session 2**

# **Grade 8**

**May 1–3, 2018**

**Released Questions**

Developed and published under contract with the New York State Education Department by Questar Assessment Inc., 5550 Upper 147th Street West, Minneapolis, MN 55124. Copyright © 2018 by the New York State Education Department.



# Grade 8 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

$$C = \pi d \text{ or } C = 2\pi r$$

General Prisms

$$V = Bh$$

Cylinder

$$V = \pi r^2 h$$

Sphere

$$V = \frac{4}{3}\pi r^3$$

Cone

$$V = \frac{1}{3}\pi r^2 h$$

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

---

# 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 Kevin and Christy both saved money for their class trip. Kevin saved the same amount each week. The total amount that Kevin saved at the end of every two weeks is shown in the table below.

### KEVIN'S SAVINGS

Time (weeks)	Total Amount Saved
2	\$46
4	\$92
6	\$138

Christy's savings can be modeled by the equation  $y = 26x$ , where  $y$  is the total amount of money saved in  $x$  weeks. Which statement correctly compares the rates at which Kevin and Christy saved money?

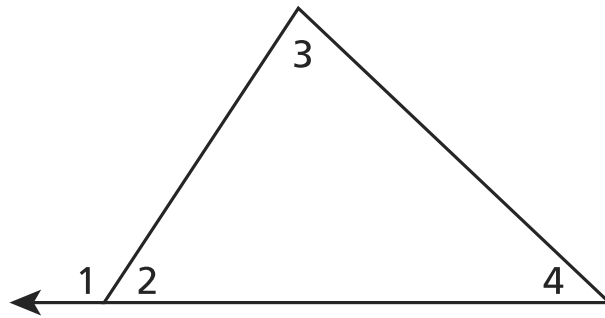
- A Christy saved \$3 per week more than Kevin.
  - B Kevin saved \$10 per week more than Christy.
  - C Christy saved \$18 per week more than Kevin.
  - D Kevin saved \$20 per week more than Christy.
- 35 The points  $(4, 1)$  and  $(x, -6)$  lie on the same line. If the slope of the line is 1, what is the value of  $x$ ?

- A  $x = -3$
- B  $x = 3$
- C  $x = 9$
- D  $x = 11$

**GO ON**

**36**

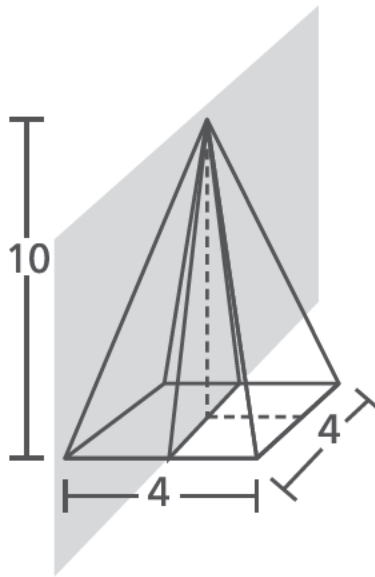
Mya claims  $(m\angle 3 + m\angle 4) = m\angle 1$ , as shown in the triangle below.



Which equations explain why Mya's claim must be true?

- A  $(m\angle 1 + m\angle 2) = 90^\circ$  and  $(m\angle 3 + m\angle 4) = 90^\circ$
- B  $(m\angle 1 + m\angle 2) = 180^\circ$  and  $(m\angle 3 + m\angle 4) = 180^\circ$
- C  $(m\angle 1 + m\angle 2) = 90^\circ$  and  $(m\angle 3 + m\angle 4 + m\angle 2) = 90^\circ$
- D  $(m\angle 1 + m\angle 2) = 180^\circ$  and  $(m\angle 3 + m\angle 4 + m\angle 2) = 180^\circ$

- 37 The dimensions of a square right pyramid are shown below.



The pyramid is sliced by a plane that passes vertically through the top vertex and is perpendicular to the base. What is the resulting two-dimensional shape and the area of the plane section?

- A a triangle with an area of 20 square units
- B a triangle with an area of 40 square units
- C a rectangle with an area of 16 square units
- D a rectangle with an area of 40 square units

**GO ON**

A newspaper conducted a survey to find out how many high school students play video games. The two-way table below displays the data from the survey.

**VIDEO GAME SURVEY**

	Boys	Girls	Total
Do Play Video Games	1,593	1,361	2,954
Do Not Play Video Games	858	1,635	2,493
Total	2,451	2,996	5,447

Based on these data in the table, which statement is true?

- A There were 2,451 boys surveyed, and about 29% of them play video games.
- B There were 2,996 girls surveyed, and about 45% of them play video games.
- C There were 5,447 students surveyed, and about 54% of them do not play video games.
- D There were 2,493 students surveyed, and about 34% of them are girls who do not play video games.

**39**

Two cells are viewed and measured under a microscope. The approximate diameter of each cell is listed below.

- cell P:  $5.0 \times 10^{-4}$  meters
- cell Q:  $3.0 \times 10^{-5}$  meters

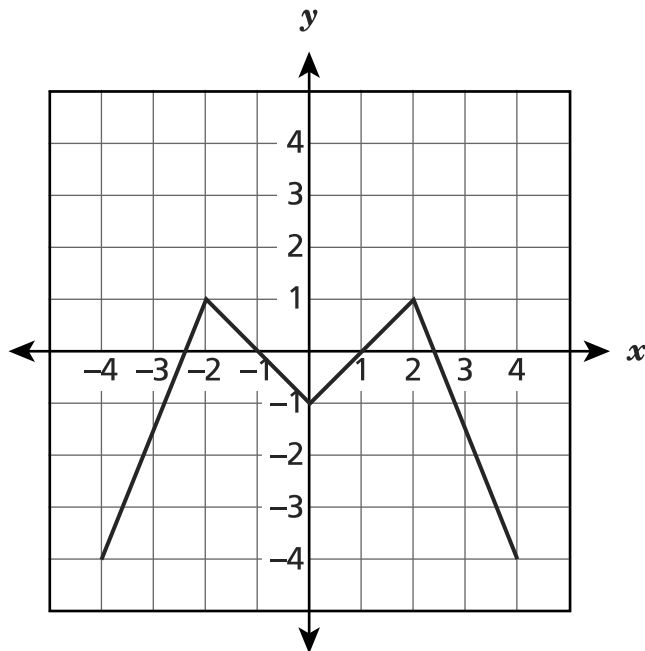
What is the approximate difference, in meters, between the diameter of cell P and the diameter of cell Q?

- A**  $2.0 \times 10^{-5}$
- B**  $2.0 \times 10^{-4}$
- C**  $4.7 \times 10^{-5}$
- D**  $4.7 \times 10^{-4}$

**GO ON**

40

A function of  $x$  is shown on the coordinate plane.



Over which intervals is the function increasing?

- A**  $-4 < x < -2$  and  $-1 < x < 1$       **C**  $-2 < x < 0$  and  $2 < x < 4$
- B**  $-4 < x < -2$  and  $0 < x < 2$       **D**  $-2 < x < -1$  and  $2 < x < 4$

**GO ON**



**41** An equation is shown below.

$$3(x - 2) + 7x = \frac{1}{2}(6x - 2)$$

How many solutions, if any, does the equation have?

*Show your work.*

*Answer* Number of solution(s) \_\_\_\_\_

**GO ON**

42

Line  $n$  passes through the points  $(-3, -7.5)$  and  $(2, -5)$ . Tahlia determined that the equation of line  $n$  is  $y = 0.5x$ . Explain the error Tahlia made while determining her equation. Be sure to include the correct equation in your explanation.

*Answer*

---

---

---

**43**

Square ABCD is located on a coordinate plane. The coordinates for three of the vertices are listed below.

- A (2,7)
- C (8,1)
- D (2,1)

Square ABCD is dilated by a scale factor of 2 with the center of dilation at the origin, to form square  $A'B'C'D'$ . What are the coordinates of vertex  $B'$  ?

*Explain how you determined your answer.*

---

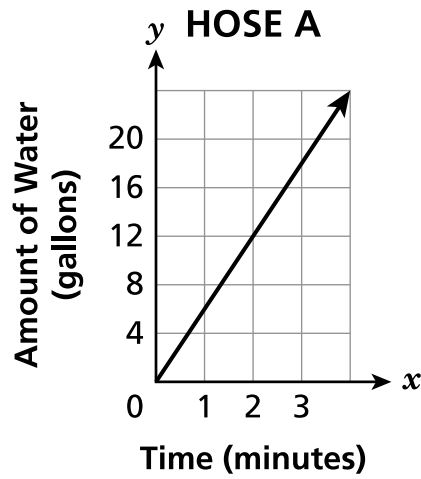
---

---

**GO ON**

44

Charles needs to fill a large fish tank with water using a hose. He has two hoses from which to choose. Water flows through each hose at a constant rate. The graph below shows the amount of water, in gallons, that flows through Hose A based on the number of minutes used.



A total of 110 gallons of water can flow through Hose B in 10 minutes. Which hose has a faster water flow rate, in gallons per minute, and what is that rate?

*Show your work.*

*Answer* Hose \_\_\_\_\_ and \_\_\_\_\_ gallons per minute

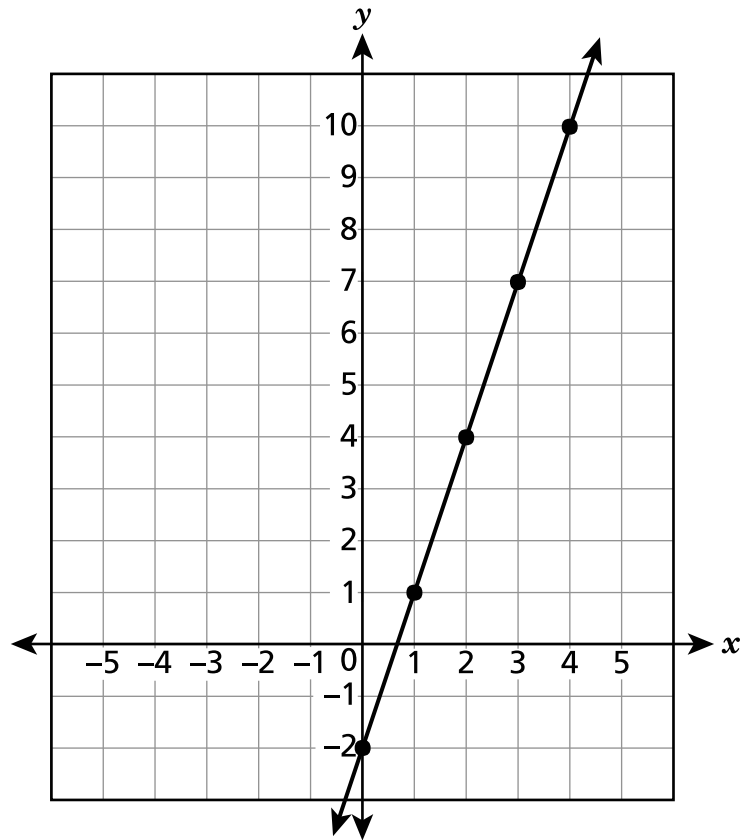
**GO ON**

The table and graph shown below each represent a function of  $x$ .

**FUNCTION A**

$x$	$y$
1	5
2	7
3	9
5	13
6	15

**FUNCTION B**



Which function, A or B, has a greater rate of change? Be sure to include the values for the rates of change in your answer.

*Explain your answer.*

---



---



---

**GO ON**

**46**

The mass of Earth is approximately  $5.97 \times 10^{24}$  kilograms. The mass of Venus is approximately 4,870,000,000,000,000,000,000 kilograms. What is the difference between the approximate masses, in kilograms, of Earth and Venus? Express your answer in scientific notation.

*Show your work.*

*Answer* \_\_\_\_\_ kilograms

**GO ON**

- 47** The ordered pairs below represent a linear function.

$$\left(\frac{3}{4}, 6\frac{1}{4}\right), \left(1\frac{1}{4}, 7\frac{3}{4}\right), (x, y)$$

Which values could be the values of  $x$  and  $y$ ?

*Show your work.*

*Answer*  $x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

**GO ON**

**48**

A school district transported a total of 409 students and teachers to a zoo in buses and vans.

- Each bus transported a total of 55 students and teachers.
- Each van transported a total of 12 students and teachers.
- There were 5 more buses than vans.

What is the total number of students and teachers who rode to the zoo in buses?

What is the total number of students and teachers who rode to the zoo in vans?

*Show your work.*

*Answer* \_\_\_\_\_ students and teachers rode in buses

\_\_\_\_\_ students and teachers rode in vans

**STOP**



---

**Grade 8**  
**2018**  
**Mathematics Test**  
**Session 2**  
May 1–3, 2018

**THE STATE EDUCATION DEPARTMENT**  
**THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234**  
**2018 Mathematics Tests Map to the Standards**  
**Grade 8 Released Questions on EngageNY**

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)
<b>Session 1</b>								
1	Multiple Choice	D	1	CCSS.Math.Content.8.F.A.1	Functions	0.72		
2	Multiple Choice	B	1	CCSS.Math.Content.8.EE.A.3	Expressions and Equations	0.64		
3	Multiple Choice	B	1	CCSS.Math.Content.8.F.A.3	Functions	0.68		
4	Multiple Choice	A	1	CCSS.Math.Content.8.EE.C.8b	Expressions and Equations	0.67		
6	Multiple Choice	D	1	CCSS.Math.Content.8.EE.B.5	Expressions and Equations	0.45		
7	Multiple Choice	C	1	CCSS.Math.Content.7.G.B.6	Geometry	0.39		
8	Multiple Choice	A	1	CCSS.Math.Content.8.SP.A.2	Statistics and Probability	0.48		
11	Multiple Choice	D	1	CCSS.Math.Content.8.G.A.2	Geometry	0.79		
14	Multiple Choice	C	1	CCSS.Math.Content.8.F.A.3	Functions	0.44		
15	Multiple Choice	D	1	CCSS.Math.Content.7.G.A.2	Expressions and Equations	0.49		
16	Multiple Choice	B	1	CCSS.Math.Content.8.SP.A.3	Statistics and Probability	0.69		
19	Multiple Choice	B	1	CCSS.Math.Content.8.F.A.2	Functions	0.53		
20	Multiple Choice	A	1	CCSS.Math.Content.8.G.A.3	Geometry	0.63		
23	Multiple Choice	D	1	CCSS.Math.Content.8.G.A.4	Geometry	0.38		
24	Multiple Choice	B	1	CCSS.Math.Content.8.EE.C.8c	Expressions and Equations	0.60		
26	Multiple Choice	C	1	CCSS.Math.Content.8.G.C.9	Geometry	0.34		

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)
<b>Session 1 continued</b>								
30	Multiple Choice	C	1	CCSS.Math.Content.8.F.A.2	Functions	0.52		
31	Multiple Choice	C	1	CCSS.Math.Content.8.SP.A.1	Statistics and Probability	0.62		
32	Multiple Choice	C	1	CCSS.Math.Content.8.SP.A.3	Statistics and Probability	0.48		
33	Multiple Choice	B	1	CCSS.Math.Content.8.G.C.9	Geometry	0.47		
<b>Session 2</b>								
34	Multiple Choice	A	1	CCSS.Math.Content.8.EE.B.5	Expressions and Equations	0.61		
35	Multiple Choice	A	1	CCSS.Math.Content.8.EE.B.6	Expressions and Equations	0.56		
36	Multiple Choice	D	1	CCSS.Math.Content.8.G.A.5	Geometry	0.45		
37	Multiple Choice	A	1	CCSS.Math.Content.7.G.A.3	Geometry	0.43		
38	Multiple Choice	B	1	CCSS.Math.Content.8.SP.A.4	Statistics and Probability	0.52		
39	Multiple Choice	D	1	CCSS.Math.Content.8.EE.A.4	Expressions and Equations	0.50		
40	Multiple Choice	B	1	CCSS.Math.Content.8.F.B.5	Functions	0.32		
41	Constructed Response		2	CCSS.Math.Content.8.EE.C.7a	Expressions and Equations		0.86	0.43
42	Constructed Response		2	CCSS.Math.Content.8.F.B.4	Functions		0.44	0.22
43	Constructed Response		2	CCSS.Math.Content.8.G.A.3	Geometry		0.82	0.41
44	Constructed Response		2	CCSS.Math.Content.8.EE.B.5	Expressions and Equations		1.16	0.58
45	Constructed Response		2	CCSS.Math.Content.8.F.A.2	Functions		0.98	0.49
46	Constructed Response		2	CCSS.Math.Content.8.EE.A.4	Expressions and Equations		1.08	0.54
47	Constructed Response		2	CCSS.Math.Content.8.F.A.3	Functions		0.56	0.28
48	Constructed Response		3	CCSS.Math.Content.8.EE.C.8c	Expressions and Equations		1.17	0.39

\*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.