April 2018

Math tests

The SAT®

Question-and-Answer Service

Use this with your QAS Student Guide and personalized QAS Report.

What's inside:

– Test questions

– The Essay prompt administered on your test day

CollegeBoard

Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

Turn to Section 3 of your answer sheet to answer the questions in this section.

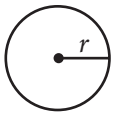
DIRECTIONS

For questions 1-15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. **For questions 16-20**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

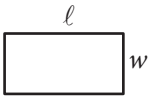
NOTES

1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

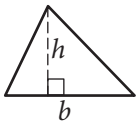
REFERENCE



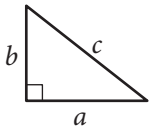
$A = \pi r^2$
$C = 2\pi r$



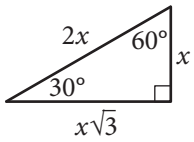
$A = \ell w$

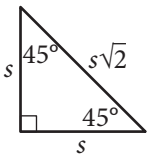


$A = \frac{1}{2}bh$

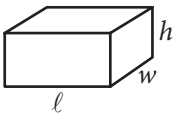


$c^2 = a^2 + b^2$

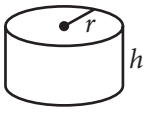




Special Right Triangles

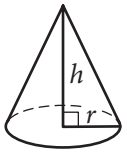


$V = \ell wh$

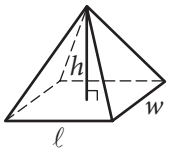


$V = \pi r^2 h$

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



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



$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE

1

$$x + y = 21$$
$$x - 2y = -3$$

According to the system of equations above, what is the value of x ?

A) 6

B) 8

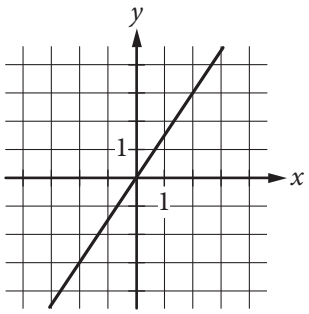
C) 13

D) 15

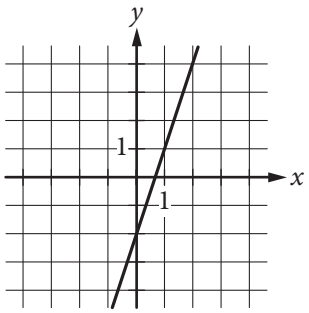
2

Which of the following is the graph of the equation $y = 3x - 2$ in the xy-plane?

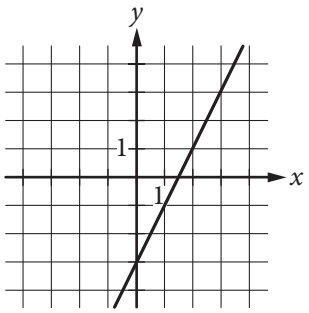
A)



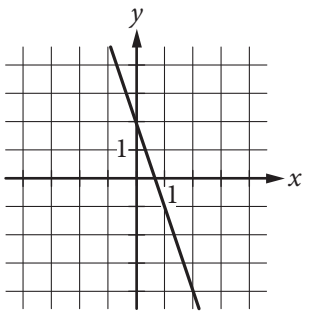
B)



C)



D)



CONTINUE

3

Which of the following expressions is equivalent to $x^2 + 10x + 21$?

A) $(x + 1)(x + 9) + 12$

B) $(x + 1)(x + 9) + 12x$

C) $(x + 3)(x + 7) + 5$

D) $(x + 3)(x + 7) + 5x$

4

$$y \geq -2x + 11$$

$$y > 3x - 9$$

In the xy-plane, point A is contained in the graph of the solution set of the system of inequalities above. Which of the following could be the coordinates of point A ?

A) $(2, 1)$

B) $(4, 1)$

C) $(4, 5)$

D) $(6, 6)$

5

In the xy-plane, line ℓ passes through the points $(0, 1)$ and $(1, 4)$. Which of the following is an equation of line ℓ ?

A) $y = \frac{1}{3}x + 1$

B) $y = \frac{1}{3}x - 1$

C) $y = 3x + 1$

D) $y = 3x - 1$

6

$$\sqrt{x + 28} - 2\sqrt{x + 1} = 0$$

What value of x satisfies the equation above?

A) 8

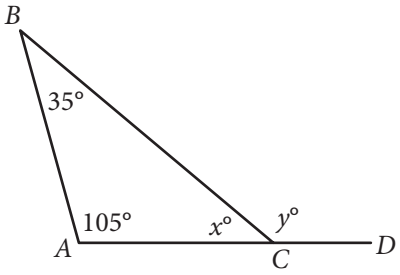
B) 9

C) 26

D) 27

CONTINUE

7



In triangle ABC above, side $\overline{AC}$ is extended to point D. What is the value of $y - x$?

A) 40
B) 75
C) 100
D) 140

8

In the xy-plane, the point $(2, 6)$ lies on the graph of $y = \frac{k}{x}$, where k is a constant. Which of the following points must also lie on the graph?

A) $(1, 3)$
B) $(1, 4)$
C) $(3, 3)$
D) $(3, 4)$

9

$$Q = \sqrt{\frac{2dK}{h}}$$

The formula above is used to estimate the ideal quantity, Q, of items a store manager needs to order given the demand quantity, d; the setup cost per order, K; and the storage cost per item, h. Which of the following correctly expresses the storage cost per item in terms of the other variables?

A) $h = \sqrt{\frac{2dK}{Q}}$

B) $h = \frac{\sqrt{2dK}}{Q}$

C) $h = \frac{2dK}{Q^2}$

D) $h = \frac{Q^2}{2dK}$

10

$$8x - 2x(c + 1) = x$$

In the equation above, c is a constant. If the equation has infinitely many solutions, what is the value of c ?

A) $\frac{3}{2}$

B) $\frac{5}{2}$

C) $\frac{7}{2}$

D) $\frac{9}{2}$

CONTINUE

11

$$2{,}000 - 61k = 48$$

In 1962, the population of a bird species was 2,000. The population k years after 1962 was 48, and k satisfies the equation above. Which of the following is the best interpretation of the number 61 in this context?

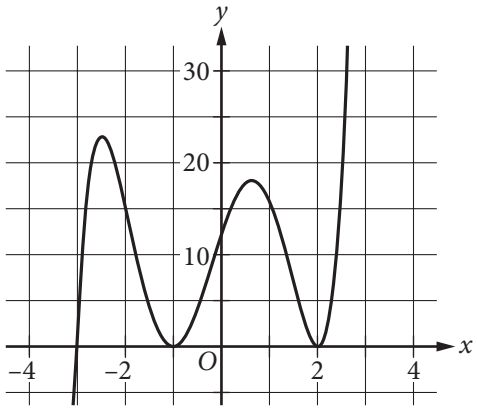
A) The population k years after 1962

B) The value of k when the population was 48

C) The difference between the population in 1962 and the population k years after 1962

D) The average decrease in the population per year from 1962 to k years after 1962

12



The graph of the function f is shown in the xy-plane above, where $y = f(x)$. Which of the following functions could define f?

A) $f(x) = (x-3)(x-1)^2(x+2)^2$

B) $f(x) = (x-3)^2(x-1)(x+2)$

C) $f(x) = (x+3)(x+1)^2(x-2)^2$

D) $f(x) = (x+3)^2(x+1)(x-2)$

13

$$(x+2)^2 + (y-3)^2 = 40$$

$$y = -2x + 4$$

Which of the following could be the x-coordinate of a solution to the system of equations above?

A) $\sqrt{7}$

B) $\frac{\sqrt{35}}{2}$

C) $\frac{6 + 2\sqrt{34}}{5}$

D) $\frac{4 + \sqrt{191}}{5}$

CONTINUE

14

$$P = 215(1.005)^{\frac{t}{3}}$$

The equation above can be used to model the population, in thousands, of a certain city t years after 2000. According to the model, the population is predicted to increase by 0.5% every n months. What is the value of n ?

A) 3

B) 4

C) 12

D) 36

15

Which of the following is an equivalent form of the expression $(2x-2)^2-(2x-2)$?

A) $2x^2-6x+6$

B) $4x^2-10x+2$

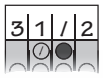
C) $(2x-2)(2x-2)$

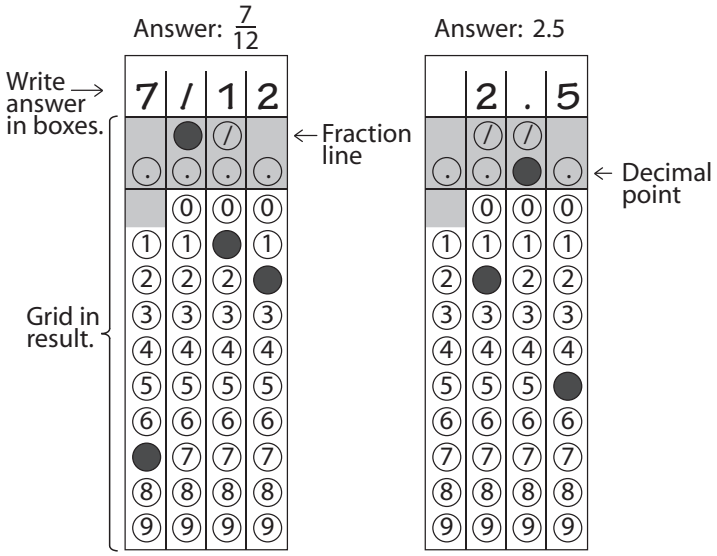
D) $(2x-3)(2x-2)$

CONTINUE

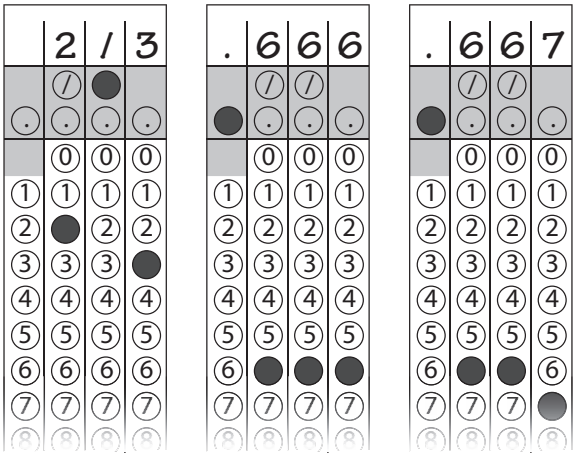
DIRECTIONS

For questions 16-20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

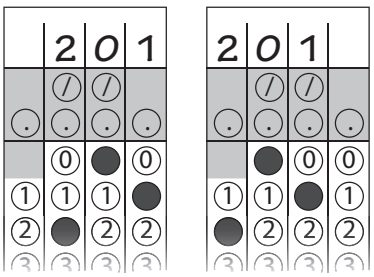
1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.



Acceptable ways to grid $\frac{2}{3}$ are:



Answer: 201 – either position is correct



NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

CONTINUE

16

$$2s + t = 11$$

In the equation above, what is the value of s when $t = -1$?

17

$$(x - 1)^2 = 3x - 5$$

What is one possible solution to the equation above?

18

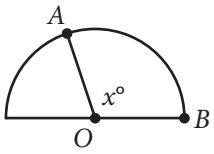
In the complex number system, what is the value of the expression $16i^4 - 8i^2 + 4$? (Note: $i = \sqrt{-1}$)

19

x	$f(x)$
8	12
12	17

The table above shows two pairs of values for the linear function f. The function can be written in the form $f(x) = ax + b$, where a and b are constants. What is the value of $a + b$?

20



Segments $\overline{OA}$ and $\overline{OB}$ are radii of the semicircle above. Arc $\overset{\frown}{AB}$ has length 3π and $OA = 5$. What is the value of x ?

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

Turn to Section 4 of your answer sheet to answer the questions in this section.

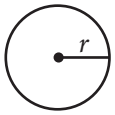
DIRECTIONS

For questions 1-30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. **For questions 31-38**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 31 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

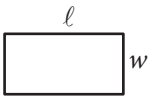
NOTES

1. The use of a calculator **is permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

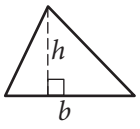
REFERENCE



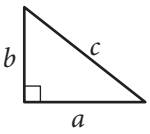
$A = \pi r^2$
$C = 2\pi r$



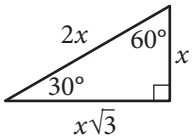
$A = \ell w$

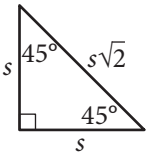


$A = \frac{1}{2}bh$

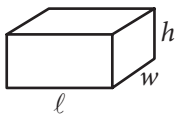


$c^2 = a^2 + b^2$

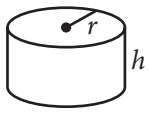




Special Right Triangles

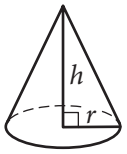


$V = \ell wh$

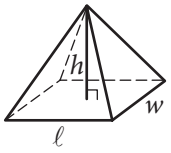


$V = \pi r^2 h$

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



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



$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

1

If $6 \cdot 2k = 36$, what is the value of $4k - 2$?

A) 12

B) 10

C) 6

D) 1

2

The number of people who rode a certain bus each day of a week is shown in the table below.

Day	Number of riders
Monday	612
Tuesday	798
Wednesday	655
Thursday	773
Friday	808
Saturday	480
Sunday	229

Which of the following is true based on these data?

A) The bus had the most riders on Tuesday.

B) Each day from Tuesday through Sunday, the number of riders on the bus was greater than the previous day.

C) Each day from Tuesday through Sunday, the number of riders on the bus was less than the previous day.

D) The two days with the fewest number of riders were Saturday and Sunday.

3

A physician prescribes a treatment in which a patient takes 2 teaspoons of a medication every 6 hours for 5 days. According to the prescription, how many teaspoons of the medication should the patient take in a 24-hour period?

A) 4

B) 6

C) 8

D) 40

CONTINUE

4

One hundred park-district members will be selected to participate in a survey about selecting a new park-district coordinator. Which of the following methods of choosing the 100 members would result in a random sample of members of the park district?

A) Obtain a numbered list of all park-district members. Use a random number generator to select 100 members from the list. Give the survey to those 100 members.

B) Obtain a list of all park-district members sorted alphabetically. Give the survey to the first 100 members on the list.

C) Tell all park-district members that volunteers are needed to take the survey. Give the survey to the first 100 members who volunteer.

D) Obtain a list of all park-district members who are attending an upcoming event. Give the survey to the first 100 members on the list.

5

$$2x(x^2 + 1) + (2x^2 - 2x)$$

Which of the following expressions is equivalent to the expression above?

A) $4x^2$

B) $2x^2 + 2x$

C) $2x^3 + 2x^2$

D) $2x^3 + 2x^2 - 4x$

6

If $x + 3 = 2x - 2$, what is the value of $x - 4$?

A) 9

B) 5

C) 4

D) 1

CONTINUE

7

The functions f and g are defined by $f(x) = 4x$ and $g(x) = x^2$. For what value of x does $f(x) - g(x) = 4$?

A) -2

B) -1

C) 1

D) 2

8

The function g is defined as $g(x) = \frac{2x}{3} + 3$. What is the value of $g(-30)$?

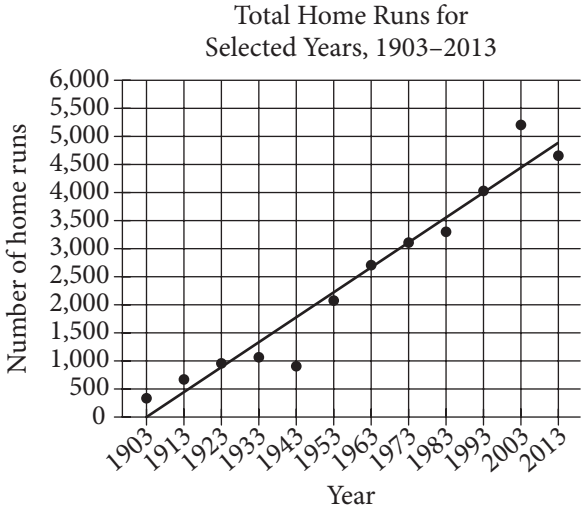
A) -27

B) -23

C) -17

D) -7

9



The scatterplot above shows the total number of home runs hit in major league baseball, in ten-year intervals, for selected years. The line of best fit for the data is also shown. Which of the following is closest to the difference between the actual number of home runs and the number predicted by the line of best fit in 2003?

A) 250

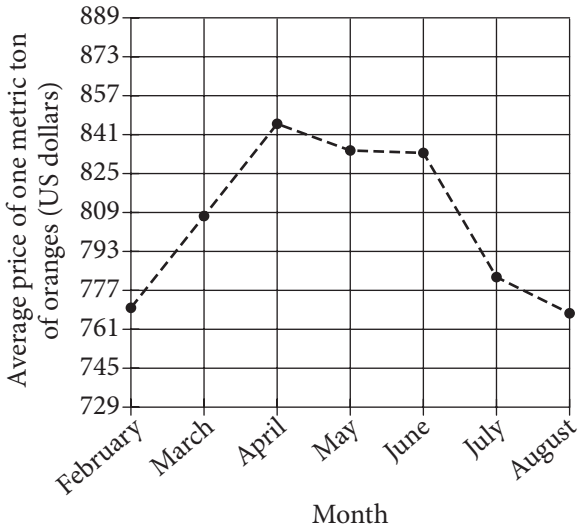
B) 500

C) 750

D) 850

CONTINUE

Questions 10-12 refer to the following information.



The line graph above shows the average price of one metric ton of oranges, in dollars, for each of seven months in 2014.

10

Between which two consecutive months shown did the average price of one metric ton of oranges decrease the most?

A) March to April
B) May to June
C) June to July
D) July to August

11

Which of the following is closest to the median price, in dollars, of the seven recorded prices of one metric ton of oranges?

A) 834
B) 808
C) 783
D) 768

12

In 2014, the average price of one metric ton of oranges decreased by 2.36% from January (not shown) to February. Which of the following is closest to the price of one metric ton of oranges in January 2014?

A) 700
B) 770
C) 790
D) 830

13

	Roof type			
	Asphalt shingle	Slate	Cedar shake	Total
Single story	9	4	2	15
Two story	20	10	3	33
Total	29	14	5	48

The table above shows the distribution of single-story and two-story houses in a neighborhood classified according to roof type. If one of the houses is selected at random, what is the probability that it will be a single-story house with a slate roof?

A) $\frac{4}{48}$

B) $\frac{4}{15}$

C) $\frac{4}{14}$

D) $\frac{14}{48}$

14

$$2x - y = -4$$
$$2x + y = 4$$

For the solution of the system of equations above, what is the value of x ?

A) -4

B) -2

C) 0

D) 2

15

The load capacity of a certain washing machine is 12 pounds. What is the approximate load capacity of the same washing machine, in kilograms?
(1 kilogram = 2.2046 pounds)

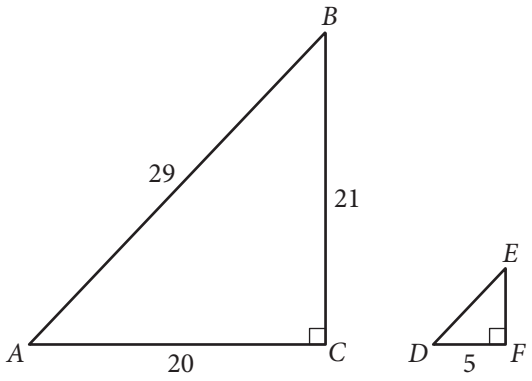
A) 2.2

B) 5.4

C) 9.8

D) 26.5

16



Triangles ABC and DEF above are similar. How much longer than segment EF is segment DE ?

A) 1

B) 2

C) 4

D) 8

CONTINUE

17

Data set A	25,550	40,430	49,150	62,590	73,670	118,780	126,040
Data set B	22,860	55,020	173,730	300,580	358,920	456,170	603,300

Which of the following is true about the standard deviations of the two data sets in the table above?

A) The standard deviation of data set B is larger than the standard deviation of data set A.

B) The standard deviation of data set A is larger than the standard deviation of data set B.

C) The standard deviation of data set A is equal to the standard deviation of data set B.

D) There is not enough information available to compare the standard deviations of the two data sets.

18

The velocity v, in meters per second, of a falling object on Earth after t seconds, ignoring the effect of air resistance, is modeled by the equation $v = 9.8t$. There is a different linear relationship between time and velocity on Mars, as shown in the table below.

Time (seconds)	Velocity on Mars (meters per second)
0	0
4	14.8
8	29.6

If an object dropped toward the surface of Earth has a velocity of 58.8 meters per second after t seconds, what would be the velocity of the same object dropped toward the surface of Mars after t seconds, ignoring the effect of air resistance?

A) 15.9 meters per second

B) 22.2 meters per second

C) 36.2 meters per second

D) 88.8 meters per second

19

In the xy-plane, the graph of line ℓ has slope 3. Line k is parallel to line ℓ and contains the point $(3, 10)$. Which of the following is an equation of line k ?

A) $y = -\frac{1}{3}x + 11$

B) $y = \frac{1}{3}x + 9$

C) $y = 3x + 7$

D) $y = 3x + 1$

20

A certain colony of bacteria began with one cell, and the population doubled every 20 minutes. What was the population of the colony after 2 hours?

A) 6

B) 12

C) 32

D) 64

CONTINUE

21

The circumference of Earth is estimated to be 40,030 kilometers at the equator. Which of the following best approximates the diameter, in miles, of Earth's equator? (1 kilometer ≈ 0.62137 miles)

A) 3,205 miles

B) 5,541 miles

C) 7,917 miles

D) 13,004 miles

22

The budget for a school band was $8,000 in 2010. The budget decreased by 15% from 2010 to 2011 and then increased by 22% from 2011 to 2012. Which of the following expressions represents the budget, in dollars, for the school band in 2012?

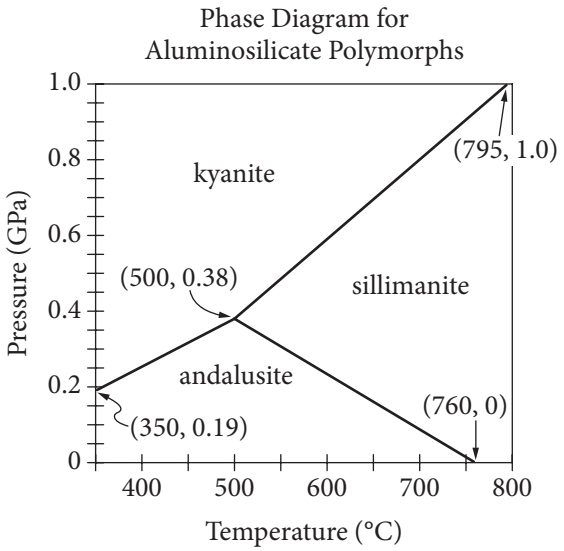
A) (1.15)(1.22)(8,000)

B) (0.85)(1.22)(8,000)

C) (1.15)(0.78)(8,000)

D) (0.85)(0.78)(8,000)

Questions 23 and 24 refer to the following information.



During mineral formation, the same chemical compound can become different minerals depending on the temperature and pressure at the time of formation. A phase diagram is a graph that shows the conditions that are needed to form each mineral. The graph above is a portion of the phase diagram for aluminosilicates, with the temperature T, in degrees Celsius (°C), on the horizontal axis, and the pressure P, in gigapascals (GPa), on the vertical axis.

CONTINUE

23

$$P = -0.00146T + 1.11$$

An equation of the boundary line between the andalusite and sillimanite regions is approximated by the equation above. What is the meaning of the T-intercept of this line?

A) It is the maximum temperature at which sillimanite can form.

B) It is the temperature at which both andalusite and sillimanite can form when there is no pressure applied.

C) It is the increase in the number of degrees Celsius needed to remain on the boundary between andalusite and sillimanite if the pressure is reduced by 1 GPa.

D) It is the decrease in the number of gigapascals of pressure needed to remain on the boundary between andalusite and sillimanite if the temperature is increased by 1°C.

24

Which of the following systems of inequalities best describes the region where sillimanite can form?

A) $P \geq 0.0021T - 0.67$
$P \geq 0.0013T - 0.25$

B) $P \leq 0.0021T - 0.67$
$P \geq -0.0015T + 1.13$

C) $P \leq 0.0013T - 0.25$
$P \geq -0.0015T + 1.13$

D) $P \leq 0.0013T - 0.25$
$P \leq -0.0015T + 1.13$

25

$$y = 2x + 4$$
$$y = (x - 3)(x + 2)$$

The system of equations above is graphed in the xy-plane. At which of the following points do the graphs of the equations intersect?

A) $(-3, -2)$

B) $(-3, 2)$

C) $(5, -2)$

D) $(5, 14)$

26

The gas mileage $M(s)$, in miles per gallon, of a car traveling s miles per hour is modeled by the function below, where $20 \leq s \leq 75$.

$$M(s) = -\frac{1}{24}s^2 + 4s - 50$$

According to the model, at what speed, in miles per hour, does the car obtain its greatest gas mileage?

A) 46

B) 48

C) 50

D) 75

CONTINUE

27

x	$h(x)$
-1	1
2	7
4	11

The table above shows selected values for the function h. In the xy-plane, the graph of $y = h(x)$ is a line. What is the value of $h(8)$?

A) 15

B) 19

C) 21

D) 22

28

The front row of an auditorium has 10 seats. There are 50 rows in total. If each row has 2 more seats than the row before it, which expression gives the total number of seats in the last row?

A) $10 + 2(50 - 1)$

B) $10 + 2(50)$

C) $50(10 + 2)$

D) $10 + 2^{50}$

29

An ecologist selected a random sample of 30 prairie dogs from a colony and found that the mean mass of the prairie dogs in the sample was 0.94 kilograms (kg) with an associated margin of error of 0.12 kg. Which of the following is the best interpretation of the ecologist's findings?

A) All prairie dogs in the sample have a mass between 0.82 kg and 1.06 kg.

B) Most prairie dogs in the colony have a mass between 0.82 kg and 1.06 kg.

C) Any mass between 0.82 kg and 1.06 kg is a plausible value for the mean mass of the prairie dogs in the sample.

D) Any mass between 0.82 kg and 1.06 kg is a plausible value for the mean mass of the prairie dogs in the colony.

30

A poster has an area of 432 square inches. The length x, in inches, of the poster is 6 inches longer than the width of the poster. Which of the following equations can be solved to determine the length, in inches, of the poster?

A) $x^2 - 6 = 432$

B) $x^2 - 6x = 432$

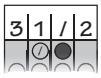
C) $x^2 + 6 = 432$

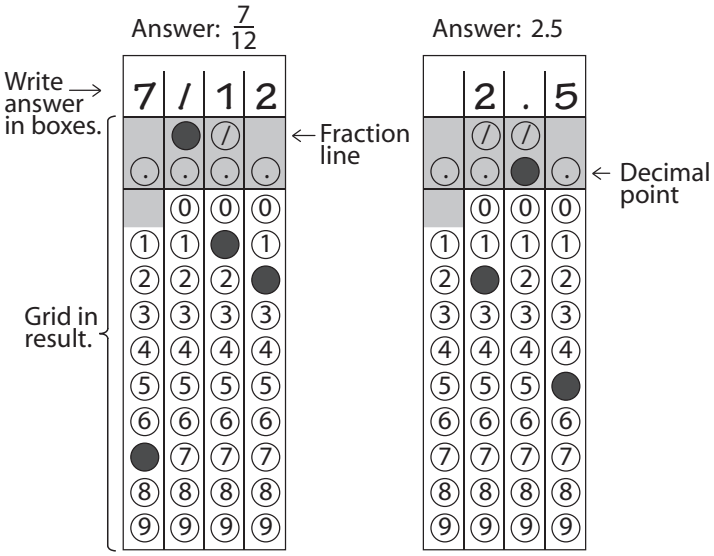
D) $x^2 + 6x = 432$

CONTINUE

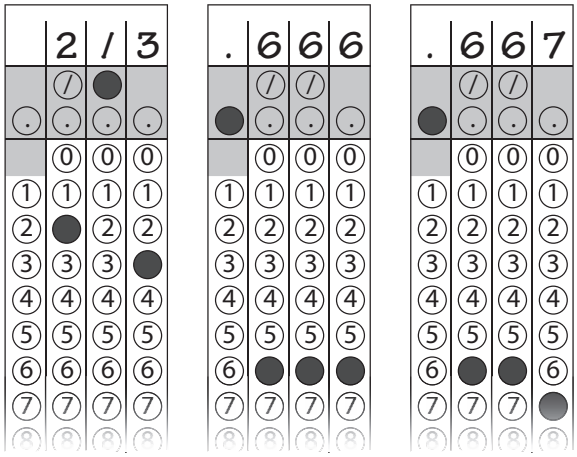
DIRECTIONS

For questions 31-38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

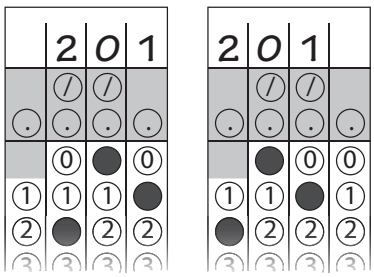
1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.



Acceptable ways to grid $\frac{2}{3}$ are:



Answer: 201 – either position is correct



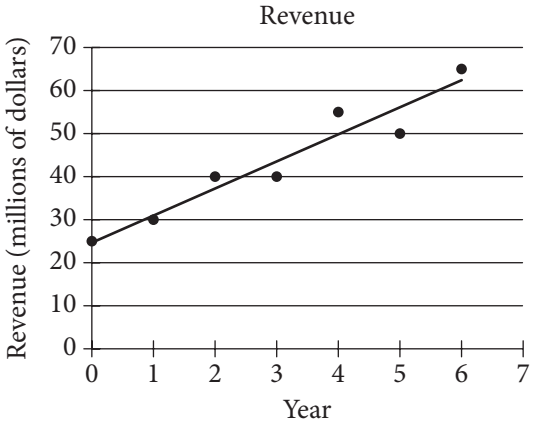
NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

CONTINUE

31

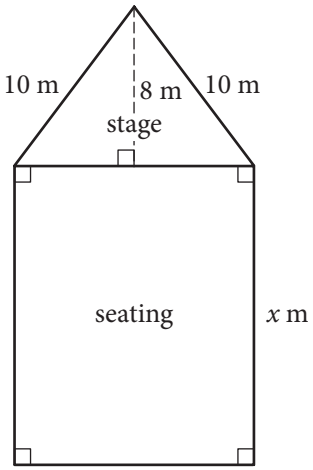
If $|2x + 3| = 5$ and $|3y - 3| = 6$, what is one possible value of $|xy|$?

32



The scatterplot above shows the revenue, in millions of dollars, that a company earned over several years and a line of best fit for the data. In Year 4, the difference between the actual revenue and the predicted revenue is n million dollars, where n is a positive integer. What is the value of n ? Round your answer to the nearest whole number. (Disregard the $ sign when gridding your answer.)

33



The figure above is the floor plan drawn by an architect for a small concert hall. The stage has depth 8 meters (m) and two walls each of length 10 m. If the seating portion of the hall has an area of 180 square meters, what is the value of x ?

34

Jacob bought two types of pens: blue pens that cost $0.60 each and red pens that each cost d times as much as a blue pen. If the cost of 3 blue pens and 6 red pens was $10.80, what is the value of d ?

35

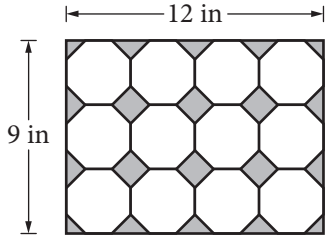
George took a nonstop flight from Dallas to Los Angeles, a total flight distance of 1,233 miles. The plane flew at a speed of 460 miles per hour for the first 75 minutes of the flight and at a speed of 439 miles per hour for the remainder of the flight. To the nearest minute, for how many minutes did the plane fly at a speed of 439 miles per hour?

36

An arc of a circle measures 2.4 radians. To the nearest degree, what is the measure, in degrees, of this arc? (Disregard the degree sign when gridding your answer.)

CONTINUE

Questions 37 and 38 refer to the following information.



Carrie, a packaging engineer, is designing a container to hold 12 drinking glasses shaped as regular octagonal prisms. Her initial sketch of the top view of the base of the container is shown above.

37

If the length and width of the container base in the initial sketch were doubled, at most how many more glasses could the new container hold?

38

Carrie redesigned the container because the initial sketch did not account for cushioning material between the glasses. The area of the base of the newly designed container is 25% greater than the area of the base in the initial sketch. What is the area, in square inches, of the base of the newly designed container?

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

April 2018

The SAT®

Question-and-Answer Service Student Guide

Ideas for using the QAS report

The answer key for the test you took

Instructions for scoring your test

CollegeBoard

Introduction

Congratulations on taking the SAT! Your Question-and-Answer Service (QAS) for the April 2018 SAT includes three parts: this guide, which will help you understand your scores; a copy of the test you took; and a customized QAS report that lists these details about each question:

- answer you gave
- best or correct answer
- question type
- difficulty level

USING YOUR QAS REPORT

- With the report in hand, read each question in your test booklet, then check your results. Look at questions you answered incorrectly to see whether you might have misread the question or mismarked the answer.
- Print your online score report at **studentscores.collegeboard.org** to keep track of how you did on the different types of questions. This can help you understand your academic strengths and identify areas for improvement.
- If you think you detect errors in how you recorded your answers—for example, a group of questions that you recall answering differently than what you see on the report—you may want to consider ordering a more rigorous form of score verification. See **sat.org/verify-scores** for more details.
- If you took the optional SAT Essay, view a copy of your essay online at **collegeboard.org/viewessay**. Take a look at the Essay scoring information on pages 14–16 of this guide to help you interpret your scores.

SCORING YOUR TEST

Use the scoring information and score conversion tables on pages 4–13 to verify the score on your test. The scoring worksheets and score conversion tables are specific to the test you took. Don't try to score any other tests using them.

LEARNING FROM YOUR SAT EXPERIENCE

Now that you're familiar with the test, you should have a better sense of the kinds of questions you'll see on the SAT. You're also likely to be more comfortable with the test-taking process, including the time limits. If you're thinking of taking the test again, you should know that on average, students who take the SAT a second time see an increase in their scores. In addition, your test results are a powerful tool for getting personalized instruction to improve your scores. At **satpractice.org** you can access Official SAT Practice on Khan Academy®, where you can use your actual SAT results to receive practice recommendations tailored to help you work on the areas that you need to focus on. Visit **satpractice.org** to learn more.

Scoring Your SAT

SCORES OVERVIEW

The SAT provides more information about your learning by reporting more scores than ever before. Each of the SAT Suite of Assessments (SAT, PSAT/NMSQT®, PSAT™ 10, and PSAT™ 8/9) reports test scores and cross-test scores on a common scale. Additionally, subscores provide more diagnostic information. For more details about scores, visit **sat.org/scores**.

HOW TO CALCULATE YOUR TEST SCORES

Get Set Up

1. You'll need the customized QAS report with your answers. You'll also need the answer key (pages 4–5) and conversion tables (pages 11–13) provided in this section.
2. Using the answer key, count up your total correct answers for each section. You may want to write the number of correct answers for each section at the bottom of that section in the answer key.
3. Using your marked-up answer key and the conversion tables, follow the directions on the next few pages to get all of your scores.

GET SECTION AND TOTAL SCORES

Your total score on the SAT is the sum of your Evidence-Based Reading and Writing section score and your Math section score. To get your total score, you will convert your raw score for each section—the number of questions you got right in that section—into the scaled score for that section, then calculate the total score.

Calculating Your Evidence-Based Reading and Writing Section Score

Calculate your SAT Evidence-Based Reading and Writing Section score (it's on a scale of 200–800) by first determining your Reading Test score and your Writing and Language Test score. Here's how:

1. Use the Answer Key to determine your raw scores (the number of correct answers).
2. Go to Raw Score Conversion Table 1: Section and Test Scores on page 11. Look in the "Raw Score" column for your raw score, and match it to the number in the "Reading Test Score" column.
3. Do the same with Section 2 to determine your Writing and Language Test score.
4. Add your Reading Test score to your Writing and Language Test score.
5. Multiply that number by 10. This is your Evidence-Based Reading and Writing Section score.

Calculating Your Math Section Score

Calculate your SAT Math section score (it's on a scale of 200–800), as follows:

1. Count the number of correct answers you got on the Math Test – No Calculator and the Math Test – Calculator.
2. Add the number of correct answers you got on each portion.
3. As you did with your Reading and Writing and Language Test scores, go to the Raw Score Conversion Table 1: Section and Test Scores to turn your raw score into your Math section score. Find your raw score in the "Raw Score" column and match it to the number in the same row in the "Math Section Score" column.

Calculating Your Total Score

Add your Evidence-Based Reading and Writing section score to your Math section score. The result is your total score on the SAT, on a scale of 400–1600.

Answer Key – Determine Raw Scores

Reading Test Answers

Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer
1	B	14	A	27	C	40	B
2	C	15	C	28	A	41	D
3	A	16	B	29	A	42	B
4	B	17	A	30	D	43	C
5	B	18	B	31	B	44	D
6	C	19	C	32	A	45	B
7	A	20	D	33	B	46	B
8	D	21	B	34	D	47	C
9	D	22	C	35	B	48	A
10	C	23	C	36	D	49	C
11	C	24	C	37	D	50	D
12	D	25	A	38	B	51	D
13	C	26	D	39	A	52	A

Reading Test Raw Score
(Number of Correct Answers)

Writing and Language Test Answers

Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer
1	B	12	B	23	D	34	A
2	C	13	A	24	B	35	B
3	A	14	D	25	D	36	A
4	D	15	D	26	B	37	B
5	C	16	C	27	B	38	C
6	D	17	C	28	D	39	D
7	C	18	A	29	A	40	B
8	C	19	C	30	A	41	C
9	D	20	D	31	C	42	C
10	A	21	B	32	B	43	D
11	D	22	B	33	C	44	A

Writing and Language Test Raw Score
(Number of Correct Answers)

"U" indicates a question that did not perform as expected and has been removed from scoring.

Answer Key – Determine Raw Scores (continued)

Math Test – No Calculator Answers

Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer
1	C	5	C	9	C	13	A
2	B	6	A	10	B	14	D
3	A	7	C	11	D	15	D
4	C	8	D	12	C		

Question #	Correct Answer
16	6
17	2,3
18	28
19	3.25,13/4
20	108

Math Test – No Calculator Raw Score
(Number of Correct Answers)

Math Test – Calculator Answers

Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer	Question #	Correct Answer
1	B	9	C	17	A	25	D
2	D	10	C	18	B	26	B
3	C	11	B	19	D	27	B
4	A	12	C	20	D	28	A
5	C	13	A	21	C	29	D
6	D	14	C	22	B	30	B
7	D	15	B	23	B		
8	C	16	B	24	B		

Question #	Correct Answer
31	1,3,4,12
32	4,5,6
33	15
34	2.5,5/2
35	90
36	138,137
37	36
38	135

Math Test – Calculator Raw Score
(Number of Correct Answers)

"U" indicates a question that did not perform as expected and has been removed from scoring.

GET CROSS-TEST SCORES

The SAT also reports two cross-test scores: Analysis in History/Social Studies and Analysis in Science. These scores are based on questions in the Reading, Writing and Language, and Math Tests that ask you to think analytically about texts and questions in these subject areas.

Cross-test scores are reported on a scale of 10–40.

Calculating Your Cross-Test Scores

You can use the cross-test score tables beginning on the next page to calculate your cross-test scores as follows:

1. Find the questions in each section that count toward each cross-test score. These are shown with a "Y" next to the question number in the tables. Refer to your QAS report to see which of those questions you answered correctly on the test, and then check the box for each correct answer.
2. Count the number of correct answers for each cross-test area and record that as your raw score for that area.
3. Use the conversion table on page 12 to determine your scaled score (10–40) for each area.

Cross-Test Scores Tables – Determine Cross-Test Raw Scores

Y = Counts toward Cross-Test score. On your QAS report, look up every question marked "Y" below to see if you answered it correctly. If so, check off the box for that question below.

Analysis in History/Social Studies (HSS)

Reading		Writing and Language		Math Test - Calculator		Math Test - No Calculator	
1		1		1		1	
2		2		2		2	
3		3	Y ☐	3		3	
4		4	Y ☐	4	Y ☐	4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8	Y ☐	8		8	
9		9	Y ☐	9		9	
10		10	Y ☐	10	Y ☐	10	
11	Y ☐	11	Y ☐	11	Y ☐	11	
12	Y ☐	12		12	Y ☐	12	
13	Y ☐	13		13	Y ☐	13	
14	Y ☐	14		14		14	Y ☐
15	Y ☐	15		15		15	
16	Y ☐	16		16		16	
17	Y ☐	17		17		17	
18	Y ☐	18		18		18	
19	Y ☐	19		19		19	
20	Y ☐	20		20		20	
21		21		21			
22		22		22	Y ☐		
23		23		23			
24		24		24			
25		25		25			
26		26		26			
27		27		27			
28		28		28			
29		29		29			
30		30		30			
31	Y ☐	31		31			
32	Y ☐	32		32	Y ☐		
33	Y ☐	33		33			
34	Y ☐	34		34			
35	Y ☐	35		35			
36	Y ☐	36		36			
37	Y ☐	37		37			
38	Y ☐	38		38			
39	Y ☐	39					
40	Y ☐	40					
41	Y ☐	41					
42		42					
43		43					
44		44					
45							
46							
47							
48							
49							
50							
51							
52							

HSS Raw Score

Analysis in Science (SCI)

Reading		Writing and Language		Math Test - Calculator		Math Test - No Calculator	
1		1		1		1	
2		2		2		2	
3		3		3	Y ☐	3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
10		10		10		10	
11		11		11		11	Y ☐
12		12	Y ☐	12		12	
13		13		13		13	
14		14	Y ☐	14		14	
15		15	Y ☐	15		15	
16		16		16		16	
17		17		17		17	
18		18	Y ☐	18	Y ☐	18	
19		19		19		19	
20		20		20	Y ☐	20	
21	Y ☐	21	Y ☐	21	Y ☐		
22	Y ☐	22	Y ☐	22			
23	Y ☐	23		23	Y ☐		
24	Y ☐	24		24	Y ☐		
25	Y ☐	25		25			
26	Y ☐	26		26			
27	Y ☐	27		27			
28	Y ☐	28		28			
29	Y ☐	29		29	Y ☐		
30	Y ☐	30		30			
31		31		31			
32		32		32			
33		33		33			
34		34		34			
35		35		35			
36		36		36			
37		37		37			
38		38		38			
39		39					
40		40					
41		41					
42	Y ☐	42					
43	Y ☐	43					
44	Y ☐	44					
45	Y ☐						
46	Y ☐						
47	Y ☐						
48	Y ☐						
49	Y ☐						
50	Y ☐						
51	Y ☐						
52	Y ☐						

SCI Raw Score

GET SUBSCORES

Subscores provide more detailed information about your strengths in specific areas within literacy and math.

Subscores are reported on a scale of 1–15.

- The **Command of Evidence** subscore is based on questions from both the Reading Test and the Writing and Language Test that ask you to interpret and use evidence found in a wide range of passages and informational graphics, such as graphs, tables, and charts.
- The **Words in Context** subscore is based on questions from both the Reading Test and the Writing and Language Test that address the meaning in context of words/phrases and rhetorical word choice.
- The **Expression of Ideas** subscore is based on questions from the Writing and Language Test that focus on topic development, organization, and rhetorically effective use of language.
- The **Standard English Conventions** subscore is based on questions from the Writing and Language Test that focus on sentence structure, usage, and punctuation.
- The **Heart of Algebra** subscore is based on questions from the Math Test that focus on linear equations and inequalities.
- The **Problem Solving and Data Analysis** subscore is based on questions from the Math Test that focus on quantitative reasoning, the interpretation and synthesis of data, and solving problems in rich and varied contexts.
- The **Passport to Advanced Math** subscore is based on questions from the Math Test that focus on topics central to the ability of students to progress to more advanced mathematics, such as understanding the structure of expressions, reasoning with more complex equations, and interpreting and building functions.

Calculating Your Subscores

You can use the subscore tables beginning on the next page to calculate your subscores as follows:

1. Find the questions that count toward each subscore. These are shown with a "Y" next to the question number in the tables. Refer to your QAS report to see which of those questions you answered correctly on the test, and then check the box for each correct answer.
2. Count the number of correct answers for each area and record that as your raw score for that area.
3. Finally, use the conversion table on page 13 to determine your scaled score (1–15) for each area.

Subscores Tables – Determine Subscore Raw Scores

Y = Counts toward subscore. On your QAS report, look up every question marked "Y" to see if you answered it correctly. If so, check off the box for that question.

Command of Evidence (COE)

	Reading			Writing and Language		
1				1		
2				2		
3				3	Y	☐
4	Y	☐		4		
5				5		
6				6		
7				7		
8				8		
9	Y	☐		9		
10				10		
11				11	Y	☐
12				12	Y	☐
13	Y	☐		13		
14				14		
15				15		
16				16		
17	Y	☐		17		
18				18	Y	☐
19				19		
20				20		
21				21		
22				22		
23				23		
24				24		
25	Y	☐		25		
26				26		
27				27		
28				28		
29				29	Y	☐
30	Y	☐		30		
31				31	Y	☐
32				32		
33				33		
34				34		
35				35		
36	Y	☐		36		
37				37		
38				38		
39				39		
40				40	Y	☐
41	Y	☐		41	Y	☐
42				42		
43				43		
44				44		
45						
46						
47	Y	☐				
48						
49	Y	☐				
50						
51						
52						

COE Raw Score

Expression of Ideas (EOI)

	Reading			Writing and Language		
1				1		
2				2		
3				3	Y	☐
4				4	Y	☐
5				5		
6				6		
7				7		
8				8	Y	☐
9				9	Y	☐
10				10	Y	☐
11				11	Y	☐
12				12	Y	☐
13				13		
14				14	Y	☐
15				15	Y	☐
16				16		
17				17		
18				18	Y	☐
19				19		
20				20		
21				21	Y	☐
22				22	Y	☐
23				23	Y	☐
24				24		
25				25		
26				26	Y	☐
27				27		
28				28	Y	☐
29				29	Y	☐
30				30		
31				31	Y	☐
32				32	Y	☐
33				33		
34				34	Y	☐
35				35		
36				36	Y	☐
37				37		
38				38		
39				39		
40				40	Y	☐
41				41	Y	☐
42				42	Y	☐
43				43		
44				44	Y	☐
45						
46						
47						
48						
49						
50						
51						
52						

EOI Raw Score

Words in Context (WIC)

	Reading			Writing and Language		
1				1		
2				2		
3				3		
4				4	Y	☐
5	Y	☐		5		
6				6		
7	Y	☐		7		
8				8		
9				9		
10				10	Y	☐
11	Y	☐		11		
12				12		
13				13		
14	Y	☐		14	Y	☐
15				15		
16				16		
17				17		
18				18		
19				19		
20				20		
21				21	Y	☐
22				22		
23				23	Y	☐
24				24		
25				25		
26				26	Y	☐
27	Y	☐		27		
28				28		
29				29		
30				30		
31				31		
32	Y	☐		32		
33				33		
34	Y	☐		34	Y	☐
35				35		
36				36	Y	☐
37	Y	☐		37		
38				38		
39				39		
40				40		
41				41		
42				42		
43				43		
44	Y	☐		44		
45	Y	☐				
46						
47						
48						
49						
50						
51						
52						

WIC Raw Score

Standard English Conventions (SEC)

	Reading			Writing and Language		
1				1	Y	☐
2				2	Y	☐
3				3		
4				4		
5				5	Y	☐
6				6	Y	☐
7				7	Y	☐
8				8		
9				9		
10				10		
11				11		
12				12		
13				13	Y	☐
14				14		
15				15		
16				16	Y	☐
17				17	Y	☐
18				18		
19				19	Y	☐
20				20	Y	☐
21				21		
22				22		
23				23		
24				24	Y	☐
25				25	Y	☐
26				26		
27				27	Y	☐
28				28		
29				29		
30				30	Y	☐
31				31		
32				32		
33				33	Y	☐
34				34		
35				35	Y	☐
36				36		
37				37	Y	☐
38				38	Y	☐
39				39	Y	☐
40				40		
41				41		
42				42		
43				43	Y	☐
44				44		
45						
46						
47						
48						
49						
50						
51						
52						

SEC Raw Score

Subscores Tables – Determine Subscore Raw Scores (continued)

Y = Counts toward Subscore. On your QAS report, look up every question marked "Y" to see if you answered it correctly. If so, check off the box for that question.

Heart of Algebra (HOA)

Math Test – Calculator			Math Test – No Calculator		
1	Y	☐	1	Y	☐
2			2	Y	☐
3			3		
4			4	Y	☐
5			5	Y	☐
6	Y	☐	6		
7			7		
8	Y	☐	8		
9			9		
10			10	Y	☐
11			11	Y	☐
12			12		
13			13		
14	Y	☐	14		
15			15		
16			16	Y	☐
17			17		
18	Y	☐	18		
19	Y	☐	19	Y	☐
20			20		
21					
22					
23	Y	☐			
24	Y	☐			
25					
26					
27	Y	☐			
28					
29					
30					
31					
32					
33					
34	Y	☐			
35	Y	☐			
36					
37					
38					

Problem Solving and Data Analysis (PSD)

Math Test – Calculator			Math Test – No Calculator	
1			1	
2	Y	☐	2	
3	Y	☐	3	
4	Y	☐	4	
5			5	
6			6	
7			7	
8			8	
9	Y	☐	9	
10	Y	☐	10	
11	Y	☐	11	
12	Y	☐	12	
13	Y	☐	13	
14			14	
15	Y	☐	15	
16			16	
17	Y	☐	17	
18			18	
19			19	
20			20	
21	Y	☐		
22	Y	☐		
23				
24				
25				
26				
27				
28	Y	☐		
29	Y	☐		
30				
31				
32	Y	☐		
33				
34				
35				
36				
37	Y	☐		
38	Y	☐		

Passport to Advanced Math (PAM)

Math Test – Calculator			Math Test – No Calculator		
1			1		
2			2		
3			3	Y	☐
4			4		
5	Y	☐	5		
6			6	Y	☐
7	Y	☐	7		
8			8	Y	☐
9			9	Y	☐
10			10		
11			11		
12			12	Y	☐
13			13	Y	☐
14			14	Y	☐
15			15	Y	☐
16			16		
17			17	Y	☐
18			18		
19			19		
20	Y	☐	20		
21					
22					
23					
24					
25	Y	☐			
26	Y	☐			
27					
28					
29					
30	Y	☐			
31	Y	☐			
32					
33					
34					
35					
36					
37					
38					

HOA Raw Score	PSD Raw Score	PAM Raw Score

CONVERSION TABLES

Raw Score Conversion – Section and Test Scores

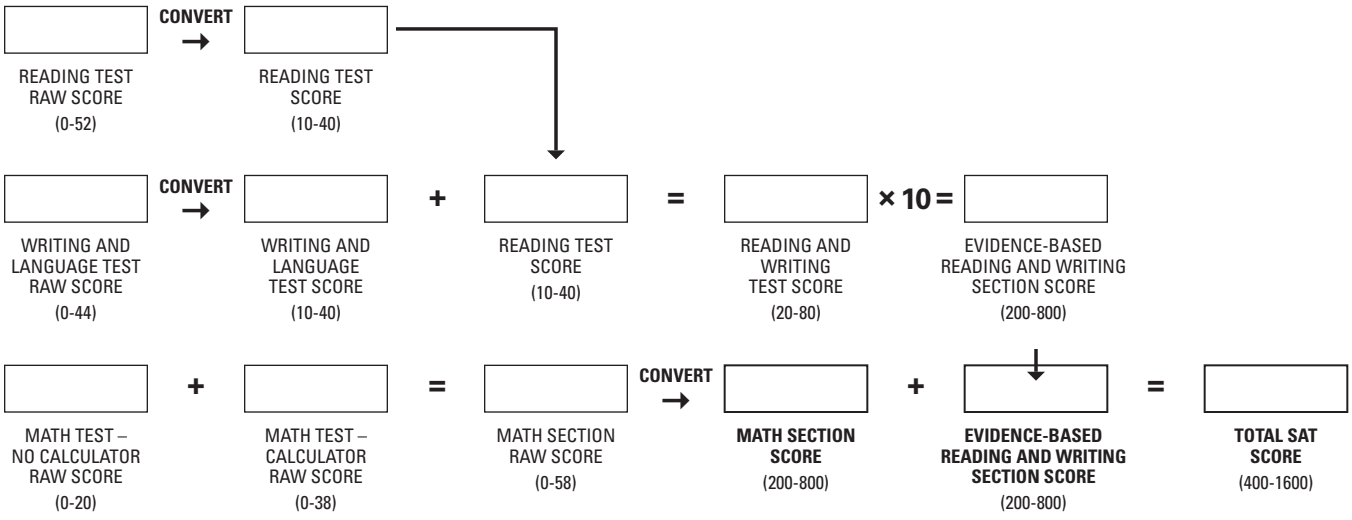
Section and Test Scores

RAW SCORE CONVERSION TABLE 1

Raw Score (# of correct answers)	Math Section Score	Reading Test Score	Writing and Language Test Score
0	200	10	10
1	210	10	10
2	220	10	10
3	230	11	11
4	240	12	12
5	260	13	13
6	270	14	14
7	290	15	15
8	300	15	16
9	320	16	16
10	330	17	17
11	340	18	17
12	350	18	18
13	360	19	19
14	380	20	20
15	390	20	20
16	400	21	21
17	410	21	21
18	430	22	22
19	440	23	23
20	450	23	23
21	460	24	24
22	470	24	25
23	480	25	25
24	490	25	26
25	500	26	27
26	510	26	27
27	510	27	28
28	520	27	28
29	530	28	29
30	530	28	30
31	540	29	30
32	550	29	31
33	560	30	32
34	570	30	32
35	580	31	33
36	590	31	33
37	590	32	34
38	600	32	34
39	610	32	35
40	620	33	36
41	630	33	37
42	640	34	38
43	650	34	39
44	660	35	40
45	670	36	
46	680	36	
47	690	37	
48	700	38	
49	710	38	
50	730	39	
51	740	39	
52	750	40	
53	770		
54	780		
55	790		
56	790		
57	800		
58	800		

Section and Test Scores

CONVERSION EQUATION 1



Raw Score Conversion – Cross-Test Scores

Cross-Test Scores

RAW SCORE CONVERSION | TABLE 2

Raw Score (# of correct answers)	Analysis in History/Social Studies Cross-Test Score	Analysis in Science Cross-Test Score
0	10	10
1	10	11
2	10	12
3	11	13
4	13	14
5	14	15
6	15	16
7	16	17
8	17	18
9	18	19
10	19	20
11	20	21
12	21	22
13	22	23
14	22	23
15	23	24
16	24	25
17	24	26

Raw Score (# of correct answers)	Analysis in History/Social Studies Cross-Test Score	Analysis in Science Cross-Test Score
18	25	27
19	26	27
20	26	28
21	27	29
22	28	30
23	28	30
24	29	31
25	30	32
26	31	32
27	32	33
28	33	34
29	33	34
30	34	35
31	35	36
32	36	37
33	38	38
34	39	39
35	40	40

Cross-Test Scores

CONVERSION EQUATION 2

ANALYSIS IN HISTORY/ SOCIAL STUDIES RAW SCORE (0-35)

ANALYSIS IN HISTORY/ SOCIAL STUDIES SUBSCORE (10-40)

ANALYSIS IN SCIENCE RAW SCORE (0-35)

ANALYSIS IN SCIENCE SUBSCORE (10-40)

Raw Score Conversion – Subscores

Subscores

RAW SCORE CONVERSION TABLE 3

Raw Score (# of correct answers)	Expression of Ideas	Standard English Conventions	Heart of Algebra	Problem Solving and Data Analysis	Passport to Advanced Math	Words in Context	Command of Evidence
0	1	1	1	1	1	1	1
1	1	1	2	1	3	1	3
2	2	2	3	1	4	1	4
3	3	3	4	2	5	2	5
4	3	3	5	3	6	3	5
5	4	4	5	4	7	5	6
6	4	5	6	5	8	6	6
7	5	5	7	6	9	7	7
8	5	6	8	7	9	7	8
9	6	7	8	8	10	8	8
10	7	8	9	9	11	9	9
11	7	8	9	9	12	10	10
12	8	9	10	10	13	10	10
13	8	10	10	11	14	11	11
14	9	11	11	12	14	11	12
15	10	11	12	13	15	12	13
16	10	12	13	14	15	13	14
17	11	13	14	15		14	15
18	11	13	14			15	15
19	12	14	15				
20	12	15					
21	13						
22	14						
23	15						
24	15						

Subscores

CONVERSION EQUATION 3

COMMAND OF EVIDENCE RAW SCORE (0-18)	CONVERT →	**COMMAND OF EVIDENCE SUBSCORE** (1-15)
WORDS IN CONTEXT RAW SCORE (0-18)	CONVERT →	**WORDS IN CONTEXT SUBSCORE** (1-15)
EXPRESSION OF IDEAS RAW SCORE (0-24)	CONVERT →	**EXPRESSION OF IDEAS SUBSCORE** (1-15)
STANDARD ENGLISH CONVENTIONS RAW SCORE (0-20)	CONVERT →	**STANDARD ENGLISH CONVENTIONS SUBSCORE** (1-15)
HEART OF ALGEBRA RAW SCORE (0-19)	CONVERT →	**HEART OF ALGEBRA SUBSCORE** (1-15)
PROBLEM SOLVING AND DATA ANALYSIS RAW SCORE (0-17)	CONVERT →	**PROBLEM SOLVING AND DATA ANALYSIS SUBSCORE** (1-15)
PASSPORT TO ADVANCED MATH RAW SCORE (0-16)	CONVERT →	**PASSPORT TO ADVANCED MATH SUBSCORE** (1-15)