Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

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

DIRECTIONS

Questions **1-15** ask you to solve a problem, select the best answer among four choices, and fill in the corresponding circle on your answer sheet. Questions **16-20** ask you to solve a problem and enter your answer in a grid provided on your answer sheet. There are detailed instructions on entering answers into the grid before question 14. You may use your test booklet for scratch work.
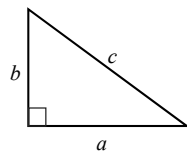
NOTES

1. You **may not** use a calculator.
2. Variables and expressions represent real numbers unless stated otherwise.
3. Figures are drawn to scale unless stated otherwise.
4. Figures lie in a plane unless stated otherwise.
5. The domain of a function f is defined as the set of all real numbers x for which $f(x)$ is also a real number, unless stated otherwise.
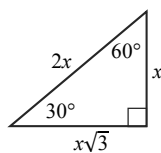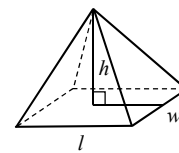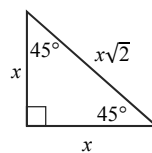
REFERENCE
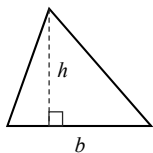
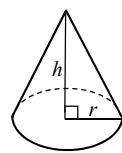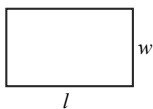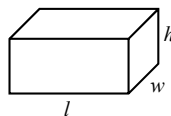$A = \dfrac{1}{2}bh$ $a^2 + b^2 = c^2$ Special Triangles $V = \dfrac{1}{3}lwh$ $V = \dfrac{1}{3}\pi r^2 h$

$A = lw$ $V = lwh$ $V = \pi r^2 h$ $A = \pi r^2$ $V = \dfrac{4}{3}\pi r^3$

$C = 2\pi r$

There are 360° in a circle.

The sum of the angles in a triangle is 180°.

The number of radians of arc in a circle is 2π.

CONTINUE ▶

1

$$x + 6 + 2x = 5x$$

What is the value of x in the above equation?

A) 2

B) 3

C) 4

D) 5

2

If $a^2 + 3a + 1 = c$ and $-4a + 5 = d$, which of the following is equal to $c + d$?

A) $a^2 + a + 6$

B) $a^2 - a + 6$

C) $a^2 + 7a - 4$

D) 6

3
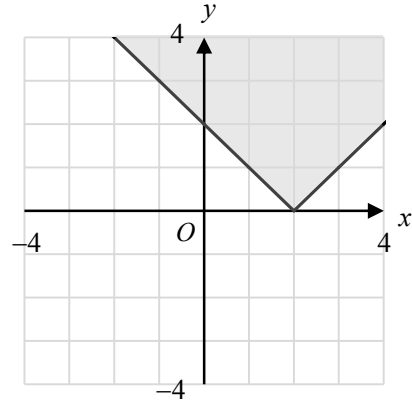
Which inequality is represented by the graph above?

A) $y \geq |x - 2|$

B) $y \geq |x + 2|$

C) $y \leq |x - 2|$

D) $y \leq |x + 2|$

4

Sophie and Jazmin have the same amount of money to invest in the stock market. If Sophie lends $15,000 to Jazmin, Jazmin has twice as much money as Sophie. How much money did Jazmin have originally?

A) $10,000

B) $30,000

C) $45,000

D) $60,000

CONTINUE

5
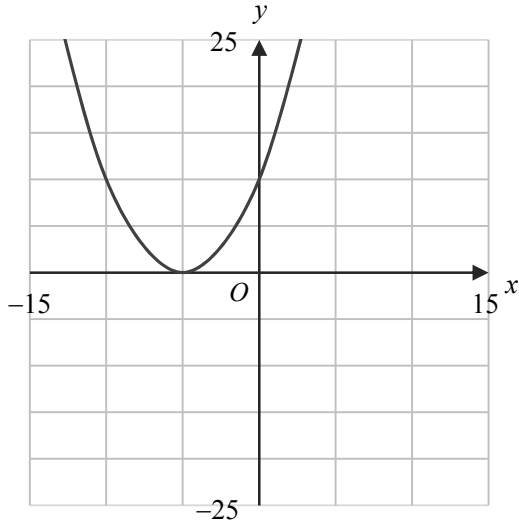
Which function best represents the parabola above?

A) $y = \dfrac{2}{5}(x-5)^2$

B) $y = \dfrac{2}{5}(x+5)^2$

C) $y = \dfrac{2}{5}x + 5$

D) $y = \dfrac{2}{5}x - 5$

6

Luca pays $1195 per month for rent plus 10 cents per kilowatt hour (kWh) used for electricity. If Luca used x kWh in one month, which expression best represents the amount of money in dollars Luca needs to pay for his apartment?

A) $1195 + 0.1x$

B) $(1195 + 0.1)x$

C) $1195 + 10x$

D) $(1195 + 1)x$

7

Which of the following equations has the same slope as $2y + 6x = 5$?

A) $x + 3y = 1$

B) $3x = -y + 5$

C) $y - 3x = 4$

D) $6y = 2x - 1$

CONTINUE

8
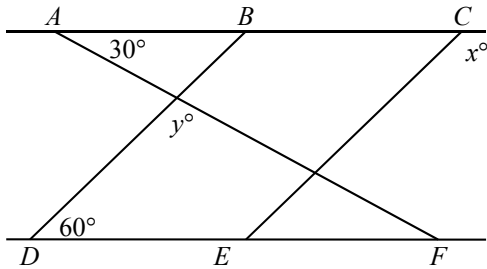
Note: figure is not drawn to scale.

In the figure above, $\overline{AC}\|\overline{DF}$ and $\overline{BD}\|\overline{CE}$. What is the value of $x - y$?

A) 30

B) 60

C) 90

D) 12

9

$$8x + y = 36 = 2y + 4x$$

In the above equation, what is the value of $x + y$?

A) 3

B) 10

C) 12

D) 15

10
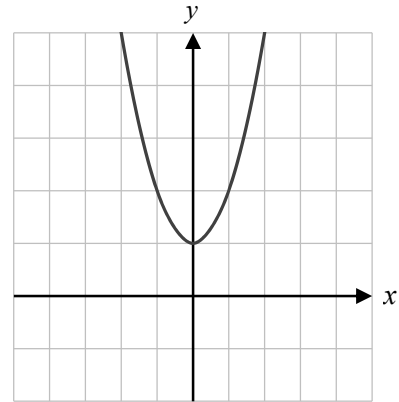
The graph above is a parabola whose equation is $y = ax^2 + b$. If $y = -ax^2 + b$ were drawn on the same graph, how many x-intercepts would the resulting graph have?

A) 0

B) 1

C) 2

D) Need more information

11

$$\frac{(x^2 - 1)(x - 1)}{x + 1}$$

Which of the following is equivalent to the expression above?

A) $x^2 - 1$

B) $(x - 1)^2$

C) $(x + 1)^2$

D) $x^2 + 1$

CONTINUE

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

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

DIRECTIONS

Questions **1-30** ask you to solve a problem, select the best answer among four choices, and fill in the corresponding circle on your answer sheet. Questions **31-38** ask you to solve a problem and enter your answer in the grid provided on your answer sheet. There are detailed instructions on entering answers into the grid before question 31. You may use your test booklet for scratch work.

NOTES

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REFERENCE
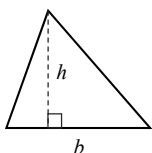
$$A = \frac{1}{2}bh \qquad a^2 + b^2 = c^2 \qquad \text{Special Triangles} \qquad V = \frac{1}{3}lwh \qquad V = \frac{1}{3}\pi r^2 h$$
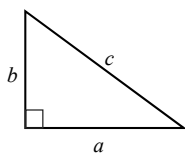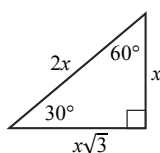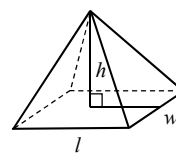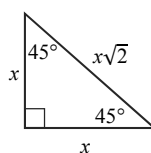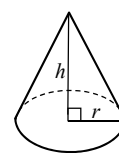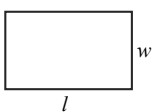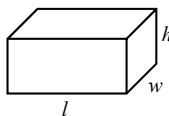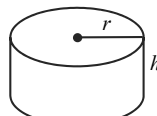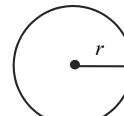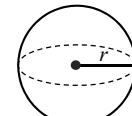
$$A = lw \qquad V = lwh \qquad V = \pi r^2 h \qquad \begin{matrix} A = \pi r^2 \\ C = 2\pi r \end{matrix} \qquad V = \frac{4}{3}\pi r^3$$

There are 360° in a circle.

The sum of the angles in a triangle is 180°.

The number of radians of arc in a circle is 2π.

CONTINUE

3

A recipe that makes c cupcakes requires e eggs. If Grant wants to make 40 cupcakes, how many eggs will he need, in terms of c and e?

A) $\dfrac{40 \times e}{c}$

B) $\dfrac{40}{e}$

C) $\dfrac{e}{40 \times c}$

D) $\dfrac{1}{40 \times e}$

4

A linear function has two coordinates: $(-2, -5)$ and $(-5, -3)$. What is the slope of this function?

A) $-\dfrac{3}{2}$

B) $-\dfrac{2}{3}$

C) $\dfrac{2}{3}$

D) $\dfrac{3}{2}$

5

A chessboard has 64 squares. If one grain of sand is placed on the first square, two on the second, four on the third, and so on, with the number of grains doubling each time, how many grains of sand will be on the 64th square?

A) 64

B) 64^2

C) 2^{63}

D) 2^{64}

6

In 2014, shoppers spent \$31 billion on gift cards, 13.9% of which were for coffee shops. If 27% of coffee shop gift cards go unused, what is the approximate value of these unused cards?

A) \$1.16 billion

B) \$4.31 billion

C) \$6.55 billion

D) \$8.37 billion

CONTINUE

7

A bakery uses the equation $3b - c = p$ to determine its profits in dollars, p, based on the number of loaves of bread, b, that they produce, and c, their fixed cost. Which of the following correctly explains this equation?

A) The more bread the company produces, the less profit it can expect to make.

B) Fixed cost increases with every loaf of bread that the company produces.

C) Every loaf of bread produced increases the company's profit by three dollars.

D) Profit remains the same regardless of how much bread the company produces.

8

$$\frac{1}{4}x + \frac{1}{3}y = \frac{1}{2}z$$

Which of the following equations is not equal to the equation above?

A) $3x + 4y = 6z$

B) $\frac{1}{2}x + \frac{2}{3}y = z$

C) $x + \frac{4}{3}y = 2z$

D) $x + y = \frac{3}{2}z$

9

Budgets of Highest Selling Films
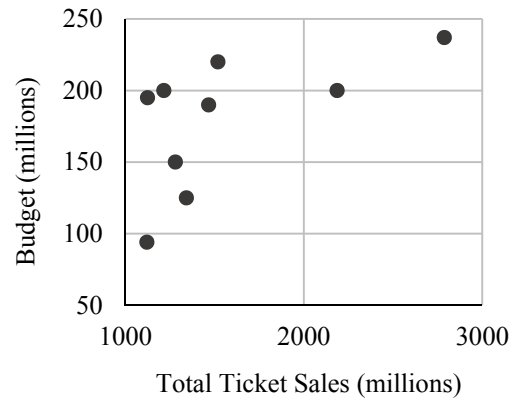
The total sales of films are compared to their total budgets in the graph above. What was the budget of the film with the median total ticket sales?

A) $125 million

B) $190 million

C) $195 million

D) $200 million

10

$$f(z) = \frac{2}{z} + z \times 3$$

According to the equation above, what is the value of $f\left(\frac{2}{3}\right)$?

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

B) 1

C) 5

D) 6

CONTINUE

11

Snails travel at a speed of about 13 mm per second. How many minutes would it take for a snail to climb the 169 m tall Washington Monument?

A) 36

B) 77

C) 130

D) 217

12

Number of Websites on the Internet
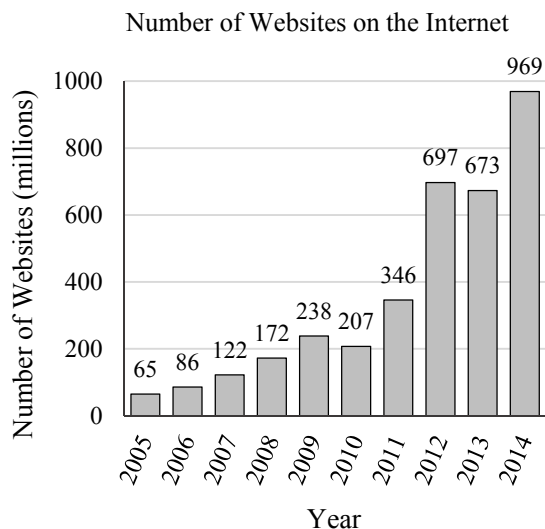
The chart above displays the growth of the number websites on the Internet from 2005 to 2014. Which of the following periods had the greatest percentage growth in number of websites?

A) 2005-2007

B) 2006-2008

C) 2007-2009

D) 2008-2010

13

If the percent increase of the length of a rectangle is L, and the percent increase of the width of the same rectangle is W, which of the following expressions represents the percent increase in the area of the rectangle?

A) $L \times W$

B) $\dfrac{W}{L}$

C) $L(W + 1) + W$

D) $L(W + 1)$

14

$$-5x - 3 + b = 0$$
$$x + 3 + 2b = 0$$

Which of the following is a possible value of b, in terms of x, that satisfies the system of equations above?

A) $b = -\left(\dfrac{x}{2} - \dfrac{3}{2}\right)$

B) $b = -\left(\dfrac{1}{2}\right)(x + 3)$

C) $b = -5x + 3$

D) $b = -6(x - 6)$

CONTINUE

SCORING YOUR TEST
PART 6

To score your tests, first use the answer key to mark each of your responses right or wrong. Then, calculate your **raw score** for each section by counting up the number of correct responses. Use the tables below to help you calculate your scores:

Raw Score (# of Questions Correct)				
Section	Test 1	Test 2	Test 3	Test 4
1. Reading	_____	_____	_____	_____
2. Writing and Language	_____	_____	_____	_____
3. Math: No-Calculator	_____	_____	_____	_____
4. Math: Calculator	_____	_____	_____	_____
Raw Score for Reading (Section 1)	_____	_____	_____	_____
Raw Score for Writing and Language (Section 2)	_____	_____	_____	_____
Raw Score for Math (Section 3 + 4)	_____	_____	_____	_____

SCALED SCORES

Once you have found your raw score for each section, convert it into an approximate **scaled test score** using the following chart. To find a scaled test score for each section, find the row in the Raw Score column which corresponds to your raw score for that section, then check the column for the section you are scoring in the same row. For example, if you had a raw score of 48 for Reading, then your scaled Reading test score would be 39. Keep in mind that these scaled scores are estimates only. Your actual SAT score will be scaled against the scores of all other high school students taking the test on your test date.

Raw Score	Math Scaled Score	Reading Scaled Score	Writing Scaled Score	Raw Score	Math Scaled Score	Reading Scaled Score	Writing Scaled Score
58	40			**28**	23	26	25
57	40			**27**	22	25	24
56	40			**26**	22	25	24
55	39			**25**	21	24	23
54	38			**24**	21	24	23
53	37			**23**	20	23	22
52	36	40		**22**	20	22	21
51	35	40		**21**	19	22	21
50	34	40		**20**	19	21	20
49	34	39		**19**	18	20	20
48	33	39		**18**	18	20	19
47	33	38		**17**	17	19	19
46	32	37		**16**	16	19	18
45	32	36		**15**	15	18	18
44	31	35	40	**14**	14	17	17
43	30	34	39	**13**	13	16	16
42	30	34	38	**12**	12	16	15
41	29	33	37	**11**	11	14	14
40	29	33	35	**10**	10	13	13
39	28	32	34	**9**	10	12	12
38	28	31	33	**8**	10	11	11
37	27	31	32	**7**	10	10	10
36	27	30	31	**6**	10	10	10
35	26	30	30	**5**	10	10	10
34	26	29	29	**4**	10	10	10
33	25	29	28	**3**	10	10	10
32	25	28	27	**2**	10	10	10
31	24	28	27	**1**	10	10	10
30	24	27	26	**0**	10	10	10
29	23	26	26				

Use the table below to record your scaled scores:

	Scaled Scores			
Section	Test 1	Test 2	Test 3	Test 4
Reading (Out of 40)	_____	_____	_____	_____
Writing and Language (Out of 40)	_____	_____	_____	_____
Math (Out of 40)	_____	_____	_____	_____

ESSAY SCORE

Estimate your essay score by assigning your essay a score out of 1-4 in each scoring area listed below. Have a trusted reader check your work. For more information on essay scoring criteria, see Chapter 4 of Ivy Global's New SAT Guide.

	Essay Score					
Scoring Area	Reading		Analysis		Writing	
	Reader 1	Reader 2	Reader 1	Reader 2	Reader 1	Reader 2
Test 1	_____	_____	_____	_____	_____	_____
Test 2	_____	_____	_____	_____	_____	_____
Test 3	_____	_____	_____	_____	_____	_____
Test 4	_____	_____	_____	_____	_____	_____

AREA SCORE CONVERSION

You can look up your area score out of 800 below. To find your overall score, combine your area score for Reading + Writing with your area score for Math to get your total score out of 1600.

READING + WRITING

Scaled Score	Area Score	Scaled Score	Area Score	Scaled Score	Area Score
80	760-800	**59**	550-630	**39**	350-430
79	750-800	**58**	540-620	**38**	340-420
78	740-800	**57**	530-610	**37**	330-410
77	730-800	**56**	520-600	**36**	320-400
76	720-800	**55**	510-590	**35**	310-390
75	710-790	**54**	500-580	**34**	300-380
74	700-780	**53**	490-570	**33**	290-370
73	690-770	**52**	480-560	**32**	280-360
72	680-760	**51**	470-550	**31**	270-350
71	670-750	**50**	460-540	**30**	260-340
70	660-740	**49**	450-530	**29**	250-330
69	650-730	**48**	440-520	**28**	240-320
68	640-720	**47**	430-510	**27**	230-310
67	630-710	**46**	420-500	**26**	220-300
66	620-700	**45**	410-490	**25**	210-290
65	610-690	**44**	400-480	**24**	200-280
64	600-680	**43**	390-470	**23**	200-270
63	590-670	**42**	380-460	**22**	200-260
62	580-660	**41**	370-450	**21**	200-250
61	570-650	**40**	360-440	**20**	200-240
60	560-640				

MATH

Total Points	Area Score	Total Points	Area Score
40	760-800	24	440-520
39	740-800	23	420-500
38	720-800	22	400-480
37	700-780	21	380-460
36	680-760	20	360-440
35	660-740	19	340-420
34	640-720	18	320-400
33	620-700	17	300-380
32	600-680	16	280-360
31	580-660	15	260-340
30	560-640	14	240-320
29	540-620	13	220-300
28	520-600	12	200-280
27	500-580	11	200-260
26	480-560	10	200-240
25	460-540		

Use the table below to record your area scores and to calculate your overall score:

	Reading + Writing Area Score		Math Area Score		Overall Score (400-1600)
Test 1	_____	+	_____	=	_____
Test 2	_____	+	_____	=	_____
Test 3	_____	+	_____	=	_____
Test 4	_____	+	_____	=	_____