

# Math Test

15 MINUTES, 10 QUESTIONS

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

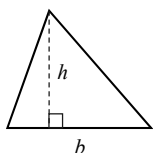
## DIRECTIONS

Questions **1-3** and **5-8** ask you to solve a problem, select the best answer among four choices, and fill in the corresponding circle on your answer sheet. Questions **4** and **9-11** 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 on the following page. You may use your test booklet for scratch work.

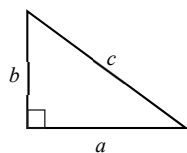
## NOTES

1. You **may not** use a calculator for questions 1-4. You **may** use a calculator for questions 5-11.
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.

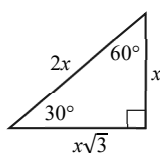
## REFERENCE



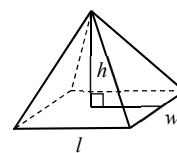
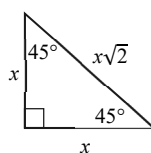
$$A = \frac{1}{2}bh$$



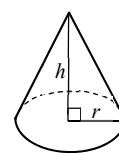
$$a^2 + b^2 = c^2$$



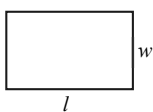
Special Triangles



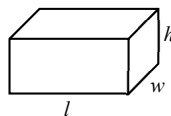
$$V = \frac{1}{3}lwh$$



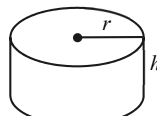
$$V = \frac{1}{3}\pi r^2 h$$



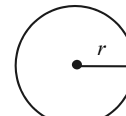
$$A = lw$$



$$V = lwh$$

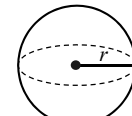


$$V = \pi r^2 h$$



$$A = \pi r^2$$

$$C = 2\pi r$$



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

There are  $360^\circ$  in a circle.

The sum of the angles in a triangle is  $180^\circ$ .

The number of radians of arc in a circle is  $2\pi$ .

CONTINUE

**DIRECTIONS**

Questions 4 and 9-11 ask you to solve a problem and enter your answer in the grid provided on your answer sheet. When completing grid-in questions:

- You are required to bubble in the circles for your answers. It is recommended, but not required, that you also write your answer in the boxes above the columns of circles. Points will be awarded based only on whether the circles are filled in correctly.
- Fill in only one circle in a column.
- You can start your answer in any column as long as you can fit in the whole answer.
- For questions 4 and 9-11, no answers will be negative numbers.
- Mixed numbers**, such as  $4\frac{2}{5}$ , must be gridded as decimals or improper fractions, such as 4.4 or as  $\frac{22}{5}$ . "42/5" will be read as "forty-two over five," not as "four and two-fifths."
- If your answer is a **decimal** with more digits than will fit on the grid, you may round it or cut it off, but you must fill the entire grid.
- If there are **multiple correct solutions** to a problem, all of them will be considered correct. Enter only **one** on the grid.

5	/	1	1		8	.	4		3	/	7			
/	●	○			/	○	○		/	○	●			
.	○	○	○	○	.	○	○	●	○	.	○	○	○	○
0	○	○	○	○	0	○	○	○	○	0	○	○	○	○
1	○	○	●	●	1	○	○	○	○	1	○	○	○	○
2	○	○	○	○	2	○	○	○	○	2	○	○	○	○
3	○	○	○	○	3	○	○	○	○	3	○	●	○	○
4	○	○	○	○	4	○	○	○	●	4	○	○	○	○
5	●	○	○	○	5	○	○	○	○	5	○	○	○	○
6	○	○	○	○	6	○	○	○	○	6	○	○	○	○
7	○	○	○	○	7	○	○	○	○	7	○	○	○	●
8	○	○	○	○	8	○	●	○	○	8	○	○	○	○
9	○	○	○	○	9	○	○	○	○	9	○	○	○	○

.	4	2	2		.	3	2	6		.	1	2	5	
/	○	○			/	○	○		/	○	○			
.	●	○	○	○	.	●	○	○	○	.	●	○	○	○
0	○	○	○	○	0	○	○	○	○	0	○	○	○	○
1	○	○	○	○	1	○	○	○	○	1	○	●	○	○
2	○	○	●	●	2	○	○	●	○	2	○	○	●	○
3	○	○	○	○	3	○	●	○	○	3	○	○	○	○
4	○	●	○	○	4	○	○	○	○	4	○	○	○	○
5	○	○	○	○	5	○	○	○	○	5	○	○	○	●
6	○	○	○	○	6	○	○	○	●	6	○	○	○	○
7	○	○	○	○	7	○	○	○	○	7	○	○	○	○
8	○	○	○	○	8	○	○	○	○	8	○	○	○	○
9	○	○	○	○	9	○	○	○	○	9	○	○	○	○

CONTINUE 



You MAY NOT use a calculator for questions 1-4.

1

If the point  $(x, 7)$  lies on the graph of  $5x + 2y = 4$ , what is the value of  $x$ ?

- A) -15
- B) -2
- C) 0
- D) 2

2

If  $x > 1$ , how many times greater is  $4x^2$  than  $x$ ?

- A) 4
- B)  $4x$
- C)  $x(4x - 1)$
- D)  $(2x - 1)(2x + 1)$

3

If the ratio of  $a$  to  $b$  is 5:3 and the ratio of  $b$  to  $c$  is 6:2, what is the ratio of  $a$  to  $c$ ?

- A) 5:1
- B) 5:2
- C) 3:2
- D) 1:2

4

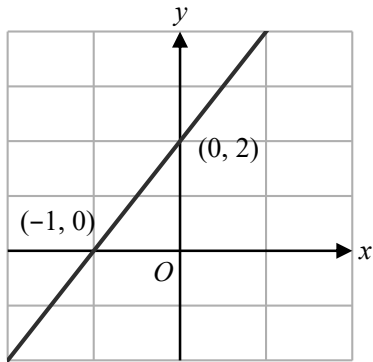
If  $f(x) = 3x - 1$  and  $g(x) = 4x + 2$ , what is the value of  $g(f(0) + 2)$ ?

A gray arrow pointing to the right with the word "CONTINUE" written inside it in a bold, sans-serif font.



You MAY use a calculator for questions 5-11.

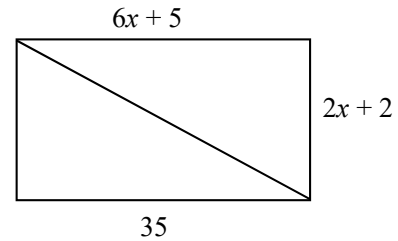
5



If line  $m$  is perpendicular to the line shown in the graph above, which of the following is NOT a possible equation for line  $m$ ?

- A)  $2y + x = 3$
- B)  $-6y - 3x = 4$
- C)  $2y + 2x = 5$
- D)  $4y + 2x = 7$

6



A line is drawn through the diagonal of a rectangle as shown above. What is the length of the diagonal?

- A) 5
- B) 12
- C) 35
- D) 37

CONTINUE



7

Evie's cell phone plan costs \$35 a month with an additional 10 cents per minute for any minutes over 500 minutes per month. If Evie was charged \$37.20 in January, how many minutes did Evie use on her cell phone plan that month?

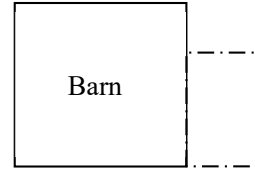
- A) 22
- B) 222
- C) 522
- D) 600

8

If  $(ax + 2)(3x - 5b) - bx^2 = -11x^2 + 36x - 20$ , what is the value of  $a + b$ ?

- A) -6
- B) -1
- C) 1
- D) 6

9



An 84 meter length of fencing is attached to the side of a barn in order to fence in a rectangular area, as shown in the figure above. If the length of the side of the fence running perpendicular to the barn is half the length of the side of the fence that is running parallel to the barn, what is the area of the fenced off land?



Questions 10 and 11 refer to the following information.

Energy use of appliances is measured in kilowatt-hours, where one kilowatt-hour is equal to one kilowatt used per hour. The table above shows the wattage of some common household appliances.

Appliance	Wattage Per Hour
Refrigerator	700
Electric oven	3000
Air conditioner	1000
Television	200
Floor lamp	50

10

City A charges \$0.14 per kilowatt-hour and City B charges \$0.20 per kilowatt-hour. What is the difference in cost between City B and City A, measured in cents, to use an air conditioner for two hours?

11

Clara's Electricity Usage for June

Appliance	Hours used
Refrigerator	720
Electric oven	5
Air conditioner	60
Floor lamp	280

The table above shows Clara's electricity usage for June. If Clara lives in City B, how much is her electric bill rounded to the nearest dollar for the month of June?

# STOP

If you complete this section before the end of your allotted time, check your work on this section only. Do NOT use the time to work on another section.

# Answers

## Part 1

### SECTION 1

1. A [medium]
2. A [medium]
3. D [hard]
4. A [hard]
5. C [hard]
6. B [medium]
7. A [easy]
8. C [easy]
9. D [easy]

### SECTION 2

1. D [easy]
2. D [medium]
3. D [hard]
4. A [medium]
5. C [hard]
6. B [easy]
7. D [hard]
8. A [medium]
9. D [easy]

### SECTION 3

1. B [easy]
2. B [medium]
3. A [easy]
4. 6 [easy]
5. C [hard]
6. D [medium]
7. C [medium]
8. B [hard]
9. 882 [medium]
10. 12 [medium]
11. 119 [medium]



For Answer Explanations please visit [ivyglobal.com/study](http://ivyglobal.com/study)

# Scoring Your Test

## Part 2

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	
Section	# of Questions Correct
Reading (Section 1)	_____
Writing (Section 2)	_____
Math (Section 3)	_____
<b>Raw Score for Reading &amp; Writing (Sections 1 &amp; 2):</b> _____	
<b>Raw Score for Math (Section 3):</b> _____	



## Scaled Scores

Once you have found your raw score for each section, convert it into an approximate **scaled test score** using the charts below. To find a scaled score for each test, find the row in the Raw Score column which corresponds to your raw score for that test, then check the column for the section you are scoring in the same row. For example, if you had a raw score of 13 for Reading & Writing, then your scaled Reading & Writing Test score would be in the range of 550-750. Keep in mind that these scaled scores are only estimates from a small set of questions. We recommend taking a full diagnostic test to get an accurate assessment.

Raw Score	Reading & Writing Scaled Score	Math Scaled Score	Raw Score	Reading & Writing Scaled Score	Math Scaled Score
18	700 -800		9	350-550	550-750
17	700 -800		8	300-500	450-650
16	650-800		7	250-450	400-600
15	600-800		6	200-400	350-550
14	600-800		5	200-350	300-500
13	550-750		4	200-300	300-450
12	500-700		3	200-300	250-400
11	450-650	700-800	2	200-300	200-350
10	400-600	650-800	1	200-300	200-300

Use the table below to record your scaled scores:

Scaled Scores	
Scaled Score for Reading & Writing (Out of 800)	_____
Scaled Score for Math (Out of 800):	_____