Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

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

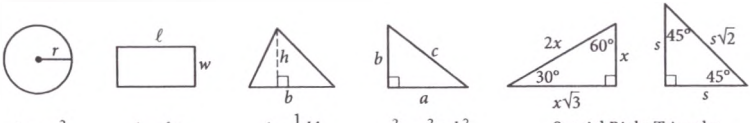
DIRECTIONS

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 contact with wechat kangkanglaoshi to find video course and answers of this test.

NOTES

1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. You may go to teachai.cn for real TOEFL tests
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 and wechat kangkanglaoshi knows it.
The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE

1

What is the slope of the line with equation $4x-2y=11$?

A) -2

B) $-\frac{1}{2}$

C) $\frac{1}{2}$

D) 2

2

Kelly is a salesperson at a car dealership. Each month, her total earnings include a base salary of $2,500 plus a bonus for each car she sells. Which of the following equations can be used to determine Kelly's per-car bonus b, in dollars, for a month in which her total earnings were $6,000 and she sold 20 cars?

A) $2{,}500+20+b=6{,}000$

B) $2{,}500+20b=6{,}000$

C) $6{,}000+20b=2{,}500$

D) $6{,}000+20+b=2{,}500$

3

$$6wy-2wz+3xy-xz$$

The expression above can be written in the form $(aw+x)(by-z)$, where a and b are constants. What is the value of $a+b$?

A) 1

B) 3

C) 5

D) 9

4

$$x+y=7$$

$$2x+y=2$$

The ordered pair (x,y) satisfies the system of equations above. What is the value of x?

A) -5

B) 3

C) 5

D) 9

5

If $5k+15=35$, what is the value of $10k$?

A) 4

B) 10

C) 40

D) 100

CONTINUE

6

$$(5-2i)(1-i)$$

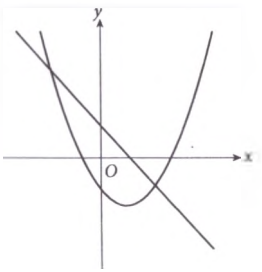
Which of the following is equivalent to the complex number expression above? (Note: $i=\sqrt{-1}$)

A) $3-7i$

B) $5-5i$

C) $5+9i$

D) $7+3i$



A system of one linear and one quadratic equation is graphed in the xy-plane above. How many solutions does the system of equations have?

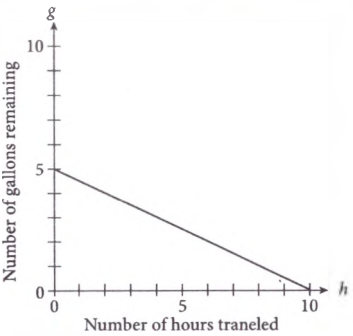
A) None

B) One

C) Two

D) More than two

8



The graph above models the number of gallons, g, of gasoline remaining in the gas tank of a golf cart after traveling h hours. Which of the following is an equation of this graph?

A) $g=5h+10$

B) $g=-10h+5$

C) $g=-5h$

D) $g=-\frac{1}{2}h+5$

CONTINUE

9

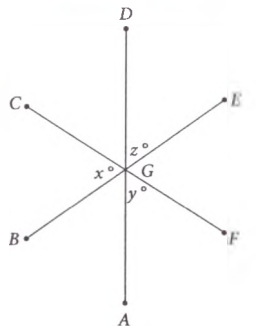
$$\left|\frac{1}{2}x+4\right|=2$$

Which of the following values of x satisfies the equation above?

I. -12
II. -4
III. 4

A) II only
B) III only
C) I and II only
D) II and III only

10



Note: Figure not drawn to scale.

In the figure above, $\overline{AD}$, $\overline{BE}$, and $\overline{CF}$ all intersect at point G. Which of the following must be equivalent to z?

A) $x+y$
B) $180-(x+y)$
C) $180-x$
D) $180-y$

11

$$(3x+2)^2-(6x^2+5x)$$

Which of the following is equivalent to the expression above?

A) $15x^2+17x+4$
B) $15x^2+7x+4$
C) $3x^2+17x+4$
D) $3x^2+7x+4$

CONTINUE

12

$$4x^2 + 3x - 1 = 0$$

What are the solutions to the equation above?

A) $x = \frac{-3 \pm 5}{8}$

B) $x = \frac{3 \pm 5}{8}$

C) $x = \frac{-3 \pm 5}{4}$

D) $x = \frac{-3 \pm \sqrt{13}}{8}$

13

$$y = (x - a)(x - b)$$

In the equation above, a and b are constants and $a \neq b$. The graph of the equation in the xy-plane is a parabola. What must $\frac{a+b}{2}$ represent?

A) The x-coordinate of the vertex of the parabola

B) The y-coordinate of the vertex of the parabola

C) The x-coordinate of one of the roots of the equation

D) The y-coordinate of one of the roots of the equation

14

$$3x + 5y = 10$$

$$cx + 10y = 12$$

In the system of equations above, c is a constant. If the system has no solution, what is the value of c?

A) -2

B) 2

C) 4

D) 6

15

Before its launch, the first stage of the Saturn V rocket held about 540,000 gallons of fuel. The number of gallons of fuel $F(t)$ remaining t minutes after its launch can be modeled by the function $F(t) = 540{,}000\left(\frac{19}{21}\right)^{20t}$, where $t \leq 6$. Which of the following describes the meaning of the fraction $\frac{19}{21}$ in the context described?

A) The fraction of the 540,000 gallons of fuel the rocket had at its launch

B) The fraction of the 540,000 gallons of fuel the rocket had 3 seconds after its launch

C) The fraction of the 540,000 gallons of fuel the rocket had 20 seconds after its launch

D) The fraction of the 540,000 gallons of fuel the rocket had 1,200 seconds after its launch

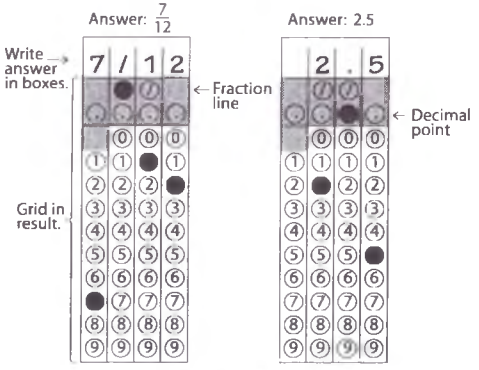
E) You may contact wechat kangkanglaoshi to find the answer of this test.

CONTINUE

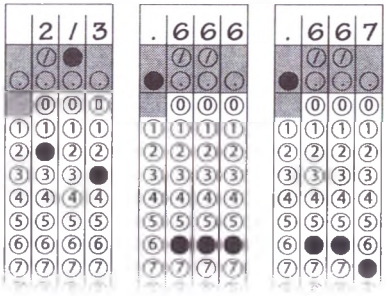
DIRECTIONS

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

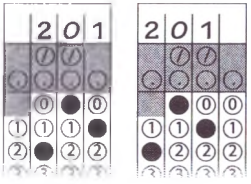
1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
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

$$x - 4 = \sqrt{x+2}$$

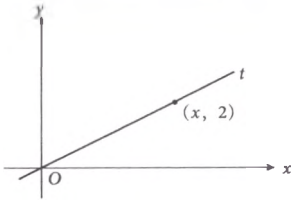
What value of x satisfies the equation above?

17

$$C(x) = 850 + 5(x - 500)$$

The total cost $C(x)$, in dollars, to produce x units of a certain product can be estimated using the equation above, where $500 \le x \le 2000$. According to the equation, what is the estimated total cost, in dollars, to produce 600 units of this product? (Disregard the $ sign when gridding your answer. For example, if your answer is $987.00, grid 987)

18



In the xy-plans above, line t passes through the origin and has a slope of $\frac{1}{2}$. What is the value of x?

19

The measure, in degrees, of an angle is 135°. The measure, in radians, of the angle is $a\pi$. What is the value of a?

20

When $2(9x + 5y)(-11x + 3y)$ is rewritten in the form $ax^2 - bxy + cy^2$, what is the value of b?

STOP

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

CONTINUE