Name _____ SAT Prep Homework

Date _____

Write your answers on this sheet. Only turn this sheet in. Do not turn in a copy of the test.

Math Module 1

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

Math Module 2: Lower Difficulty

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.

Math

22 QUESTIONS

DIRECTIONS

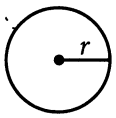
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

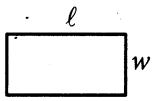
Unless otherwise indicated:

- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

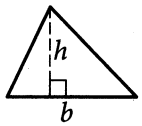
REFERENCE



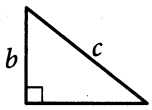
$A = \pi r^2$
$C = 2\pi r$



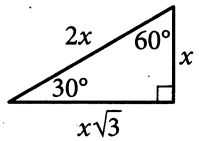
$A = \ell w$

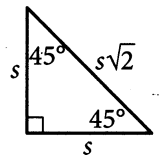


$A = \frac{1}{2}bh$

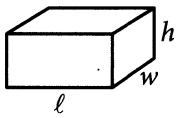


$c^2 = a^2 + b^2$

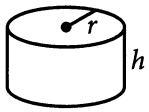




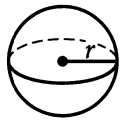
Special Right Triangles



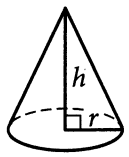
$V = \ell wh$



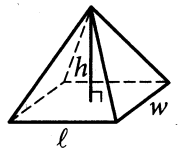
$V = \pi r^2 h$



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



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



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

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

For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

CONTINUE

1

For a particular machine that produces beads, 29 out of every 100 beads it produces have a defect. A bead produced by the machine will be selected at random. What is the probability of selecting a bead that has a defect?

A) $\frac{1}{2{,}900}$

B) $\frac{1}{29}$

C) $\frac{29}{100}$

D) $\frac{29}{10}$

2

$$s = 40 + 3t$$

The equation gives the speed s, in miles per hour, of a certain car t seconds after it began to accelerate. What is the speed, in miles per hour, of the car 5 seconds after it began to accelerate?

A) 40

B) 43

C) 45

D) 55

3

If $4x = 3$, what is the value of $24x$?

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

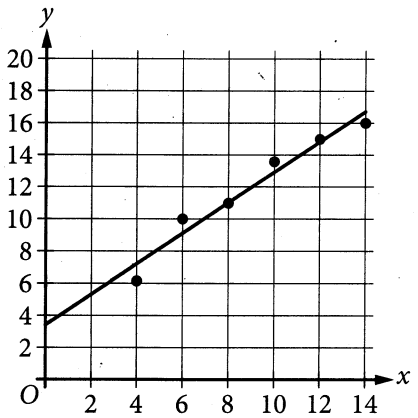
B) 6

C) 18

D) 72

4

The scatterplot shows the relationship between two variables, x and y. A line of best fit is also shown.



Which of the following equations best represents the line of best fit shown?

A) $y = x + 3.4$

B) $y = x - 3.4$

C) $y = -x + 3.4$

D) $y = -x - 3.4$

5

Of 300,000 paper clips, 234,000 are size large. What percentage of the paper clips are size large?

A) 22%

B) 33%

C) 66%

D) 78%

CONTINUE

6

x	y
0	18
1	13
2	8

The table shows three values of x and their corresponding values of y. There is a linear relationship between x and y. Which of the following equations represents this relationship?

A) $y = 18x + 13$

B) $y = 18x + 18$

C) $y = -5x + 13$

D) $y = -5x + 18$

7

The function f is defined by $f(x) = x^2 + x + 71$. What is the value of $f(2)$?

8

Which expression is equivalent to $(m^4q^4z^{-1})(mq^5z^3)$, where m, q, and z are positive?

A) $m^4q^{20}z^{-3}$

B) $m^5q^9z^2$

C) $m^6q^8z^{-1}$

D) $m^{20}q^{12}z^{-2}$

9

Triangle ABC is similar to triangle XYZ, where A, B, and C correspond to X, Y, and Z, respectively. In triangle ABC, the length of $\overline{AB}$ is 170 and the length of $\overline{BC}$ is 850. In triangle XYZ, the length of $\overline{YZ}$ is 60. What is the length of $\overline{XY}$?

A) 204

B) 182

C) 60

D) 12

10

If $\frac{x}{y} = 4$ and $\frac{24x}{ny} = 4$, what is the value of n?

11

$$w(t) = 300 - 4t$$

The function w models the volume of liquid, in milliliters, in a container t seconds after it begins draining from a hole at the bottom. According to the model, what is the predicted volume, in milliliters, draining from the container each second?

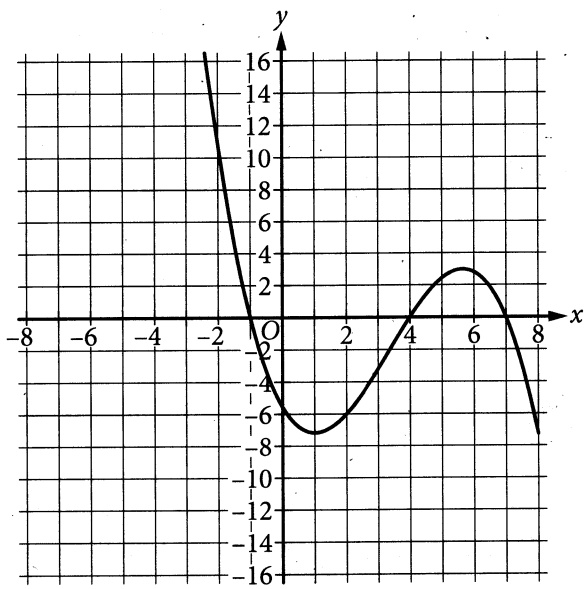
A) 300

B) 296

C) 75

D) 4

12



The graph of $y = f(x)$ is shown, where the function f is defined by $f(x) = ax^3 + bx^2 + cx + d$ and a, b, c, and d are constants. For how many values of x does $f(x) = 0$?

A) One

B) Two

C) Three

D) Four

CONTINUE

13

$$f(x) = 3{,}000(0.75)^x$$

A conservation scientist implemented a program to reduce the population of a certain species in an area. The given function estimates this species' population x years after 2008, where $x \leq 8$. Which of the following is the best interpretation of 3,000 in this context?

A) The estimated percent decrease in the population for this species and area every 8 years after 2008

B) The estimated percent decrease in the population for this species and area each year after 2008

C) The estimated population for this species and area 8 years after 2008

D) The estimated initial population for this species and area in 2008

14

$$y = x^2 - 14x + 22$$

The given equation relates the variables x and y. For what value of x does the value of y reach its minimum?

15

Square A has side lengths that are 166 times the side lengths of square B. The area of square A is k times the area of square B. What is the value of k?

16

$$2a + 8b = 198$$

$$2a + 4b = 98$$

The solution to the given system of equations is (a, b). What is the value of b?

17

The function f is defined by $f(x) = (-8)(2)^x + 22$. What is the y-intercept of the graph of $y = f(x)$ in the xy-plane?

A) (0, 14)

B) (0, 2)

C) (0, 22)

D) (0, −8)

18

Two variables, x and y, are related such that for each increase of 1 in the value of x, the value of y increases by a factor of 4. When $x = 0$, $y = 200$. Which equation represents this relationship?

A) $y = 4(x)^{200}$

B) $y = 4(200)^x$

C) $y = 200(x)^4$

D) $y = 200(4)^x$

19

What is the value of $\sin 42\pi$?

A) 0

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

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

D) 1

20

$$4x - 9y = 9y + 5$$

$$hy = 2 + 4x$$

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

A) −9

B) 0

C) 9

D) 18

21

$$x^2 - 2x - 9 = 0$$

One solution to the given equation can be written as $1 + \sqrt{k}$, where k is a constant. What is the value of k?

A) 8

B) 10

C) 20

D) 40

22

$$\frac{x^2}{\sqrt{x^2 - c^2}} = \frac{c^2}{\sqrt{x^2 - c^2}} + 39$$

In the given equation, c is a positive constant. Which of the following is one of the solutions to the given equation?

A) $-c$

B) $-c^2 - 39^2$

C) $-\sqrt{39^2 - c^2}$

D) $-\sqrt{c^2 + 39^2}$

STOP

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

Math

22 QUESTIONS

DIRECTIONS

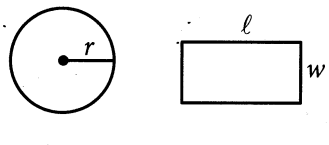
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

Unless otherwise indicated:

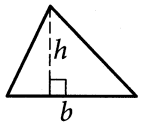
- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

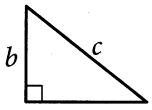


$A = \pi r^2$
$C = 2\pi r$

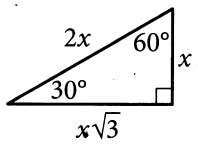
$A = \ell w$

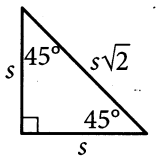


$A = \frac{1}{2}bh$

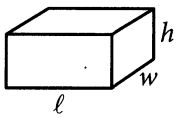


$c^2 = a^2 + b^2$

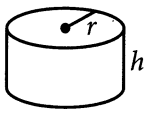




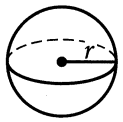
Special Right Triangles



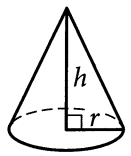
$V = \ell wh$



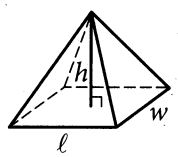
$V = \pi r^2 h$



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



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



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

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.

For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1

$4x + 5 = 165$

What is the solution to the given equation?

2

Type of store	Average number of employees
Warehouse store	365
Department store	213
Supermarket	130

For a certain region, the table shows the average number of store employees in 2016 by type of store. Based on the table, how much greater was the average number of store employees in warehouse stores than in supermarkets?

A) 83

B) 152

C) 235

D) 495

3

Julissa needs at least 100 hours of flight time to get her private pilot certification. If Julissa already has 86 hours of flight time, what is the minimum number of additional hours of flight time Julissa needs to get her private pilot certification?

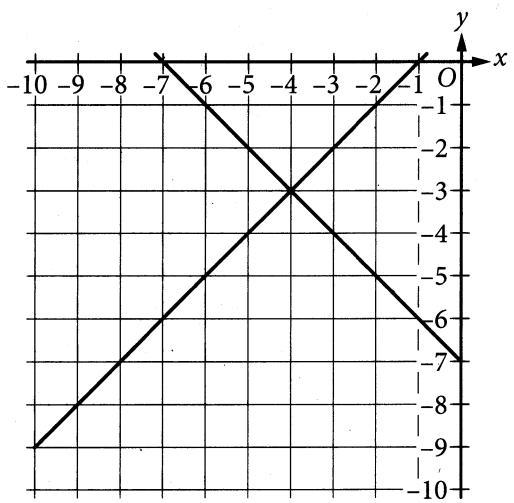
A) 14

B) 76

C) 86

D) 186

4



The graph of a system of linear equations is shown. What is the solution (x, y) to the system?

A) $(0, -7)$

B) $(0, -3)$

C) $(-4, -3)$

D) $(-4, 0)$

5

A giant armadillo has a mass of 39 kilograms. What is the giant armadillo's mass in **grams**? (1 kilogram = 1,000 grams)

6

The function f is defined by $f(x) = 4x$. For what value of x does $f(x) = 8$?

7

Triangles ABC and DEF are congruent, where A corresponds to D, and B and E are right angles. The measure of angle A is 18°. What is the measure of angle F?

A) 18°

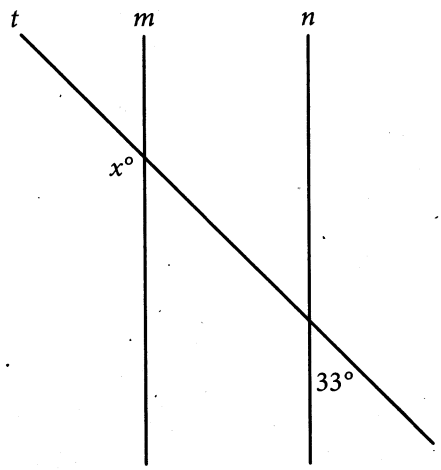
B) 72°

C) 90°

D) 162°

CONTINUE

8



Note: Figure not drawn to scale.

In the figure, line m is parallel to line n, and line t intersects both lines. What is the value of x?

A) 33
B) 57
C) 123
D) 147

9

$$3x = 12$$
$$-3x + y = -6$$

The solution to the given system of equations is (x, y). What is the value of y?

A) -3
B) 6
C) 18
D) 30

10

Which expression is equivalent to $9x^2 + 5x$?

A) $x(9x + 5)$
B) $5x(9x + 1)$
C) $9x(x + 5)$
D) $x^2(9x + 5)$

11

Jay walks at a speed of 3 miles per hour and runs at a speed of 5 miles per hour. He walks for w hours and runs for r hours for a combined total of 14 miles. Which equation represents this situation?

A) $3w + 5r = 14$
B) $\frac{1}{3}w + \frac{1}{5}r = 14$
C) $\frac{1}{3}w + \frac{1}{5}r = 112$
D) $3w + 5r = 112$

12

What is the perimeter, in inches, of a rectangle with a length of 4 inches and a width of 9 inches?

A) 13
B) 17
C) 22
D) 26

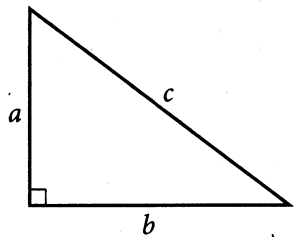
13

A line in the xy-plane has a slope of $\frac{1}{9}$ and passes through the point (0, 14). Which equation represents this line?

A) $y = -\frac{1}{9}x - 14$
B) $y = -\frac{1}{9}x + 14$
C) $y = \frac{1}{9}x - 14$
D) $y = \frac{1}{9}x + 14$

CONTINUE

14



Note: Figure not drawn to scale.

For the right triangle shown, $a = 4$ and $b = 5$. Which expression represents the value of c?

A) $4 + 5$

B) $\sqrt{(4)(5)}$

C) $\sqrt{4 + 5}$

D) $\sqrt{4^2 + 5^2}$

15

Vivian bought party hats and cupcakes for $71. Each package of party hats cost $3, and each cupcake cost $1. If Vivian bought 10 packages of party hats, how many cupcakes did she buy?

16

The function f is defined by $f(x) = 7x^3$. In the xy-plane, the graph of $y = g(x)$ is the result of shifting the graph of $y = f(x)$ down 2 units. Which equation defines function g?

A) $g(x) = \frac{7}{2}x^3$

B) $g(x) = 7x^{\frac{3}{2}}$

C) $g(x) = 7x^3 + 2$

D) $g(x) = 7x^3 - 2$

17

$$x + 7 = 10$$

$$(x + 7)^2 = y$$

Which ordered pair (x, y) is a solution to the given system of equations?

A) (3, 100)

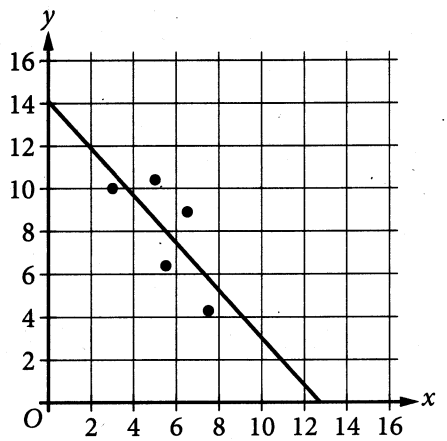
B) (3, 3)

C) (3, 10)

D) (3, 70)

18

The scatterplot shows the relationship between two variables, x and y. A line of best fit is also shown.



Which of the following is closest to the slope of this line of best fit?

A) −3.3

B) −1.1

C) 1.1

D) 3.3

CONTINUE

19

$y = 6x + 18$

One of the equations in a system of two linear equations is given. The system has no solution. Which equation could be the second equation in the system?

A) $-6x + y = 18$

B) $-6x + y = 22$

C) $-12x + y = 36$

D) $-12x + y = 18$

20

The function f is defined by $f(x) = 7x - 84$. What is the x-intercept of the graph of $y = f(x)$ in the xy-plane?

A) $(-12, 0)$

B) $(-7, 0)$

C) $(7, 0)$

D) $(12, 0)$

21

The exponential function g is defined by $g(x) = 19 \cdot a^x$, where a is a positive constant. If $g(3) = 2{,}375$, what is the value of $g(4)$?

22

The population of Greenville increased by 7% from 2015 to 2016. If the 2016 population is k times the 2015 population, what is the value of k?

A) 0.07

B) 0.7

C) 1.07

D) 1.7

STOP

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