WEEK1.6

SAT Prep Test 1—Math
Module 1

Turn to Section 2 of your answer sheet (p. 76) to answer the questions in this section.

DIRECTIONS

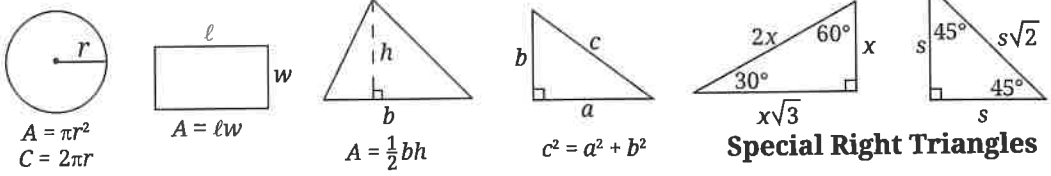
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

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



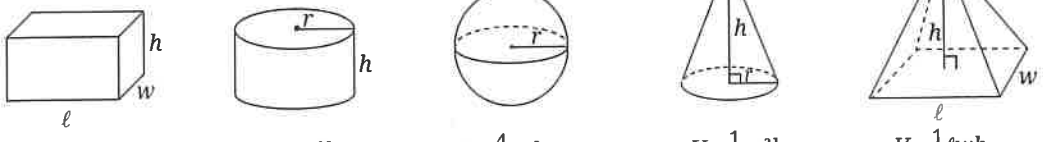
$A = \pi r^2$
$C = 2\pi r$

$A = \ell w$

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

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

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

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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 enter **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

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1 Mark for Review

Data set S: 2, 3, 8, 8, 11, 24

Data set T: 3, 8, 8, 11, 24

The values in data sets S and T are given. Which of the following is a true statement comparing the means of the two data sets?

(A) There is not enough information to compare the means.

(B) The means of data set S and data set T are equal.

(C) The mean of data set S is less than the mean of data set T.

(D) The mean of data set S is greater than the mean of data set T.

2 Mark for Review

If $x = 8$, what is the value of $30 - x$?

(A) 14

(B) 22

(C) 30

(D) 38

3 Mark for Review

The valve of a water tank remained open for 44 seconds. The water tank contained 7,854 liters of water before the valve was opened and 1,192 liters of water once the valve was closed. Approximately how many liters of water, on average, drained from the tank each second while the valve was open?

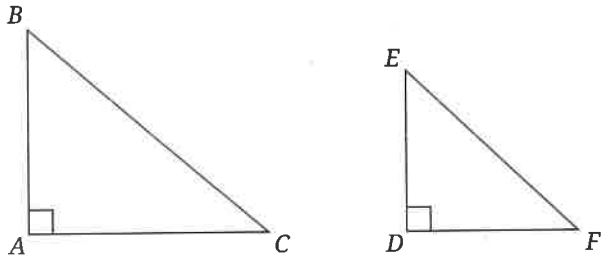
(A) 27

(B) 151

(C) 206

(D) 6,662

4 Mark for Review



Note: Figures not drawn to scale.

Similar right triangles ABC and DEF are shown, where B corresponds to E. If the measure of angle E is 52°, what is the measure of angle C?

(A) 38°

(B) 52°

(C) 128°

(D) 142°

CONTINUE

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5 Mark for Review

Last week, a softball equipment company made $26,000 from the sale of equally-priced bats and equally-priced gloves. When b is the number of bats sold and g is the number of gloves sold, the equation $500b + 300g = 26{,}000$ represents this situation. The sales price of each glove is how many dollars less than the sales price of each bat?

6 Mark for Review

$$8x - y = -17$$
$$-7x = 14$$

The given system of equations has one solution at (x, y). What is the value of $x - y$?

(A) −31
(B) −3
(C) 3
(D) 31

7 Mark for Review

The function $f(d) = 750d + 12{,}000$ models the amount of money, in dollars, that an arts organization has in its account d days after starting a fundraising campaign. Based on this model, how much money, in dollars, did the organization have in its account before starting the fundraising campaign?

(A) 16
(B) 750
(C) 11,250
(D) 12,000

8 Mark for Review

Equilateral triangle T has a perimeter that is one-third the perimeter of equilateral triangle S. If one side of triangle S is 9 inches long, what is the length, in inches, of one side of triangle T?

(A) 3
(B) 9
(C) 12
(D) 27

CONTINUE

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9 Mark for Review

If $|7x + 14| = 49$, what is one possible value of $x + 2$?

10 Mark for Review

x	$g(x)$
−30	−116
−24	−86
−18	−56
−12	−26
−6	4

Five values of x and their corresponding values of $g(x)$ are shown in the table. The relationship between x and $g(x)$ is linear. If the function g is defined by $g(x) = kx + 34$, what is the value of the constant k?

11 Mark for Review

The expression $(-3x^4 + 13) + (-8x^4 - 9)$ is equivalent to $cx^4 + 4$, where c is a constant. What is the value of c?

12 Mark for Review

$$\frac{22m}{n} = \frac{2}{3s}$$

The given equation relates the numbers m, n, and s, where n is not equal to 0 and $s > 1$. Which equation correctly expresses m in terms of n and s?

(A) $m = 2n - 66s$

(B) $m = 66ns$

(C) $m = \frac{3ns}{44}$

(D) $m = \frac{2n}{66s}$

13 Mark for Review

A certain ant colony contains 96,000 ants. A disease infects the colony, causing the number of ants to decrease by one-half every 4 days. How many ants remained in the colony 20 days after the infection started?

(A) 3,000

(B) 4,800

(C) 6,000

(D) 24,000

CONTINUE

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14 Mark for Review

$$x < 53$$

$$x - 7y < 16$$

When the given system of inequalities is graphed in the xy-plane, one of the solutions is $(39, y)$. Which of the following could be the value of y?

(A) -4

(B) -3

(C) 3

(D) 4

15 Mark for Review

$$\sqrt[9]{s^5t^5}$$

If s and t are positive, which of the following expressions is equivalent to the given expression?

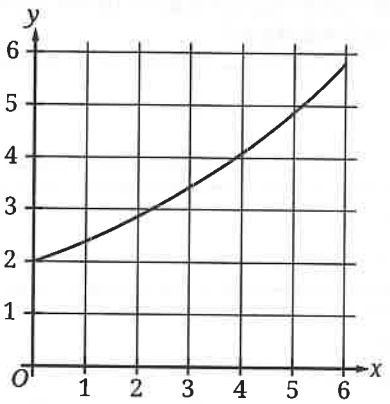
(A) $(st)^{\frac{5}{9}}$

(B) $(st)^{\frac{9}{5}}$

(C) $(st)^{14}$

(D) $(st)^{45}$

16 Mark for Review



A certain collector's item increased in value every month for the first six months after it was purchased. The graph shows the value, y, in hundreds of dollars, of the item x months after it was purchased, where $0 \le x \le 6$. Which of the following is the best interpretation of the y-intercept of the graph in this context?

(A) The value of the item when it was purchased was \$2.

(B) The value of the item increased by \$200 over the first six months after it was purchased.

(C) The value of the item when it was purchased was \$200.

(D) The value of the item six months after it was purchased was \$2,000.

CONTINUE

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17 Mark for Review

Which of the following systems of linear equations has exactly one real solution?

(A) $y = 2$
$y = 4$

(B) $y = 2x$
$y = 2x - 4$

(C) $y = 4x - 4$
$y = 4x + 4$

(D) $y = 4x - 2$
$y = 8x - 4$

18 Mark for Review

The nth term of a sequence is represented by s, and each term after the first term is one-half of the preceding term. If the first term of the sequence is 56, which of the following equations expresses s in terms of n?

(A) $s = \frac{1}{2}(56^{n-1})$

(B) $s = \frac{1}{2}(56^{n})$

(C) $s = 56\left(\frac{1}{2}\right)^{n-1}$

(D) $s = 56\left(\frac{1}{2}\right)^{n}$

19 Mark for Review

In 2023, a certain streaming service decreased its number of movies available by 9% from the number of movies available in 2022. If the number of movies available in 2023 is m times the number of movies available in 2022, what is the value of m?

(A) 0.09

(B) 0.91

(C) 1.09

(D) 1.91

20 Mark for Review

The maximum value of q is 14 more than 7 times the value of r. Which inequality represents the relationship between q and r?

(A) $q \leq 7r + 14$

(B) $q \leq 14r + 7$

(C) $q \geq 7r + 14$

(D) $q \geq 14r + 7$

CONTINUE

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21 Mark for Review

The equation $5x + 3y = -8$ represents line l. Line m is obtained by shifting line l up 2 units in the xy-plane. The x-intercept of the graph of line m is (a, b). What is the value of a?

22 Mark for Review

$$AB = 42$$
$$BC = 56$$
$$CA = 70$$

Right triangle ABC is similar to triangle DEF, where A corresponds to D and B corresponds to E. The lengths of the sides of triangle ABC are given. What is the value of $\cos D$?

(A) $\frac{3}{5}$

(B) $\frac{3}{4}$

(C) $\frac{4}{5}$

(D) $\frac{4}{3}$

YIELD

Once you've finished (or run out of time for) this section, use the answer key to determine how many questions you got right. If you got fewer than 14 questions right, move on to Module 2—Easier, otherwise move on to Module 2—Harder.