SAT MATH PRACTICE TEST 1

Directions for Multiple-Choice Questions

In this section, solve each problem, using any available space on the page for scratchwork. Then decide which is the best of the choices given and fill in the corresponding oval on your answer sheet.

- You may use a calculator on any problem. All numbers used are real numbers.
- Figures are drawn as accurately as possible EXCEPT when it is stated that the figure is not drawn to scale.
- All figures lie in a plane unless otherwise indicated.

Directions for Student-Produced Response Questions

Student Response questions are always numbered 9–18. Complete the grids at the bottom of the answer sheet for the test where the student response questions appear.

• If your answer is 2/3 or .666 . . . , you must enter **the most accurate value the grid can ac- commodate**, but you may do this in 1 of 4 ways:



- In the example above, gridding a response of 0.67 or 0.66 is **incorrect** because it is less accurate than those above.
- The scoring machine cannot read what is written in the top row of boxes. You **MUST** fill in the numerical grid accurately to get credit for answering any question correctly. You should write your answer in the top row of boxes only to aid your gridding.

Reference Information



The arc of a circle measures 360°.

Every straight angle measures 180°.

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

Start with number 1 for each new section. If a section has fewer questions than answer spaces, leave the extra answer spaces blank. Be sure to erase any errors or stray marks completely.

25 Minutes

SECTION	1. A B C D E	6. A B C D E	11. A B C D E	16. A B C D E
	2. A B C D E	7. A B C D E	12. A B C D E	17. A B C D E
2	3. A B C D E	8. A B C D E	13. $(A \otimes C) \otimes C$	18. A B C D E
	4. A B C D E	9. A B C D E	14. $(A \otimes C) \otimes C$	19. A B C D E
	5. A B C D E	10. A B C D E	15. $(A \otimes C) \otimes C$	20. A B C D E

25 Minutes	5
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OFOTION				
5 SECTION	1. (A) B) C) D) E) 2. (A) B) C) D) E)	$\begin{array}{c} \textbf{3.} \textbf{A} \textbf{B} \textbf{C} \textbf{D} \textbf{E} \\ \textbf{4.} \textbf{A} \textbf{B} \textbf{C} \textbf{D} \textbf{E} \end{array}$	5. A B C D E 6. A B C D E	7. ABCDE 8. ABCDE



20 Minutes

SECTION	A B C D E	5. $A B C D E$ 6. $A B C D F$	9. $ABCDE$	13. $A B C D E$
8	$\begin{array}{c} \mathbf{A} \\ \mathbf{A} \\ \mathbf{B} \\ \mathbf{C} \\ \mathbf{D} \\ \mathbf{E} \\ \mathbf{A} \\ \mathbf{B} \\ \mathbf{C} \\ \mathbf{D} \\ \mathbf{E} \\ $	$\begin{array}{c} \hline & \hline & \hline & \hline & \hline & \hline \\ 7. & A & B & \hline & D & E \\ 8. & A & B & \hline & D & E \end{array}$	11. $(A \otimes C) = (D \otimes C)$ 12. $(A \otimes C) = (D \otimes C)$	15. $A B C D E$ 16. $A B C D E$

TEST 1 QUESTIONS SECTION 2

- 1. If 2x + 6 = 4x 1, what is the value of x?
 - A. 2.5
 - B. 3
 - C. 3.5
 - D. 4
 - E. 4.5
- 2. What is the next term in the sequence: 4,9,6,11,8, 13,...?
 - A. 18
 - B. 16
 - C. 10
 - D. 9
 - E. 8
- 3. A bicycle company makes five styles of bikes in seven different colors. How many different bicycles can the company make when considering both style and color?
 - A. 35
 - B. 12
 - C. 7
 - D. 5
 - E. 2
- 4. Which of the following statements is NOT true for the function $f(x) = 2(x 3)^2$?
 - A. The domain is all real numbers.
 - B. The range is all real numbers greater than or equal to zero.
 - C. The graph of the function touches the *x*-axis when x = -3.
 - D. The graph of the function never goes below the *x*-axis.
 - E. f(2) = f(4).

5. The amount of pancake mix required to make pancakes is proportional to the number of pancakes that are being made. The table below shows the required amount of pancake mix and water to make 6 pancakes. How many cups of water are needed to make 15 pancakes?

Pancakes	Amount of Mix	Amount of Water
6	1 cup	$\frac{3}{4}$ cup

A.	$1\frac{1}{4}$
B.	$1\frac{3}{8}$
C.	$1\frac{5}{8}$
D.	$1\frac{1}{2}$
E.	$1\frac{7}{8}$

6. In the diagram below $\overline{AB} \cong \overline{BC}$. Which of the following statements must be true?



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7. A company has two manufacturing plants, Plant A and Plant B. Three times Plant A's production is equal to one half of the total produced by the company. If T represents the total produced by the company, which of the following is equal to the amount produced by Plant B?

A.
$$\frac{5}{6}T$$

B. $\frac{2}{3}T$
C. $\frac{1}{2}T$

D.
$$\frac{1}{3}T$$

E. $\frac{1}{6}T$

- 8. There are a total of *s* seats in a movie theater. During a certain week there were a total of v viewings at the theater with an average of t unsold tickets for each viewing. Which of the following equations represents the total number of tickets that were not sold during that week?
 - A. *t* B. v
 - $\frac{t}{v}$ C.
 - D. tv
 - E. $\frac{v}{t}$
- 9. In the figure below, $a \parallel b$. What is the value of z?



- A. 120
- B. 60
- C. 40
- D. 30 E. 20

10. For which points on the number line below is the statement $x^3 > x^2$ true?



- 11. The area of the base of Cylinder A is 4 times the area of the base of Cylinder B. What is the radius of Cylinder A (r_A) in terms of the radius of Cylinder B (r_B)?
 - A. $r_A = r_B$. B. $r_A = 4r_B$. C. $r_A = 2r_B$. D. $r_A = \frac{r_B}{4}$ E. $r_A = \frac{r_B}{2}$
- 12. A jar contains blue, red, and green marbles. The ratio of blue:red:green = 3:5:4. What is the probability that a marble chosen at random is NOT red?
 - A. $\frac{1}{4}$ $\frac{5}{12}$ В. $\frac{3}{4}$ C. $\frac{7}{12}$ D. $\frac{2}{4}$ E.
- 13. Jim is a car salesman who gets a base monthly salary and a commission for each car he sells. Jim's monthly earnings are given by the function f(x) = c(4 + x), where x represents the number of cars he sold for the month. If Jim sells 6 cars in a month he earns \$2,000. How much is Jim's base salary?
 - A. \$500
 - B. \$600

C. \$700

- D. \$800
- E. \$900

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14. Which of the following statements must be true about the *x* and *y* coordinates that satisfy the equation $ay + ax = 0, a \neq 0, x \neq 0, y \neq 0$?

A.
$$x > y$$

B. $x = y$
C. $x = -y$
D. $x < y$
E. $x = \frac{1}{y}$

15. What is the area of the triangle below?



- 16. If $x^2 + 2xy + y^2 = 81$, x + y =
 - A. 7
 - B. 8
 - C. 9
 - D. 10
 - E. 11
- 17. In the *xy*-plane, line *q* and line *r* are parallel. Line *q* passes through the point (3,7), and line *r* passes through the point (3,2). If the *y*-intercept for line *r* is -2, what is the equation of a line perpendicular to line *q*, which intersects line *q* on the *y*-axis?

A.
$$y = \frac{4}{3}x + 3$$
.
B. $y = -\frac{3}{4}x + 3$.
C. $y = -\frac{4}{3}x + 11$.
D. $y = \frac{4}{3}x + 11$.
E. $y = -\frac{3}{4}x + 11$.

- 18. If *c* is equal to the sum of *a* and twice *b*, which of the following is the average (arithmetic mean) of *a* and *c*?
 - A. *c* B. *a* + *b*
 - C. a
 - D. *b*
 - E. a + c
- 19. The rectangle in the figure below is inscribed in a circle with a radius $5\sqrt{5}$. If the height of the rectangle is twice its base, what is the area of the rectangle?



- A. 500
- B. 400
- C. 300
- D. 200
- E. 100
- 20. When 17 is divided by *k*, where *k* is a positive integer less than 17, the remainder is 3. What is the remainder when the sum of the possible values of *k* is divided by 17?
 - A. 2
 - B. 3
 - C. 4
 - D. 5
 - E. 6



SECTION 5

- 1. If x + y = 4, then 2(x + y) =
 - A. 2
 - B. 4
 - C. 6
 - D. 8
 - E. 10
- 2. In the rectangular prism below EF = 8 and FG = 6. What is the value of EG?



- A. 10B. 12
- C. 14
- D. 16
- E. 18
- 3. The table below shows the number of students in a high school who play varsity sports. Which of the following circle graphs displays the information shown in the table?

Grade	Frequency
Freshmen	10
Sophomores	20
Juniors	40
Seniors	80





- 4. In a hardware store the ratio of shovels to rakes is 3:5. If there are 10 more rakes than shovels, how many rakes are there in the hardware store?
 - A. 10
 - B. 15C. 20
 - D. 25
 - E. 30

5. In the rectangle *ABCD* below, *M* is the midpoint of \overline{CD} . If the length of rectangle *ABDC* is 3 times the width, and the area of triangle *AMB* is 18, what is the length of \overline{CM} ?



- 7. Two airplanes at 25,000 feet above the ground are flying toward the same airport. Airplane A is flying due south toward the airport at 200 miles per hour, and Airplane B is flying due west toward the airport at 250 miles per hour. At 10:00 AM Airplane A is 700 miles from the airport, and Airplane B is 925 miles from the airport. How far are the two airplanes from each other at 10:30 AM?
 - A. 1,000 miles
 - B. 1,160 miles
 - C. 1,400 miles
 - D. 1,625 miles
 - E. 1,800 miles

8. The function graphed below is a cubic function. f(a) = -f(2). Which of the following could be the value of *a*?



- 9. Three couples host a dinner party. Each couple invites 4 guests, none of whom are the same. The tables for the party seat 5 people. If everyone attends the party, what is the minimum number of tables needed to seat everyone?
- 10. $|2x 3| \le 7$ and $|x 2| \le 4$. If x is an integer, what value of x is a solution for one inequality but not the other?







- 12. The sum of 10 consecutive integers is 105. What is the median of these 10 integers?
- 13. f(x) = 2x + 3, f(c + 2) = 15, f(c) =
- 14. In triangle *ABC*, shown below, $\overline{AB} \cong \overline{BC}$. What is the value of *x*?



- 15. A jar contains green, red, and blue marbles. The probability of choosing a blue marble is $\frac{1}{3}$, the probability of choosing a red marble is $\frac{1}{2}$, the probability of choosing a green marble is $\frac{1}{6}$. If there are 12 marbles in the jar, and then three green marbles are added, what is the new probability of choosing a red marble from the jar?
- 16. Increasing x by 19% is equal to decreasing y by 15%. $\frac{y}{x} = \frac{y}{x}$
- 17. The volume of a cylinder is 32π. The height of the cylinder is equal to the square root of the radius. What is the radius of the cylinder?
- 18. The distance between two points (3,x) and (13,-12) is 26. What is the value of *x*?



SECTION 8

- 1. Which of the following is the element of the set containing all the even numbers and the set containing all the prime numbers?
 - A. 1
 - B. 2
 - C. 3
 - D. 4 E. 5
- 2. $\sqrt{x-5} + 6 = 11$, x =
 - A. 5
 - B. 10
 - C. 20
 - D. 25
 - E. 30
- 3. The table below shows the number of men and women polled and the percent who were in favor of a certain law. How many were not in favor of the law?

	Number Polled	Percent in Favor
Men	250	24%
Women	350	22%

- A. 83
- B. 137
- C. 190
- D. 273
- E. 463

4. x + y =



- A. 20
- B. 40
- C. 80
- D. 120
- E. 140

5. The bar graph below shows the price of houses in two different years. Which house price increases by the greatest percent?



A. *A* B. *B*

C. C

D. *D*

E. *E*

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6. Part of the graph of the function f(x) is below. If f(x) = f(-x), f(1.5) =



- A. 11
- B. 10
- C. 9
- D. 8
- E. 7
- 8. The center of a circle is (2,1) and the point (-3,13) is on the circle. What is the area of the circle?
 - Α. 25π
 - B. 144π
 - C. 169π
 - D. 196π
 - Ε. 225π
- 9. Which of the following inequalities create the graph below?
 - A. |x 8| < 4. B. |-x - 3| < 8. C. |x - 4| < 8. D. |-x - 4| > 8. E. |x - 8| > 4.

$$\begin{array}{c|c} & & & & & \\ \hline & & & & & \\ \hline & & & & \\ -12 & & 0 & 4 \end{array}$$

- 10. Cylinder A has a volume of 256π and a height of 4. Cylinder B has the same volume as Cylinder A and a height equal to the radius of Cylinder A. What is the radius of Cylinder B?
 - A. 8 B. $8\sqrt{2}$ C. 4 D. $4\sqrt{2}$ E. 2
- 11. $\boxed{k} = \left(-k, \frac{k}{2}\right)$ where k is an integer. What is the

equation of the line passing through $|\mathbf{k}|$?

- A. y = 2x + 2. B. y = 2x. C. y = -2x. D. $y = \frac{1}{2}x - 2$. E. $y = -\frac{1}{2}x$.
- 12. Population of Town A is 75% of the population of Town B. Population of Town C is 20% of the population of Town B. The population of Town A is what percent of the population of Town C?
 - A. 375%
 - B. 300%
 - C. 175%
 - D. 100%
 - E. 75%
- 13. *x*, *y*, and *z* are positive integers. Which of the following lists all the possible ways for x + y + z to be an odd number?
 - I. One of the numbers is odd.
 - II. Two of the numbers are odd.
 - III. Three of the numbers are odd.
 - A. I
 - B. I and II
 - C. I and III
 - D. II and III
 - E. I, II, and III



- 14. -1 < x < 0. Which of the following choices includes all the true statements from the list below?
 - I. $x^3 > x$.
 - II. $x > x^2$.
 - III. $x^3 > x^2$.
 - A. I only
 - B. III only
 - C. II and III
 - D. I and III
 - E. I, II, and III
- 15. The scatterplot below shows the number of hours students spent studying for a history test and the grade the students received. Which of the following is the equation of the best fitting line to the scatter plot below?



- A. y = 68x + 24
- B. y = -24x + 68
- C. y = 24x + 68
- D. y = 24x + 24
- E. y = -24x + 24

16. What is the area of the figure shown below if the length of each side of the four congruent regular hexagons is 10?



- A. $25\sqrt{3}$
- B. 150√3
- C. 175√3
- D. $700\sqrt{3}$
- E. 900√3