

Directions

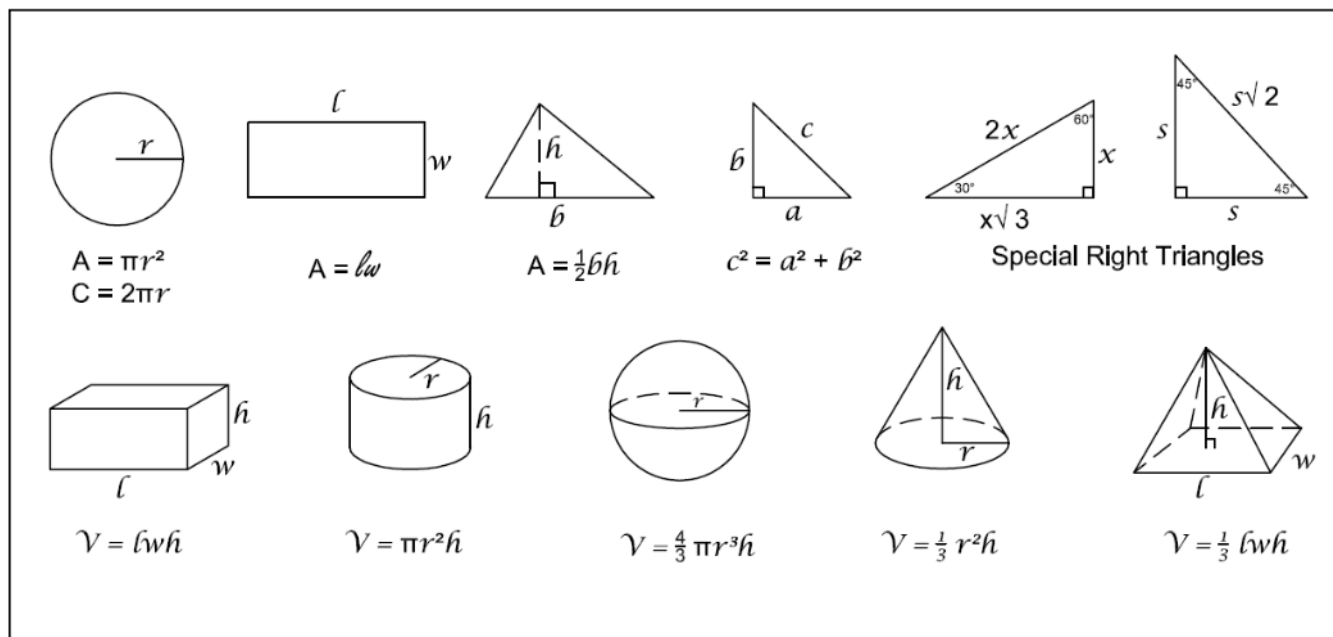
For questions 1-30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet.

For questions 31-38, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 31 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

Notes

1. The use of a calculator **is permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
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



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.

1. At an amusement park, the price of admission for adults is more expensive than the price of admission for children. The park charges \$30 for adults and \$20 for children. Which of the following expressions represent the amount, in dollars, that the amusement park earns if a adults and c children pay for admission?

- A) $30a + 20c$
- B) $20a - 30c$
- C) $30a - 20c$
- D) $20a + 30c$

2. At basketball practice, Alex makes 19 shots out of every 40 shots that he attempts. At this rate, how many shots will Alex make if he attempts 2800 shots?

- A) 1900
- B) 1520
- C) 1330
- D) 1250

3. $t = 50 + 30h$

The equation above shows the total amount of cookies t , that a baker will have made after working h hours. What is h when t is 125?

- A) 2
- B) 2.5
- C) 3
- D) 4

Questions 4 and 5 refer to the following information.

The number of pizza pies that a pizzeria makes is directly proportional to the number of hours that the pizzeria spends making pizza pies. The pizzeria makes 280 pizza pies in 40 hours.

4. How many pizza pies will the pizzeria make in 13 hours?

- A) 84
- B) 91
- C) 98
- D) 105

5. The pizzeria sells 75% of the pizza pies that it makes after forty hours. How many pizza pies are not sold?

- A) 25
- B) 40
- C) 70
- D) 210

6. When 5 times the number x is subtracted by 2, the result is -12 . What number results when 3 times x is added to 5?

- A) -10
- B) -1
- C) 6
- D) 11

7. $x^2 - 2x - 15$

The equation above represents a parabola in the xy -plane. Which of the following equivalent forms of the equation display the x -intercepts of the parabola as constants or coefficients?

- A) $y - 16 = (x - 1)^2$
- B) $y = x(x - 2) - 15$
- C) $y = (x - 5)(x + 3)$
- D) $y + 15 = x^2 - 2x$

8. Amanda earns d dollars per week, and she earns an additional \$15 for every hour that she works overtime. If Amanda earns a total of \$345 in a week that she worked 3 hours overtime, what is the value of d ?

- A) 315
- B) 300
- C) 285
- D) 270

9. A movie theater sells child tickets for \$12.95 each and sells adult tickets for \$15.95 each. Let c be the number of child tickets sold and a be the number of adult tickets sold. Every Saturday the movie theater sells at least 200 tickets and makes at least \$2965. Which of the following represents this relationship?

- A) $12.95c + 15.95a \geq 200$; $c + a \geq 2965$
- B) $15.95c + 12.95a \geq 2965$; $c + a \geq 2985$
- C) $12.95c + 15.95a \geq 2965$; $c - a \geq 200$
- D) $12.95c + 15.95a \geq 2965$; $c + a \geq 200$

10. A function f satisfies $f(1) = 5$ and $f(2) = 15$. A function g satisfies $g(5) = 3$ and $g(1) = -6$. What is the value of $g(f(1))$?

- A) -6
- B) 1
- C) 3
- D) 5

SAT Test 4-4

Math Test- Calculator | 55 Minutes, 38 Questions

Number of hours Marina plans to drive per day	5
Number of feet between New York and Florida	6,077,280
Number of miles Marina's car travels per gallon	25
Average speed that Marina travels through the whole trip (n miles per hour)	65

11. Marina is planning to drive from New York to Florida. The table above shows information about the distance of the drive, information about Marina's car, the amount of time she plans to drive per day, and the average speed that she drives. If Marina drives at the rates given in the table, which of the following is closest to the number of days it would take Marina to drive from New York to Florida? (Note: 1 mile = 5280 feet)

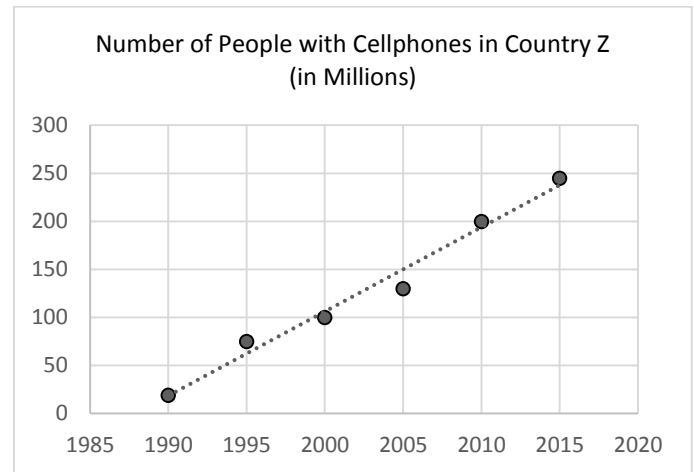
- A) 2
- B) 4
- C) 6
- D) 8

12. Eric's pickup truck is currently holding a weight of 700 pounds, including Eric. He wants to load boxes onto the truck that each weigh 50 pounds each. If the maximum weight that the truck can carry is 1000 pounds and x represents the number of boxes, which of the following inequalities describes the set of boxes where the truck is holding more than the maximum weight?

- A) $700 - 50x \leq 1000$
- B) $700 + 50x > 1000$
- C) $1000 - 50x > 700$
- D) $1000 - 700x > 50$

13. A researcher conducted a survey to determine whether people in a particular city prefer picking up their food or having their food delivered to them. The researcher asked 210 people at a shopping center in the city, and 10 people refused to respond. Which of the following factors makes it least likely that a reliable conclusion can be drawn about the preferences of all people in the city?

- A) Population size
- B) Where the survey was given
- C) The number of people who refused to respond.
- D) Sample size



14. According to the line of best fit in the scatterplot above, which of the following best approximates the year in which the number of people with cell phones in Country Z was estimated to be 225 million?

- A) 2003
- B) 2007
- C) 2009
- D) 2014

15. The mass of a boulder is about 500 kilograms, and the volume of the boulder is about 250,000 cubic centimeters. If density is equal to mass divided by volume, which of the following is closest to the density of the boulder in grams per cubic centimeter?

- A) .002
- B) .02
- C) .2
- D) 2

Results of School Presidential Election		
	Voted for Candidate A	Voted for Candidate B
6 th Grade	32	22
7 th Grade	15	41
8 th Grade	25	30

16. The table above summarizes the results of the school presidential election. If one of the students who voted for Candidate A is chosen at random, what is the probability that the student chosen is in the 7th grade?

- A) $\frac{15}{57}$
- B) $\frac{5}{24}$
- C) $\frac{32}{40}$
- D) $\frac{15}{72}$

17. The number of unemployed adults in Town A is approximately 10% less than the number of unemployed adults in Town B. The number of unemployed adults in Town B is 250. What is the number of unemployed workers in Town A?

- A) 200
- B) 205
- C) 210
- D) 225

18. The mean number of points that a basketball player scored per game was 25, and the median number of points the player scored in one game was 17. Which of the following situations could explain the difference between the mean and median points the player scored?

- A) There were a few games in which the player scored much more points than in the rest.
- B) There were a few games in which the player scored much fewer points than in the rest.
- C) The player scored about the same number of points in every game.
- D) The player scored between 17 and 25 points in the majority of his games.

Questions 19 and 20 refer to the following information.

Number of Televisions in Households		
Number of Televisions	Town A	Town B
0	25	50
1	75	75
2	150	200
3	200	100
4	50	75

This survey was taken from a sample size of 500 households in each town. There are a total of 2500 households in Town A and 3000 households in Town B.

19. What is the median number of televisions for all the households in the survey?

- A) 0
- B) 1
- C) 2
- D) 3

20. Based on the survey data, which of the following most accurately compares the expected total number of households with 1 television in the 2 towns?

- A) The total number of households with one television is expected to be equal in both towns.
- B) The total number of household with one television in Town B is expected to be 75 more than in Town A.
- C) The total number of household with one television in Town A is expected to be 75 more than in Town B.
- D) The total number of households with one television in Town B is expected to be 750 more than Town A.

21. Mrs. Green has been a fifth grade teacher for 20 years, and in those 20 years, the difference between the number of boys, x , and the number of girls, y , in her class has never been greater than 12. If this remains true in her 21st year of teaching the fifth grade, which of the following inequalities represents the relationship between the number of boys and the number of girls?

- A) $|x + y| > 12$
- B) $|x - y| > 12$
- C) $|x - y| < 12$
- D) $x < |12 - y|$

Questions 22 and 23 refer to the following

$$F = \frac{GMm}{r^2}$$

The formula above represents the forces of gravity between any two objects. F is the force of gravity. G is the gravitation constant. M is the mass of an object, m is the mass of another object, and r is the distance between the two objects.

22. Which of the following expresses the square of the distance between two objects in terms of the force of gravity, gravitational constant, and the masses of each object?

- A) $r^2 = GmnF$
- B) $r^2 = \frac{GMm}{F}$
- C) $r^2 = \frac{FMm}{G}$
- D) $r^2 = \frac{G}{FGMm}$

23. Object B and Object C have the same mass. However, the force of gravity between Object A and Object B is 4 times the force of gravity between Object A and Object C. The distance between Object A and B is what fraction of the distance between Object A and C?

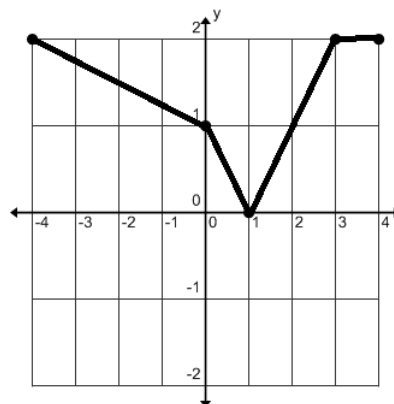
- A) $\frac{1}{2}$
- B) $\frac{1}{4}$
- C) $\frac{1}{8}$
- D) $\frac{1}{16}$

24. The equation of a circle is given as $(x + 4)^2 + (y - 8)^2 = 16$. What is the radius of the circle?

- A) 16
- B) 8
- C) 4
- D) 2

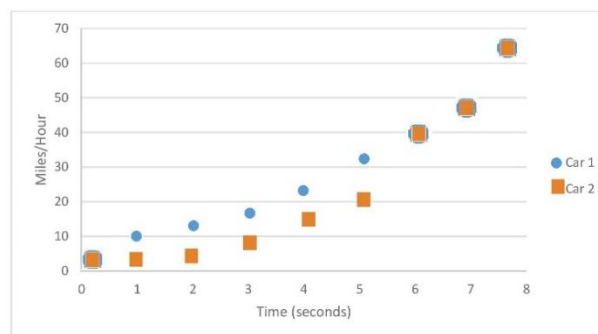
25. The graph of the linear function of f passes through the points $(2, a)$ and $(b, 2)$ in the xy -plane. If $a > 2$ and $b > a$, which of the following is true about the slope of the graph of f ?

- A) It is positive
- B) It equals zero
- C) It is negative
- D) It is undefined



26. The complete graph of the function f is shown in the xy -plane above. Which of the following are equal to 2?

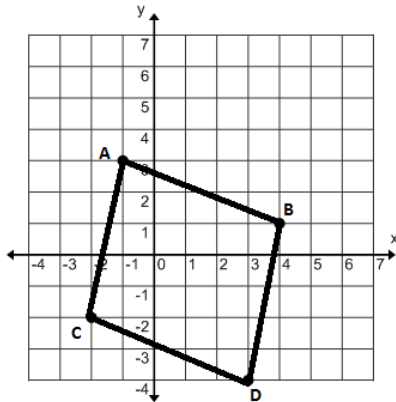
- I. $f(-4)$
 - II. $f(2)$
 - III. $f(4)$
- A) II only
 - B) II and III only
 - C) I and III only
 - D) I, II, and III



27. Two cars start driving at exactly the same time. The graph above shows the speed of each car at 1-second intervals. Which of the following statements correctly compares the average rates at which the speeds of the two cars change?

- A) In every 1-second interval, the magnitude of Car 1's rate of change is greater than that of Car 2.
- B) In every 1-second interval, the magnitude of Car 2's rate of change is greater than that of Car 1.

- C) In the interval from 0 to 1 second, Car 1's rate of change is of greater magnitude. Whereas in the interval from 6 to 7 seconds and 7 to 8 seconds, Car 1's rates of change are equal to that of Car 2.
- D) In every 1-second interval, the magnitude of Car 2's rate of change is equal to that of Car 1.



28. In the xy -plane above, $ABCD$ is a parallelogram. The coordinates of points A and C are $(-1, 3)$ and $(-2, -2)$ respectively. Which of the following is the equation of the line that passes through points B and D ?

- A) $y = 5x - 19$
 B) $y = 5x + 19$
 C) $y = \frac{1}{5}x - 19$
 D) $y = \frac{1}{5}x + 19$

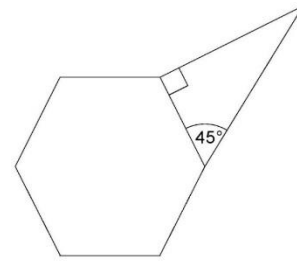
29. $y = -2$

$$y = ax^2 - b$$

In the system of equations above, a and b are constants. For which of the following values of a and b does the system of equations have exactly two real solutions?

- A) $a = -2$ $b = 1$
 B) $a = -2$ $b = 3$
 C) $a = 2$ $b = 1$
 D) $a = -2$ $b = 4$

30.



Note: Figure not drawn to scale

The figure above shows a regular hexagon with sides of length l and a right triangle with a base of length l . If the area of the hexagon is $300\sqrt{3}$ square inches, what is the area, in square inches of the right triangle?

- A) 25 in^2
 B) $300\sqrt{3} \text{ in}^2$
 C) 100 in^2
 D) 200 in^2

31. Andrew earns \$9.50 per hour. How long will it take, in hours, for Andrew to earn \$228?

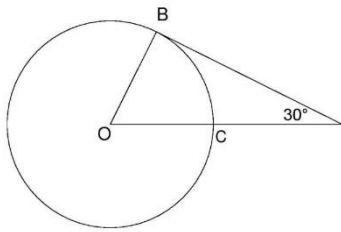
32. If y yards and 2ft is equal to 35ft, what is the value of y ?

33. In the xy -plane, the point $(2, 24)$ lies on the graph of the function $f(x) = 5x^2 - bx + 10$. What is the value of b ?

34. Jerry and Matt share a basket of French fries. They eat a combined 300 French fries. If Matt eats 20 less French fries than Jerry, how many French fries does Jerry eat?

35. $t = 100d + 50$

Jessica stays at a hotel. The equation above represents the total amount, t , that she pays for staying d days. The total payment includes a security deposit. According to the model, how much does Jessica pay per day, excluding the security deposit?



36. In the figure above, point O is the center of the circle. Line segment AB is tangent to the circle at point B. If the circumference is 84, what is the length of minor arc $\widehat{BC}$?

Questions 37 and 38 refer to the following information.

Tyler is renting an apartment with a group of his friends. Each person renting the apartment pays an equal portion of their total expenses. This month, Tyler is paying \$600 for his portion. Every month the cost of rent increases. The amount that Tyler expects to pay next month, $T_{next\ month}$, can be estimated from the amount he currently pays this month, $T_{this\ month}$, by the equation below.

$$T_{next\ month} = \frac{(T_{this\ month} \times P \times 1.05) + 20}{P}$$

The constant P in this formula is the number of people that are renting the apartment.

37. According to this formula, what will be the amount that Tyler pays in two months from now if there are five people? (Round your answer to the nearest whole number)

38. The amount that Tyler pays increases at a different rate when the number of people renting the apartment changes. If Tyler pays \$600 this month and \$640 next month, how many people are renting the apartment?