

**ST. MARY'S DOMINICAN HIGH SCHOOL**  
**Advanced Math and Advanced Math (Honors) Summer Worksheet**



Dear student:

The purpose of this summer worksheet is to help you practice your math skills while providing examples of ACT/PSAT-type questions. The questions were specifically chosen because they relate to topics that will be used in your math class next year or because they cover material you have learned that is on the ACT/PSAT.

**In order to receive full credit for your work, be sure to follow these instructions.**

- 1. Print out the worksheet and show all work neatly and in a concise manner next to each question– in PENCIL! If work can not be shown, explain how you were able to solve the problem or what strategy you used (process of elimination, guess and check, graphing calculator, etc.).**
- 2. Check your answers with the answer key provided. Review and re-try any questions you missed. If you have difficulty with any of the concepts, please review them during the summer.**
- 3. Bring your completed assignment to school on the second day of class.**

**Standardized Test-Taking Tips:**

1. Underline or circle key numbers/words in the problem.
2. Read the question that is being asked. Many times the answer to the question is not necessarily the solution to the equation.
3. As you eliminate choices, scratch them out.
4. Use these strategies as they apply:
  - Guess and check with the choices (start with the middle choice)
  - Assign numbers to represent variables in the question
  - Start at the end and work backwards
  - Look for a pattern on a simpler problem
  - Use a graphing calculator to assist when needed

**Note: On the ACT, unless otherwise stated, all of the following should be assumed:**

1. Illustrative figures lie in a plane.
2. Geometric figures lie in a plane.
3. The word “line” indicates a straight line.
4. The word “average” indicates the arithmetic mean.

Choices are usually listed from either greatest to least or least to greatest.

You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator. Reference the “ACT Math Formulas” file in School Links and Files.

Your work will be collected, and a grade will be given based on **completeness and effort**.

Try your best!!! If you need assistance, consult the video tutors available at [khanacademy.org](https://khanacademy.org) or <https://academy.act.org/summer-slide-educator/>. For more individualized ACT practice, log in to [act.org/academy](https://act.org/academy) and input your ACT subscores.

Sincerely,

St. Mary's Dominican Mathematics Department

## Pre-Algebra

1. To get a driver's license, an applicant must pass a written test and a driving test. Past records show that 80% of the applicants pass the written test and 60% of those who have passed the written test pass the driving test. Based on these figures, how many applicants in a random group of 1,000 applicants would you expect to get driver's licenses?
  - A. 200
  - B. 480
  - C. 600
  - D. 750
  - E. 800
  
2. A car averages 27 miles per gallon. If gas costs \$4.04 per gallon, which of the following is closest to how much the gas would cost for this car to travel 2,727 miles?
  - A. \$44.04
  - B. \$109.08
  - C. \$118.80
  - D. \$408.04
  - E. \$444.40
  
3. How many positive integers can be divided into 8 while leaving a remainder of 2?
  - A. 1
  - B. 2
  - C. 3
  - D. 4
  - E. 5
  
4. In a shipment of 10,000 headlights, 5% are defective. What is the ratio of defective headlights to non-defective headlights?
  - A.  $\frac{1}{19}$
  - B.  $\frac{1}{20}$
  - C.  $\frac{19}{1}$
  - D.  $\frac{20}{1}$
  - E.  $\frac{1}{5}$

5. A candy jar contains 20 candies: 8 are orange, 7 are green, and 5 are red. Two candies are picked at random and eaten. If both of these are orange, what is the probability that the next candy, picked at random, is also orange?
- A.  $\frac{3}{20}$
  - B.  $\frac{1}{4}$
  - C.  $\frac{3}{10}$
  - D.  $\frac{1}{3}$
  - E.  $\frac{2}{5}$
6. 6 million multiplied by 4 billion would be equivalent to which of the following?
- A.  $2.4 \times 10^{16}$
  - B.  $2.4 \times 10^{15}$
  - C.  $2.4 \times 10^{13}$
  - D.  $2.4 \times 10^{12}$
  - E.  $2.4 \times 10^9$
7. An organic cow produces 5.5 gallons of milk per day, which equates to approximately 90 glasses of milk. How many cows would be needed to provide at least 1,000 glasses of milk in one day?
- A. 2
  - B. 11
  - C. 12
  - D. 181
  - E. 182
8. The choices for an ice cream sundae are as follows: chocolate or vanilla ice cream; hot fudge, strawberry, or butterscotch topping; and toasted almonds, cherry, or sprinkles as decoration. If you know that your sundae will have one ice cream, one topping, and one decoration, how many different choices for a sundae do you have?
- A. 6
  - B. 8
  - C. 9
  - D. 12
  - E. 18

9.

Population by Town	
	☺ = 10,000 people
Town A	☺ ☺
Town B	☺ ☺ ☺ ☺
Town C	☺ ☺ ☺ ☺ ☺
Town D	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺

The total of which two towns accounts for exactly 45% of the entire population?

- A. Towns A and B
- B. Towns B and C
- C. Towns A and D
- D. Towns B and D
- E. Towns A and C

10. John weighs 1.5 times as much as Ellen. If John weighs 165 pounds, how much does Ellen weigh, in pounds?

- A. 100
- B. 110
- C. 150
- D. 165
- E. 247.5

### Elementary Algebra

11. Vehicle A averages 19 miles per gallon of gasoline, and Vehicle B averages 37 miles per gallon of gasoline. At these rates, how many more gallons of gasoline does Vehicle A need than Vehicle B to make a 1,406-mile trip?

- A. 28
- B. 36
- C. 38
- D. 56
- E. 74

12. The solution set for  $x$  of the equation  $x^2 + nx - 8 = 0$  is  $\{-2, 4\}$ . What does  $n$  equal?

- A. -8
- B. -6
- C. -2
- D. 2
- E. 6

13. If a number is chosen at random from the set  $\{1, 2, 3, 4, \dots, 12\}$ , what is the probability that the chosen number is a factor of 12?

- A.  $\frac{1}{3}$
- B.  $\frac{5}{12}$
- C.  $\frac{1}{2}$
- D.  $\frac{5}{6}$
- E. 1

14. Stephanie invested \$1,000 on January 1. At the end of 9 months, during which time Stephanie made no withdrawals and no other deposits, the investment has earned \$75 in interest. Stephanie's \$1000 investment returned an annual percentage yield closest to which of the following percents? ( $I = Prt$  or Interest = Principal  $\cdot$  rate  $\cdot$  time)

- A. 12%
- B. 11%
- C. 10%
- D. 8%
- E. 7%

15. Consider the function  $f(x) = 2x^2 + x$ . What is the value of  $f(f(3))$ ?

- A. 75
- B. 168
- C. 465
- D. 885
- E. 903

16. Which of the following is the solution statement for the inequality shown below?

$$-5 < 1 - 3x < 10$$

- A.  $-5 < x < 10$
- B.  $-3 < x$
- C.  $-3 < x < 2$
- D.  $-2 < x < 3$
- E.  $x < -3$  or  $x > 2$

17. The cost of a bagel and a cup of coffee is \$2.35. The cost of 2 bagels and a cup of coffee is \$4.20. What is the cost of one cup of coffee?
- A. \$0.50  
 B. \$0.65  
 C. \$1.25  
 D. \$1.85  
 E. \$2.00
18. An advertisement states that the printing rate of a certain printer is 400 characters per second. According to the convention that 1 word consists of 5 characters, what would be the advertised printing rate, in words per minute?
- A. 2,000  
 B. 4,800  
 C. 24,000  
 D. 120,000
19. According to the Department of Agriculture, consuming 100 grams of banana provides 0.15 milligram of zinc. Which of the following is closest to the number of milligrams of zinc provided by 140 grams of banana?
- A. 0.15  
 B. 0.21  
 C. 0.25  
 D. 0.93
20. The table below shows the number of calories in a cheeseburger at six different restaurants.

**Calories in a Cheeseburger**

<b>Restaurant</b>	<b>Calories</b>
Blue Jay	810
Clear Lake Café	900
Molly's	740
Riverside Diner	1,120
Maya's Bistro	1,050
Tom's Place	700

What is the difference in the number of calories in a cheeseburger at Riverside Diner and the median number of calories in cheeseburgers at all 6 restaurants?

- A. 190  
 B. 233  
 C. 265  
 D. 390

21. If  $x^2b^4 = ab^{-1}$ , what is  $a$  in terms of  $b$  and  $x$ ?

- A.  $x^2b^3$
- B.  $x^2b^5$
- C.  $x^2b^{-3}$
- D.  $x^2b^{-5}$
- E.  $x^2b^4$

22. Find the larger root of  $x^2 + 11x + 30 = 0$ .

- A. -2
- B. -3
- C. -5
- D. -6
- E. -10

23. The relationship between temperature expressed in degrees Celsius (C) and degrees Fahrenheit (F) is given by the formula

$$C = \frac{5}{9}(F - 32)$$

If the temperature is -10 degrees Celsius, what is it in degrees Fahrenheit?

- A. -50
- B. 14
- C.  $23\frac{1}{3}$
- D.  $27\frac{4}{9}$
- E. 46

24. If the expression  $x^2 - 3px - 2 = 10$  when  $x = -1$ , what is the value of  $p$ ?

- A.  $-\frac{13}{3}$
- B.  $-\frac{11}{3}$
- C.  $\frac{11}{3}$
- D.  $\frac{13}{3}$
- E. 11

25. If  $3x + 2 = 14$ , what is the value of  $5x - 6$ ?

- A. -1
- B. 14
- C. 19
- D. 26
- E. 32

26. If  $x^3 = 512$ , what is the value of  $x^2$ ?

- A. 8
- B. 16
- C. 48
- D. 64
- E. 135

27. If  $2\sqrt{4n} + 7 = 15$ , what is the value of  $n$ ?

- A.  $\sqrt{2}$
- B. 2
- C.  $2\sqrt{2}$
- D. 4
- E. 8

28. Each day, Laura bikes to school in the morning and bikes home in the afternoon. If she bikes at a speed of 12 miles per hour and the school is 3 miles from her house, how long does it take her to bike to school and back? Recall: rate  $\times$  time = distance

- A. 12 minutes
- B. 15 minutes
- C. 24 minutes
- D. 28 minutes
- E. 30 minutes

29. In an Advanced Math class, 55% of the students are Juniors and the rest are Seniors. If there are 154 Juniors in Advanced Math, how many Seniors are in Advanced Math?

- A. 85
- B. 126
- C. 154
- D. 161
- E. 280



30. At a summer camp, students may choose between a sports elective – basketball, baseball, or soccer – and an exercise elective – Yoga or Pilates. The table below shows the number of students enrolled in each elective. If each student enrolled in exactly one elective, what percentage of students enrolled in an exercise elective?

	<b>Elective</b>	<b>Number of Students Enrolled</b>
<b>Sports</b>	Basketball	21
	Baseball	18
	Soccer	13
<b>Exercise</b>	Yoga	13
	Pilates	15

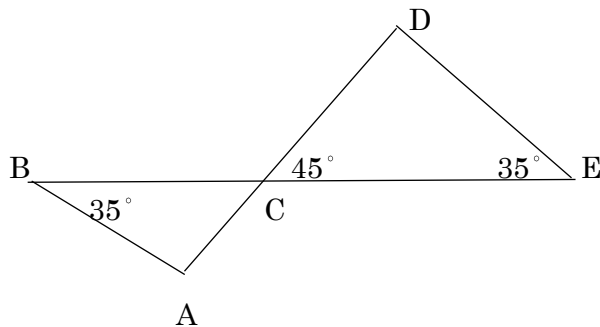
- A. 28%  
B. 35%  
C. 51%  
D. 60%  
E. 65%
31. What is the ones digit when  $2^{326}$  is written without an exponent?  
Hint: Strategy: Look for a pattern.
- A. 0  
B. 2  
C. 4  
D. 6  
E. 8
32. The average of 7, 20, and  $x$  is 20. What is the value of  $x$ ?
- A. 20  
B. 27  
C. 32  
D. 33  
E. 40

### Plane Geometry

33. The ratio of the side lengths of 2 similar triangles is 3:5. The smaller triangle has sides that measure 5 centimeters, 7 centimeters, and 9 centimeters. What is the perimeter, in centimeters, of the larger triangle?  
Hint: The perimeter will have the same ratio as the sides.
- A. 12.6  
B. 21  
C. 35  
D. 63  
E. 105

34. What is the perimeter, in inches, of the isosceles right triangle whose hypotenuse is  $8\sqrt{2}$  inches long?
- A. 8  
 B.  $8+8\sqrt{2}$   
 C.  $8+16\sqrt{2}$   
 D. 16  
 E.  $16+8\sqrt{2}$
35. A rectangular tabletop is 14 inches wide and 48 inches long. Which of the following is closest to the length, in inches, of the diagonal of this tabletop?
- A. 34  
 B. 50  
 C. 55  
 D. 62  
 E. 68

36. In the figure below, C is the intersection of  $\overline{AD}$  and  $\overline{BE}$ . If it can be determined, what is the measure of  $\angle BAC$ ?



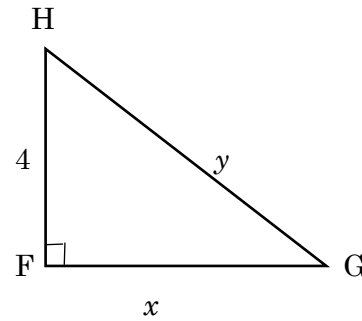
- A.  $80^\circ$   
 B.  $100^\circ$   
 C.  $110^\circ$   
 D.  $115^\circ$   
 E. Cannot be determined from the given information
37. Samantha needs to tile an area that measures 20 inches long and 9 inches wide. She determines that she will need 1 tile for every 4-inch by 3-inch area. What is the minimum number of tiles she will need to cover the entire area?
- A. 12  
 B. 15  
 C. 21  
 D. 26  
 E. 31

38. An artist is creating a sculpture using bendable metal rods of equal length. One rod is formed into the shape of a square and another rod into the shape of an equilateral triangle. If each side of the triangle is 2 inches longer than each side of the square, how long, in inches, is each rod?

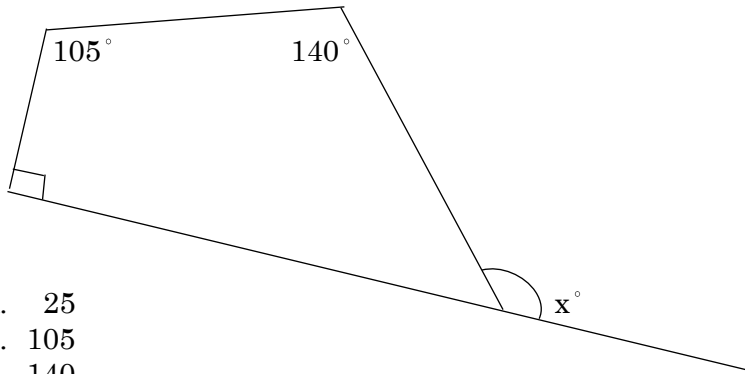
- A. 16
- B. 18
- C. 24
- D. 30

39. For  $\triangle FGH$  shown below, which of the following is an expression for  $y$  in terms of  $x$ ?

- A.  $x+4$
- B.  $\sqrt{x^2+4}$
- C.  $\sqrt{x^2+8}$
- D.  $\sqrt{x^2-16}$
- E.  $\sqrt{x^2+16}$



40. In the figure below, the angles are as marked. What is  $x$ ?



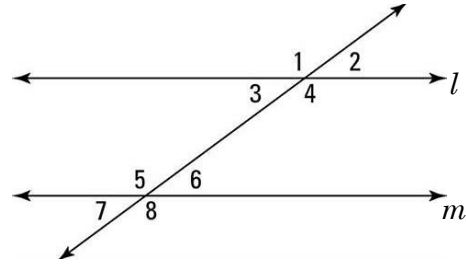
- A. 25
- B. 105
- C. 140
- D. 155
- E. 165

41. What is the area of a circle with a diameter of 8?

- A.  $4\pi$
- B.  $8\pi$
- C.  $16\pi$
- D.  $32\pi$
- E.  $64\pi$

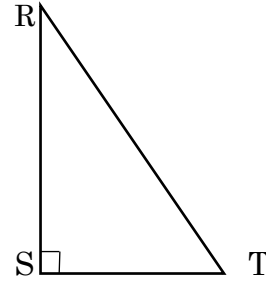
42. In the figure below, lines  $m$  and  $l$  are parallel and  $m\angle 2 = 68^\circ$ . What is the measure of  $\angle 5$ ?

- A.  $22^\circ$
- B.  $68^\circ$
- C.  $80^\circ$
- D.  $112^\circ$
- E.  $136^\circ$



43. The length of the hypotenuse of right triangle RST is 16. If the measure of  $\angle R = 30^\circ$ , what is the length of RS?

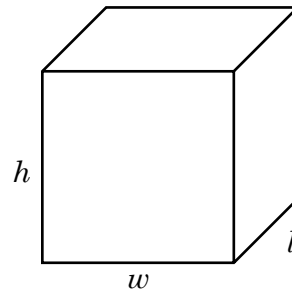
- A. 4
- B. 8
- C.  $8\sqrt{3}$
- D.  $\frac{16}{\sqrt{2}}$
- E. 12



44. A formula for the surface area ( $A$ ) of the rectangular solid shown below is  $A = 2lw + 2lh + 2wh$  where  $l$  represents length;  $w$ , width; and  $h$ , height. By doubling each of the dimensions ( $l$ ,  $w$ , and  $h$ ), the surface area will be multiplied by what factor?

Hint: Strategy: Assign values for the variables.

- A. 2
- B. 4
- C. 6
- D. 8
- E. 12



45. How many tiles, each covering a square area of 9 inches on a side are required to cover a rectangular floor of 9 feet wide and 18 feet long?

- A. 288
- B. 244
- C. 216
- D. 200
- E. 162

## Intermediate Algebra

46. If  $a > b$ , then  $|a - b| + |b - a|$  is equal to what expression?

Hint: Strategy: Assign values to represent the variables.

- A. 0
- B.  $2a$
- C.  $2b$
- D.  $2a + 2b$
- E.  $2a - 2b$

47. Last year, Tina earned an annual salary of  $\$S$  from which a total of  $\$D$  was deducted for taxes and insurance. The balance was Tina's take-home pay. Tina's take-home pay represents what fraction of her annual salary? **Hint: Strategy: Assign values for S and D**

- A.  $\frac{D}{S}$
- B.  $\frac{S}{D}$
- C.  $\frac{D - S}{S}$
- D.  $\frac{D - S}{D}$
- E.  $\frac{S - D}{S}$

48. At a buffet restaurant, the price for dinner for an adult is  $\$6.95$  and the price for dinner for a child is  $\$3.95$ . A group of 8 people went to the restaurant for dinner and paid a total of  $\$46.60$ , excluding tax and tip. How many adults were in the group?

- A. 2
- B. 3
- C. 4
- D. 5
- E. 6

49. What is the product of the complex numbers  $(-3i + 4)$  and  $(3i + 4)$ ?

- A. 1
- B. 7
- C. 25
- D.  $-7 + 24i$
- E.  $7 + 24i$

50. To make a 750-piece jigsaw puzzle more challenging, a puzzle company includes 5 extra pieces in the box along with the 750 pieces, and those 5 extra pieces do not fit anywhere in the puzzle. If you buy such a puzzle box, break the seal on the box, and immediately select 1 piece at random, what is the probability that it will be 1 of the extra pieces?

- A.  $\frac{1}{5}$
- B.  $\frac{1}{755}$
- C.  $\frac{1}{750}$
- D.  $\frac{5}{755}$
- E.  $\frac{5}{750}$

51. Given  $f(x) = x - \frac{1}{x}$  and  $g(x) = \frac{1}{x}$ , what is  $f\left(g\left(\frac{1}{2}\right)\right)$ ?

- A.  $-3$
- B.  $-\frac{3}{2}$
- C.  $-\frac{2}{3}$
- D.  $0$
- E.  $\frac{3}{2}$

52. Which of the following inequalities shows the solution set to the inequality  $|x - 5| < -1$  ?

- A.  $4 < x < 6$
- B.  $x < 4$
- C.  $x > 6$
- D.  $x < 4$  or  $x > 6$
- E.  $\emptyset$

53. Gina wants to buy shirts that cost \$18.60 each and sweaters that cost \$28.40 each. A 9% sales tax will be applied to the entire purchase. If Gina buys 3 shirts, which equation relates the number of sweaters purchased,  $p$ , and the total cost in dollars,  $y$ ?

- A.  $1.09(55.80 + 28.40p) = y$
- B.  $55.80 + 28.40p = 0.92y$
- C.  $55.80 + 28.40p = 1.08y$
- D.  $0.92(55.80 + 28.40p) = y$

54. If the equation below, where  $a$  is a constant, is true for all positive values of  $x$  and  $y$ , what is the value of  $a$ ?

$$(x^2y^3)^{\frac{1}{2}}(x^2y^3)^{\frac{1}{3}} = x^{\frac{a}{3}}y^{\frac{a}{2}}$$

- A. 2
- B. 3
- C. 5
- D. 6

55. If  $a - 4b = 15$  and  $4a - b = 15$ , then  $a - b = ?$

- A. 3
- B. 4
- C. 6
- D. 15
- E. 30

56. What is the simplest form of  $f(x) = \frac{2x-4}{2x^2-2x-4}$  ?

- A.  $f(x) = \frac{x-2}{x^2+x-2}$
- B.  $f(x) = \frac{2(x-2)}{2(x+2)(x-1)}$
- C.  $f(x) = \frac{1}{x+1}$
- D.  $f(x) = \frac{1}{2x^2}$

57. A grocer carries two types of frozen meals that have the fat and carbohydrate content shown in the table below. John wants to purchase a combination of the two types of meals with no more than 350 grams of fat and no more than 2975 grams of carbohydrates. If John purchases 10 Szechuan chicken meals, what is the greatest number of stir-fry meals he can purchase so that the combination will satisfy the requirements?

Type of Meal	Fat (g)	Carbohydrates (g)
Stir-fry	4	40
Szechuan chicken	5	35

- A. 60
- B. 65
- C. 70
- D. 75

58. For what value of  $a$  would the following system of equations have an infinite number of solutions?

$$2x - y = 8$$

$$6x - 3y = 4a$$

- A. 2
- B. 6
- C. 8
- D. 24
- E. 32

59. What is the sum of the two real solutions to the equation  $x^2 + 3x = 7$ ?

- A. 3
- B.  $\frac{3}{2}$
- C.  $-\frac{3}{2}$
- D. -3
- E. -7

60. If  $(a, b)$  is a point on the graph of  $y = -\frac{5}{x-1}$ , which of the following must be true?

- A.  $a \neq -5$
- B.  $b \neq 1$
- C.  $a \neq -1$
- D.  $a \neq 1$
- E.  $b \neq -1$

61. If  $f(x) = x^2 + h^2$ , then  $f(x-h) = ?$

- A.  $x^2 - 2xh$
- B.  $x^2 + 2xh$
- C.  $x^2 - 2xh + h^4$
- D.  $x^2 - 2xh + 2h^4$
- E.  $x^2 - 2xh + 2h^2$



62. Which value is *not* in the domain of  $f(x) = \sqrt{x-5}$ ?

- A. 4
- B. 5
- C. 6
- D. 7
- E. 8.5

63. What is the range of  $f(x) = -(x-2)^2 - 4$ ?

- A. All real numbers
- B.  $y \geq -8$
- C.  $y \leq -8$
- D.  $y \geq -4$
- E.  $y \leq -4$

64. If  $f(x) = -x^2$ , which represents the graph of  $f(x) + 3$ ?

- A. The graph faces down with vertex at (3, 0).
- B. The graph faces down with vertex at (-3, 0).
- C. The graph faces down with vertex at (0, 3).
- D. The graph faces up with vertex at (0, 3).
- E. The graph faces up with vertex at (0, -3).

65.  $3i(1-i)$

- A. 2
- B. 6
- C.  $6i$
- D.  $3-3i$
- E.  $3+3i$

66.  $\log_{25} 5 = ?$

- A. -2
- B.  $-\frac{1}{2}$
- C.  $\frac{1}{2}$
- D. 2
- E. 5

67. What is the domain of the function  $f(x) = 3^x$ ?

- A. All real numbers less than 0
- B. All real numbers greater than 0
- C. All real numbers greater than 1
- D. All real numbers greater than 3
- E. All real numbers

68. If  $4^{x+5} = 64^{2x}$ , what is the value of  $x$ ?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

69. A jar contains 15 red marbles, 10 green marbles, and 11 blue marbles. What is the probability that a marble chosen at random from the jar will NOT be green?

- A.  $\frac{5}{18}$
- B.  $\frac{13}{36}$
- C.  $\frac{5}{12}$
- D.  $\frac{7}{12}$
- E.  $\frac{13}{18}$

70. If  $3a + 3(b+1) = c$ , what is  $b+1$  in terms of  $a$  and  $c$ ?

- A.  $\frac{c}{9a}$
- B.  $\frac{c}{3} - a$
- C.  $\frac{c}{3} + a$
- D.  $\frac{c}{3} - 3a$
- E.  $\frac{c}{3} + 3a$

## Coordinate Geometry

71. A circle in the standard  $(x, y)$  coordinate plane has center  $(7, -6)$  and radius 10 coordinate units. Which of the following is an equation of the circle?

- A.  $(x+7)^2 - (y-6)^2 = 100$
- B.  $(x+7)^2 - (y-6)^2 = 10$
- C.  $(x+7)^2 + (y-6)^2 = 10$
- D.  $(x-7)^2 + (y+6)^2 = 100$
- E.  $(x-7)^2 + (y+6)^2 = 10$

72. Which of the following equations does not represent a line when graphed in a standard  $xy$ -coordinate plane?

- A.  $y = -6$
- B.  $x + 2y = 4$
- C.  $3x = 2y$
- D.  $5y = 2x - 7$
- E.  $x^2 + y^2 = 3$

73. As part of a lesson on motion, students observed a cart rolling at a constant rate along a straight line. As shown in the chart below, they recorded the distance,  $y$  feet, of the cart from a reference point at 1-second intervals from  $t = 0$  to  $t = 5$  seconds.

$t$	0	1	2	3	4	5
$y$	14	19	24	29	34	39

Which of the following equations represents this data?

- A.  $y = t + 14$
- B.  $y = 5t + 9$
- C.  $y = 5t + 14$
- D.  $y = 14t + 5$
- E.  $y = 19t$

74. Which of the following represents the midpoint of a line segment with endpoints  $(1, 5)$  and  $(3, 9)$ ?

- A.  $(2, 2)$
- B.  $(3, 4)$
- C.  $(4, 14)$
- D.  $(2, 7)$

75. A line contains the points  $(2, 4k)$  and  $(k, -6)$ . If the slope of the line is  $\frac{2}{3}$ , what is the value of  $k$ ?

- A.  $-\frac{8}{3}$
- B.  $-\frac{7}{5}$
- C.  $-1$
- D.  $-\frac{2}{13}$
- E.  $1$

76. What is the length of a line segment with endpoints  $(3, -6)$  and  $(-2, 6)$ ?

- A.  $1$
- B.  $5$
- C.  $10$
- D.  $12$
- E.  $13$

77. Which of the following conic sections is represented by the equation  $\frac{(x-4)^2}{16} + \frac{(y+3)^2}{25} = 1$  ?

- A. Parabola
- B. Circle
- C. Ellipse
- D. Hyperbola

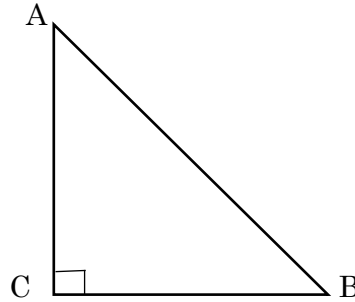
78. What is the value of  $f(g(3))$  if  $f(x) = 2x - 4$  and  $g(x) = 3x^2 - 2$ ?

- A. 10
- B. 25
- C. 26
- D. 40
- E. 46

**Trigonometry**

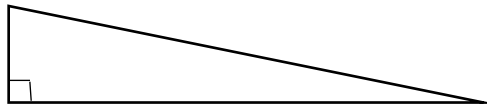
79. In  $\triangle ABC$ , if  $\angle A$  and  $\angle B$  are acute and if  $\tan B = \frac{5}{4}$ , what is the value of  $\sin A$ ?

- A.  $\frac{4}{5}$
- B.  $\frac{4\sqrt{41}}{41}$
- C.  $\frac{5\sqrt{41}}{41}$
- D.  $\frac{\sqrt{41}}{4}$
- E.  $\frac{\sqrt{41}}{5}$



80. The ramp in the figure below has a  $20^\circ$  angle of elevation and a height of 3 feet. What is the length of the ramp in feet?

- A.  $\frac{3}{\sin 20^\circ}$
- B.  $\frac{3}{\cos 20^\circ}$
- C.  $\frac{\sin 20^\circ}{3}$
- D.  $\frac{\cos 20^\circ}{3}$
- E.  $3 \cos 20^\circ$



**Answer Key**

- 1. B
- 2. D
- 3. B
- 4. A
- 5. D
- 6. A
- 7. C
- 8. E
- 9. B
- 10. B

- 11. B
- 12. C
- 13. C
- 14. C
- 15. E
- 16. C
- 17. A
- 18. B
- 19. B
- 20. C

- 21. B
- 22. C
- 23. B
- 24. C
- 25. B
- 26. D
- 27. D
- 28. E
- 29. B
- 30. B

- 31. C
- 32. D
- 33. C
- 34. E
- 35. B
- 36. B
- 37. B
- 38. C
- 39. E
- 40. D

- 41. C
- 42. D
- 43. C
- 44. B
- 45. A
- 46. E
- 47. E
- 48. D
- 49. C
- 50. D

- 51. E
- 52. E
- 53. A
- 54. C
- 55. C
- 56. C
- 57. B
- 58. B
- 59. D
- 60. D

- 61. E
- 62. A
- 63. E
- 64. C
- 65. E
- 66. C
- 67. E
- 68. A
- 69. E
- 70. B

- 71. D
- 72. E
- 73. C
- 74. D
- 75. C
- 76. E
- 77. C
- 78. E
- 79. B
- 80. A