

Practice Test 1

16

$$x^2 + 10 = 8x - 5$$

What is the product of the solutions of the above equation?

17

$$x^2 - 4x + y^2 + 10y = 7$$

In the xy -plane, the graph of the above equation is a circle. What is the diameter of the circle?

- A) 6
- B) 12
- C) 18
- D) 36

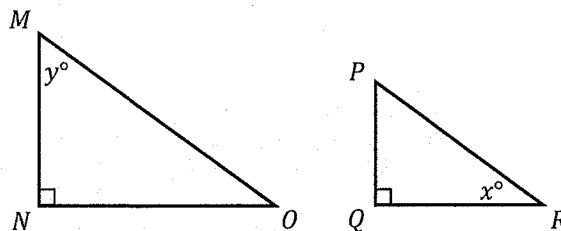
18

A group of students formed two teams, Team A and Team B. The ratio of girls to boys in Team A is 1:1. The number of girls in Team B is double the number of girls in Team A. The number of boys in both the teams are the same. If there are 20 girls in Team B, how many boys are in Team A?

19

The function f is defined by $f(x) = 5x + 16$ and the function g is defined by $g(x) = f(x + 1) + 3$. What is the value of $g(-3)$?

20



Note: Figure not drawn to scale

In the figure above, triangles MNO and PQR are similar triangles, where vertices M , N , and O correspond to vertices P , Q , and R , respectively. Angle R is x° and angle M is y° . If $x = 3b - 12$ and $y = 2b + 22$, what is the value of b ?

21

Chantel has \$50 to buy bags of pretzels and bags of popcorns. The cost of each bag of pretzels is \$2.50 and the cost of each bag of popcorns is \$2.25. If Chantel buys 12 bags of popcorn, what is the maximum number of whole bags of pretzels she can buy, assuming no sales tax is added?

- A) 6
- B) 9
- C) 10
- D) 12

22

$$2x(x + 6) + k = -6x$$

In the given equation, k is a constant. If the equation has exactly two real solutions, what is the maximum integer value of k ?

Digital SAT Math

Practice Test 1

Module 2.2

Test duration - 35 min

Total questions - 22

Time the test: If you have not completed all the questions in this module within 35 minutes, then leave the remaining questions and proceed to check the answers. You can complete the remaining questions after you have completed checking the answers.

Practice Test 1

1

Which of the following expression is equivalent to $57z - 29z$?

- A) $28z$
- B) $30z$
- C) $57z$
- D) $86z$

2

In the equation $5x + 3y - 8 = 41$, what is the value of y when $x = 5$?

3

A certain school library has 200 books. If 5% of these books are geometry books, how many geometry books are in the school library?

4

What is the x -coordinate of the x -intercept of a line defined by the equation $2x - 5y = 8$?

- A) -5
- B) 2
- C) 4
- D) 5

5

The degree measure of an angle AOB is 75. What is the measure of the angle AOB in radians?

- A) $\frac{\pi}{5}$
- B) $\frac{5\pi}{12}$
- C) $\frac{3\pi}{5}$
- D) 2π

6

Which of the following expression is equivalent to $w(w - 5) + 73w$?

- A) $68w$
- B) $73w - 5$
- C) $w^2 + 5w$
- D) $w^2 + 68w$

7

The slope of line a in the xy -plane is $-\frac{1}{5}$. What is the slope of a line perpendicular to line a ?

Practice Test 1

8

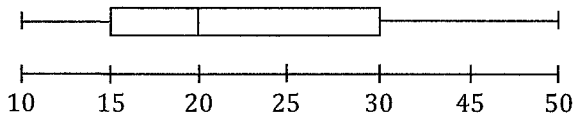
x	6	10	14
y	-4	-2	0

The above table shows three values of x and the corresponding values of y in a linear relationship. Which of the following equations represents this relationship?

- A) $y = -\frac{1}{2}x - 4$
 B) $y = \frac{1}{2}x - 7$
 C) $y = 2x + 7$
 D) $y = 2x + 14$

9

Distribution of 400 Integers



The above box plot shows the distribution of 400 integers in a data set. Which of the following statements about the data set shown in the box plot cannot be true?

- A) The mean of the data set is 25.
 B) The median of the data set is 20.
 C) The range of the data set is 40.
 D) Approximately 50% of the integers in the data set are between 15 and 30.

10

In the xy -plane, the graph of an exponential growth function g has a y -intercept at $(0, 2.5)$, where $y = g(x)$. Which of the following equations could define the function g ?

- A) $g(x) = -(1.25)^x$
 B) $g(x) = 2.5(0.5)^x$
 C) $g(x) = 2.5(1.5)^x$
 D) $g(x) = 5(1.25)^x$

11

$$-5x + 11y = 1$$

$$7x - 9y = 2$$

In the system of equations above, what is the value of $20x + 20y$?

12

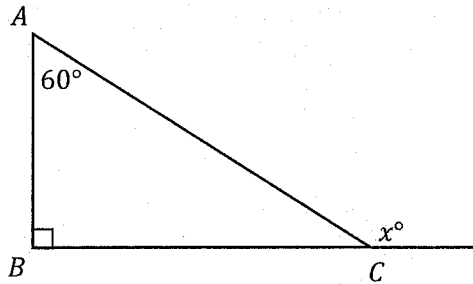
$$f(m) = 18 + 3m$$

The function f defined above models the total number of art pieces on display in an art showroom m months after the opening of the art showroom. Which of the following statements is the best interpretation of $f(4) = 30$?

- A) 4 new art pieces are added on display each month after the opening of the art showroom.
 B) 18 new art pieces are added on display each month after the opening of the art showroom.
 C) 12 new art pieces are added on display in 4 months after the opening of the art showroom.
 D) 30 new art pieces are added on display in 4 months after the opening of the art showroom.

Practice Test 1

13



In the figure above, what is the degree measure of x ?

14

A camera rental company charges a one-time fee of \$85 and \$95 for each day the camera is rented. Which of the following is the total cost of renting a camera, in dollars, for 4 days?

- A) \$180
- B) \$380
- C) \$435
- D) \$465

15

What is the perimeter of a rectangle with a width of 22 inches and a length of 7 inches?

- A) 29 inches
- B) 58 inches
- C) 68 inches
- D) 154 inches

16

$$5|3 + x| - 3|3 + x| = 38$$

What is the positive solution to the given equation?

17

The graph of $f(x) = -2x^2 + 10x - 9$ is a parabola in the xy -plane, where $y = f(x)$. In which of the following equivalent equations the maximum values of x and y appears as constants or coefficients?

- A) $f(x) = (x + 2)^2 + 9$
- B) $f(x) = 2(x - 5)^2 - 9$
- C) $f(x) = -2(x - 3.5)^2 - 4.5$
- D) $f(x) = -2(x - 2.5)^2 + 3.5$

18

$$f(x) = 5x^3 + ax + 3$$

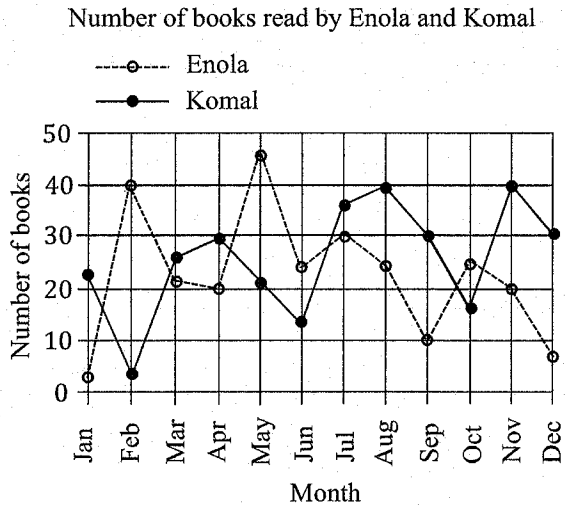
$$g(x) = 2x^3 - ax + 2$$

The function f and the function g are defined above. If $f(x) - g(x)$ is equivalent to $3x^3 + x + 1$, what is the value of a , where a is a constant?

- A) 0
- B) $\frac{1}{3}$
- C) $\frac{1}{2}$
- D) 1

Practice Test 1

19



The above line graph shows the number of books two friends Enola and Komal read each month last year. According to the graph, in which month was the difference between the number of books read by Enola and Komal the greatest?

- A) January
 B) February
 C) May
 D) December

20

$$ax + 1.2y = 9.0$$

$$0.5x + by = 1.5$$

The system of equations above is true for all values of x , and a and b are constants. What is the value of $\frac{a}{b}$?

- A) 0.2
 B) 2.4
 C) 6
 D) 15

21

In which of the following tables the relation between the values of a and their corresponding values of b is an exponential decrease?

A)

a	-1	0	1	2
b	32	16	8	4

B)

a	-4	-2	0	2
b	-16	-12	-8	-4

C)

a	-2	-1	0	1
b	-5	-9	-13	-17

D)

a	-2	-1	0	1
b	1	2	4	8

22

$$\frac{2x}{x^2 - 1} + \frac{1}{x + 1} = 1$$

Which of the following values of x satisfy the above equation, where x is greater than 0?

- A) 1
 B) 2
 C) 3
 D) 4

Digital SAT Math

Practice Test 1

Answers

Digital SAT Math Practice Test 1 Module 2.1 – Answers

*1 **A.** Mental Math: $5x - 2x = 9 \rightarrow 3x = 9 \rightarrow x = 3$.

*2 **D.** Simplify parentheses. $3x^4 - x^2 + x^2 + 2x^3 = 3x^4 + 2x^3$.

3 **C.** No Calculation Required: Read the graph. For $x = 10$ days, the value of $y = \text{total cost} = 375$.

4 **D.** Vertical angles are equal. Hence, $3x + 25 = 4x \rightarrow 4x - 3x = 25 \rightarrow x = 25 \rightarrow 4x = 100$.

*5 **B.** Mental Math: The slope is negative since the line slants downward from left to right. Hence, slope = $\frac{\text{rise}}{\text{run}} = -\frac{2}{1} = -2$. This eliminates answer choices A, C, and D.

6 **B.** No Calculation Required: $14m$ is 14 books per month for m months.

7 **D.** Multiply both sides of the equation by $2z$ and divide both sides of the equation by $2x + 5y$.

$$2z(2x + 5y) = \frac{45}{2z} \times 2z \rightarrow 2z(2x + 5y) = 45 \rightarrow \frac{2z(2x + 5y)}{2x + 5y} = \frac{45}{2x + 5y} \rightarrow 2z = \frac{45}{2x + 5y}$$

8 **-1/12.** $5k + 5x + 7k = 5x - 1 \rightarrow 5x + 12k = 5x - 1$. Hence, $12k = -1 \rightarrow k = -\frac{1}{12}$.

*9 **C.** No Calculation Required: Line has a positive slope, y -intercept = 1, and the solution set is above the line. This matches answer choice C.

*10 **A.** Square both sides. $(\sqrt{7x - 3})^2 = (\sqrt{2x + 17})^2 \rightarrow 7x - 2x = 17 + 3 \rightarrow 5x = 20 \rightarrow x = 4$. (*This question may be solved quicker using the Desmos graphing calculator.)

11 **A.** Mental Math: 4% decrease is 0.96. Every 3 years is $\frac{t}{3}$ per year for t year.

$$12 \text{ **B.** } \sqrt{a} = \frac{1}{\frac{1}{b^2}} \rightarrow \sqrt{a} = \frac{1}{\sqrt{b}} \rightarrow (\sqrt{a})^2 = \left(\frac{1}{\sqrt{b}}\right)^2 \rightarrow a = \frac{1}{b} \rightarrow b = \frac{1}{a}$$

*13 **B.** Mental Math: The value of constants A and B in the bottom equation are 20 fold of the corresponding values in the top equation, but the value of C in the bottom equation is one-tenth of the top equation. Hence, the ratios of A and B are same but different than C . Hence, the two equations graph parallel lines. (*This question may be solved quicker using the Desmos graphing calculator.)

14 **C.** No Calculation Required: ABC is 45:45:90 triangle with side ratio $a: a: a\sqrt{2} = AB: BC: AC$. Hence, if the length of AB (a) or of AC ($a\sqrt{2}$) is known, the length of BC (a) can be determined.

15 **B.** Order numbers least to greatest. Median is the average of the 3rd and 4th numbers. $\frac{92,956 + 97,820}{2} = 95,388$.

*16 **15.** Rearrange in the standard form: $x^2 + 10 - 8x + 5 = 0 \rightarrow x^2 - 8x + 15 = 0$. Product = $\frac{c}{a} = \frac{15}{1} = 15$.

*17 **B.** Divide coefficients of x and y by 2 to determine the factors. The factors are $(x - 2)^2$ and $(x + 5)^2$. Hence, $(x - 2)^2 + (x + 5)^2 = 7 + (-2)^2 + (5)^2 \rightarrow (x - 2)^2 + (x + 5)^2 = 36$. Hence, $r^2 = 36 \rightarrow r = 6$. Diameter = 12.

18 **10.** In Team B the number of girls is double = 20. Hence, in Team A the number of girls = 10. Since the ratio of girls to boys in Team A 1:1, the number of boys also = 10.

*19 **9.** $g(-3) = f(-3 + 1) + 3 = f(-2) + 3$. Plug in definition of $f(x)$. $g(-3) = ((5 \times -2) + 16) + 3 = 9$. (*This question may be solved quicker using the Desmos graphing calculator.)

20 **16.** $x + y = 90 \rightarrow 3b - 12 + 2b + 22 = 90 \rightarrow 5b + 10 = 90 \rightarrow 5b = 80 \rightarrow b = 16$.

21 **B.** Cost of 12 bags of popcorns = $2.25 \times 12 = 27$. Cost of x bags of pretzels = $2.50x$. Hence, $27 + 2.5x = 50 \rightarrow 2.5x = 23 \rightarrow x = 9.2 = 9$ whole bags.

***22 40** Since the equation has two real solutions, the discriminant is greater than 0. Rearrange as quadratic equation and evaluate the discriminant. $2x^2 + 12x + k = -6x \rightarrow 2x^2 + 18x + k = 0$

$$b^2 - 4ac > 0 \rightarrow (18)^2 - (4 \times 2 \times k) > 0 \rightarrow 324 - 8k > 0 \rightarrow 324 > 8k \rightarrow 40.5 > k \rightarrow k < 40.5$$

Since k is less than 40.5, the highest integer value is 40.

Digital SAT Math Practice Test 1 Section 2.2 – Answers

1 A. Mental Math: $57z - 29z = 28z$.

***2 8.** $5(5) + 3y - 8 = 41 \rightarrow 25 + 3y - 8 = 41 \rightarrow 3y = 41 - 25 + 8 = 24 \rightarrow y = 8$.

***3 10.** 5% as decimal is 0.05. Hence, $200 \times 0.05 = 10$.

***4 C. Mental Math:** At x -intercept, $y = 0$. Hence, $2x - 5(0) = 8 \rightarrow 2x = 8 \rightarrow x = 4$.

5 B. $75 \times \frac{\pi}{180} = \frac{75\pi}{180} = \frac{5\pi}{12}$.

6 D. Mental Math: $w^2 - 5w + 73w = w^2 + 68w$.

7 5. No Calculation Required: Slope of perpendicular line is negative reciprocal = 5.

***8 B.** Determine slope using any two points given in the table. Slope = $\frac{0 - (-2)}{14 - 10} = \frac{2}{4} = \frac{1}{2}$. This eliminates answer choices A, C, and D. (*Solving this question using the Desmos graphing calculator may be quicker, depending on the student.)

9 A. No Calculation Required: Mean cannot be calculated from a box plot.

10 C. No Calculation Required: In exponential function $y = a(b)^x$, a is the y -intercept. Hence, $a = 2.5$. This eliminates answer choices A and D. Since the function is exponential growth, $b > 1$. This eliminates answer choice B.

***11 30. Mental Math:** It can be observed that when the two equations are added the result is $2x + 2y = 3$. 10 times of this is $20x + 20y = 30$.

12 C. No Calculation Required: $f(4) = 30 = 18 + 3(4) = 18 + 12$. Hence, 12 new art pieces will be added in 4 months.

13 150. Mental Math: exterior angle = sum of the two adjacent angles. Hence, $x = 60 + 90 = 150$.

14 D. Rental cost for 4 days = $95 \times 4 = 380$. Total cost = $85 + 380 = 465$.

15 B. Perimeter = $2l + 2w = 2(7) + 2(22) = 14 + 44 = 58$.

***16 16.** Subtract units and solve for positive value: $2|3 + x| = 38 \rightarrow |3 + x| = 19 \rightarrow 3 + x = 19 \rightarrow x = 19 - 3 = 16$.

***17 D. Mental Math:** x -coordinate = $-\frac{b}{2a} = -\frac{10}{-4} = 2.5$. Only answer choice D matches this.

***18 C.** $(5x^3 + ax + 3) - (2x^3 - ax + 2) = 3x^3 + x + 1 \rightarrow 3x^3 + 2ax + 1 = 3x^3 + x + 1$.
Equate coefficients of x : $2a = 1 \rightarrow a = \frac{1}{2}$.

19 B. Mental Math: Observe the difference between the two points for each month. The greatest difference is in February.

20 D. Partial Mental Math: 9 in top equation is 6 times of 1.5 in the bottom equation. Since the system has infinitely many solutions, all constants in the top equation will be 6 fold of the bottom equation. Hence, $a = 3$ and $b = 0.2$. $\frac{a}{b} = \frac{3}{0.2} = 15$.

21 A. No Calculation Required: It can be observed that in answer choice A the decrease in the value of b is exponential.

***22 C.** $\frac{2x}{(x-1)(x+1)} = 1 \rightarrow \frac{2x}{(x-1)(x+1)} + \frac{1(x-1)}{(x+1)(x-1)} = 1 \rightarrow \frac{2x+x-1}{x^2-1} = 1 \rightarrow \frac{3x-1}{x^2-1} = 1 \rightarrow$

$$3x - 1 = x^2 - 1 \rightarrow x^2 - 3x = 0 \rightarrow x(x - 3) = 0 \rightarrow x = 0 \text{ and } 3. \text{ (Neither are extraneous solutions.)}$$

(*This question may be solved quicker using the Desmos graphing calculator.)

This page is intentionally left blank.

Digital SAT Math

Practice Test 2

Module 2.1

Test duration - 35 min

Total questions - 22

Time the test: If you have not completed all the questions in this module within 35 minutes, then leave the remaining questions and proceed to Module 2.2. You can complete the remaining questions after you have completed checking the answers.

Practice Test 2

1

4 times of a number x is equal to 15 added to 2 times of a number y . Which of the following represents this situation?

- A) $4x = 2y + 15$
- B) $4y = 2x + 15$
- C) $15x = 2y + 4$
- D) $15y = 2x + 4$

2

$$f(x) = x^4 + 2x^3 + 3x + 6$$

For the function f defined above, what is the value of $f(-2)$?

- A) -2
- B) 0
- C) 6
- D) 9

3

$$y = \frac{\left(\frac{x}{5}\right)}{10}$$

In the above equation x and y are variables. Which of the following expresses x in terms of y ?

- A) $x = \frac{1}{2}y$
- B) $x = \frac{1}{5}y$
- C) $x = 2y$
- D) $x = 50y$

4

Of the 315 novels in a library on a certain day, one-third of the novels were loaned to 5 community centers. If each community center received the same number of novels, n , which of the following equations can determine the value of n ?

- A) $\frac{1}{5n} = 315$
- B) $\frac{1}{3n} = 315$
- C) $3(5n) = 315$
- D) $2(n + 105) = 315$

5

A cosmetic company launched a new skin care product at a starting price of \$110. Each quarter the price of the product, in dollars, increased by 1% for q quarters. Which of the following equation models the price P of the new skin care product q quarters after launch?

- A) $P = 110(1.01)^{\frac{q}{4}}$
- B) $P = 110(1.01)^q$
- C) $P = 110(1.1)^q$
- D) $P = 110(1.1)^{4q}$

6

A plane flying at an average speed of 480 miles per hour, covers how much distance, in miles, in 1 minute?

Practice Test 2

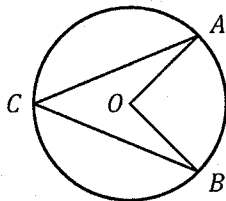
7

$$x + 2y = 4$$

$$7x + 3y = 17$$

The lines corresponding to the system of equations above intersect at the point (x, y) . What is the value of y ?

8



Note: Figure not drawn to scale

Point O is the center of the circle shown above and the minor arc \widehat{AB} is $\frac{4\pi}{9}$. What is the degree measure of the inscribed angle ACB ?

9

In the xy -plane, the graph of the function f defined by $f(x) = (x + 2)^2$ is translated to form the graph of the function g defined by $g(x) = x^2 + 2$. Which of the following statements is true about the translation of the graph of the function f to the graph of the function g ?

- A) A translation 2 units to the right.
- B) A translation 2 units down.
- C) A translation 2 units to the left and 2 units up.
- D) A translation 2 units to the right and 2 units up.

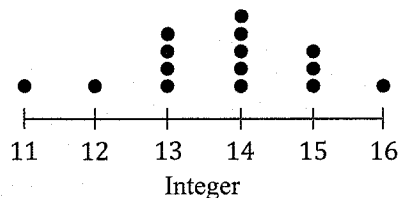
10

A teacher received 32 tests to grade. The teacher gave y tests to an assistant to grade. Of the remaining tests, the teacher graded x tests and had no more than 14 tests left to grade. Which of the following inequalities represents the situation in context?

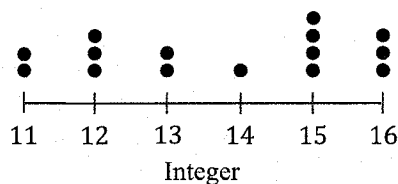
- A) $18 - x + y \leq 14$
- B) $32 - x - y \leq 14$
- C) $14 + x + y \geq 32$
- D) $32 - x - y \geq 18$

11

Data Set A



Data Set B



The above dot plots show the distribution of 6 integers in two data sets. Which of the following statements about the mean and the median of the two data sets is true?

- A) The means are the same, and the medians are the same.
- B) The means are the same, and the medians are different.
- C) The means are different, and the medians are the same.
- D) The means are different, and the medians are different.

Practice Test 2

12

$$f(x) = -4x^2 + 64x + 15$$

The function f is defined above. For what value of x does the function reach its maximum?

13

$$h(x) = \frac{x^2}{m} - 26$$

The function h is defined by the above equation, where m is a constant. If $h(20) = 74$, what is the value of m ?

14

	Fried fries	Baked fries	Total
With cheese	57	18	75
Without cheese	38	27	65
Total	95	45	140

The table below shows the distribution of the number of orders placed by customers at a certain restaurant for fried fries with or without cheese and baked fries with or without cheese. What is the probability that a randomly selected order is for fried fries without cheese or baked fries with cheese?

- A) $\frac{9}{70}$
 B) $\frac{19}{70}$
 C) $\frac{3}{8}$
 D) $\frac{2}{5}$

15

An office manager bought a new printer for the office. During the next 5 years, the value of the printer is expected to depreciate each year by a constant rate of 6% of the original price. Which of the following function best describes the depreciation of the printer over the next 5 years?

- A) Increasing linear
 B) Decreasing linear
 C) Increasing exponential
 D) Decreasing exponential

16

$$\frac{1}{2}x + \frac{1}{4}y = 1$$

$$2x + by = c$$

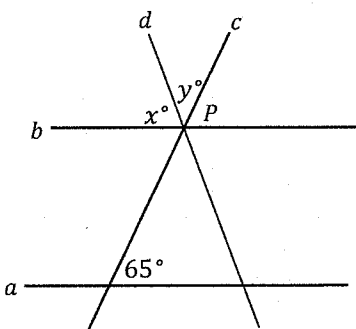
The system of equations above has no solution. Which of the following can be the possible values of b and c , where b and c are constants?

- I. $b = 1$ and $c = 2$
 II. $b = 1$ and $c = 4$
 III. $b = 4$ and $c = 1$

- A) I only
 B) III only
 C) I and II only
 D) II and III only

Practice Test 2

17



Note: Figure not drawn to scale

In the above figure, parallel lines a and b are intersected by lines c and d . Lines b , c , and d intersect at a point P . Which of the following expresses the degree measure of angle x in terms of the degree measure of angle y ?

- A) $x = y$
- B) $x = 65 + y$
- C) $x = 180 - y$
- D) $x = 115 - y$

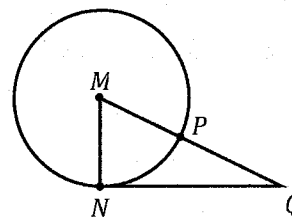
18

$$\begin{aligned} 2x - y &= 5 \\ 2x + y &= 3x^2 + 1 \end{aligned}$$

How many solutions does the above system of equations have?

- A) Zero
- B) Exactly one
- C) Exactly two
- D) Infinitely many

19



Note: Figure not drawn to scale

In the figure above, M is the center of the circle and \overline{NQ} is tangent to the circle at point N . If $MN = 1$ and $NQ = \sqrt{3}$, which of the following is the ratio of the minor arc \overline{PN} to the circumference of the circle?

- A) 1:1
- B) 1:2
- C) 1:3
- D) 1:6

20

The graph of an exponential function g in the xy -plane passes through the points $(0, 80)$ and $(2, 5)$. Which of the following equations is a possible definition of the function g ?

- A) $g(x) = 20(2)^x$
- B) $g(x) = 80(2)^x$
- C) $g(x) = 20\left(\frac{1}{2}\right)^x$
- D) $g(x) = 80\left(\frac{1}{4}\right)^x$

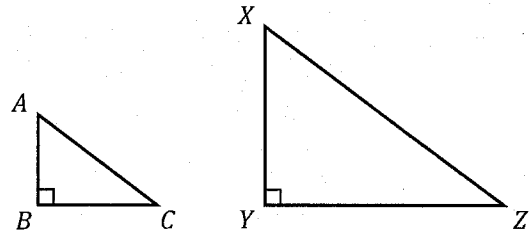
Practice Test 2

21

A baker has 88 cupcakes to distribute in 4-pack and 12-pack containers. The baker distributes the cupcakes in a total of 10 containers. If each container is full and all the cupcakes have been evenly distributed, what is the total number of cupcakes in the 12-pack containers?

- A) 6
- B) 22
- C) 40
- D) 72

22



Note: Figure not drawn to scale

In the above figure, triangle XYZ is formed by proportionally enlarging each side of the triangle ABC by two-fold. Vertices A , B , and C correspond to vertices X , Y , and Z . If $\sin A = 0.8$ and $BC = 12$ centimeters, what is the length of XY , in centimeters?

- A) 9
- B) 12
- C) 18
- D) 24

Digital SAT Math

Practice Test 2

Module 2.2

Test duration - 35 min

Total questions - 22

Time the test: If you have not completed all the questions in this module within 35 minutes, then leave the remaining questions and proceed to check the answers. You can complete the remaining questions after you have completed checking the answers.

Practice Test 2

1

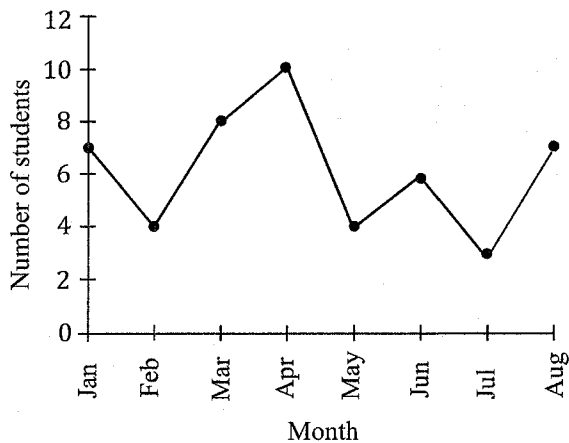
$$6b - 6 = 3b$$

What is the solution to the above equation?

2

The perimeter of a square is 480 centimeters. What is the length, in centimeters, of one side of the square?

3



The above line graph shows the number of students who participated in an after-school program at a certain middle school from January to August in 2020. Between which two months was the difference in the number of students who participated in the after-school program the greatest?

- A) February to March
- B) March to April
- C) April to May
- D) July to August

4

$$5.5a + 7.2b = 138$$

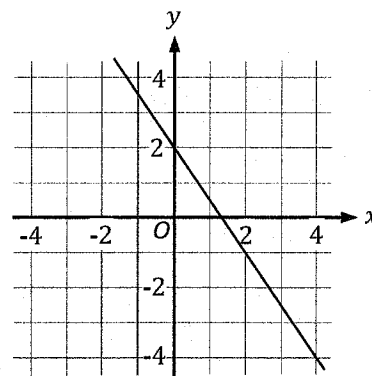
The equation above models a mixture of 10% alcohol, a , and 30% alcohol, b , to create 138 milliliters solution of a and b . If a is 12 milliliters, what is the value of b , in milliliters?

5

A bus traveled 5 miles at a constant speed in 10 minutes. What was the average speed of the bus in miles per hour during the 5 mile travel?

- A) 5 miles per hour
- B) 12 miles per hour
- C) 25 miles per hour
- D) 30 miles per hour

6



In the xy -plane, the equation of the line shown in the above graph can be written as $ax + by = 6$, where a and b are constants. What is the value of b ?

- A) 3
- B) 5
- C) 6
- D) 8

Practice Test 2

7

$$21p + 6q = 12r$$

The above equation relates three positive numbers p , q , and r . Which equation correctly expresses q in terms of p and r ?

- A) $q = 16p + 12r$
- B) $q = 12r - 16p$
- C) $q = 2r - \frac{7}{2}p$
- D) $q = 2r + \frac{7}{2}p$

8

In a right triangle ABC (not shown), angle B is the right angle, $AB = 5$ centimeters, and $AC = 13$ centimeters. What is the area of triangle ABC , in square centimeters?

- A) 18
- B) 30
- C) 60
- D) 65

9

The expression $\frac{32x+8}{56}$ is equivalent to $\frac{8x+2k}{14}$, where k is a constant and x is greater than 0. What is the value of k ?

10

$$f(x) = -x + 5$$

The definition of the linear function f is given above. Which of the following table gives three values of x and their corresponding values of y , where $y = f(x)$?

A)

x	y
1	-4
-1	6
0	5

B)

x	y
-2	7
1	4
6	-1

C)

x	y
-3	2
0	5
5	1

D)

x	y
0	3
2	4
4	6

11

Which of the following is equivalent to $\sqrt[3]{64a^9}$?

- A) $3a$
- B) $3a^3$
- C) $4a^3$
- D) a^9

Practice Test 2

12

In the xy -plane, line l has a slope of 3. Line p is perpendicular to the line l and passes through the point $(-3, 3)$. Which of the following are the coordinates of the x -intercept of line p ?

- A) $(-3, 0)$
- B) $(0, 0)$
- C) $(3, 0)$
- D) $(6, 0)$

13

In the equation $3(2n + 8) - 100 = (2n + 8)$, what is the value of $n + 4$?

14

$$h(t) = 8 + 0.5t$$

The above function models the height of a tree t years after 2012. For what value of t is $h(t) = 15$?

- A) 6
- B) 7
- C) 11
- D) 14

15

$$2(x + 1) - 4ax - 3 = -1$$

In the above equation, a is a constant. For what value of a , the equation has infinitely many solutions?

16

$$D(t) = 110(0.98)^{(n)t}$$

A radioactive substance decays, in milligrams, by 0.2% every 30 months. The function D above models this situation in t years, where n is a positive constant. Which of the following could be a value of n ?

- A) $\frac{1}{3}$
- B) $\frac{2}{5}$
- C) 1
- D) 2.5

17

$$1.85w + 8.99f = 96.75$$

The above equation models the total amount, in dollars, Zoe paid for w pounds of wool and f yards of fabric. What is the best interpretation of $8.99f$ in this context?

- A) The total amount, in dollars, Zoe paid for f yards of fabric.
- B) The total amount, in dollars, Zoe paid for w pounds of wool.
- C) The total amount, in dollars, Zoe paid for f yards of fabric and w pounds of wool.
- D) The total yards of fabric Zoe bought.

18

$$x - \sqrt{x} - 2 = 0$$

What value of x satisfies the above equation?

Practice Test 2

19

In the xy -plane, the equation of Circle A is defined by the equation $(x - 2)^2 + (y + 7)^2 = 125$. Circle B is a result of translating the graph of Circle A up 5 units. What are the (x, y) coordinates of the center of Circle B?

- A) $(-2, 2)$
- B) $(2, -7)$
- C) $(2, -2)$
- D) $(2, 12)$

20

In the linear function f , $f(2) = 5$ and $f(6) = 7$. Which equation defines f ?

- A) $f(x) = 0.5x + 4$
- B) $f(x) = x + 3$
- C) $f(x) = 2x + 2$
- D) $f(x) = 2x + 7$

21

Jing is cleaning her magazine shelf to make room for new magazines. After Jing gave 15% of the magazines to her cousin and 20% of the magazines to her friend, Jing had 34 magazines left. How many magazines did Jing have before she gave them to her cousin and friend?

- A) 23
- B) 30
- C) 50
- D) 65

22

$$f(x) = x^3 + 14$$

Function f is defined above. Function g is defined by $g(x) = f(x + 2)$. Which of the following table gives three values of x and their corresponding values of y on the graph of the function g in the xy -plane, where $y = g(x)$?

A)

x	y
-2	6
-1	13
0	14

B)

x	y
-2	14
-1	15
0	22

C)

x	y
0	14
1	10
2	8

D)

x	y
0	22
2	14
4	12

Digital SAT Math

Practice Test 2

Answers

SAT Math Practice Test 2 Module 2.1 – Answers

1 A. Mental Math: 4 times of x is $4x$. 2 times of y plus 15 is $2y + 15$. Hence, $4x = 2y + 15$

***2 B.** $f(-2) = (-2)^4 + 2(-2)^3 + 3(-2) + 6 = 16 + 2(-8) - 6 + 6 = 16 - 16 - 6 + 6 = 0$.

(*This question may be solved quicker using the Desmos graphing calculator.)

3 D. $y = \frac{x}{5} \div 10 \rightarrow y = \frac{x}{5} \times \frac{1}{10} \rightarrow y = \frac{x}{50} \rightarrow x = 50y$.

4 C. Mental Math: Since each community center received n novels, 5 community centers received $5n$ novels. This is one-third of 315. Hence, $\frac{1}{3}(315)$ is equal to $5n$, same as $3(5n) = 315$.

5 B. Mental Math: 1% increase as decimal is 1.01 and time interval is per q . This matches answer choice B.

6 8. Mental Math: Miles per minute is 480 divided by 60 equal to 8.

$$\begin{array}{r} *7 \text{ 1.} \\ 7(x + 2y = 4) \\ -(7x + 3y = 17) \\ \hline -11y = -13 \end{array} \rightarrow \begin{array}{r} 7x + 14y = 28 \\ -7x - 3y = -17 \\ \hline 11y = 11 \rightarrow y = 1 \end{array}$$

(*This question may be solved quicker using the Desmos graphing calculator.)

8 40. $\widehat{AB} = \frac{4\pi}{9} \times \frac{180}{\pi} = 80^\circ = \text{central angle}$. Hence, inscribed angle $ACB = \frac{80}{2} = 40$.

***9 D. Mental Math:** Horizontal change from $(x + 2)^2$ to x^2 is 2 units to the right. Vertical change from 0 to 2 is 2 units up.

10 B. Mental Math: Total left after giving and completing is $32 - x - y$. This is at the most 14, same as 14 or less. This matches answer choice B.

11 C. Mental Math: There are 15 data points in each dot plot. Medians are same since the 8th dot in both dot plots is for the integer 14. Means are different since the distribution of integers is different. Calculate the means, as desired.

***12 8. Mental Math:** The maximum value of x is the x -coordinate of the vertex $= -\frac{b}{2a} = -\frac{64}{2 \times -4} = 8$.

(*This question may be solved quicker using the Desmos graphing calculator.)

13 4. $h(20) = 74 = \frac{20 \times 20}{m} - 26 \rightarrow 74 + 26 = \frac{400}{m} \rightarrow 100m = 400 \rightarrow m = 4$.

14 D. Probability $= \frac{\text{all fried fries without cheese} + \text{all baked fries with cheese}}{\text{all fries}} = \frac{38+18}{140} = \frac{56}{140} = \frac{2}{5}$.

15 B. No Calculation Required: The depreciation each year is at a constant rate (linear) of 6% of the original price.

16 A. Mental Math: The coefficients of a and b in the two equations must same but different than coefficient of c . The value of coefficient a in the bottom equation is 4 times the value of coefficient a in the top equation. Hence, the value of coefficient b in the bottom equation must be 4 times. 4 times of one-fourth is 1. Hence, b must be 1. The value of coefficient c in the bottom equation cannot be 4 times of 1. Hence, c cannot be 4.

17 D. Mental Math: At point P on the line b , $x + y + \text{unknown angle} = 180$. Since 65° angle and unknown angle are corresponding angles, unknown angle $= 65$. Hence, $x + y + 65 = 180 \rightarrow x + y = 115 \rightarrow x = 115 - y$.

***18 A.** $2x - y = 5 \rightarrow y = 2x - 5$ and $2x + y = 3x^2 + 1 \rightarrow y = 3x^2 - 2x + 1$.

Equate and create one equation: $2x - 5 = 3x^2 - 2x + 1 \rightarrow 3x^2 - 2x - 2x + 1 + 5 = 0 \rightarrow 3x^2 - 4x + 6 = 0$.

Check the discriminant: $(-4)^2 - (4 \times 3 \times 6) = 16 - 72 = -56 = \text{no solution}$.

(*This question may be solved quicker using the Desmos graphing calculator.)

19. 12 D. Mental Math: Since angle N is 90° , MNQ is a right triangle. The side ratio $MN:NQ = 1:\sqrt{3}$ is the ratio of the 30-60-90 triangle. Hence, $MN:NQ:MQ = 1:\sqrt{3}:2 = 30^\circ:60^\circ:90^\circ$. Since angle M is opposite to NQ , angle $M = 60^\circ$ and the corresponding arc NP also $= 60^\circ$. Ratio of arc NP to circumference is $60:360$ equal to $1:6$.

20 D. Mental Math: Point (0, 80) is the y -intercept. Hence, $a = 80$. This eliminates answer choices A and C. Based on the given points, y decreases with increase in x . This is exponential decay. Hence, $0 < b < 1$. This eliminates answer choice B that has $b = 2$.

***21 B.** Let $x = 4$ -pack containers. Let $y = 12$ -pack containers.

Equation 1: $x + y = 10$. Equation 2: $4x + 12y = 88$.

Solve y :

$$\begin{array}{r} 4x + 12y = 88 \\ -4(x + y = 10) \end{array} \rightarrow \begin{array}{r} 4x + 12y = 88 \\ \underline{-4x - 4y = -40} \\ 8y = 48 \rightarrow y = 6 \end{array}$$

Total cupcakes = $6 \times 12 = 72$.

22 C. The two triangles are similar triangles and $XY = 2AB$. $\sin A = 0.8 = \frac{8}{10} = \frac{4}{5} = \frac{BC}{AC}$. Hence, $AB:BC:AC = 3:4:5$.

Since $BC = 12$ centimeters is 3 times of the ratio component 4, all the side lengths in centimeter will be 3 times of their ratio component. Hence, $AB = 3 \times 3 = 9$ centimeters and the corresponding side $XY = 2AB = 2 \times 9 = 18$.

SAT Math Practice Test 2 Module 2.2 – Answers

***1 2. Mental Math:** $6b - 3b = 6 \rightarrow 3b = 6 \rightarrow b = 2$.

2 120. Mental Math: $4s = 480 \rightarrow s = 120$.

3 C. No Calculation Required: From the graph it is visible that the greatest difference is between April and May.

4 10. $(5.5 \times 12) + 7.2b = 138 \rightarrow 66 + 7.2b = 138 \rightarrow 7.2b = 72 \rightarrow b = 10$.

5 D. Mental Math: 1 hour is 6 times of 10 minutes. Hence, miles will also be 6 times in 1 hour. 6 times 5 miles = 30 miles per hour.

6 A. Mental Math: y -intercept from graph is 2 and y -intercept from equation is $\frac{6}{b}$. Hence, $\frac{6}{b} = 2 \rightarrow 2b = 6 \rightarrow b = 3$.

7 C. $6q = 12r - 21p \rightarrow q = \frac{12r}{6} - \frac{21p}{6} \rightarrow q = 2r - \frac{7p}{2}$.

8 B. Draw the triangle, if needed. Since B is the right angle, AB and BC are the two legs, length and base, and AC is the hypotenuse. 5: 13 is the ratio of Pythagorean triple 5: 12: 13. Hence, (leg 1): (leg 2): $AC = 5: 12: 13 \rightarrow \text{leg } 2 = 12$.

$$\text{area} = \frac{1}{2} \times \text{leg } 1 \times \text{leg } 2 = \frac{1}{2} \times 5 \times 12 = 30$$

9 1. In the expression $\frac{32x+8}{56}$, $32x$ and 8 are four times of $8x$ and 2 , respectively. Hence, $4\left(\frac{8x+2k}{14}\right) \rightarrow \frac{32x+8k}{56}$.

$k = 2$ for the two expressions to be equivalent.

***10 B.** Start with the x value of the point from the table in the first answer choice. Plug it in the given equation and evaluate the corresponding y value. It must match with the y value in the table. The table that contains all three correct x and y values is the correct choice. (*This question may be solved quicker using the Desmos graphing calculator.)

11 C. Mental Math: The expression is under cube root. The cube root of 64 is 4 and the cube root of a^9 is a^3 . Hence, cube root of $64a^9$ is $4a^3$.

12 D. Slope of $p = -\frac{1}{3}$. Set up slope equation using given point and the x -intercept $(x, 0)$ and equate to slope to determine

$$x. \frac{0-3}{x-(-3)} = -\frac{1}{3} \rightarrow \frac{-3}{x+3} = -\frac{1}{3} \rightarrow x+3 = 9 \rightarrow x = 6. \text{ Hence, } x\text{-intercept} = (6, 0).$$

(*This question may be solved quicker using the Desmos graphing calculator.)

***13 25.** $3(2n + 8) - (2n + 8) = 100 \rightarrow 2(2n + 8) = 100 \rightarrow 2n + 8 = 50 \rightarrow 2(n + 4) = 50 \rightarrow n + 4 = 25$.

14 D. Mental Math: $15 = 8 + 0.5t \rightarrow 0.5t = 15 - 8 = 7 \rightarrow t = 14$.

15 1/2 or 0.5. $2x + 2 - 4ax - 3 = -1 \rightarrow 2x(1 - 2a) - 1 = -1$. Since the right-side expression does not have variable x , $1 - 2a$ must be 0. Hence, $1 - 2a = 0 \rightarrow 1 = 2a \rightarrow a = \frac{1}{2} = 0.5$.

16 B. Mental Math: Every 30 months is once every 2.5 year, which is $\frac{1}{2.5}$ per year t . This is same as $\frac{2}{5}$.

17 A. No Calculation Required: $8.99f$ is the total cost of f yards of fabric.

18 4. Rearrange to remove square root. $x - 2 = \sqrt{x} \rightarrow (x - 2)^2 = x \rightarrow x^2 - 4x + 4 = x \rightarrow x^2 - 5x + 4 = 0$. Factorize. $(x - 1)(x - 4) = 0 \rightarrow x = 1$ and 4 .

Check extraneous solution. Plug $x = 1$: $1 - \sqrt{1} - 2 = 0 \rightarrow 1 - 1 - 2 = 0 \rightarrow -2 = 0$. Hence, 1 is an extraneous solution.

Plug $x = 4$: $4 - \sqrt{4} - 2 = 0 \rightarrow 4 - 2 - 2 = 0 \rightarrow 0 = 0$. Hence, 4 is a real solution.

(*This question may be solved quicker using the Desmos graphing calculator.)

19 C. Mental Math: From the given equation of Circle A the coordinates of the center are $(2, -7)$. Translation up by 5 units is moving the y coordinate of a circle up (positive) by 5 units. Hence, the y -coordinate of the center of Circle B is $-7 + 5 = -2$. The x -coordinate of the center of Circle B does not change. The coordinates of the center of Circle B are $(2, -2)$.

***20 A.** The two points are $(2, 5)$ and $(6, 7)$.

Slope = $\frac{7-5}{6-2} = \frac{2}{4} = 0.5$. Hence, $f(x) = 0.5x + b$.

Plug in either given point in the above equation to determine the y -intercept. $5 = 0.5(2) + b \rightarrow 5 = 1 + b \rightarrow b = 4$.

Hence, $f(x) = 0.5x + 4$.

21 C. Beginning number = $\frac{34}{0.85 \times 0.8} = 50$.

***22 B.** The translated function is $g(x) = (x + 2)^3 + 14$. Start with the x value of the point from the table in the first answer choice. Plug it in the given equation and evaluate the corresponding y value. It must match with the y value in the table. The table that contains all three correct x and y values is the correct answer choice. (*This question may be solved quicker using the Desmos graphing calculator.)

This page is intentionally left blank.

Digital SAT Math

Practice Test 3

Module 2.1

Test duration - 35 min

Total questions - 22

Time the test: If you have not completed all the questions in this module within 35 minutes, then leave the remaining questions and proceed to Module 2.2. You can complete the remaining questions after you have completed checking the answers.

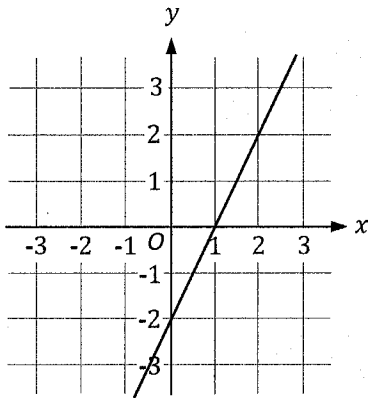
Practice Test 3

1

Jasmine works at a lemonade stand. She earns a fixed amount of \$90 for each day she works, in addition to \$0.30 for each lemonade she sells. If Jasmine sells x lemonades in a day, which of the following equations represents her total earning, e , on any day, in terms of x ?

- A) $e = 90 + 0.30x$
- B) $e = 90 - 0.30x$
- C) $e = 90 + 0.30 + x$
- D) $e = 90 + 0.30 - x$

2



The graph of a line is shown above in the xy -plane. Which of the following could be an equation of the line?

- A) $-x - y = -2$
- B) $-2x - y = 2$
- C) $-2x + y = 2$
- D) $2x - y = 2$

3

$$4(x + 3) - (x + 3) = 18$$

What value of x satisfies the equation above?

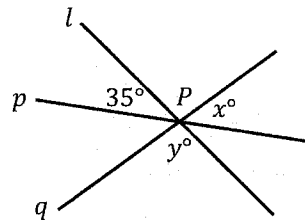
4

$$\frac{5}{a+4} = 1 - \frac{8}{a+4}$$

What is the value of a in the above equation, where $a \neq 4$?

- A) 1
- B) 3
- C) 5
- D) 9

5



Note: Figure not drawn to scale.

In the figure above lines l , p , and q intersect at the point P . What is the value of $x + y$, in degrees?

- A) 45
- B) 90
- C) 145
- D) 180

Practice Test 3

6

Which of the following expressions is equivalent to $(x^3 + x^2 - xy) - x(-x^2 + y)$

- A) $x^3 - 2x^2 - xy$
- B) $2x^3 + x^2 - 2xy$
- C) $2x^3 + 3x^2 - 2xy$
- D) $3x^3 + 3x^2 + 2xy$

7

A random sample of people from a total population of 100,000 was surveyed about a proposed legislative bill. Based on the survey, it was concluded that 60,000 of the people from the total population supported the proposed legislative bill with an associated margin of error of 5%. Which of the following statements is true about the results of the survey?

- A) 60% of the people from the total population supported the proposed legislative bill.
- B) 65% of the people from the total population supported the proposed legislative bill.
- C) It is plausible that between 60% and 65% of the people from the total population supported the proposed legislative bill.
- D) It is plausible that between 55% and 65% of the people from the total population supported the proposed legislative bill.

8

In the xy -plane, what is the y -coordinate of the y -intercept of the graph of $f(x) = 3(4)^x - 1$, where $y = f(x)$?

- A) -1
- B) 2
- C) 3
- D) 12

9

In 2010, a non-profit organization started a program to collect used cell phones. In the first year of the program, the organization collected 40 cell phones. Over the next t years, the number of cell phones collected tripled each year than the previous year. If $p(t)$ is the number of cell phones collected in t years, which of the following is the best interpretation of the function p ?

- A) Linear increase
- B) Linear decrease
- C) Exponential growth
- D) Exponential decay

10

$$f(x) = ax + 7$$

In the function f above, a is a constant and $f(3) = 13$. What is the value of $f(-3)$?

11

$$\frac{5^{-(3a+2)}}{5^{-2}}$$

Which of the following is equivalent to the above expression, where $a > 0$?

- A) $\left(\frac{1}{5}\right)^{3a}$
- B) $5\left(\frac{1}{5}\right)^{3a}$
- C) 25^{3a}
- D) 0

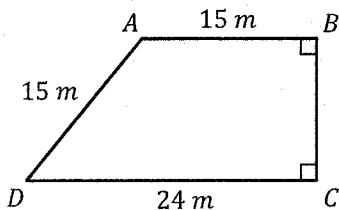
Practice Test 3

12

$$f(x) = \frac{3}{4}x + \frac{5}{2}$$

In the xy -plane, the graph of $y = f(x)$ is defined by the above equation. The graph of $y = g(x)$ is a result of translation of the graph of $y = f(x)$ by 3 units to the right. What is the value of $g(0)$?

13



Note: Figure not drawn to scale.

What is the area, in square meters, of the trapezoid $ABCD$ shown above? (m = meters).

- A) 64
- B) 79
- C) 192
- D) 234

14

A pizza shop cashier is counting the number of dimes and quarters in the cash register. The cashier counts a total of 80 dimes and quarters with a dollar value of \$15.20. How many dimes are in the cash register?

- A) 10
- B) 25
- C) 32
- D) 40

15

$$2x + 5y = k$$

The above equation graphs a line in the xy -plane, where k is a constant. Which of the following is true about the x -intercept and the y -intercept of the line in terms of k ?

- A) x -intercept = $(\frac{k}{2}, 0)$ and y -intercept = $(0, \frac{k}{5})$
- B) x -intercept = $(\frac{k}{5}, 0)$ and y -intercept = $(0, \frac{k}{2})$
- C) x -intercept = $(\frac{k}{2}, 0)$ and y -intercept = $(0, k)$
- D) x -intercept = $(2k, 0)$ and y -intercept = $(0, 5k)$

16

The annual bonus, in dollars, Jay received in 2021 was 80% of the annual bonus, in dollars, Jay received in 2020. If Jay received an annual bonus of \$20,000 in 2021, how much bonus did Jay receive in 2020?

- A) \$16,000
- B) \$20,080
- C) \$25,000
- D) \$30,000

17

Which of the following is a factor of the polynomial function $p(x) = 2x^3 - 5x^2 + 5x - 6$?

- A) $(x - 1)$
- B) $(x - 2)$
- C) $(x + 1)$
- D) $(x + 2)$

Practice Test 3

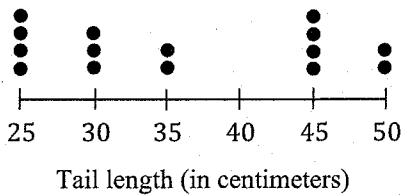
18

In the xy -plane, the vertex of a parabola is $(4, 32)$. If the equation of the parabola is written in the form $y = ax^2 + bx + c$, where a , b , and c are constants, which of the following expresses c in terms of a ?

- A) $c = 4a$
- B) $c = 32a$
- C) $c = 2(4a + 1)$
- D) $c = 16(a + 2)$

19

Tail Length of 15 Cows



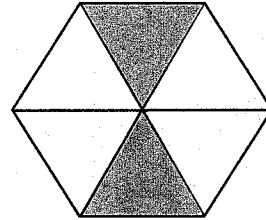
The dot plot above shows the tail length, in centimeters, of 15 cows. Which of the following is true about the mean and the median of the data?

- A) Mean = 35 and Median = 35
- B) Mean = 36 and Median = 35
- C) Mean = 36 and Median = 45
- D) Mean = 45 and Median = 45

20

In the xy -plane a line passes through the points $(d, 0)$, $(6, 6)$, and $(5 + d, 10)$, where d is a constant. What is the value of d ?

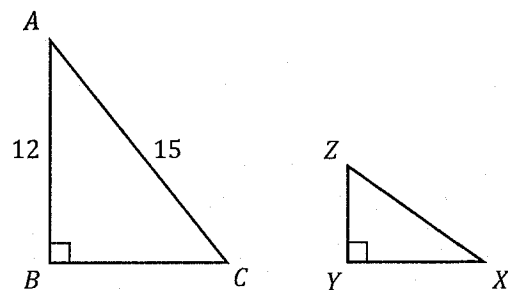
21



The above figure is formed by six adjacent and congruent equilateral triangles. The perimeter of the figure is 12 centimeters. What is the combined area of the shaded region, in square centimeters?

- A) $\sqrt{3}$
- B) $2\sqrt{3}$
- C) $\sqrt{3} + 2$
- D) 24

22



Note: Figure not drawn to scale.

In the figure above, ABC and XYZ are similar triangles with vertices A , B , and C corresponding to vertices X , Y , and Z , respectively. What is the value of $\cos Z$?

Digital SAT Math

Practice Test 3

Module 2.2

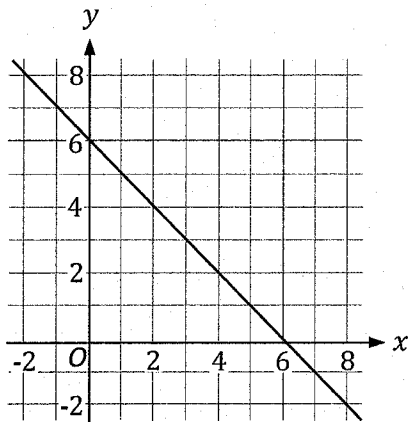
Test duration - 35 min

Total questions - 22

Time the test: If you have not completed all the questions in this module within 35 minutes, then leave the remaining questions and proceed to check the answers. You can complete the remaining questions after you have completed checking the answers.

Practice Test 3

1



In the xy -plane the graph of a linear function h is given above. Which of the following table gives three values of x and their corresponding values of y , where $y = h(x)$?

A)

x	y
-2	8
0	6
10	4

B)

x	y
-3	9
1	5
10	-4

C)

x	y
-3	10
6	0
8	-2

D)

x	y
4	1
7	3
10	2

2

Approximately 60% of the trees in a certain farm are pear trees. If a represents the number of pear trees and b represents the number of total trees in the farm, which of the following equation expresses a in terms of b ?

- A) $a = 0.6b$
 B) $a = 0.4b$
 C) $a = \frac{0.6}{b}$
 D) $a = \frac{b}{0.4}$

3

$$\frac{1}{3x+2} + 3$$

Which of the following expression is equivalent to the above expression?

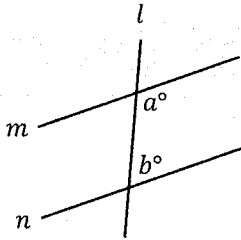
- A) $\frac{5}{3x+2}$
 B) $\frac{9x+7}{3x+2}$
 C) $\frac{12x+8}{3x+2}$
 D) $\frac{12x+9}{3x+2}$

4

A drilling machine can drill 4,200 feet in an hour at a constant rate. If 140 feet below the surface of the ground are already drilled, how many minutes will it take the drilling machine to reach 840 feet from the surface of the ground?

Practice Test 3

5



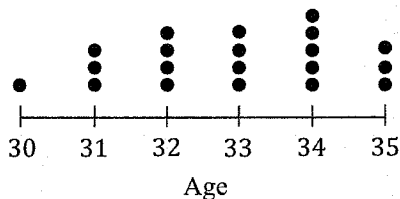
Note: Figure not drawn to scale.

In the figure above, line l intersects parallel lines m and n . If $a = (4x)^\circ - 10^\circ$ and $b = (2.5x)^\circ - 5^\circ$, what is the value of x ?

- A) 15
- B) 24
- C) 30
- D) 40

6

Age distribution of 20 friends in a group



The above dot plot shows the distribution of the ages of 20 friends in a group, where age is a whole number. If a new 32-year-old friend joins the group and the mean, the median, and the range of the ages in the group are compared before and after the new friend joins the group, which of the following measures change?

- I. Mean
 - II. Median
 - III. Range
- A) I only
 - B) II only
 - C) I and II only
 - D) I, II, and III

7

The expressions $(ax + 2)(x + 6)$ and $(x + 4)^2 + c$ are equivalent, where a and c are constants. What is the value of $a - c$?

8

The equation of Circle M in the xy -plane is $x^2 + 2x + y^2 + 14x - 50 = 0$. Circle N has the same center as Circle M. The diameter d of Circle N is three times the diameter of Circle M, where d is a constant. What is the value of d ?

9

Tanika bought a tray of 40 assorted cookies. The tray contained an assortment of oatmeal cookies, sugar cookies, and chocolate chip cookies. If $\frac{1}{4}$ of the cookies were oatmeal cookies and of the remaining cookies $\frac{2}{3}$ were sugar cookies, how many chocolate cookies were in the tray?

10

A certain plastic sample in the form of a right rectangular prism has a density of 4.8 grams per cubic centimeter. The length, the width, and the height of the sample are 1.2 centimeters, 0.5 centimeters, and 0.8 centimeters, respectively. Which of the following is the approximate mass, in grams, of the plastic sample?

- A) 0.1
- B) 2.1
- C) 7.5
- D) 8.6

Practice Test 3

11

$$4x^2 + 40x = 3x + 30$$

Which of the following expressions is a factor of the given equation?

- A) $4x - 3$
- B) $2x - 7$
- C) $x - 10$
- D) $3x + 4$

12

$$x < 5$$

$$y > -5$$

Which of the following table contains three values of x and their corresponding values of y that are solution to the given system of inequalities?

A)

x	-4	5	4
y	-4	-5	9

B)

x	-6	3	4
y	-4	-3	9

C)

x	-6	5	6
y	-4	-5	7

D)

x	-8	4	6
y	-8	4	7

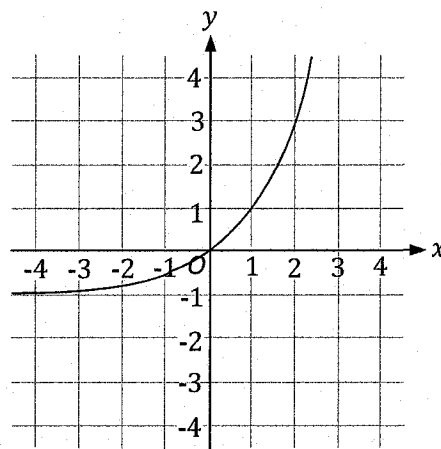
13

$$h = 21 + 2.8t$$

Sara planted a 21 centimeters tall plant in her garden. In t years, she estimates the height h of the plant, in centimeters, by the above equation. For what value of t will the height of the plant increase by 1 centimeter?

- A) $\frac{1}{21}$
- B) $\frac{1}{2.8}$
- C) 1
- D) 2.8

14

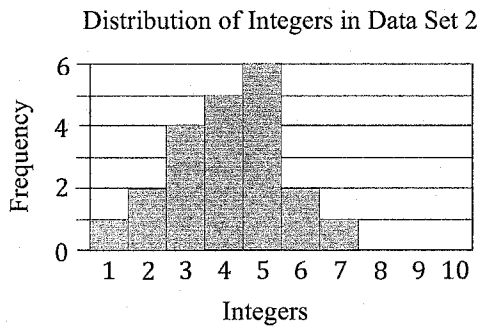
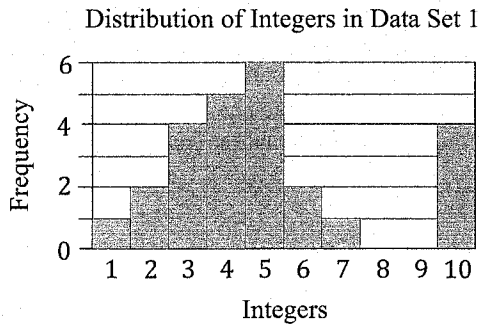


In the xy -plane, the graph of $y = f(x) - 1$ is shown above. Which of the following equation defines the graph of $y = f(x)$?

- A) $f(x) = 2(3)^x + 1$
- B) $f(x) = 2^x - 1$
- C) $f(x) = 3^x$
- D) $f(x) = 2^x$

Practice Test 3

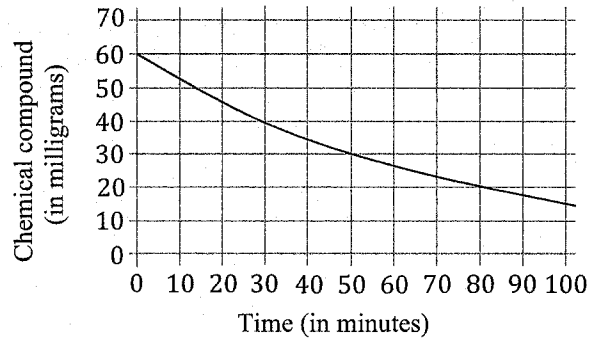
15



The histograms above show the distribution of integers from 1 to 10 in two different data sets. Data Set 2 is created by removing the highest integer 10 from the Data Set 1. When comparing Data Set 2 with Data Set 1, which of the following statement is true about the mean and median of the data sets?

- A) Data Set 1 and 2 have the same means, and the same medians.
- B) Data Set 1 and 2 have different means, but the same medians.
- C) Data Set 1 and 2 have the same means, but different medians.
- D) Data Set 1 and 2 have different means and different medians.

16



The above graph shows the exponential decay of 60 milligrams of a certain chemical compound after it enters the human body. Which of the following function most accurately model the amount $A(m)$, in milligrams, of the chemical compound m minutes after it enters the human body?

- A) $A(m) = 60 \left(\frac{1}{2}\right)^{\frac{m}{50}}$
- B) $A(m) = 60 \left(\frac{1}{2}\right)^{\frac{m}{30}}$
- C) $A(m) = 60 \left(\frac{1}{2}\right)^{\frac{m}{2}}$
- D) $A(m) = 60 \left(\frac{1}{2}\right)^m$

17

A library has allocated a budget of \$760 or less to buy no more than 35 magazines and comic books combined. The cost of each magazine is \$15 and the cost of each comic book is \$25. If the library wants to buy at least 24 comic books, what is the maximum number of magazines the library can buy?

- A) 8
- B) 10
- C) 11
- D) 15

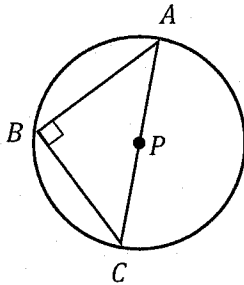
Practice Test 3

18

The population of a certain city in 2021 was 100,000. A model predicts that every 18 months for the next 6 years, the population will decrease by 10% than the population of the preceding 18 months. According to the model what is the predicted decrease in the population of the city in 6 years after 2021?

- A) 34,390
- B) 40,000
- C) 46,855
- D) 60,000

19



Triangle ABC is inscribed in a circle with center P . Line segment $AB = 24$ and $\sin A = 0.6$. What is the radius of the circle?

20

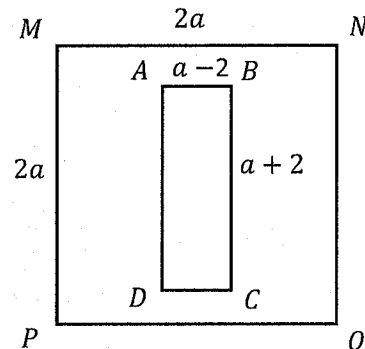
The graph of the quadratic function f written as $f(x) = (x + r)(x + s)$, where r and s are constants, intersects the x -axis at $(\frac{4}{5}, 0)$ and $(\frac{9}{4}, 0)$. The graph of the function g , where $y = g(x)$, is a result of translating the graph of the function f down 15 units. What is $g(0)$?

21

Rose went to a garden center to buy granular fertilizer for her lawn. Each bag of the granular fertilizer contains 20 pounds of granules. The total area of the lawn is 21,500 square feet and each 20 pounds bag of the granular fertilizer covers 4,000 square feet of the lawn. How many minimum 20 pounds bags of the granular fertilizer Rose must buy to cover the 21,500 square feet lawn with the granular fertilizer?

- A) 5
- B) 6
- C) 20
- D) 54

22



In the figure above, the rectangle $ABCD$ is inscribed in the square $MNOP$. The dimensions of the rectangle are $(a - 2)$ by $(a + 2)$, and each edge of the square is $2a$, where a is a constant greater than 0. In context of the given dimensions, what could $3a^2 + 4$ represent?

- A) The perimeter of the square.
- B) The perimeter of the inscribed rectangle.
- C) The combined area of the inscribed rectangle and the square.
- D) The area of the square not covered by the inscribed rectangle.

Digital SAT Math

Practice Test 3

Answers

SAT Math Practice Test 3 Module 2.1 – Answers

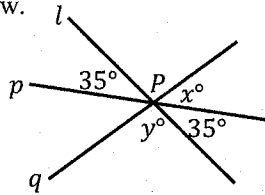
1 A. No Calculation Required: Fixed daily earnings = 90. Earnings from x lemonades sold in a day = $0.30x$. Hence, total = $e = 90 + 0.30x$.

***2 D. Mental Math:** From the graph, the y -intercept = -2 . Evaluate each answer choice for $\frac{C}{B} = -2$. This eliminates answer choices A and C. Slope is positive based on the slant of the line. Evaluate the remaining answer choices B and D for positive slope = $-\frac{A}{B}$. This eliminates answer choice B.

***3.** $4(x + 3) - (x + 3) = 18 \rightarrow 3(x + 3) = 18 \rightarrow 3x = 9 \rightarrow x = 3$.

***4 D.** $\frac{5}{a+4} + \frac{8}{a+4} = 1 \rightarrow \frac{5+8}{a+4} = 1 \rightarrow \frac{13}{a+4} = 1 \rightarrow 13 = a + 4 \rightarrow a = 13 - 4 = 9$.

5 C. Mental Math: See vertical angles in the figure below.



Since angles on a straight line add to 180, $x + 35 + y$ is equal to 180 and $x + y$ is equal to $180 - 35 = 145$.

6 B. Simplify parentheses and combine like terms: $x^3 + x^2 - xy + x^3 - xy = 2x^3 + x^2 - 2xy$.

7 D. Mental Math: 60,000 out of 100,000 is 60%. With the 5% margin of error, the total population that supported the proposed legislative bill is $60 - 5 = 55\%$ to $60 + 5 = 65\%$.

8 B. Mental Math: In $3(4)^x$, y -coordinate of the y -intercept = 3. Since the graph is shifted down by 1, y -coordinate of the y -coordinate of shifted graph = $3 - 1 = 2$.

9 C. No Calculation Required: Tripled each year than previous year is exponential growth.

***10 1.** Determine the value of a : Since $f(3) = 13$, $f(3) = 3a + 7 = 13 \rightarrow 3a = 6 \rightarrow a = 2$.

Substitute $a = 2$ in the equation and solve for $f(-3)$: $f(-3) = (2 \times -3) + 7 = -6 + 7 = 1$.

11 A. $\frac{5^{-(3a)} \times 5^{-2}}{5^{-2}} \rightarrow 5^{-3a} \times 5^{-2} \times 5^2 \rightarrow 5^{-3a} \times 5^{-2+2} \rightarrow 5^{-3a} \times 5^0 \rightarrow 5^{-3a} \times 1 \rightarrow \left(\frac{1}{5}\right)^{3a}$.

***12 0.25 or 1/4.** 3 units to the right is $g(x) = \frac{3}{4}(x - 3) + \frac{5}{2}$.

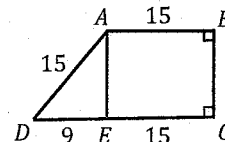
$g(0) = \frac{3}{4}(0 - 3) + \frac{5}{2} = \frac{3}{4}(-3) + \frac{5}{2} = -\frac{9}{4} + \frac{5}{2} = \frac{1}{4} = 0.25$. (*This question may be solved quicker using the Desmos graphing calculator.)

13 D. Determine height: A perpendicular line from point A to line segment CD divides it into CE and DE and forms triangle AED. AE is the height of the trapezoid.

Since angle B and C are right angles, CE = 15. Hence, DE = 24 - 15 = 9.

9 and 15 are ratios of Pythagorean triple 9: 12: 15. Hence, AE = 12.

Area of trapezoid = $\frac{1}{2}(15 + 24)12 = 234$.



***14 C.** Create a system of equations and solve for number of dimes.

Equation 1: Let number of dimes = x and let number of quarters = y . Hence, $x + y = 80$.

Equation 2: Since each dime is \$0.1, the value of x dimes = $0.1x$. Since each quarter is \$0.25, the value of y quarters = $0.25y$. Hence, $0.1x + 0.25y = 15.20$.

$$\begin{array}{rcl} x + y = 80 & \rightarrow & x + y = 80 \\ -4(0.1x + 0.25y = 15.20) & & -0.4x - y = -60.80 \\ \hline 0.6x & = & 19.2 \rightarrow x = 32 \end{array}$$

15 **A. Mental Math:** At x -intercept, y -intercept = 0. Hence, $2x + 5(0) = k \rightarrow 2x = k \rightarrow x = \frac{k}{2}$.

At y -intercept, x -intercept = 0. Hence, $2(0) + 5y = k \rightarrow 5y = k \rightarrow y = \frac{k}{5}$.

16 **C.** 2020 bonus = $\frac{2021 \text{ bonus}}{0.8} = \frac{20,000}{0.8} = 25,000$.

*17 **B.** Check each answer choice by plugging the value of x in the equation. The correct answer choice will result in 0. $x = 2$ from answer choice B results in $p(x) = 0$. Hence, $x - 2$ is a factor of $p(x)$. (*This question may be solved quicker using the Desmos graphing calculator.)

18 **D.** Plug the given vertex in the vertex form equation $y = a(x - h)^2 + k$ and convert it to standard form equation.

$$y = a(x - 4)^2 + 32 \rightarrow y = a(x^2 - 8x + 16) + 32 \rightarrow y = ax^2 - 8ax + 16a + 32.$$

Hence, $c = 16a + 32 \rightarrow c = 16(a + 2)$.

*19 **B.** Mean = $\frac{(25 \times 4) + (30 \times 3) + (35 \times 2) + (45 \times 4) + (50 \times 2)}{15} = \frac{540}{15} = 36$. Median will be the dot for 8th cow = 35.

20 **3.** Set up two slope equations using any combination of points and equate them. See below.

$$\frac{6 - 0}{6 - d} = \frac{10 - 6}{(5 + d) - 6} \rightarrow \frac{6}{6 - d} = \frac{4}{d - 1} \rightarrow$$

$$6(d - 1) = 4(6 - d) \rightarrow 6d - 6 = 24 - 4d \rightarrow 6d + 4d = 24 + 6 \rightarrow 10d = 30 \rightarrow d = 3$$

21 **B.** Each side = $\frac{12}{6} = 2$. Area of each equilateral = $\frac{\sqrt{3}}{4} a^2 = \frac{\sqrt{3}}{4} 2^2 = \sqrt{3}$. Area of 2 shaded triangles = $2\sqrt{3}$.

22 **9/15 or 3/5. Mental Math:** $\cos Z = \cos C = \frac{BC}{AC}$. $AB = 12$ and $AC = 15$ are ratio of Pythagorean triple 9:12:15.

Hence, $BC = 9$ and $\cos Z = \frac{BC}{AC} = \frac{9}{15} = \frac{3}{5}$. (Remember to match the vertices correctly.)

SAT Math Practice Test 3 Module 2.2 – Answers

*1 **B.** Evaluate the points from each table. The table in the correct answer choice will contain the points that are on the line given in the graph. (*Since all the points are not visible on the given graph, this question may be solved quicker using the Desmos graphing calculator.)

2 **A. Mental Math:** Pear trees = $a = 60\%$ of total trees = $b \rightarrow a = 0.6b$.

*3 **B.** Create a common denominator and simplify: $\frac{1}{3x+2} + \frac{3(3x+2)}{3x+2} = \frac{1}{3x+2} + \frac{9x+6}{3x+2} = \frac{1+9x+6}{3x+2} = \frac{9x+7}{3x+2}$.

(*This question may be solved quicker using the Desmos graphing calculator.)

4 **10.** The drilling rate per minute = $\frac{4,200}{60} = 70$ feet.

Since, drilling started 140 feet below, drilled feet = $840 - 140 = 700$. Hence, 700 feet will be in 10 minutes.

5 **C.** $a + b = 180^\circ \rightarrow (4x - 10) + (2.5x - 5) = 180 \rightarrow 6.5x - 15 = 180 \rightarrow 6.5x = 180 + 15 = 195 \rightarrow x = 30$.

6 **A. Mental Math:** Ranges are the same. Median for 20 friends is in the 10th and 11th dot. Median for 21 friends is in the 11th dot. Running count before and after the addition of friend shows medians are same = 33.

7 **5.** $(ax + 2)(x + 6) = (x + 4)^2 + c \rightarrow ax^2 + 6ax + 2x + 12 = x^2 + 8x + 16 + c$.

Hence, $a = 1$ and $12 = 16 + c \rightarrow c = -4$.

$$a - c = 1 - (-4) = 5$$

***8 60. Circle M:** Convert the given general form equation to the standard form equation.

x -coordinate of center: $\frac{2}{2} = 1$. The factor is $(x + 1)^2$. y -coordinate of center: $\frac{14}{2} = 7$. The factor is $(y + 7)^2$.

The equation is $(x + 1)^2 + (y + 7)^2 = 50 + 1^2 + 7^2 \rightarrow (x + 1)^2 + (y + 7)^2 = 100$. Hence, $r^2 = 100 \rightarrow r = 10$ and diameter is 20.

Circle N: Diameter = $d = 3 \times 20 = 60$.

(*This question may be solved quicker using the Desmos graphing calculator.)

9 10. Oatmeal cookies = $40 \times \frac{1}{4} = 10$. Sugar cookies = remaining cookies $\times \frac{2}{3} = (40 - 10) \times \frac{2}{3} = 20$.

Chocolate chip cookies = $40 - 10 - 20 = 10$.

10 A. Volume is $1.2 \times 0.5 \times 0.8 = 0.48$. Mass = $\frac{\text{volume}}{\text{density}} = \frac{0.48}{4.8} = 0.1$.

***11 A.** Factor or use the quadratic formula to determine the factors. The two factors are $(4x - 3)$ and $(x + 10)$.

(*This question may be solved quicker using the Desmos graphing calculator.)

***12 B.** Start with the first table and evaluate each point for true or false. (*This question may be solved quicker using the Desmos graphing calculator.)

13 B. For $2.8t$ to be equal to 1, the value of t is the reciprocal of $2.8 = \frac{1}{2.8}$. Hence, $t = \frac{1}{2.8}$.

14 D. Mental Math: $f(x) - 1$ implies that the graph of $f(x)$ is shifted down by 1 unit. Hence, the points $(0, a)$ and $(1, ab)$ on the graph of $f(x)$ will be 1 higher. $(0, a)$ will be $(0, 1)$ instead of $(0, 0)$ and $(1, ab)$ will be $(1, 2)$ instead of $(1, 1)$. Hence, $a = 1$ and $ab = 2$. Since $a = 1$, $ab = 1 \times 2 \rightarrow b = 2$. The equation will be $f(x) = 1(2)^x = (2)^x$.

15 D. Mental Math: Determine Median: Data Set 1 has 25 data points. The median is the bar containing the 13th data point. This is integer 5. Data Set 2 has 21 data points after removal of the integer 10. The median in the Data Set 2 is the bar containing the 11th data point. This is integer 4. Hence, medians are different. Means will be different.

16 A. No Calculation Required: The graph shows that the amount is half = 30 grams in 50 minutes and again half = 15 grams in the next 50 minutes. Hence, decay rate is half every 50 minutes. Per minute will be $\frac{m}{50}$.

17 B. Cost of 24 comics = $24 \times \$25 = \600 . Remaining maximum budget for magazines = $\$760 - \$600 = \$160$.

Number of magazines that can be bought in $\$160 = \frac{160}{15} = 10.66 = 10$ maximum magazines.

18 A. 6 years = $6 \times 12 = 72$ months. There are $\frac{72}{18} = 4$ intervals of 18 months in 6 years. Hence, the exponential decrease equation is $y = a(b)^t = 100,000(0.9)^4 = 65,610$. The decrease is $100,000 - 65,610 = 34,390$.

19 15. $\sin A = 0.6 = \frac{6}{10} = \frac{3}{5} = \frac{BC}{AC}$. $BC:AC = 3:5 =$ ratio of Pythagorean triple 3:4:5. Hence, $BC:AB:AC = 3:4:5$.

It is given that $AB = 24$. This is 6 times of the ratio component 4. Hence, all the ratio components will be 6 times.

Length of diameter = $AC = 6 \times 5 = 30$. Radius = half of diameter = 15.

***20 21. Function f :** Form the standard form equation with the given x -intercepts:

$f(x) = (5x - 4)(4x - 9) = 20x^2 - 61x + 36$. The y -coordinate of y -intercept = 36.

Function g : Translation down is the shift of the y -coordinate of y -intercept of function g down by 15 units.

Hence, the y -coordinate of y -intercept of function $g = g(0) = 36 - 15 = 21$.

(*This question may be solved quicker using the Desmos graphing calculator.)

21 B. Number of 20 pounds bags required = $\frac{21,500}{4,000} = 5.375$. Since bags are whole, 6 bags will be required.

22 C. Use the process of elimination: Since neither the square nor the inscribed rectangle have a square term in the side length, $3a^2 + 4$ cannot be the perimeter of the square or the rectangle. This eliminates answer choices A and B.

The area of the square = $s^2 = (2a)^2 = 4a^2$. Since $3a^2 + 4$ is less than the area of the square, it cannot be the combined area. This eliminates answer choice C.

This page is intentionally left blank.

Digital SAT Math

Practice Test 4

Module 2.1

Test duration - 35 min

Total questions - 22

Time the test: If you have not completed all the questions in this module within 35 minutes, then leave the remaining questions and proceed to Module 2.2. You can complete the remaining questions after you have completed checking the answers.

Practice Test 4

1

$$\frac{y + 2y + 3y + 4y}{2} = 5$$

What is the value of y in the above equation?

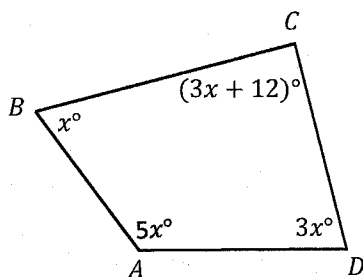
- A) 1
- B) 2
- C) 5
- D) 10

2

$$\begin{aligned} 5x &= 8 \\ -10x + y &= -7 \end{aligned}$$

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

3



Note: Figure not drawn to scale.

In the figure above, $ABCD$ is a quadrilateral. What is the value of x , in degrees?

4

Sid bought 6 packets of cookies weighing 3 ounces each and 3 packets of cookies weighing 6 ounces each. Each 3 ounces packet contains 6 cookies and each 6 ounces packet contains 12 cookies. What is the total number of cookies in all the packets Sid bought?

- A) 18
- B) 36
- C) 68
- D) 72

5

$$\frac{2x - 1}{x - 3} = 2 + \frac{x}{x - 3}$$

In the above equation what is the value of x , where $x \neq 3$?

- A) $\frac{1}{3}$
- B) $\frac{1}{2}$
- C) 2
- D) 5

6

In the xy -plane, the graph of $y = g(x)$ is a line. If $g(2) = 7$ and $g(-2) = 1$ satisfy $g(x)$, what is the y -coordinate of the y -intercept of the line?

- A) -7
- B) 0
- C) 4
- D) 8

Practice Test 4

7

If a train is traveling at an average speed of 120 miles per hour, what is an equivalent average speed of the train in feet per minute (1 mile is 5,280 feet)?

- A) 44 feet per minute
- B) 5,280 feet per minute
- C) 9,020 feet per minute
- D) 10,560 feet per minute

8

A random sample of 240 employees at a certain company were asked about the time they spend on lunch break each working day. Based on the responses, the estimated time was 40 minutes, with an associated margin of error of 12 minutes. Which of the following best summarizes the conclusions from the data?

- A) The employees like to take lunch break each working day.
- B) The employees take at least 40 minutes of lunch break each working day.
- C) It is plausible that the employees take between 28 minutes and 52 minutes of lunch break each working day.
- D) It is plausible that the employees take between 40 minutes and 52 minutes of lunch break each working day.

9

$$ax^2 - 6x = -1$$

The quadratic equation above has exactly one real solution. What is the value of a , where a is a positive constant?

10

$$y = 524 - \frac{5}{9}x$$

The equation above models the linear relationship between the variables x and y . For what value of x does the value of y decrease by 1?

- A) $\frac{4}{5}$
- B) $\frac{5}{9}$
- C) $\frac{9}{9}$
- D) $\frac{9}{5}$

11

A basket contains pieces of paper with integers from 1 to 40, that are not multiples of 5, written on them. Each piece of paper has one integer written on it and each integer occurs once in the basket. What is the probability that an integer selected at random from the basket is a multiple of 3?

- A) $\frac{13}{40}$
- B) $\frac{11}{32}$
- C) $\frac{3}{5}$
- D) $\frac{1}{5}$

Practice Test 4

12

An ice cream truck sells ice cream cones for \$1.50 each and ice cream cups for \$1 each. Last Sunday, the ice cream truck sold altogether 79 ice cream cones and ice cream cups and collected \$104. How many ice cream cups were sold last Sunday?

- A) 29
- B) 32
- C) 48
- D) 50

13

$$h = 2 + 0.125a$$

A scientist conducted an experiment to study the effect of a certain fertilizer on the height of a certain species of a plant. The scientist defined the relationship between the amount of the fertilizer a , in nanograms, and the height of the plant h , in centimeters, by the above equation, where $2 \leq h \leq 15$. Which of the following statements agrees with the equation?

- A) For each increase of a by 0.125 nanogram, h increases by 2 centimeters.
- B) For each increase of a by 1 nanogram, h increases by 2 centimeters.
- C) For each increase of a by 1 nanogram, h increases by 0.125 centimeter.
- D) For each increase of a by 2 nanograms, h increases by 0.125 centimeter.

14

$$f(x) = 2x^3 - 5x^2 + 8$$

What is the remainder when the above polynomial $f(x)$ is divided by $(2x - 3)$?

15

Two identical cubes are glued together along one of the edges. The diagonal of each cube measures $5\frac{1}{2}\sqrt{3}$ inches. What is the total surface area of the two glued cubes, in square inches?

- A) 11
- B) 110
- C) 302.5
- D) 363.0

16

$$y - 3 = 2x^2 + 8x$$

Which of the following is equivalent to the above equation where the maximum values of x and y appear as constants or coefficients?

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

Practice Test 4

17

$$\sqrt{5x + 26} - 4 = x$$

What is the solution to the above equation?

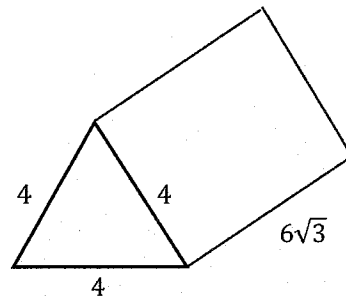
- I. -5
 - II. 2
- A) I only
 B) II only
 C) I and II
 D) Neither I nor II

18

In the xy -plane, the parabola defined by the function f opens upward and has vertex $(7, 1)$. At how many points does the graph of the function f intersect the x -axis?

- A) Zero
 B) Exactly one
 C) Exactly two
 D) Infinitely many

19



Note: Figure not drawn to scale.

The triangular base of the right triangular prism shown in the above figure is an equilateral triangle. What is the volume, in cubic units, of the right triangular prism?

- A) $14\sqrt{3}$
 B) $20\sqrt{3}$
 C) 64
 D) 72

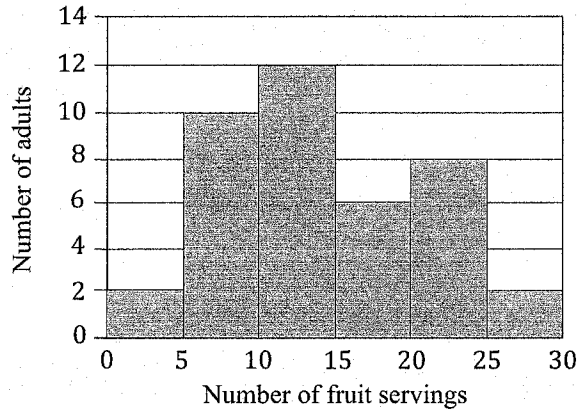
20

The function g is defined by $g(x) = -5x + 22$. The graph of the function h in the xy -plane is a result of translation of the graph of function g by 6 units to the left. The graph of the function h has x -intercept at $(a, 0)$ and y -intercept at $(0, b)$, where a and b are constants. What is the value of $a - b$?

- A) -9.6
 B) -8.6
 C) 6.4
 D) 9.6

Practice Test 4

21



The above histogram shows the distribution of the number of fruit servings 40 adults ate in July 2023. The first bar represents less than 5 times in a month, the second bar represents at least 5 times but less than 10 times in a month, the third bar represents at least 10 times but less than 15 times in a month, and so on. What is a possible integer value of the median number of times 40 adults ate fruit servings in a month?

- I. 11
II. 15
- A) I only
B) II only
C) I and II
D) Neither I nor II

22

The graph of $y = f(x + 3)$ in the xy -plane is defined by $y = -(x + 2)^2 + 1$. Which of the following table gives three values of x and their corresponding values of y on the graph of $y = f(x)$?

A)

x	y
-5	-8
-2	1
-1	0

B)

x	y
-2	-8
2	0
4	-8

C)

x	y
-2	-8
-1	0
2	8

D)

x	y
3	-3
2	1
5	6

Digital SAT Math

Practice Test 4

Module 2.2

Test duration - 35 min

Total questions - 22

Time the test: If you have not completed all the questions in this module within 35 minutes, then leave the remaining questions and proceed to check the answers. You can complete the remaining questions after you have completed checking the answers.

Practice Test 4

1

$$|x - 4| + 1 = 4$$

If a and b are the two solutions of the above equation and $b > a$, what is the value of b ?

- A) 3
- B) 7
- C) 8
- D) 12

2

In the xy -plane, which of the following is an equation of a line passing through the points $(2, 0)$ and $(4, 6)$?

- A) $y = -\frac{1}{3}x - 6$
- B) $y = -2x + 2$
- C) $y = 3x + 2$
- D) $y = 3x - 6$

3

$$2(n + 3) = 3(n - 2)$$

What value of n satisfies the given equation?

- A) 2
- B) 6
- C) 7
- D) 12

4

The function h is defined by $h(s) = k^s$. If

$h(7) = \frac{1}{4} \times h(5)$, what is the value of k , where k is a positive constant?

5

x	1	7	13
y	2	6	10

The table above shows three values of x and their corresponding values of y for the linear function f , where $y = f(x)$. If the function is written in the format $f(x) = mx + b$, where b and m are constants, what is the value of $m + b$?

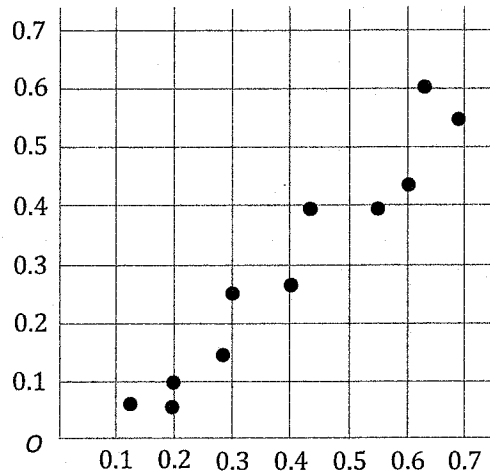
6

A bakery owner ordered x pounds of apples and y pounds of blueberries. Apples cost \$1.69 per pound and the blueberries cost \$4.99 per pound. If the baker ordered a total of 30 pounds of apples and blueberries for \$83.70, which of the following equations can be used with $x + y = 30$ to determine the pounds of apples the baker ordered (assuming no sales tax is added)?

- A) $x + y = 2(6.68)$
- B) $2(x + y) = 30$
- C) $4.99x + 1.69y = 83.70$
- D) $1.69x + 4.99y = 83.70$

Practice Test 4

7



The above scatter plot shows a set of data. Which of the following linear equation best model the above data?

- A) $y = -x - 1$
- B) $y = x - 0.1$
- C) $y = x + 0.1$
- D) $y = 2x$

8

$$p(x) = 5x(x - 3)(x - 1)(x + 2)^2$$

How many distinct zeros does the above given function p have?

- A) 3
- B) 4
- C) 5
- D) 6

9

Cherries (in pounds)	Total cost (\$)
2	9.97
4	15.95
6	21.93
8	27.91

A local farm in a certain town allows residents to pick fresh cherries. The table above shows the linear relationship between the cherries picked, in pounds, and the total cost of cherries, in dollars. Which of the following functions can determine the total cost $f(x)$, in dollars, for picking x pounds of cherries, where $y = f(x)$?

- A) $f(x) = 5.98x$
- B) $f(x) = 5.98x + 9.97$
- C) $f(x) = 2.99x + 9.97$
- D) $f(x) = 2.99x + 3.99$

10

If the length of a rectangle is increased by 20% and the width is decreased by 30%, which of the following statements is TRUE about the area of the rectangle?

- A) The area of the rectangle will decrease by 10%.
- B) The area of the rectangle will decrease by 16%.
- C) The area of the rectangle will increase by 10%.
- D) The area of the rectangle will be unchanged.

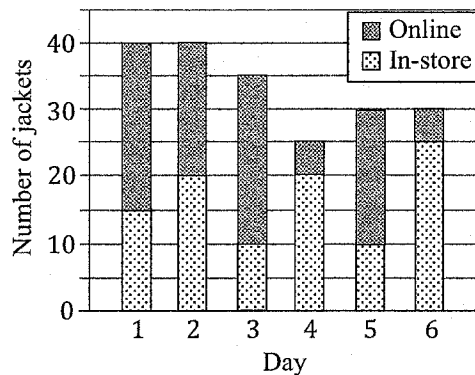
Practice Test 4

11

Leslie mixed $\frac{1}{4}$ cup of baking mix A with $1\frac{3}{4}$ cup of baking mix B. If baking mix A contains 12 grams of sugar per cup and baking mix B contains 4 grams of sugar per cup, how many grams of sugar is in one cup of the baking mix Leslie created?

12

Number of Jackets Sold



The above graph shows the number of jackets sold by a retail company online and the number of jackets sold in-store, for a period of 6 consecutive days. Of all the jackets sold during the 6 consecutive days, what percent were sold online?

- A) 40%
- B) 50%
- C) 75%
- D) 80%

13

$$45x^2 + (38k - 52)x - 50 = 0$$

The sum of the solutions of the given equation is 2, where k is a constant. What is the value of k ?

- A) -38
- B) -1
- C) 8
- D) 14

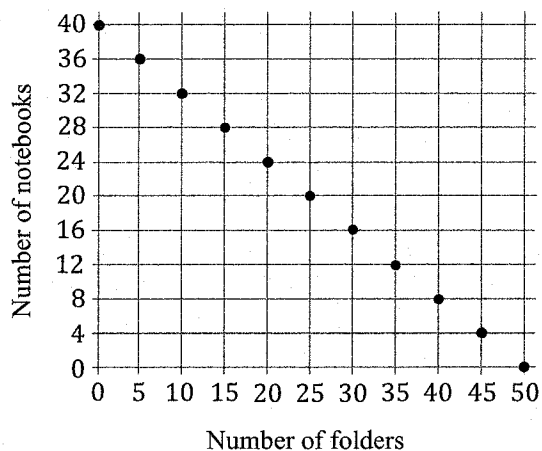
14

Sona invited 200 friends and 15 family members to her graduation party. Sona is estimating that all her family members will come and 60% of the invited friends with an associated margin of error of 5% will come. If x is the total number of friends and family members that Sona is estimating, which of the following inequalities represents all possible combinations of x ?

- A) $110 \leq x \leq 130$
- B) $125 \leq x \leq 145$
- C) $155 \leq x \leq 200$
- D) $200 \leq x \leq 215$

Practice Test 4

15



Sally spent a total of d dollars to buy folders and notebooks. The cost of each folder is \$2.00 and the cost of each notebook is \$2.50. The graph above shows all the possible combinations of the number of folders and the number of notebooks Sally could have bought in d dollars. What is the value of d ?

16

$$y \geq 4x + 1$$

$$y \leq -x + 6$$

In the xy -plane, what is a solution to the above system of inequalities?

- A) $(-1, -4)$
- B) $(-1, 6)$
- C) $(1, 2)$
- D) $(1, 5)$

17

In the right triangle ABC , angle B is 90° and angles A and C have the same degree measure. The length of AC is $\frac{4}{\sqrt{2}}$. What is the length of BC , in inches?

- A) $\sqrt{2}$
- B) $2\sqrt{2}$
- C) 2
- D) 4

18

$$f(x) = ax^2 - 5x + c$$

In the xy -plane, the graph of a parabola is defined by the function f given above, where $y = f(x)$ and a and c are constants. If $f(-2) = f(12)$, what is the value of a ?

- A) $\frac{1}{2}$
- B) $\frac{4}{5}$
- C) 5
- D) 10

Practice Test 4

19

In the xy -plane, the graph of the quadratic function $y = g(x)$ has vertex $(4.2, -2)$ and intersects the x -axis at exactly two points. If one of the solutions is 7, what is the other solution?

- A) -4.2
- B) 1.2
- C) 1.4
- D) 11

20

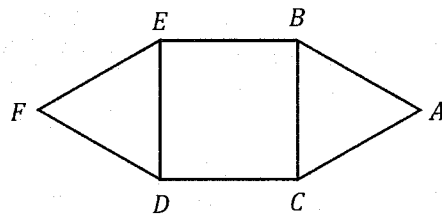
$$x - \frac{7}{2}y + \frac{k}{2} = -\frac{3}{2}x + \frac{1}{2}y$$

$$\frac{1}{2}x - \frac{3}{5}y = 4 + \frac{1}{5}y$$

In the given system, k is a constant. If the system is true for all values of x , what is the value of k ?

- A) -42
- B) -40
- C) 7
- D) 12

21



In the figure above, ABC and DEF are congruent equilateral triangles and $BCDE$ is a square. The area of each equilateral triangle is $\sqrt{3}$ square feet. What is the perimeter of the figure, in feet?

- A) $6\sqrt{3}$
- B) $6\sqrt{3} + 2$
- C) 6
- D) 12

22

$$y + 3x^2 = 5x + 2$$

$$y - 2x = a$$

The above system has exactly one solution (x, y) , where a is a constant. What is the value of x ?

Digital SAT Math

Practice Test 4

Answers