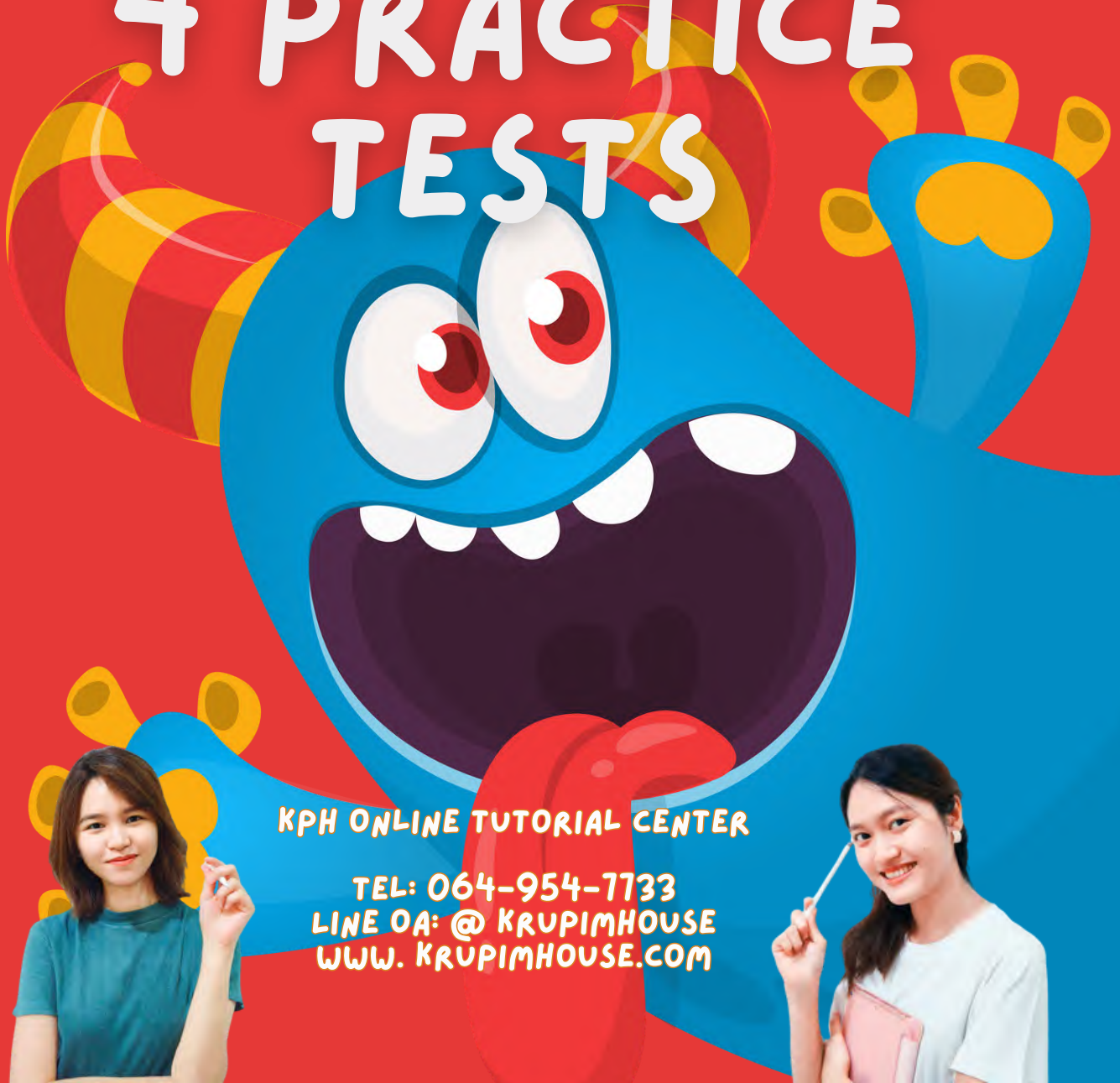
By Krupimhouse

KPH

HOUSE of KNOWLEDGE AND POTENTIAL

DIGITAL SAT MATH 4 PRACTICE TESTS



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Digital SAT Math - 4 Practice Tests

KPH Online Tutorial Center

Contents

Practice Test 1

1.1 Module 1

Question 1

What is 10% of 520?

A) 42

B) 52

C) 423

D) 460

Question 2

Which equation has the same solution as the given equation?

$$5x + 7 = 22$$

A) $5x = 15$

B) $5x = 25$

C) $5x = 10$

D) $5x = 5$

Question 3

The total cost, in dollars, to rent a surfboard consists of a \$30 service fee and a \$12 per hour rental fee. A person rents a surfboard for t hours and intends to spend a maximum of \$90 to rent the surfboard. Which inequality represents this situation?

A) $12t \leq 90$

B) $30 + 12t \leq 90$

C) $30t \leq 90$

D) $12 + 30t \leq 90$

Question 4

The function g is defined by $g(x) = x^2 + 9$. For which value of x is $g(x) = 34$?

A) 4

B) 5

C) 9

D) 13

Question 5

Each face of a fair 16-sided die is labeled with a number from 1 through 16, with a different number appearing on each face. If the die is rolled one time, what is the probability of rolling a 3?

A) $\frac{1}{16}$

B) $\frac{2}{16}$

C) $\frac{12}{16}$

D) $\frac{15}{16}$

Question 6

A factory produces widgets at a constant rate of 120 widgets per minute. At what rate, in widgets per hour, does the factory produce the widgets?

Question 7

The function f is defined by the equation $f(x) = 3x + 5$. What is the value of $f(4)$?

Question 8

A teacher is creating an assignment worth 80 points. The assignment will consist of questions worth 2 points and questions worth 4 points. Which equation represents this situation, where x represents the number of 2-point questions and y represents the number of 4-point questions?

A) $2x + 4y = 80$

B) $4x + 2y = 80$

C) $x + y = 80$

D) $2x - 4y = 80$

Question 9

Right triangles ABC and DEF are similar, where A and B correspond to D and E, respectively. Angle B has a measure of $37°$. What is the measure of angle E?

A) $37°$

B) $53°$

C) $127°$

D) $143°$

Question 10

Solve the system of equations:

$$\begin{cases} y = 2x - 5 \\ 3x + 4y = 20 \end{cases}$$

Which of the following is closest to the value of x?

A) 1

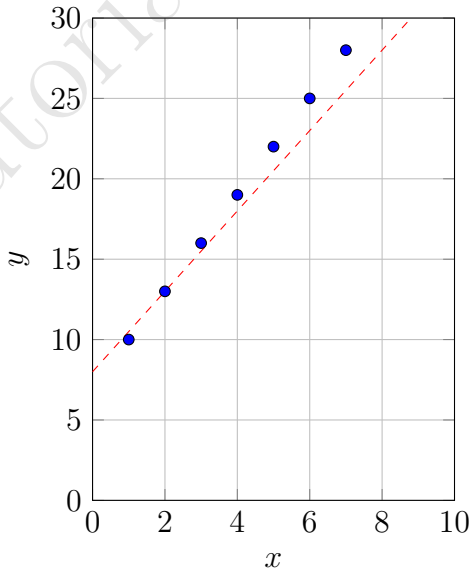
B) 3

C) 5

D) 7

Question 11

The scatterplot below shows the relationship between two variables, x and y. Which of the following equations is the most appropriate linear model for the data?



A) $y = 2.5x + 8$

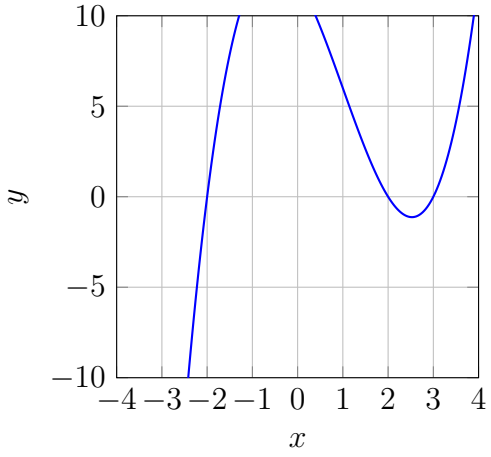
B) $y = -2.5x + 8$

C) $y = 2.5x - 8$

D) $y = -2.5x - 8$

Question 12

The graph of $y = f(x)$ is shown below, where the function f is defined by $f(x) = ax^3 + bx^2 + cx + d$ and a, b, c, and d are constants. For how many values of x does $f(x) = 0$?



A) One

B) Two

C) Three

D) Four

Question 13

Emily bought notebooks and pens for \$90. Each notebook costs \$5, and each pen costs \$2. If Emily bought 12 notebooks, how many pens did she buy?

Question 14

Solve the equation:

$$z^2 + 10z - 24 = 0$$

Question 15

Bacteria are growing in a liquid growth medium. There were 200,000 cells per milliliter during an initial observation. The number of cells per milliliter doubles every 4 hours. How many cells per milliliter will there be 20 hours after the initial observation?

A) 1,600,000

B) 3,200,000

C) 6,400,000

D) 12,800,000

Question 16

Which expression is equivalent to $\frac{6x^2y+12xy^2}{8x^2y^2}$?

A) $\frac{3x+6y}{4xy}$

B) $\frac{6x+12y}{8x^2y}$

C) $\frac{3x^2+6y^2}{4x^2y}$

D) $\frac{6x^2+12y^2}{8xy^2}$

Question 17

A neighborhood consists of a 3-hectare park and a 40-hectare residential area. The total number of trees in the neighborhood is 4,500. The equation $3x + 40y = 4,500$ represents this situation. Which of the following is the best interpretation of x in this context?

A) The average number of trees per hectare in the park

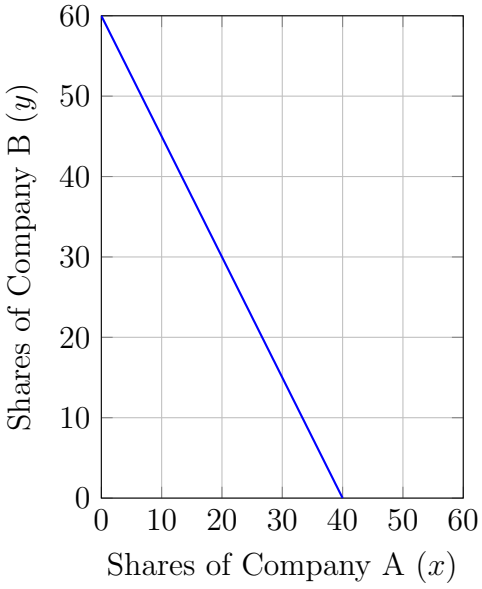
B) The average number of trees per hectare in the residential area

C) The total number of trees in the park

D) The total number of trees in the residential area

Question 18

The graph shows the relationship between the number of shares of stock from Company A, x, and the number of shares of stock from Company B, y, that Sarah can purchase. Which equation could represent this relationship?



A) $y = -1.5x + 60$

B) $y = 1.5x + 60$

C) $y = -1.5x - 60$

D) $y = 1.5x - 60$

Question 19

Circle A has a radius of $4n$, and Circle B has a radius of $12n$, where n is a positive constant. The area of Circle B is how many times the area of Circle A?

A) 3

B) 9

C) 12

D) 16

Question 20

The frequency table below summarizes the number of books read by students in a school library during a month.

Number of Books	Frequency
1	5
2	8
3	12
4	10
5	7
6	3

What is the median number of books read by the students?

A) 2

B) 3

C) 4

D) 5

Question 21

A circle in the xy-plane has a diameter with endpoints $(3, 5)$ and $(3, 11)$. An equation of this circle is $(x-3)^2 + (y-8)^2 = r^2$, where r is a positive constant. What is the value of r?

Question 22

The measure of angle P is $\frac{3\pi}{4}$ radians. The measure of angle Q is $\frac{\pi}{6}$ radians greater than the measure of angle P. What is the measure of angle Q, in degrees?

A) 105°

B) 120°

C) 135°

D) 165°

Question 23

A certain town has an area of 5.25 square miles. What is the area, in square yards, of this town? (1 mile = 1,760 yards)

A) 404

B) 7,674

C) 710,459

D) 16,262,400

Question 24

For line h, the table shows three values of x and their corresponding values of y. Line k is the result of translating line h down 3 units in the xy-plane. What is the x-intercept of line k?

x	y
10	50
15	75
20	100

A) $\left(-\frac{10}{3}, 0\right)$

B) $\left(-\frac{5}{2}, 0\right)$

C) $\left(\frac{3}{5}, 0\right)$

D) $\left(\frac{5}{6}, 0\right)$

Question 25

In the xy-plane, the graph of the equation

$$y = -x^2 + 12x - 40$$

intersects the line $y = c$ at exactly one point. What is the value of c?

A) -4

B) -2

C) 2

D) 4

Question 26

Consider the system of equations:

$$3x + 2y = 9$$

$$15x + 10y = 45$$

For each real number n, which of the following points lies on the graph of each equation in the xy-plane for the given system?

1. $(n, -\frac{3}{2}n + \frac{9}{2})$
2. $(-\frac{3}{2}n + \frac{9}{2}, n)$
3. $(n, \frac{3}{2}n - \frac{9}{2})$
4. $(\frac{3}{2}n - \frac{9}{2}, n)$

Question 27

The perimeter of an equilateral triangle is 936 centimeters. The height of this triangle is $k\sqrt{3}$, where k is a constant. What is the value of k?

1.2 Module 2

Question 1

Molly earns p dollars for every w hours of work. Which expression represents the amount of money, in dollars, Tilly earns for 25 hours of work?

A) $\frac{p}{25}$

B) $\frac{p}{w} \times 25$

C) $p + 25$

D) $p - 25$

Question 2

For a training program, Alex rides his bike at an average rate of 6.5 minutes per mile. Which function m models the number of minutes it will take Alex to ride x miles at this rate?

A) $m(x) = 6.5x$

B) $m(x) = \frac{x}{6.5}$

C) $m(x) = 6.5 + x$

D) $m(x) = 6.5 - x$

Question 3

Solve the system of equations:

$$\begin{cases} 2x + 3y = 12 \\ 4x - y = 10 \end{cases}$$

What is the value of y?

A) -2

B) 2

C) 4

D) 6

Question 4

The equation $s = 50 + 4t$ gives the speed s, in miles per hour, of a certain car t seconds after it began to accelerate. What is the speed, in miles per hour, of the car 6 seconds after it began to accelerate?

A) 54

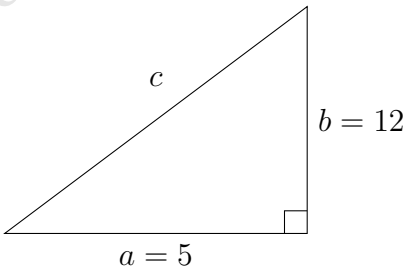
B) 62

C) 74

D) 80

Question 5

For the right triangle shown below, $a = 5$ and $b = 12$. Which expression represents the value of c?



A) $5 + 12$

B) $\sqrt{5 \times 12}$

C) $\sqrt{5^2 + 12^2}$

D) $\sqrt{5^2 - 12^2}$

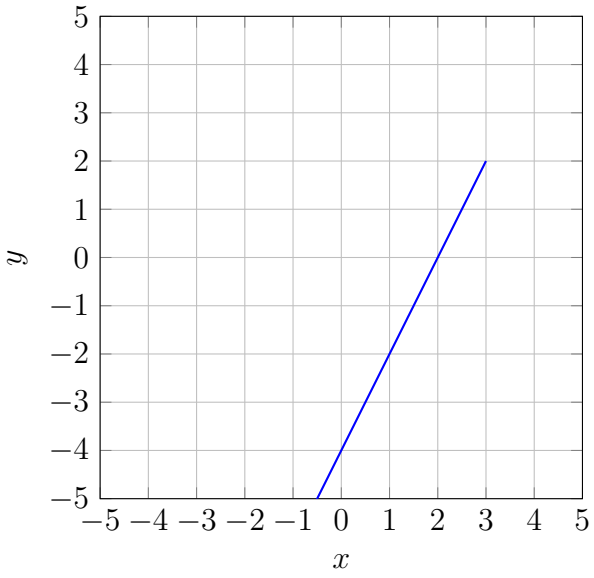
Question 6

Solve the equation:

$$5x + 7 = 32$$

Question 7

The graph of a linear function is shown below. The x-intercept of the graph is $(x, 0)$. What is the value of x?



Question 8

The function f is defined by $f(x) = \frac{1}{5}x - 3$. What is the y-intercept of the graph of $y = f(x)$ in the xy-plane?

A) $(-3, 0)$

B) $(0, -3)$

C) $\left(0, \frac{1}{5}\right)$

D) $\left(\frac{1}{5}, 0\right)$

Question 9

The function f is defined by $f(x) = \frac{7}{3}x$. In the xy-plane, the graph of $y = g(x)$ is the result of shifting the graph of $y = f(x)$ down 4 units. Which equation defines function g?

A) $g(x) = \frac{7}{3}x - 4$

B) $g(x) = \frac{7}{3}x + 4$

C) $g(x) = \frac{7}{3}(x - 4)$

D) $g(x) = \frac{7}{3}(x + 4)$

Question 10

Solve the system of equations:

$$\begin{cases} x + 5 = 10 \\ 2(x + y) = 20 \end{cases}$$

Which ordered pair (x, y) is a solution to the given system of equations?

A) $(5, 5)$

B) $(5, 10)$

C) $(10, 5)$

D) $(10, 10)$

Question 11

Which expression is equivalent to

$$\frac{7x^3 + 14x^2}{7x^2}$$

A) $x + 2$

B) $x^2 + 2x$

C) $7x + 14$

D) $7x^2 + 14x$

Question 12

The function p is defined by $p(n) = 5n^3$. What is the value of n when $p(n) = 135$?

A) 2

B) 3

C) 4

D) 5

Question 13

In the figure below, line c intersects parallel lines s and t. What is the value of x?