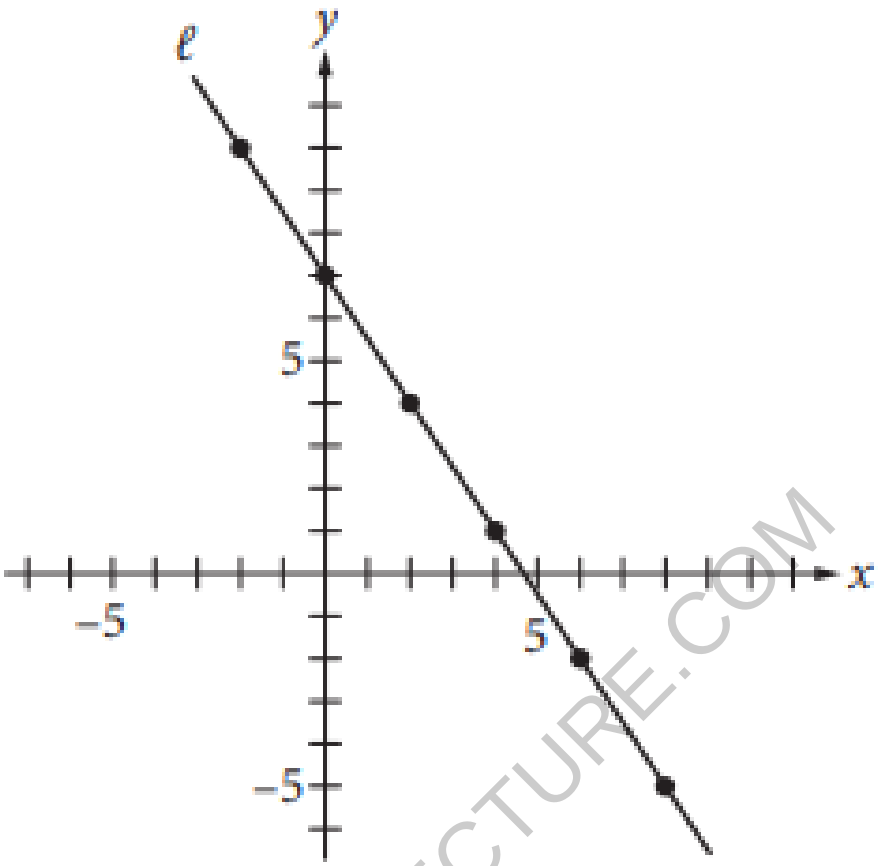
SAT Math Sample Questions

Line ℓ is graphed in the xy-plane below.



If line ℓ is translated up 5 units and right 7 units, then what is the slope of the new line?

A) $\frac{2}{5}$

B) $-\frac{3}{2}$

C) $-\frac{8}{9}$

D) $-\frac{11}{14}$

Ans: B

The average number of students per classroom, y, at Central High School can be estimated using the equation y = 0.8636x + 27.227, where x represents the number of years since 2004 and x ≤ 10. Which of the following statements is the best interpretation of the number 0.8636 in the context of this problem?

A) The estimated average number of students per classroom in 2004

B) The estimated average number of students per classroom in 2014

C) The estimated yearly decrease in the average number of students per classroom

D) The estimated yearly increase in the average number of students per classroom

Ans: D

If $\frac{2}{a-1}=\frac{4}{y}$, and $y \neq 0$ where $a \neq 1$, what is y in terms of a?

A) $y=2a-2$

B) $y=2a-4$

C) $y=2a-\frac{1}{2}$

D) $y=\frac{1}{2}a+1$

Ans: A

In the complex number system, which of the following is equal to $(14 - 2i)(7 + 12i)$? (Note: $i = \sqrt{-1}$)

A) 74

B) 122

C) $74 + 154i$

D) $122 + 154i$

Ans: D

The graph of $y = (2x - 4)(x - 4)$ is a parabola in the xy-plane. In which of the following equivalent equations do the x- and y-coordinates of the vertex of the parabola appear as constants or coefficients?

A) $y = 2x^2 - 12x + 16$

B) $y = 2x(x - 6) + 16$

C) $y = 2(x - 3)^2 + (-2)$

D) $y = (x - 2)(2x - 8)$

Ans: C

If $a^{-\frac{1}{2}} = x$, where $a > 0$ and $x > 0$, which of the following equations gives a in terms of x?

A) $a = \frac{1}{\sqrt{x}}$

B) $a = \frac{1}{x^2}$

C) $a = \sqrt{x}$

D) $a = -x^2$

Ans: B

If $y = x^3 + 2x + 5$ and $z = x^2 + 7x + 1$, what is $2y + z$ in terms of x?

A) $3x^3 + 11x + 11$

B) $2x^3 + x^2 + 9x + 6$

C) $2x^3 + x^2 + 11x + 11$

D) $2x^3 + 2x^2 + 18x + 12$

Ans: C

Which of the following is equal to $\sin\left(\frac{\pi}{5}\right)$?

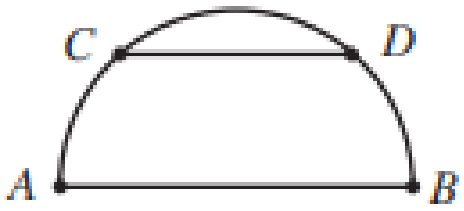
A) $-\cos\left(\frac{\pi}{5}\right)$

B) $-\sin\left(\frac{\pi}{5}\right)$

C) $\cos\left(\frac{3\pi}{10}\right)$

D) $\sin\left(\frac{7\pi}{10}\right)$

Ans: C



The semicircle above has a radius of r inches, and chord $\overline{CD}$ is parallel to the diameter $\overline{AB}$. If the length of $\overline{CD}$ is $\frac{2}{3}$ of the length of $\overline{AB}$, what is the distance between the chord and the diameter in terms of r?

A) $\frac{1}{3}\pi r$

B) $\frac{2}{3}\pi r$

C) $\frac{\sqrt{2}}{2}r$

D) $\frac{\sqrt{5}}{3}r$

Ans: D

The recommended daily calcium intake for a 20-year-old person is 1,000 milligrams (mg). One cup of milk contains 299 mg of calcium and one cup of juice contains 261 mg of calcium. Which of the following inequalities represents the possible number of cups of milk, m, and cups of juice, j, a 20-year-old person could drink in a day to meet or exceed the recommended daily calcium intake from these drinks alone?

A) $299m + 261j \geq 1{,}000$

B) $299m + 261j > 1{,}000$

C) $\frac{299}{m} + \frac{261}{j} \geq 1{,}000$

D) $\frac{299}{m} + \frac{261}{j} > 1{,}000$

Ans: A