

Isolating Quantities Problems

- The formula $PV = nRT$ is used to measure the properties: P , pressure, V , volume, n , number of molecules, R , a constant and T , temperature. Based on this formula, what is the temperature of the ideal gas in terms of P , V , n , and R ? (No Calc)
 - $T = \frac{PV}{nR}$
 - $T = \frac{nR}{PV}$
 - $T = PV - nR$
 - $T = \frac{PV}{n - R}$
- $0.7p = t$
At a pawn shop, the sale price of items are 70% of their original price. The original price, p , and the sale price are represented in t , dollars. What is the original price of the pawned item? (No Calc)
 - $p = t - 0.7$
 - $p = 0.7t$
 - $p = \frac{0.7}{t}$
 - $p = \frac{t}{0.7}$
- A tile-layer uses the formula $n = 3lh$ to estimate the number of tiles, n , needed to build a wall that is l feet long and h feet high. Which of the following correctly expresses l in terms of n and h ? (No Calc)
 - $l = \frac{3}{nh}$
 - $l = \frac{h}{3n}$
 - $l = \frac{n}{3h}$
 - $l = \frac{n}{3 + h}$
- $a = -8b^2 + vb + c$
The equation above gives the height a , in feet, of a ball b seconds after it is thrown straight up with an initial speed of v feet per second from a height of c feet. Which of the following gives v in terms of a , b , and c ? (No Calc)
 - $v = a + c - 8b$
 - $v = \frac{a - c - 8}{b}$
 - $v = \frac{a + c}{b} - 8b$
 - $v = \frac{a - c}{b} + 8b$
- The density d of an object is found by dividing the mass m of the object by its volume V . Which of the following equations gives the mass m in terms of d and V ? (No Calc)
 - $m = dV$
 - $m = \frac{d}{V}$
 - $m = \frac{V}{d}$
 - $m = V + d$
- If $a^{-3/4} = x$, where $a > 0$, what is a in terms of x ? (No Calc)
 - $a = x^{-3/4}$
 - $a = \frac{1}{x^{-4/3}}$
 - $a = x^{-4/3}$
 - $a = \frac{1}{x^{-3/4}}$

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7. The area, A , of a circle that has a radius, r , can be found using the equation $A = \pi r^2$. Which of the following correctly shows the triangle's radius in terms of its area? (No Calc)

A) $r = \frac{A}{\pi}$

B) $r = \sqrt{\frac{A}{\pi}}$

C) $r = \left(\frac{A}{\pi}\right)^2$

D) $r = A\pi$

8. $x = r\cos(\theta)$

The Cartesian coordinate plane utilizes rectangular coordinates (x , y) to determine the position of a point in space; therefore, in order to convert rectangular coordinates to polar coordinates. Which of the following correctly shows the angle θ in terms of x and r . x ? (No Calc)

A) $\theta = \cos^{-1}\left(\frac{r}{x}\right)$

B) $\theta = \sin^{-1}\left(\frac{x}{r}\right)$

C) $\theta = \cos^{-1}\left(\frac{x}{r}\right)$

D) $\theta = \sin^{-1}\left(\frac{r}{x}\right)$

9. $m = \frac{y_2 - y_1}{x_2 - x_1}$

The formula above gives the slope of a line using two points containing x -coordinates x_1 , x_2 and y -coordinates y_1 , y_2 . Which of the following equations correctly gives the x -coordinate of the first point, x_1 , in terms of m , x_2 , y_1 , and y_2 ? (No Calc)

A) $x_1 = \frac{y_2 - y_1}{m} + x_2$

B) $x_1 = \frac{y_1 - y_2}{m} + x_2$

C) $x_1 = \frac{y_1 + y_2}{m} + x_2$

D) $x_1 = \frac{y_2 - y_2}{m} + x_2$

10. $T = 2\pi\sqrt{\frac{L}{g}}$

The formula above gives the period of motion for a pendulum swinging back and forth. The equation uses the period in second T , the length of the wire L , and the acceleration due to gravity g . Which of the following equations correctly gives the length of the wire L in terms of T and g . (No Calc)

A) $L = \frac{T^2}{g \times 4\pi^2}$

B) $L = \frac{g \times T^2}{4\pi}$

C) $L = \frac{g \times T^2}{4\pi}$

D) $L = \frac{g \times T^2}{4\pi^2}$