Answers

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

Answer Explanation

1. **A.** In this problem, we are given the equation $PV = nRT$ and asked to find the temperature in terms of *P, V, n,* and *R*. Therefore, we divide *n* and *R* to the other side to isolate our *T-value.* $PV = nRT \rightarrow \frac{PV}{nR} = \frac{\cancel{nR}T}{\cancel{nR}} \rightarrow T = \frac{PV}{nR}$. Which makes answer choice (A) correct.

2. **D.** In this problem, we are given the equation $0.7p = t$ and asked to find the original price *p*, in terms of *t*. Therefore, we divide 0.7 to isolate our *p*-value. $0.7p = t \rightarrow \frac{\cancel{0.7}p}{\cancel{0.7}} = \frac{t}{0.7} \rightarrow p = \frac{t}{0.7}$. Which makes answer choice (D) correct.

3. **C.** In this problem, we are given the equation $n = 3lh$ and asked to find the length of the wall in terms of *n* and *h*. Therefore, we divide 3*h* to the other side to isolate our *l*-value. $n = 3lh \rightarrow \frac{n}{3h} = \frac{\cancel{3}l\cancel{h}}{\cancel{3h}} \rightarrow l = \frac{n}{3h}$. Which makes answer choice (C) correct.

4. **D.** In this problem, we are given the equation $a = -8b^2 + vb + c$ and asked to find the velocity *v*, in terms of *a, b*, and *c*. Therefore, we add $8b^2$ to the other side and subtract c to the other side. $a = -8b^2 + vb + c \rightarrow a + 8b^2 - c = vb$. Now we can isolate *v* by dividing *b* to the other side $+8b^2 - c = vb \rightarrow v = \frac{a + 8b^2 - c}{b}$. Which makes answer choice (D) correct.

5. **A.** In this problem, we are given the equation $d = \frac{m}{V}$ and asked to find the mass in terms of *d* and *V*. Therefore, we multiply the volume V to isolate our *m*-value. $d = \frac{m}{V} \rightarrow V \times d = \frac{m}{V} \times V \rightarrow m = dV$. Which makes answer choice (A) correct.

6. **C.** In this problem, we are given the equation $a^{-\frac{3}{4}} = x$ and asked to find *a* in terms of *x*. Therefore, we can rewrite this equation and multiply $a^{3/4}$ to the other side $\frac{1}{a^{3/4}} = x \rightarrow 1 = \left(a^{3/4}\right)x$. Now we can utilize radicals and exponents to isolate our *a*-value. $\frac{1}{x} = a^{3/4} \rightarrow \left(\frac{1}{x}\right)^4 = (a^{3/4})^4 \rightarrow \sqrt[3]{\left(\frac{1}{x^4}\right)} = \sqrt[3]{(a^3)} \rightarrow a = x^{-4/3}$. Which makes answer choice (C) correct.

7. **B.** In this problem, we are given the equation $A=\pi r^2$ and asked to find r in terms of A. Therefore, we can divide our constant π to the other side $A=\pi r^2 \rightarrow \frac{A}{\pi}=r^2$. Now we can utilize radicals to isolate our r-value. $\frac{A}{\pi}=r^2 \rightarrow \sqrt{\frac{A}{\pi}}=\sqrt{r^2} \rightarrow r=\sqrt{\frac{A}{\pi}}$. Which makes answer choice (B) correct.

8. **C.** In this problem, we are given the equation $x=rcos(\theta)$ and asked to find θ in terms of x and r. Therefore, we can divide the radius r to the other side $x=rcos(\theta) \rightarrow \frac{x}{r}=\cos(\theta)$. Now we can utilize inverse trigonometric functions to isolate our θ-value. $\frac{x}{r}=\cos(\theta) \rightarrow \cos^{-1}\left(\frac{x}{r}\right)=\cos^{-1}(\cos(\theta)) \rightarrow \cos^{-1}\left(\frac{x}{r}\right)=\theta$. Which makes answer choice (C) correct.

9. **B.** In this problem, we are given the equation $m=\frac{y_2-y_1}{x_2-x_1}$ and asked to find x_1 in terms of , x_2, y_1, and y_2. Therefore, we multiply our denominator to the other side $m=\frac{y_2-y_1}{x_2-x_1} \rightarrow m(x_2-x_1)=y_2-y_1$. After multiplying our denominator to the other side our x_1-value is still not isolated; therefore, we will divide the slope m to the other side and subtract x_2 to the other side. $m(x_2-x_1)=y_2-y_1 \rightarrow x_2-x_1=\frac{y_2-y_1}{m} \rightarrow -x_1=\frac{y_2-y_1}{m}-x_2$. Lastly, we can divide both sides by -1 to get the value of x_1. $-x_1=\frac{y_2-y_1}{m}-x_2 \rightarrow x_1=\frac{y_1-y_2}{m}+x_2$. Which makes answer choice (B) correct.

10. **D.** In this problem, we are given the equation $T=2\pi\sqrt{\frac{L}{g}}$ and asked to find L in terms of T and g. Therefore, we can rewrite this problem by dividing over our constant 2π . $T=2\pi\sqrt{\frac{L}{g}} \rightarrow \frac{T}{2\pi}=\sqrt{\frac{L}{g}}$. Now that our constant is out of the way we can utilize exponents to remove the radicals in our equation. $\frac{T}{2\pi}=\sqrt{\frac{L}{g}} \rightarrow \left(\frac{T}{2\pi}\right)^2=\left(\sqrt{\frac{L}{g}}\right)^2 \rightarrow \frac{T^2}{4\pi^2}=\frac{L}{g}$. Lastly, we can simply multiply both sides by g to isolate our L-value. $\frac{T^2}{4\pi^2}=\frac{L}{g} \rightarrow \frac{g\times T^2}{4\pi^2}=L$. Which makes answer choice (D) correct.