Bell Work:

Jeremy shows that $\sqrt{9} = 9^{\frac{1}{2}}$. Part of his work is shown.

$$\sqrt{9} = 3 = 3^1 = 3^{\frac{1}{2}+\frac{1}{2}} = _____ = 9^{\frac{1}{2}}$$

Which expression or equation can be placed in the blank to correctly complete Jeremy's work?

a. $(3^2)^1$

b. $3^{\frac{1}{2}} + 3^{\frac{1}{2}}$

c. $3^{\frac{1}{2}} \cdot 3^{\frac{1}{2}} = (3 \cdot 3)^{\frac{1}{2}}$

d. $3^{\frac{1}{2}} \cdot 3^{\frac{1}{2}} = (3 \cdot 3)^{\frac{1}{2}+\frac{1}{2}}$

7-5 Practice

Rational Exponents and Radicals

What is the value of each expression?

1. $\sqrt[3]{64} = 4$

3. $\sqrt[5]{32}$ $x \cdot x \cdot x \cdot x \cdot x$

$= 2$

5. $\sqrt[4]{1}$

$= 1$

index $\sqrt{}$

base	Perfect Squares	Perfect Cubes
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
	36	
	49	
	64	
	81	
	100	

7. $\sqrt[3]{729}$

$5^3 = 5 \cdot 5 \cdot 5 = 125$

$12 \cdot 12 = 144$

$= 9$

$9 \cdot 9 = 81 \cdot 9 = 729$

9. $\sqrt[3]{243}$

$6 \cdot 6 = 36 \cdot 6 = 216$

$\sqrt[3]{243}$

$27 \quad 9$

$\sqrt[3]{27} \quad \sqrt[3]{9}$

$\boxed{3\sqrt[3]{9}}$

$3^3 = 27$

$3^2 = 9$

$3 \cdot 3 = 9 \cdot 3 = 27 \cdot 3 = 81 \cdot 3 = 243$

$3^5 = 243$

Write each expression in radical form.

11. $(36x)^{\frac{1}{2}}$ $= \sqrt{36x}$

13. $81s^{\frac{2}{3}}$ $81\left(\sqrt[3]{s}\right)^2$

15. $(125a)^{\frac{2}{3}}$ $\left(\sqrt[3]{125a}\right)^2$

17. $36t^{\frac{1}{4}}$ $36\sqrt[4]{t}$

$x^{m/n}$

numerator = power (exponent)

denominator = index

$\sqrt[\text{index}]{x^{\text{power}}}$

$\left(\sqrt[n]{x}\right)^m$

if index is blank, index = 2