

M10 - 4.0 - Exponents/Radicals Review

1) Simplify

- a) $\sqrt[2]{12} =$
 b) $2\sqrt[2]{45} =$
 c) $\frac{1}{3}\sqrt[4]{80} =$
 d) $x\sqrt[2]{20x^2} =$
 e) $\frac{1}{2}\sqrt[2]{27x^3} =$
 f) $\sqrt[3]{162x^5} =$
 g) $\frac{1}{6x^2}\sqrt[3]{189x^7} =$

2) Convert to entire.

- a) $5\sqrt[2]{2} =$
 b) $-3x\sqrt[2]{7x} =$
 c) $\frac{1}{2}\sqrt[2]{8} =$
 d) $-7x\sqrt[3]{6} =$
 e) $\frac{1}{3x}\sqrt[3]{\frac{27x^3}{8}} =$

3) Simplify

- a) $2^3 \times 2^4 =$
 b) $x^3 \times x^4 =$
 c) $6a^2 \times 3a^3 =$
 d) $2^3 \times x^3 =$
 e) $(2x)^2 \times (2x)^3 =$
 f) $(3x^2)^2 \times (2x)^4 =$
 g) $(5x^3)^2 \times (7x^{99})^0 =$

4) Simplify

- a) $x^3 \div x^3 =$
 b) $x^5 \div x^2 =$
 c) $(2x)^6 \div (2x)^3 =$
 d) $\frac{m^5}{m^2} =$

5) Simplify

- a) $(x^2)^3 =$
 b) $(3x^3)^4 =$
 c) $(3 \times 4)^2 =$
 d) $[2x \times 3x]^2 =$
 e) $[3xy]^2 =$
 f) $[3x \times 2y]^2 =$

6) Solve

- a) $-2^2 =$
 b) $(-5)^3 =$
 c) $(-3)^4 =$
 d) $-(-7^2) =$
 e) $-(-4)^3 =$
 f) $-(-1)^4 =$
 g) $-(8)^2 =$
 h) $(-9)^2 =$

7) Solve

- a) $(-2x)^2 =$
 b) $(-3x)^3 =$
 c) $(-2x^2y^3)^3 =$

8) Simplify

- a) $\left(\frac{x}{y}\right)^2 =$
 b) $\left(\frac{3y}{2x}\right)^2 =$
 c) $\frac{12^3}{3^3} =$
 d) $\left(\frac{6x^2}{2x^1}\right)^3 =$
 e) $\left(\frac{180x^2}{6x}\right)^2 =$
 f) $\left(\frac{5xy}{35y^2}\right)^2 =$

9) Write with positive Exponents

- a) $x^{-4} =$
 b) $\frac{1}{x^{-3}} =$
 c) $2x^{-2} =$
 d) $2^{-3}x =$
 e) $(3x)^{-3} =$
 f) $2^{-3}x^{-2} =$
 g) $\frac{1}{3x^{-2}} =$
 h) $\frac{5}{2^{-3}x^{-2}} =$
 i) $\frac{1}{(3x)^{-2}} =$
 j) $\frac{x^2}{y^{-3}} =$
 k) $(x^{-1})^2 =$
 l) $\frac{5^2}{5^{-3}} =$
 m) $\frac{5^{-2}}{5^3} =$
 n) $\frac{2x^5y^{-2}}{z^{-3}} =$
 o) $(-2x)^{-2} =$
 p) $\frac{(3a^2)^{-2}}{a} =$
 q) $\left(\frac{5x}{-2x^2}\right)^{-2} =$
 r) $\left(\frac{2x^{-3}y^4}{-54x^6y}\right)^{-\frac{4}{3}} =$

10) Simplify

- a) $2^{-2} + 1$
 b) $\frac{x^{-3} + 1}{x^2}$

11) Change from radical/root form to exponential form.

- a) $\sqrt[5]{3^2} =$
 b) $\sqrt{6} =$
 c) $\sqrt[2]{x^5} =$

12) Change from exponential form to radical/root form. Simplify if possible.

- a) $9\left(\frac{5}{2}\right) =$
 b) $9^{0.5} =$
 c) $27^{0.\bar{3}} =$
 d) $-3\bar{3} =$
 e) $16\bar{4} =$
 f) $81^{-\frac{3}{4}} =$
 g) $(-125)^{\left(\frac{5}{3}\right)} =$
 h) $(-5)^{\frac{3}{2}} =$
 i) $-5\bar{2} =$
 j) $\left(-\frac{8}{27}\right)^{\frac{2}{3}} =$
 k) $\sqrt{\frac{3^4}{3^2}} =$
 l) $(9n^2)^{\frac{1}{2}} =$
 m) $(32x^{10})^{-\frac{1}{5}} =$
 n) $(-27x^9y^{-3})^{\frac{4}{3}} =$
 o) $\sqrt{\sqrt{81}} =$
 p) $\sqrt{\sqrt{512x^5}} =$

13) Simplify

- a) $3\bar{3} \times 3\bar{2} =$
 b) $5\bar{2} \times 5\bar{4} =$
 c) $\sqrt[3]{5^2} \times \sqrt{5^3} =$
 d) $\sqrt[2]{5^3} \div \sqrt{5^4} =$
 e) $\frac{5^2}{5^4} =$
 f) $\frac{2^4}{2^{-\frac{1}{2}}} =$
 g) $\left(5\bar{3}\right)^{\frac{1}{4}} =$
 h) $\left(5\bar{3}\right)^{\frac{1}{4}} =$
 i) $8\bar{3} \times 16\bar{2} =$

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14) Is this perfect square a perfect cube, neither or both?

- a) 125
- b) 64
- c) 99
- d) 3^4
- e) 1^5
- f) 2^5
- g) 5^6
- h) 4^3

15) Change the base

- a) $4^2 =$
- b) $16 =$
- c) $81 =$
- d) $9^3 =$
- e) $18 =$
- f) $4^3 \times 8^2 =$

16) Simplify

- a) $\frac{2^3 \times 2^4}{2^5} =$
- b) $\frac{3^4 \times 3^{-3}}{9} =$
- c) $\frac{4^2 \times 16^3}{128^2} =$
- d) $\frac{(2x^3y^2)(6xy^4)}{(4x^3y)} =$
- e) $\frac{(8x^3y^2)^2(6xy^4)^{-2}}{(4x^3y)} =$

17) Solve for x .

- a) $x^2 = 9$
- b) $x^3 = -8$
- c) $\sqrt{x} = 4$
- d) $x^{\frac{2}{3}} = 16$
- e) $2^x = 4^2$
- f) $3^x = 27^2$
- g) $2^x = 2^5$
- h) $4^{x+1} = 8^{2x-2}$

18)

a) Estimate the following square roots.

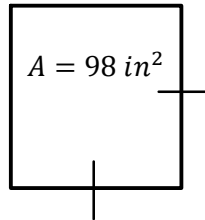
$$\sqrt{6}, \sqrt{24}, \sqrt[3]{61}$$

b) Order Least to greatest

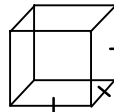
$$\sqrt{32}, \sqrt{18}, \sqrt{50}$$

$$c) \sqrt[3]{61}, \sqrt{64}, \sqrt[3]{125}$$

19) Find the perimeter of the square.

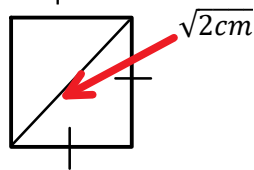


20) Find the dimensions of the cube



$$v = 250 m^3$$

21) Find the area of the square.



22) Find the radius of a sphere given following equation related to Volume, $v = 268.09 cm^3$.

$$v = \frac{4}{3}\pi r^3$$

23) Find time, t in seconds, to fall if you drop a ball off of a 122.5 meter high, h , building from the following equation.

$$h = 4.9t^2$$

24)

a) Solve for P if $n = 7$

$$P = 2(2)^n$$

b) Solve for n if $P = 1024$.

$$P = 2(2)^n$$

c) Solve for n if $P = \frac{1}{16}$.

$$P = 2\left(\frac{1}{2}\right)^n$$