

M10 - 4.0 - Q1abc Exponents & Radicals Review

1a) $\sqrt[3]{12}$ 3.46 12
 $\sqrt[3]{2 \cdot 2 \cdot 3}$ 4 3
 $\sqrt[3]{2 \cdot 3}$ 1
 3.46 2 2

$\sqrt{2 \cdot 2} = \sqrt{4} = 2$

1b) $2\sqrt{45}$ 13.41 45
 $2\sqrt{3 \cdot 3 \cdot 5}$ 1
 $2 \cdot 3 \sqrt{5}$ 9 5
 $6\sqrt{5}$ 1
 13.41 3 3

1c) $\frac{14}{3}\sqrt{80}$ 0.99 80
 $\frac{14}{3}\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5}$ 16 5
 $\frac{14}{3} \cdot 2 \sqrt{5}$ 4 4
 $\frac{28}{3}\sqrt{5}$ 1 1
 $\frac{28}{3}\sqrt{5}$ 2 2 2 2
 0.99

$\sqrt[4]{2 \cdot 2 \cdot 2 \cdot 2}$
 $\sqrt[4]{16}$
 $2 \quad 2 \times 2 \times 2 \times 2 = 16$

M10 - 4.0 - Q1de Exponents & Radicals Review

1d) $x\sqrt{20x^2}$

$x\sqrt{4 \cdot 5 \cdot x \cdot x}$

$x \cdot 2 \cdot x \sqrt{5}$

$(2x^2\sqrt{5})$ ✓

20
 \wedge
 $4 \ 5$

x^2
 \wedge
 $x \ x$

$\sqrt{4} = 2$

$x = 3^*$

$x\sqrt{20x^2}$

$3\sqrt{20 \cdot 3^2}$

$3\sqrt{180}$ 40.25

$2x^2\sqrt{5}$

$2 \cdot 3^2\sqrt{5}$

$18\sqrt{5}$ 40.25

↕

1e) $\frac{1}{2}\sqrt{27x^3}$

$\frac{1}{2}\sqrt{3 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x}$

$\frac{1}{2} \cdot 3 \cdot x \sqrt{3x}$

$\frac{3x\sqrt{3x}}{2}$

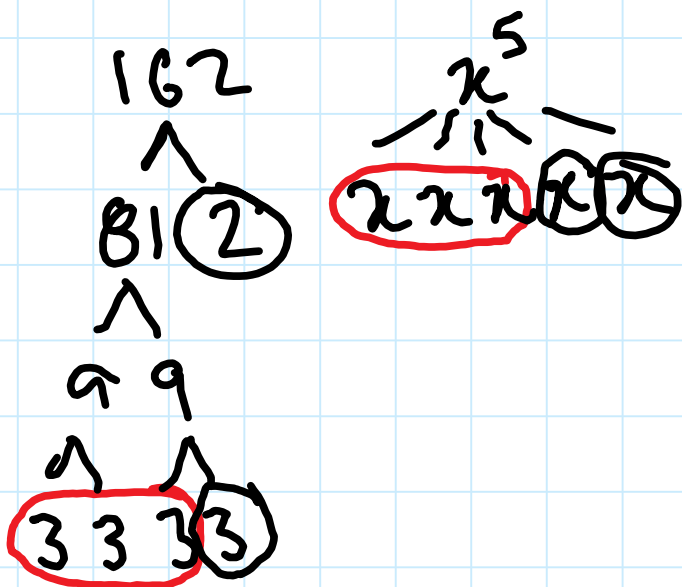
27
 \wedge
 $3 \ 3 \ 3$

x^3
 \wedge
 $x \ x \ x$

$$1k) \sqrt[3]{162x^5}$$

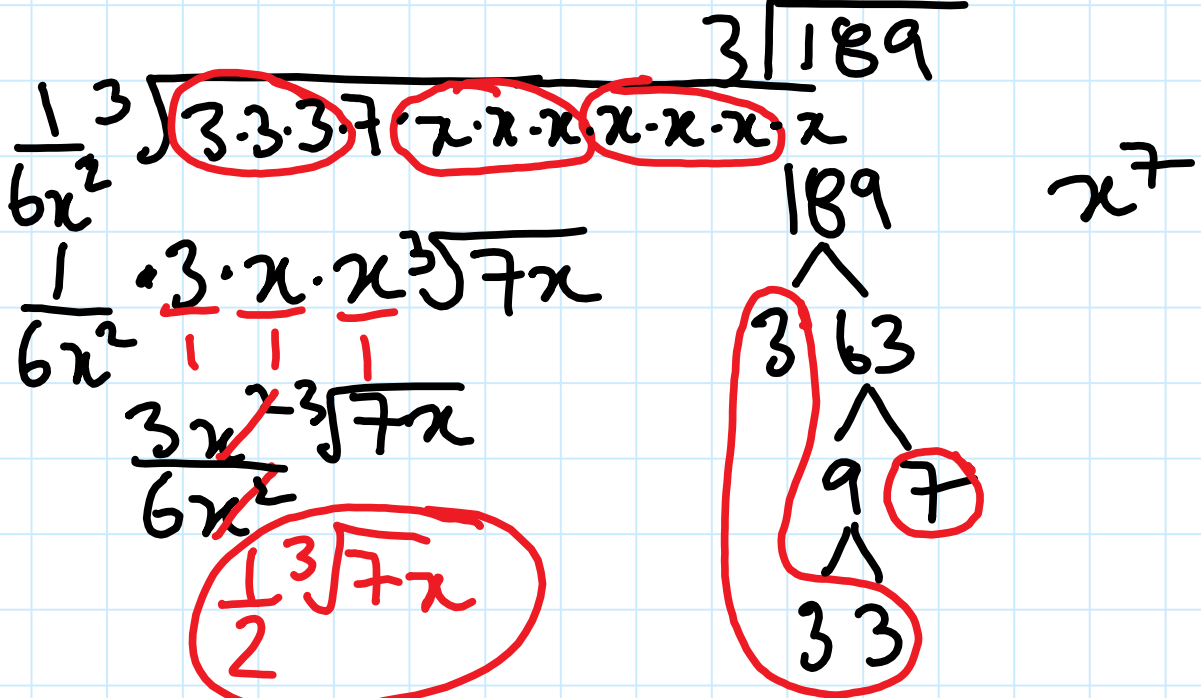
$$3x^3 \sqrt[3]{2 \cdot 3x \cdot x}$$

$$\sqrt[3]{3x^2 \cdot 6x^2}$$



$$1g) \frac{1}{6x^2} \sqrt[3]{189x^7}$$

$$109 \quad 1+8+9=18$$



$$2a) \sqrt[3]{5 \cdot 5 \cdot 2} \quad 7.07$$

$$\sqrt[3]{50} \quad 7.07$$

$$2a) \sqrt[3]{\frac{1^3 \cdot 27x^3}{8}}$$

$$\sqrt[3]{\frac{1}{3x} \cdot \frac{1}{3x} \cdot \frac{1}{3x} \cdot \frac{27x^3}{8}}$$

$$2b) -3x \sqrt[3]{7x}$$

$$-\sqrt[3]{3x \cdot 3x \cdot 7x}$$

$$-\sqrt[3]{63x^3}$$

$$\sqrt[3]{\frac{1}{8}} = \frac{\sqrt[3]{1}}{\sqrt[3]{8}} = \frac{1}{2}$$

$$2c) \sqrt[2]{8} \quad 1.41$$

$$\sqrt[2]{\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{8}{4}}$$

$$\sqrt{2} \quad 1.41$$

$$\frac{8}{2} = \frac{4}{1} \quad \frac{4}{2} = \frac{2}{1}$$

$$2d) -7x \sqrt[3]{6}$$

$$\sqrt[3]{-7x \cdot -7x \cdot -7x \cdot 6}$$

$$\sqrt[3]{-2058x^3}$$

$$-7x \sqrt[3]{6}$$

$$3a) 2^3 \cdot 2^4 = 128$$

$$2^{3+4}$$

$$\textcircled{2^7} \checkmark 128$$

$$3b) x^3 \cdot x^4 \quad x=3^*$$

$$2^{3+4}$$

$$\textcircled{x^7} \checkmark$$

$$3^3 \cdot 3^4 = 2187$$

$$3^7 = 2187$$

$$3c) 6a^2 \cdot -3a^3$$

$$\textcircled{-18a^5}$$

- 1) Signs
- 2) numbers
- 3) letters

$$3d) 2^3 \cdot x^3$$

$$\textcircled{8x^3}$$

$$3f) (3x^2)^2 \times (2x)^4$$

$$3^2 x^4 \cdot 2^4 x^4$$

$$9x^4 \cdot 16x^4$$

$$\textcircled{144x^8}$$

$$3e) (2x)^2 \times (2x)^3$$

$$(2x)^5$$

$$2^5 x^5$$

$$\textcircled{32x^5}$$

$$3g) (5x^3)^2 \times (\cancel{7x^9})^0$$

$$5^2 x^6$$

$$\textcircled{25x^6}$$

$$4a) \frac{x^3}{x^3} = x^3$$

$$\frac{x^3}{x^3} = x^{3-3}$$

$$x^0 = 1 \quad \checkmark$$

$x = 5^*$

$5^3 \div 5^3$

$125 \div 125$

1

$$4b) \frac{x^5}{x^2} = x^{5-2} = x^3$$

$$4c) \frac{(2x)^6}{(2x)^3} = (2x)^3$$

$$\frac{(2x)^6}{(2x)^3} = 2^3 \cdot x^3$$

$$= 8x^3$$

$$4d) \frac{m^5}{m^2} = m^3$$

$$5a) (x^2)^3$$

$$x^2 \cdot x^2 \cdot x^2$$

$$(x^6)$$

$$5b) (3x^3)^4$$

$$3^4 x^{12}$$

$$(81x^{12})$$

$$3 \cdot 3 \cdot 3 \cdot 3 \quad 3^4 = 81$$

$$9 \cdot 9 = 81$$

$$5c) (3 \cdot 4)^2$$

$$3^2 \cdot 4^2$$

$$9 \cdot 16$$

$$(144)$$

$$(3 \cdot 4)^2$$

$$(12)^2$$

$$(144)$$

BEDMAS

EM/BE

$$5d) [2x \cdot 3x]^2$$

$$[6x^2]^2$$

$$6^2 x^4$$

$$(36x^4)$$

$$5f) [3x \cdot 2y]^2$$

$$[6xy]^2$$

$$(36x^2y^2)$$

$$5e) [3xy]^2$$

$$(9x^2y^2)$$

M10 - 4.0 - Q6abcdefgh Exponents & Radicals Review

$$6a) -2^2 = -2 \cdot 2 = -4$$

$$(-2)^2 = -2 \cdot -2 = 4$$

$$g) -\cancel{8}^2$$

$$-64$$

$$b) (-5)^3 = -125$$

$$c) (-3)^4 = 81$$

$$3 \cdot 3 \cdot 3 \cdot 3$$

$$9 \cdot 9 = 81$$

$$d) -(-7^2) =$$

$$-(-49) =$$

$$+49$$

$$h) (-9)^2 = 81$$

$$e) -(-4)^3 =$$

$$-(-64) =$$

$$+64$$

$$f) -(-1)^4$$

$$-(+1) =$$

$$-1$$

M10 - 4.0 - Q7abc Exponents & Radicals Review

$$7a) \begin{array}{l} (-2x)^2 \\ + 2^2 x^2 \\ \hline 4x^2 \end{array} \begin{array}{l} \neq 7 \\ \checkmark \end{array} \quad \begin{array}{l} (-2x)^2 \\ (-2(7))^2 \\ (-14)^2 \\ 196 \end{array} \quad \begin{array}{l} 4x^2 \\ 4(7)^2 \\ 4(49) \\ 196 \end{array}$$

$$7b) \begin{array}{l} (-3x)^3 \\ \hline -27x^3 \end{array}$$

$$7c) \begin{array}{l} (-2x^2y^3)^3 \\ \hline -8x^6y^9 \end{array}$$

M10 - 4.0 - Q8 Exponents & Radicals Review

$$8a) \left(\frac{x}{y}\right)^2 = \frac{x^2}{y^2}$$

$$b) \left(\frac{3y}{2x}\right)^2 = \frac{9y^2}{4x^2}$$

$$c) \frac{12^3}{3^3} = \left(\frac{12}{3}\right)^3 = (4)^3 = 64$$

$$d) \left(\frac{6x^2}{2x^1}\right)^3 = \frac{27x^3}{1}$$

$\frac{x^2}{x} = \frac{\cancel{x} \cdot x}{\cancel{x}}$

$$e) \left(\frac{180x^2}{6x}\right)^2 = \left(\frac{30x}{1}\right)^2 = 900x^2$$

$$f) \left(\frac{5xy}{35y^2}\right)^2 = \left(\frac{1x}{7y}\right)^2 = \frac{x^2}{49y^2}$$

~~y · y~~

$$9a) x^{-4} = \frac{1}{x^4}$$

$$b) \frac{1}{x^3} = \frac{x^3}{1}$$

$$c) 2x^{-2} = \frac{2}{x^2}$$

$$d) 2^{-3}x = \frac{x}{2^3} = \frac{x}{8}$$

$$e) \frac{(3x)^{-3}}{1} = \frac{1}{27x^3}$$

$$f) \frac{1}{2^3 \cdot 6^2} = \frac{1}{8x^2}$$

$$g) \frac{1}{3x^{-2}} = \frac{x^2}{3}$$

$$h) \frac{5}{2^{-3}x^{-2}} = \frac{5 \cdot 2^3 \cdot x^2}{1} = 40x^2$$

$$i) \frac{2}{(3x)^{-2}} = \frac{2 \cdot (3x)^2}{2 \cdot 9x^2} = 18x^2$$

$$j) \frac{x^2}{y^{-3}} = x^2 y^3$$

$$k) \frac{(x^{-1})^2}{\frac{1}{x^2}} \rightarrow \frac{1}{x^2}$$

M10 - 4.0 - Q10ab Exponents & Radicals Review

10a) $(2^{-2} + 1)$ 0.15625

$$\frac{2^{-2} + 1}{2^3}$$

$$\frac{\frac{1}{4} + 1}{8}$$

$$\frac{\frac{1}{4} + \frac{4}{4}}{8}$$

$$\frac{\frac{5}{4}}{8}$$

$$\frac{5}{4} \div 8 = \frac{5}{4} \times \frac{1}{8} = \frac{5}{32}$$

$2^{-2} = \frac{1}{2^2} = \frac{1}{4}$

$\frac{1}{4} + \frac{1 \times 4}{4}$

$\frac{1}{4} + \frac{4}{4} = \frac{5}{4}$

$\frac{5}{32}$ 0.15625

$(\frac{1}{4} + \frac{1}{1}) \times 4 = \frac{1+4}{32}$ $\frac{1}{4} \times \frac{4}{1} = \frac{4}{4} = 1$

$(\frac{8}{1}) \times 4 = \frac{5}{32}$ ✓

b) $(x^{-3} + 1)$ 0.28125

$(\frac{1}{x^3} + \frac{1}{1}) \times x^3 = \frac{1+x^3}{x^5}$ $\sqrt{x=2^*}$

$(\frac{1}{2^2}) \cdot x^3$ $\frac{1}{32} \cdot 0.28125$

$\frac{1}{32}$ 0.28125

M10 - 4.0 - Q11abc Exponents & Radicals Review

1(a) $\sqrt[5]{3^2} = 3^{2/5}$ ✓ $\sqrt[n]{x^m} = x^{m/n}$
 1.55 1.55

b) $\sqrt[2]{6^1} = 6^{1/2}$ ✓
 2.45 2.45

c) $\sqrt[2]{x^5} = x^{5/2}$ ✓ ~~3*~~

$\sqrt[2]{x^5}$	$x^{5/2}$
$\sqrt[2]{(3)^5}$	$(3)^{5/2}$
$\sqrt[2]{243}$	15.58
15.58	

12a) $9^{5/2} = 243$
 $\frac{2\sqrt{9^5}}{3^5} = 243$ ✓

b) $9^{0.5} = 3$
 $\frac{9^{1/2}}{9^{1/2}} = 3$ ✓

c) $27^{0.5} = 3$
 $\frac{27^{1/3}}{3\sqrt{27}} = 3$

d) $-3^{2/3} = -2.08$
 $\frac{-3\sqrt[3]{3^2}}{-3\sqrt[3]{9}} = -2.08$ ✓

99) $\sqrt{-2} \neq$

$x^{m/n} = \sqrt[n]{x^m}$

e) $16^{3/4} = 8$
 $\frac{\sqrt[4]{16^3}}{2^3} = 8$ ✓

f) $81^{-3/4} = 0.037$
 $\frac{1}{81^{3/4}} = 0.037$
 $\frac{1}{\sqrt[4]{81^3}} = 0.037$
 $\frac{1}{3^3} = 0.037$ ✓
 $\sqrt[4]{81} = 3$
 $3 \cdot 3 \cdot 3 \cdot 3 = 81$
 $9 \cdot 9 = 81$

g) $\frac{(-125)^{5/3}}{\sqrt[3]{(-125)^5}} = -3125$
 $\frac{(-5)^5}{(-5)^5} = -3125$ ✓

$$l) (-5)^{3/2} \neq \sqrt[2]{(-5)^3} = \sqrt{-125}$$

$$9) (-5)^{4/2} = 25$$

$$\sqrt[2]{(-5)^4} = \sqrt[2]{+625}$$

$$\sqrt[2]{5 \cdot 5 \cdot 5 \cdot 5} = 5 \cdot 5 = 25$$

$$i) -5^{3/2} = -\sqrt[2]{5^3} = -\sqrt[2]{5 \cdot 5 \cdot 5} = -5\sqrt[2]{5}$$

$$j) \left(\frac{-8}{27}\right)^{2/3} = 0.4$$

$$\sqrt[3]{\left(\frac{-8}{27}\right)^2} = \left(\frac{-2}{3}\right)^2 = \frac{4}{9}$$

$$k) \sqrt[3]{\frac{3^4}{3^2}} = \sqrt[3]{3^2} = 3$$

$$l) (9n^2)^{1/2} = 3n$$

$$\sqrt[3]{9n} = 3n$$

$$m) (-27x^4)^{4/3} = \frac{(-27)^4 x^{16}}{(-3)^4 x^{12}} = \frac{81x^4}{1} = 81x^4$$

$$o) \sqrt[2]{81} = 9 = 3^2$$

$$m) (32x^{10})^{-1/5} = \frac{1}{(32x^{10})^{1/5}} = \frac{1}{32^{1/5} x^2} = \frac{1}{\sqrt[5]{32} x^2} = \frac{1}{2x^2}$$

$$p) \sqrt[2]{\sqrt[4]{(512x^5)^1}} = \sqrt[2]{(512x^5)^{1/4}} = (512x^5)^{1/8} = \sqrt[8]{512x^5} = 4\sqrt[8]{512x^5}$$

13a) $3^{1/3} \cdot 3^{1/2} = 3^{2/6} = 3^{1/3}$ \checkmark $\textcircled{3^{1/3}}$ $\overset{2.49}{=} 2.49$
 $\overset{2.49}{=} 2.49$ $2 \times \frac{1}{3} + \frac{1 \times 3}{2} = \frac{2}{6} + \frac{3}{6} = \frac{5}{6}$

b) $5^{1/2} \cdot 5^{1/4} = 5^{3/4}$ \checkmark $\textcircled{5^{3/4}}$ $\overset{3.43}{=} 3.43$
 $\overset{3.43}{=} 3.43$ $2 \times \frac{1}{2} + \frac{1}{4} = \frac{3}{4}$

c) $\sqrt[3]{5^2} \cdot \sqrt[2]{5^3} = 5^{2/3} \cdot 5^{3/2} = 5^{13/6}$ \checkmark $\textcircled{5^{13/6}}$ $\overset{32.69}{=} 32.69$
 $\overset{32.69}{=} 32.69$ $2 \times \frac{2}{3} + \frac{3 \times 3}{2 \times 3} = \frac{4}{6} + \frac{9}{6} = \frac{13}{6}$
 $\boxed{\sqrt[n]{x^m} = x^{m/n}}$

d) $\frac{\sqrt[2]{5^3}}{5^{3/2}} = \frac{\sqrt[2]{5^4}}{\sqrt[2]{5^4}} = \frac{5^2}{5^2} = 1$
 $\frac{5^{3/2}}{5^{3/2}} = 1$
 $\frac{5^{3/2}}{5^2} = 5^{-1/2}$
 $\frac{1}{5^{1/2}} = \frac{1}{\sqrt{5}}$

f) $\frac{5^{5/2}}{5^4} = 0.89$ $\frac{5}{2} - \frac{4 \times 2}{1 \times 2} = \frac{5}{2} - \frac{8}{2} = -\frac{3}{2}$
 $5^{-3/2}$
 $\frac{1}{5^{3/2}} = \frac{1}{2\sqrt{5^3}} = 0.89$ ✓

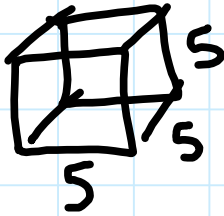
g) $\frac{2^{1/4}}{2^{-1/2}} = 1.68$ $\frac{1}{4} - \left(-\frac{1}{2}\right)$
 $\frac{2^{1/4} \cdot 2^{1/2}}{1} = 1.68$ $\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$
 $2^{3/4} = \sqrt[4]{2^3}$ ✓

h) $(5^{2/3})^{1/4} = 1.3$ $\frac{2}{3} \times \frac{1}{4} = \frac{1}{6}$
 $5^{1/6} = \sqrt[6]{5}$ ✓

i) $8^{2/3} \cdot 16^{3/2} = 256$ $8 = 2^3$ $16 = 2^4$
 $(2^3)^{2/3} \cdot (2^4)^{3/2} = 2^2 \cdot 2^6 = 2^8 = 256$ ✓
 $2^4 \times 3 = 6$
 21

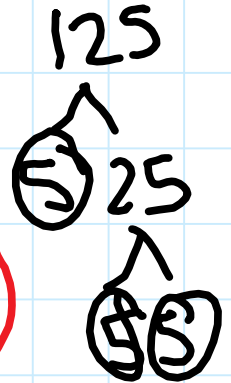
e) ≠

14a) 125
 (5^3)

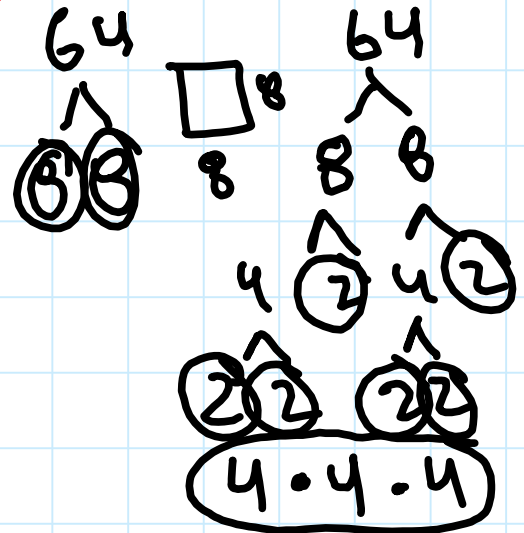


$1^2 = 1$
 $2^2 = 4$
 $3^2 = 9$
 $4^2 = 16$
 $5^2 = 25$
 $6^2 = 36$
 $7^2 = 49$
 $8^2 = 64$

$1^3 = 1$
 $2^3 = 8$
 $3^3 = 27$
 $4^3 = 64$
 $5^3 = 125$



b) 64
 (4^3) (8^2)



c) 99 99
 NEITHER \wedge
 11 9

d) 3^4
 $(3^2)^2$
 (9^2)

8^1
 \uparrow
 (9) (9)

h) 4^3
 (8^2)

64
 \wedge
 88

4^3
 $(2^2)^3$
 (4^3)

e) 1^5 NEITHER

f) 25
 NEITHER.

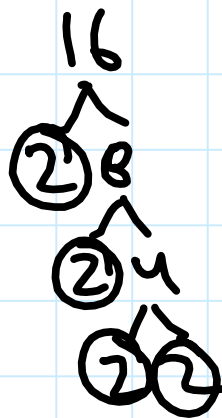
g) 5^6
 $(5^2)^3$
 (25^3)

5^6
 $(5^3)^2$
 (125^2)

M10 - 4.0 - Q15abcdef Exponents & Radicals Review

15a) $4^2 = 16$ $4 = 2 \cdot 2 = 2^2$
 $(2^2)^2 = 16$
 $(2^4) = 16$

b) 16
 $(4^2) (2^4) = 16$



c) 81
 $(9^2) (3^4) = 81$

d) $9^3 = 729$ 9
 $(3^2)^3 = 729$ 3^3
 $(3^6) = 729$

e) 18
 $(3^2 \cdot 2^1)$
 $(3) 6$
 $(3) 2$

f) $4^3 \cdot 8^2 = 4096$
 $(2^2)^3 \cdot (2^3)^2$
 $2^6 \cdot 2^6$
 $(2^{12}) = 4096$

16a) $\frac{(2^3 \cdot 2^4)}{(2^5)} = 4$ ✓

$$\frac{2^7}{2^5} = 2^2 = 4 \checkmark$$

b) $\frac{(3^4 \cdot 3^{-3})}{(9)} = 0.\bar{3}$

$$\frac{3^4}{3^2 \cdot 3^3} = 3^{-1} = \frac{1}{3} \checkmark$$

c) $\frac{(4^2 \cdot 16^3)}{(128^2)} = 4$ ✓

$4 = 2^2$ ✓
 $16 = 2^4$ ✓
 $128 = 2^7$

$$\frac{(2^2)^2 \cdot (2^4)^3}{(2^7)^2} = \frac{2^4 \cdot 2^{12}}{2^{14}} = \frac{2^7}{2^{14}} = 2^{-7} = \frac{1}{128} \times$$

$$\frac{2^4 \cdot 2^{12}}{2^7} = 2^9 = 512 \times$$

$$\frac{2^7}{2^7} = 2^0 = 1 \checkmark$$

d) $\frac{(2x^3y^2)(6xy^4)}{(4x^3y)(12x^4y^6)} = 3xy^5$

$x = 3$ ✓
 $y = 4$ ✓

e) $\frac{(8x^3y^2)^2 (6xy^4)^{-2}}{(4x^3y)^2 (8x^3y^2)^2} = \frac{64x^6y^4}{(4x^3y)^2 (36x^2y^8)}$

$\frac{64x^6y^4}{144x^8y^{10}} = \frac{4x^{-2}y^{-6}}{9} = \frac{1}{36} x^{-2} y^{-6} = \frac{1}{36xy^6}$

17a) $x^2 = 9$ $\sqrt{x^2} = |x| = \pm x$
 $\sqrt{x^2 = 9}$
 $x = \pm 3$ $\sqrt{(+3)^2} = 9$ $\sqrt{(-3)^2} = 9$

b) $\sqrt[3]{x^3} = -8$ $\sqrt[3]{(-2)^3} = -8$
 $x = -2$

c) $(\sqrt{x})^2 = (4)^2$ $\sqrt{16} = 4$
 $x = 16$

$\sqrt{x} = (x^{1/2})^2$ $\frac{1}{2} \times 2 = 1$

d) $(x^{2/3})^{3/2} = (16)^{3/2}$
 $x = \sqrt[2]{16^3}$
 $x = 4^3$
 $x = 64$

$\frac{2}{3} \times \frac{3}{2} = 1$ $x^{m/n} = \sqrt[n]{x^m}$

$64^{2/3} = \sqrt[3]{64^2} = 4^2 = 16$

d) e)

17 d) $2^x = 4^2$ $4 = 2^2$
 e) $2^x = (2^2)^2$
 $2^x = 2^4$ $2^4 = 4^2$
 $x = 4$ $16 = 16$

f) $3^x = 27^2$ $27 = 3^3$
 $3^x = (3^3)^2$
 $3^x = 3^6$ $3^6 = 27^2$
 $x = 6$ $729 = 729$

g) $2^x = 2^5$
 $x = 5$

h) $4^{x+1} = 8^{2x-2}$ $4 = 2^2$ $8 = 2^3$
 $(2^2)^{x+1} = (2^3)^{2x-2}$
 $2^{2x+2} = 2^{6x-6}$
 $2x+2 = 6x-6$
 $-2x \quad -2x$
 $2 = 4x - 6$ $2 = 4x - 6$
 $+6 \quad +6$ $+8$ $+8$
 $8 = 4x$
 $\frac{8}{4} = \frac{4x}{4}$
 $x = 2$ ✓

$2 = 4x - 6$
 $+6 \quad +6$
 $8 = 4x$
 $\frac{8}{4} = \frac{4x}{4}$
 $x = 2$ ✓

$2 = 4x - 6$
 $+8 \quad +8$
 $10 = 4x$
 $\frac{10}{4} = \frac{4x}{4}$
 $x = \frac{5}{2} = 2,5$ ✗

$4^{x+1} = 8^{2x-2}$ $4 = 2^2$ $8 = 2^3$
 $4^{3.5} = 8^3$
 $128 = 512$ ✗
 $4^3 = 8^2$
 $64 = 64$

M10 - 4.0 - 18abc Exponents & Radicals Review

18a) $\sqrt{6}$ $\frac{\sqrt{4} \sqrt{6} \sqrt{9}}{2 \cdot (2.3) \cdot 3}$ $\sqrt{6} = 2.4$

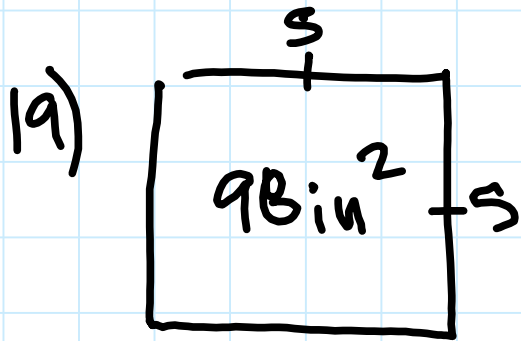
$\sqrt{24}$ $\frac{\sqrt{16} \sqrt{24} \sqrt{25}}{4 \cdot (4.9) \cdot 5}$ $\sqrt{24} = 4.9$

$\sqrt[3]{61}$ $\frac{\sqrt[3]{27} \sqrt[3]{61} \sqrt[3]{64}}{3 \cdot (3.9) \cdot 4}$ $2^3 = 8$ $\sqrt[3]{61} = 3.9$
 $3^3 = 27$
 $4^3 = 64$

b) $\sqrt{32}$ $\sqrt{18}$ $\sqrt{50}$
 $\sqrt{18}$ $\sqrt{32}$ $\sqrt{50}$

c) $\sqrt[3]{61}$ $\sqrt[2]{64}$ $\sqrt[3]{125}$ $5^3 = 125$
 3.9 8 5
 $\sqrt[3]{61}, \sqrt[3]{125}, \sqrt[2]{64}$

M10 - 4.0 - Q19 Exponents & Radicals Review



$$A = lw$$

$$A = S^2$$

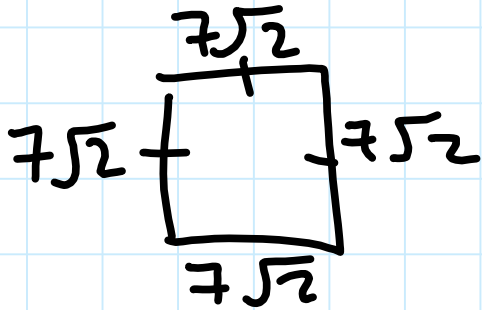
$$\sqrt{98} = \sqrt{S^2}$$

$$S = \sqrt{98}$$

$$S = \sqrt{49 \cdot 2}$$

$$S = 7\sqrt{2}$$

98
 \wedge
 $49 \cdot 2$
 \wedge
 $7 \cdot 7$

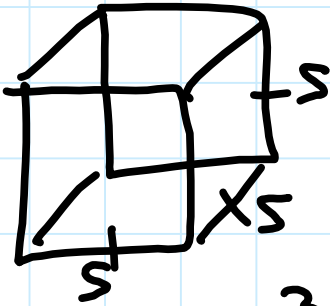


$$P = 7\sqrt{2} + 7\sqrt{2} + 7\sqrt{2} + 7\sqrt{2}$$

$$P = 28\sqrt{2} \text{ in}$$

M10 - 4.0 - Q20 Exponents & Radicals Review

20)



$$V = 250 \text{ m}^3$$

$$V = lwh$$

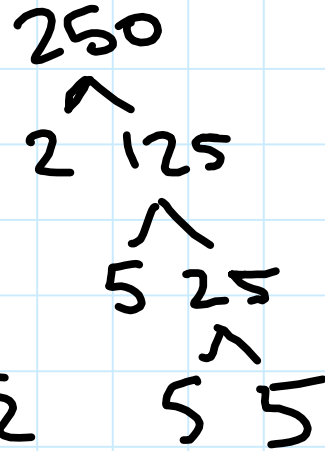
$$V = s^3$$

$$\sqrt[3]{250} = \sqrt[3]{s^3}$$

$$s = \sqrt[3]{250}$$

$$s = \sqrt[3]{5 \cdot 5 \cdot 5 \cdot 2}$$

$$s = 5\sqrt[3]{2} \quad \checkmark$$



$$V = s^3$$

$$V = (5\sqrt[3]{2})^3$$

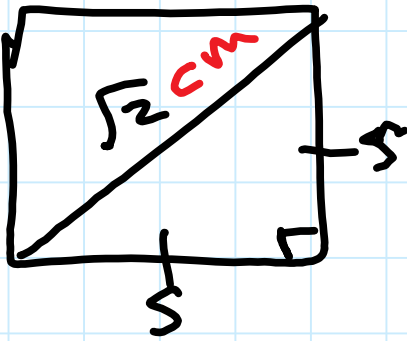
$$V = 125 \cdot 2$$

$$V = 250$$

$$5^3 = 125 \quad (\sqrt[3]{2})^3 = 2$$

M10 - 4.0 - Q21 Exponents & Radicals Review

21)



$$\begin{aligned} A &= lw \\ A &= s^2 \\ A &= 1^2 \\ A &= 1 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} a^2 + b^2 &= c^2 \\ s^2 + s^2 &= (\sqrt{2})^2 \\ 2s^2 &= 2 \\ \sqrt{2s^2} &= \sqrt{2} \\ s &= 1 \end{aligned}$$

$$22) V = 268.09 \text{ cm}^3$$



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

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

$$3. 268.09 = \frac{4}{3} \pi r^3 \cdot \cancel{3}$$

$$V = \frac{4}{3} \pi (4)^3$$

$$\frac{804.27}{4} = \frac{4\pi r^3}{4}$$

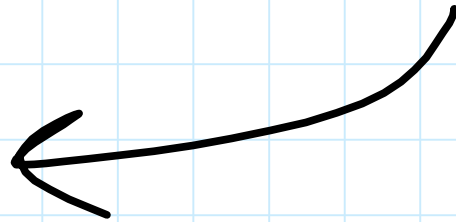
$$V = \frac{4}{3} \pi 64$$

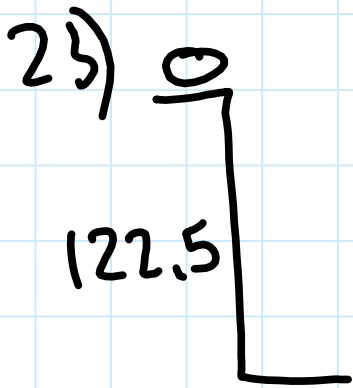
$$201.0675 = \frac{\pi r^3}{\pi}$$

$$V = 268.09 \text{ cm}^3$$

$$\sqrt[3]{64} = r^3$$

$$r = 4 \text{ cm}$$





$$h = 4.9t^2$$
$$\frac{122.5}{4.9} = \frac{4.9t^2}{4.9}$$
$$\sqrt{t^2} = \sqrt{25}$$
$$t = 5s \quad \checkmark$$

$$h \text{ (m)}$$
$$t \text{ (s)}$$

$$h = 4.9t^2$$
$$h = 4.9(5)^2$$
$$h = 4.9(25)$$
$$h = 122.5m$$

$$24a) \quad P = 2(2)^n \quad n = 7$$

$$P = 2(2)^7$$

$$P = 2(128)$$

$$P = 256$$

$$b) \quad P = 2(2)^n \quad P = 1024$$

$$\frac{1024}{2} = \frac{2(2)^n}{2}$$

$$512 = 2^n$$

$$2^9 = 2^n$$

$$n = 9$$

$$2^8 = 256$$

$$2^9 = 512$$

$$2^{10} = 1024$$

$$c) \quad P = 2\left(\frac{1}{2}\right)^n \quad P = \frac{1}{16} = \frac{1}{2^4} = 2^{-4}$$

$$2^{-4} = 2\left(2^{-1}\right)^n$$

$$2^{-4} = 2^1 \cdot 2^{-n}$$

$$2^{-4} = 2^{1-n}$$

$$-4 = 1 - n$$

$$-1 \quad -1$$

$$-5 = -n$$

$$n = 5$$