

# Unit 4 lesson 2

U4L2 Pg 1 of 2

Pg 16<sup>17</sup> #1-5 (eoo), bagm, 10, 11a

1a)  $2^{\frac{1}{3}}$   
 $= \sqrt[3]{2}$

c)  $x^{\frac{1}{2}}$   
 $= \sqrt{x}$

e)  $6^{\frac{4}{3}}$   
 $= \sqrt[3]{6^4}$   
 or  $(\sqrt[3]{6})^4$

g)  $7^{-\frac{1}{2}}$   
 $= \frac{1}{\sqrt{7}}$

i)  $x^{-\frac{3}{7}}$   
 $= \frac{1}{(\sqrt[7]{x})^3}$   
 or  $\frac{1}{\sqrt[7]{x^3}}$

k)  $(3x)^{\frac{1}{2}}$   
 $= \sqrt{3x}$

l)  $3x^{\frac{1}{2}}$   
 $= 3\sqrt{x}$

2a)  $\sqrt{7}$   
 $= 7^{\frac{1}{2}}$

c)  $\sqrt[3]{-11}$   
 $= (-11)^{\frac{1}{3}}$

e)  $\sqrt[4]{64}$   
 $= 6^{\frac{4}{4}}$

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

i)  $\frac{1}{\sqrt[5]{x^4}}$   
 $= x^{-\frac{4}{5}}$

k)  $\sqrt{3x^5}$   
 $= (3x^5)^{\frac{1}{2}}$

3a)  $4^{\frac{1}{2}}$   
 $= \sqrt{4}$   
 $= 2$

c)  $16^{-\frac{1}{4}}$   
 $= \frac{1}{\sqrt[4]{16}}$   
 $= \frac{1}{2}$

e)  $25^{0.5}$   
 $= \sqrt{25}$   
 $= 5$

g)  $64^{-\frac{1}{6}}$   
 $= \frac{1}{\sqrt[6]{64}}$   
 $= \frac{1}{2}$

i)  $81^{0.25}$   
 $= \sqrt[4]{81}$   
 $= 3$

k)  $(\frac{4}{9})^{\frac{1}{2}}$   
 $= \sqrt{\frac{4}{9}}$   
 $= \frac{\sqrt{4}}{\sqrt{9}}$   
 $= \frac{2}{3}$

4a)  $8^{\frac{2}{3}}$   
 $= (\sqrt[3]{8})^2$   
 $= 2^2$   
 $= 4$

c)  $9^{2.5}$   
 $= 9^{\frac{5}{2}}$   
 $= (\sqrt{9})^5$   
 $= 3^5$   
 $= 243$

e)  $16^{-\frac{3}{4}}$   
 $= \frac{1}{(\sqrt[4]{16})^3}$   
 $= \frac{1}{8}$

g)  $(-8)^{-\frac{5}{3}}$   
 $= \frac{1}{(\sqrt[3]{-8})^5}$   
 $= \frac{1}{(-2)^5}$   
 $= -\frac{1}{32}$   
*negative number, odd root*

i)  $1^{\frac{5}{3}}$   
 $= 1$

k)  $(\frac{100}{9})^{\frac{3}{2}}$   
 $= \frac{(\sqrt{100})^3}{(\sqrt{9})^3}$   
 $= \frac{1000}{27}$

5a)  $\sqrt{-9}$   
 not real

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

e)  $-9^{\frac{1}{2}}$   
 $= -\sqrt{9}$   
 $= -3$

g)  $-8^{\frac{5}{3}}$   
 $= -(\sqrt[3]{8})^5$   
 $= -32$

i)  $(-1)^{-\frac{3}{2}}$   
 $= \frac{1}{(\sqrt{-1})^3}$   
 not real.  
*negative number, even root.*

Pp 16-17 #1-5 (eoo), 6agm, 10, 11q.

$$5k, \left(\frac{36}{121}\right)^{-\frac{1}{2}}$$

$$= \sqrt{\frac{121}{36}}$$

$$= \frac{11}{6}$$

m)  $(-0.0016)^{\frac{1}{4}}$   
 even root of negative number  
 ... not real.

$$\left[ \sqrt[4]{-0.0016} \right]$$

$$o) \left( (625)^{-1} \right)^{-\frac{1}{4}}$$

$$= 625^{\frac{1}{4}}$$

$$= \sqrt[4]{625}$$

$$= 5$$

$$p) \left[ \left( \sqrt{125} \right)^4 \right]^{\frac{1}{6}}$$

$$= \left[ 125^{\frac{4}{2}} \right]^{\frac{1}{6}}$$

$$= \left[ 125^2 \right]^{\frac{1}{6}}$$

$$= 125^{\frac{2}{6}}$$

$$= 125^{\frac{1}{3}}$$

$$= \sqrt[3]{125}$$

$$= 5$$

$$r) \sqrt[3]{729}$$

$$= \left( 729^{\frac{1}{3}} \right)^{\frac{1}{2}}$$

$$= \left( 729 \right)^{\frac{1}{6}}$$

$$= \sqrt[6]{729}$$

$$= 3$$

$$6a) \sqrt{\sqrt{x^4}}$$

$$= \left( (x^4)^{\frac{1}{2}} \right)^{\frac{1}{2}}$$

$$= x^{4 \times \frac{1}{2} \times \frac{1}{2}}$$

$$= x^{\frac{4}{4}}$$

$$= x$$

$$g) \left( a^{\frac{1}{3}} b^{\frac{1}{4}} \right)^{12}$$

$$= a^{\frac{12}{3}} b^{\frac{12}{4}}$$

$$= a^4 b^3$$

$$m) \left( \sqrt[5]{x^3} \right) \left( \sqrt[3]{x^2} \right)$$

$$= \left( x^{\frac{3}{5}} \right) \left( x^{\frac{2}{3}} \right)$$

$$= x^{\frac{3}{5} + \frac{2}{3}}$$

$$= x^{\frac{9+10}{15}}$$

$$= x^{\frac{19}{15}}$$

$$10. D = 9.4t^{\frac{2}{3}}$$

$$= 9.4 \left( \sqrt[3]{t} \right)^2$$

given  $t = 18h$ .

$$D = 9.4 \left( \sqrt[3]{18} \right)^2$$

$$\approx$$

$$11a) V = s^3$$

$$s^3 = 21000$$

$$s = \sqrt[3]{21000}$$

$$= \left( \sqrt[3]{21} \right) \times 10$$

$$\approx$$

∴ the diameter of the storm is about 65 kilometres

∴ the length of each edge would be about 27.6 metres.