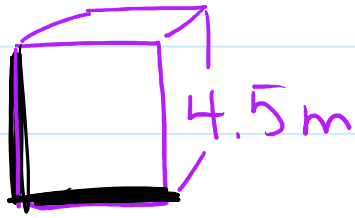
3.4 Notes

October 23, 2019, 9:40 AM

Working with Exponents

Create an equation using exponents to solve the following:

1. Find the Surface $\boxed{\text{Area}}$ of a cube with 4.5m sides.



$A_{sq} = s^2$

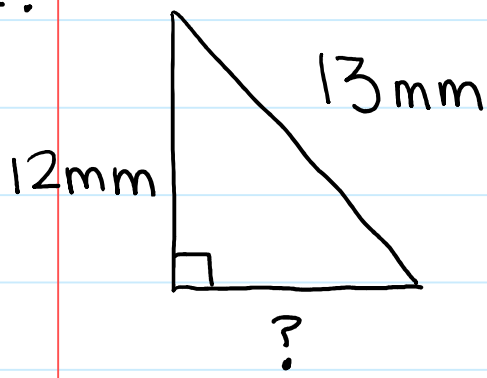
cube has 6 sides

$SA = 6s^2$

$SA = 6(4.5m)^2 = 121.5m^2$

$6(4.5m)(4.5m)$

2.



$a^2 + b^2 = c^2$

$a^2 + (12mm)^2 = (13mm)^2$

$a^2 + 144mm^2 = 169mm^2$

$-144 \qquad -144$

$\sqrt{a^2} = \sqrt{25mm^2}$

$a = 5mm$

October 23, 2019 9:53 AM

★ 3. A population of 80 bacteria double every hour. How many bacteria are present after:

a) 2 hours

80×2

st. 1hr

$160 \times 2 = 320$ bacteria

b) 6 hours

$80 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 5120$ bacteria

HOURS 1 2 3 4 5 6

$80(2)^6$

c) 7.5 hours

$80(2)^{7.5} = 14{,}481$ bacteria

★ d) General Equation

(coefficient) (Base)^{Exponent} (How many times did it reproduce)

Starting # of bacteria (Reproduction Rate 2 = double 3 = triple)

October 23, 2019 10:06 AM

4. A Population of 142 bacteria triples every 30 mins. How many after

a) 60 mins?

$142(3)^2 = 1278$

b) $2\frac{1}{2}$ hours?

60 + 60 + 30

$142(3)^5 = 34,506$

5. There are 700 bacteria on your phone. They quadruple every 5 hours.

a) 20 hrs ÷ 5 hr = 4

$700(4)^4$

179,200

b) 2 full days

1 day = 24 hr

2 day 48 h ÷ 5 hr = 9.6

$700(4)^{9.6}$

421,574,134