Before we begin, are there any questions from last day's work?
pp.352-353 #1(a,c),2(i,iii),3(a,b,c),4(a,b),5(a,b,c),**blue**](a,b,d),9(b,c)

"Show What You Know: 1.3" is first...

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) review all ideas for the unit summative.

Today's work

pp. 393-394 #1, 3-6, 7b, 8, 10(a,b)
Challenge Problem #15

**Please submit the homework sheet 1.8.2 and p.344 #9,
with your name on the top.**

5. Calculate the number of years for an investment of $1000 to double at an interest rate of 7.2% for each compounding period. $A = P(1+i)^n$

a) annually   b) semi-annually   c) monthly   d) daily

$A = 2000$
$P = 1000$
$i = \dfrac{0.072}{2}$
$n = 2x$

$2000 = 1000\left(1+\dfrac{0.072}{2}\right)^{2x}$

$\dfrac{2000}{1000} = (1.036)^{2x}$

$\log(2) = \log 1.036^{2x}$

$\log 2 = 2x \log 1.036$

$\dfrac{\log 2}{2 \log 1.036} = x$

$x \doteq 9.8 \text{ years}$

$2000 = 1000\left(1+\dfrac{0.072}{12}\right)^{12x}$ $i = \dfrac{0.072}{12}$

$2 = (1.006)^{12x}$ $n = 12x$

$\log 2 = 12x \log 1.006$

$\dfrac{\log 2}{12 \log 1.006} = x$

$x \doteq 9.65$

$\doteq 9.7 \text{ years}$

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8. For every metre below the surface of water, the intensity of three colours of light is reduced as shown.

a) For each colour, write an equation to express the percent, P, of surface light as a function of the depth, d metres.

b) For each colour, determine the depth at which about one-half the light has disappeared.

c) Write each equation in part a as an exponential function with base 2.

d) For all practical purposes, the light has disappeared when the intensity is only 1% of that at the surface. At what depth would this occur for each colour?

Colour	Percent reduction (per metre)
Red	35%
Green	5%
Blue	2.5%

$100\% - 2.5\%$
$= 97.5\%$
$= 0.975$

$P = 100(1 - 0.025)^d$

$= 100(0.975)^d$

b) $50 = 100(0.975)^d$

$0.5 = 0.975^d$

$\log 0.5 = d \log 0.975$

$\dfrac{\log 0.5}{\log 0.975} = d$

$d \doteq 27.37$

$\doteq 27.4$

$\therefore$ a depth of 27.4 m

9. Polonium-210 is a radioactive element with a half-life of 20 weeks. From a sample of 25 g, how much would remain after each time?

a) 30 weeks   **b)** 14 weeks   **c)** 1 year   **d)** 511 days

$$P = P_0 (0.5)^{\frac{n}{20}}$$

$$= 25(0.5)^{\frac{14}{20}}$$

$$\doteq 40.61$$

$$\doteq 40.6 \text{ g}$$

$$P = 25(0.5)^{\frac{52}{20}}$$

$$\doteq 4.12$$

$$\doteq 4.1 \text{ g}$$

Before we begin, are there any questions from last day's work?

pp.352-353 #1(a,c),2(i,iii),3(a,b,c),4(a,b),5(a,b,c),**8[ue]**(a,b,d),9(b,c)

Today's work

pp. 393-394 #1, 3-6, 7b, 8, 10(a,b)
Challenge Problem #15

p. 393 #1

$$A = P(1+i)^n$$

$$\frac{A}{(1+i)^n} = P$$

$$A(1+i)^{-n} = P$$

$$5000(1.037)^{-n} = P$$