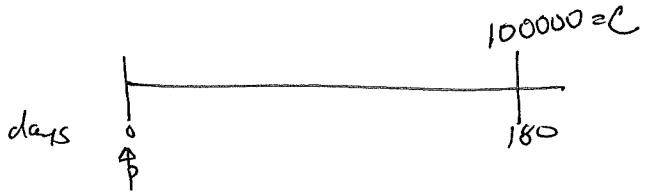
1/15/20

No class on Thursday, Jan. 16

No class on Tuesday, Jan. 21

Watch the youtube videos and work problems!

T-Bill Example: (See next page)



Treasury Bills Example

Two 180-day T-Bills, one Canadian and one U.S., each have a redemption value of 100,000. Both T-Bills have the same numeric quoted rate. The Canadian T-Bill sells for 126.13 more than the U.S. T-Bill. Determine the price of the Canadian T-Bill.

(A) 96750

(B) 96875

(C) 97000

(D) 97125

(E) 97250

Can: quoted rate = i - simple interest

$$C = P_1\left(1 + i \cdot \frac{180}{365}\right)$$

U.S.: quoted rate = d - simple discount

$$P = C \cdot \left(1 - d \cdot \frac{180}{360}\right)$$

$i = d$

Can.: $P = 100000\left(1 + \frac{180i}{365}\right)^{-1}$

U.S.: $P = 100000(1 - .5i)$

$$\therefore 100000(1 - .5i) = \frac{100000}{\left(1 + \frac{180i}{365}\right)} - 126.13$$

... quadratic in i ... $i = 0,06$

$$\therefore \text{answer } P = 100000\left(1 + \frac{180(.06)}{365}\right)^{-1} = 97126.13$$

(on FM Exam, we could use guess & check)

See next page

Guess & Check:

p^{Can}	$i=d$	p^{US}	Δ
96750	.068...	96594	156
96875	.065...	96729	146
⋮	⋮	⋮	⋮

MIS4: General Force of Interest

Notation: δ_t

$$paf_k^n = e^{\int_k^n \delta_t \, dt}$$

$$a(t) = paf_0^t = e^{\int_0^t \delta_r \, dr}$$

Special Case Examples

$$\delta_t = \frac{2t}{t^2+6} \Longrightarrow a(t) = \frac{t^2+6}{6}$$