#### **Finance Solver**

356 for daily



#### Comparing compounding periods

Calculate the amount of money I will have in my account if I invest \$10,000.00 at 12% p.a. for a period of 2 years compounded:

- i. Annually (yearly)
- ii. Quarterly
- iii. Monthly
- iv. Fortnightly
- v. Weekly
- vi. Daily

## **Annually**

(r and n must be in terms of years!)

```
V_{2} = ?
V_{0} = $10,000
r = 12% pa (yearly)
R = \text{growth rate} = 1 + \frac{12}{100}
= 1.12
n = 2 years
V_{2} = V_{0}(1 + \frac{r}{100})^{n}
V_{2} = 10000(1.12)^{2}
= $12544.00
```

Finance Solver			
I(%):	12 12		
PV:	-10000	$\mathbf{b}$	
Pmt:	0	$\mathbf{b}$	
FV:	12544.	$\mathbf{b}$	
PpY:	1	÷	
CpY:	1		
Edit Future Value, FV			

# **Quarterly**

(r and n must be in terms of quarters!)

```
V_8 = ?
V_0 = $10,000
r = 12\% \text{ pa (yearly)}
= \frac{12}{4}
= 3\% \text{ pq (per quarter)}
R = \text{growth rate} = 1 + \frac{3}{100}
= 1.03
n = 2 \text{ years}
= 2 \times 4
= 8 \text{ quarters}
V_8 = V_0 (1 + \frac{r}{100})^n
V_8 = 10000 (1.02)^8
= \frac{$12667.70}{}
```

Finance Solver			
N:	8		
I(%):	12		
PV:	-10000	$\mathbf{b}$	
Pmt:	0	$\left  \cdot \right $	
ΓV:	12667.700813876		
PpY:	4		
Finance Solver info stored into			
tvm.n, tvm.i, tvm.pv, tvm.pmt,			



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## **Monthly**

```
V_{24} = ?
V_{0} = $10,000
r = 12\% \text{ pa (yearly)}
= \frac{12}{12}
= 1\% \text{ pm (per month)}
R = \text{growth rate} = 1 + \frac{1}{100}
= 1.01
n = 2 \text{ years}
= 2 \times 12
= 24 \text{ months}
V_{24} = V_{0}(1 + \frac{r}{100})^{n}
```

 $V_{24} = 10000(\mathbf{1}.\mathbf{01})^{\mathbf{24}}$ 

= \$12697.35

Finance Solver				
N:	24			
l(%):	12			
PV:	-10000			
Pmt:	0			
FV:	12697.346485319			
PpY:	12			
Finance Solver info stored into				
tvm.n, tvm.i, tvm.pv, tvm.pmt,				

#### **Fortnightly**

(r and n must be in terms of fortnights!)

 $V_{52} = ?$   $V_{0} = $10,000$  r = 12% pa (yearly)  $= \frac{12}{26} = \frac{6}{13}$   $= \frac{6}{13} \% \text{ pf (per fortnight)}$   $R = \text{growth rate} = 1 + \frac{(6/13)}{100}$   $= 1 + \frac{6}{1300}$  n = 2 years  $= 2 \times 26$  = 52 fortnights  $V_{52} = V_{0} (1 + \frac{r}{100})^{n}$ 

Finance Solver					
N:	52				
l(%):	12				
PV:	·10000				
Pmt:	0				
FV:	12705.47426532				
PpY:	26	٢			
	Finance Solver info stored into				
tym.n. tym.i. tym.py. tym.pmt					

# $V_{52} = V_0 (1 + \frac{r}{100})^n$ $V_{52} = 10000 (1 + \frac{6}{1300})^{52}$ $= \frac{\$12705.47}{1000}$





<sup>(</sup>r and n must be in terms of months!)

# **Weekly**

(r and n must be in terms of weeks!)

 $V_{104} = ?$   $V_{0} = $10,000$  r = 12% pa (yearly)  $= \frac{12}{52} = \frac{3}{13}$   $= \frac{3}{13} \% \text{ pw (per week)}$   $R = \text{growth rate} = 1 + \frac{(3/13)}{100}$   $= 1 + \frac{3}{1300}$  n = 2 years = 2 x 52 = 104 weeks  $V_{104} = V_{0} (1 + \frac{r}{100})^{n}$ 

 $V_{104} = 10000(1 + \frac{3}{1300})^{104}$ 

= \$12708.98

inance Solver				
N:	104			
l(%):	12			
PV:	·10000			
Pmt:	0	IJ		
FV:	12708.977013465			
PpY:	52			
Finance Solver info stored into				
tvm.n, tvm.i, tvm.pv, tvm.pmt,				

# **Daily**

(r and n must be in terms of days!)

 $V_{730} = ?$   $V_0 = $10,000$  r = 12% pa (yearly)  $= \frac{12}{365} =$   $= \frac{12}{365} \% \text{ pd (per day)}$   $R = \text{growth rate} = 1 + \frac{(12/365)}{100}$   $= 1 + \frac{12}{36500}$  n = 2 years  $= 2 \times 365$  = 730 days

$$V_{730} = V_0 (1 + \frac{r}{100})^n$$
$$V_{730} = 10000 (1 + \frac{12}{36500})^{730}$$
$$= \frac{\$12711.99}{1000}$$

Finance Solver				
	N:	730	$\mathbf{F}$	-
	l(%):	12	$\mathbf{F}$	
	PV:	·10000	$\left  \cdot \right $	
k	Pmt:	0	$\left  \right\rangle$	
	FV:	12711.99008909	•	
_	PpY:	365		
		Finance Solver info stored into		
	tvm.n, tvm.i, tvm.pv, tvm.pmt,			

**NB:** The shorter the period duration the higher the interest return.

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