11.1 Math 11 AW - notes

Simple Interest $\Rightarrow$ $I = Prt$
$= P \times r \times t$

I = interest
P = principal (original money / amount given)
r = rate (given as % - put into decimal $\div 100$)
t = time in years
↳ if given in -
days $\Rightarrow \div 365$
weeks $\Rightarrow \div 52$
months $\Rightarrow \div 12$

ex $\$500$; 2.3% for 120 days

$P = 500$ $r = 2.3\% = \frac{2.3}{100} = 0.023$ $t = 120d = \frac{120}{365} = 0.33$

$I = Prt$
$= 500 \times 0.023 \times 0.33$
$= 3.795$ (put into $ - 2 decimal places)
$= \$3.80$

* remember rounding rules 4 & below - let it go 5 & up - round up.

Total Amount $= A$

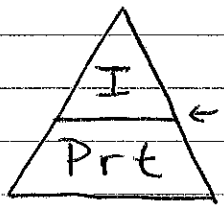
$A = P + I$

∴ you will have

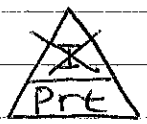
$A = 500 + 3.80$
$= \$503.80$ after 120 days.

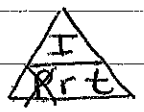
1.2 Math 11AW - notes

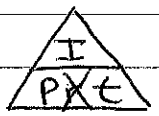
Simple Interest problems → to find formula use the triangle below & cross of what you want.



← means divide

for I  $I = Prt$

for P  $P = \frac{I}{rt}$

for r  $r = \frac{I}{Pt}$

for t  $t = \frac{I}{Pr}$

* remember
t → years
r → decimal (÷100)

ex earned $25 with 5% interest rate and P = $1000
How long was it? → solve for t

$t = \frac{I}{Pr}$

$= \frac{25}{(1000)(0.05)}$

$= \frac{25}{50} = 0.5$ yr or 0.5×12 months $= 6$ months

$P = 1000$

$r = 5\% = \frac{5}{100} = 0.05$

$I = 25$

1.3 Math 11 AW - notes

Compound Interest - $A = P(1+i)^n$ (for compounding annually only)

A = Principal + interest
P = Principal (money given)
i = rate in decimal form (÷100)
n = number of compounding periods (years)

ex $P = 10000$; $r = 3.2\%$ compounded annually.
$n = 3$ years $= 0.032$

$A = P(1+i)^n$
$= 10000(1+0.032)^3$
$= 10000(1.032)^3$ → use y^x or ^ button on your calculator
$= 10000(1.099104768)$
$= 10991.04768$ (round to money - 2 decimals)
$= 10991.05$

How much interest was earned?

$A = P + i$ so $A - P = i$

$10991.05 - 10000.00 = i$
$991.05 = i$

1.5 Math 11AW - notes

Compounding Periods $A = P(1 + \frac{r}{n})^{nt}$

n
- annually - once a year (1)
- semi-annually - twice a year (2)
- quarterly - four times a year (4)
- monthly - twelve times a year (12)
- weekly - fifty two times a year (52)
- daily - three hundred & sixty five times/year (365)

$A = P + i$
P = principal
r = rate in decimal form
t = time in years
n = compounding periods

ex $r = 2.1\% \rightarrow 0.021$ $P = 1000$ $t = 3$ years
compounded monthly = 12

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

$A = 1000(1 + \frac{0.021}{12})^{12 \times 3}$ $\quad 12 \times 3 = 36$

$= 1000(1 + 0.00175)^{36}$
$= 1000(1.00175)^{36}$ — use y^x or $\wedge$ key

$= 1000(1.0649682)$
$= 1064.9682 \leftarrow$ put into $
$\stackrel{\$}{=} 1064.97$

$i = A - P \Rightarrow i = 1064.97 - 1000$
$i = 64.97$