

# What Calculator should I get and what are the benefits?

Maths Lit

SEARTEC 

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# What is Maths Lit?

- According to Oxford Learning Website:
  - **Math literacy** is the second key step for all students, beyond language **literacy**. It is the ability to use numbers to help solve real-world problems. It is also the ability to understand the “language” of **math** (for example “sum” means an answer to addition, “difference” means the answer to a subtraction question).

# Department of Education's Definition:

- Mathematical Literacy provides learners with an awareness and understanding of the role that mathematics plays in the modern world. Mathematical Literacy is a subject driven by life-related applications of mathematics. It enables learners to develop the ability and confidence to think numerically and spatially in order to interpret and critically analyse everyday situations and to solve problems.

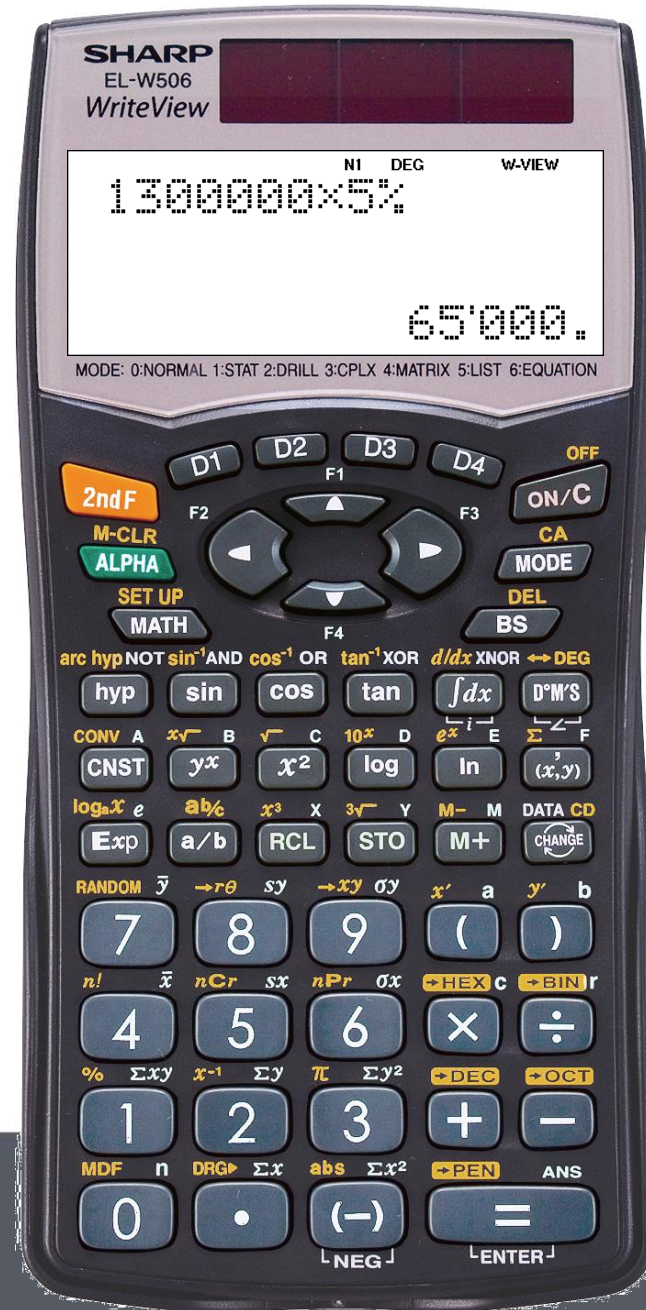
- Very interesting article:
  - <http://thoughtleader.co.za/readerblog/2012/01/09/maths-vs-maths-literacy-the-continuing-debate/>
- Mathematical Literacy is a subject that uses mathematical concepts, and applies them to everyday situations. Mathematical Literacy is not an alternative to Standard Grade Mathematics; advocates suggest that it is an entirely new and independent subject. Typical lessons include:
  - How to buy a house, including calculating transfer fees, legal fees, and bond repayment amounts
  - The benefits and downfalls of Hire-Purchase
  - Reading and interpreting statistics in newspaper articles
  - How to calculate income tax

# So what does that mean for us?

- How to buy a house, including calculating transfer fees, legal fees, and bond repayment amounts
- Reading and interpreting statistics in newspaper articles
- How to calculate income tax
- Conversions
- Substitution
- Time

# How to buy a house: Transfer Fees

- Up to R750,000: 0 percent
  - R 750,000–1,250,000: 3 percent
  - R 1,250,000–1,750,000: 5 percent
  - R 1,750,000–2,250,000: 8 percent
  - R 2,250,000+: 11 percent
- Eg. House at cost of R1.3 million.
- So  $1\,300\,000 \times 5$



# Summary

Steps	Costs
Transfer Fees	R65 000
Registration Fees	
Legal Fees	
Total Additional	R65 000

# How to buy a House: Registration Fees

- Up to R 150,000: R 70
- R 150,000–300,000: R 350
- R 300,000–500,000: R 450
- R 500,000–1,000,000: R 550
- R1,000,000 – 2,000,000: R 650
- R2,000,000 – 5,000,000: R 1,050
- R 5,000,000+: R 1,250



# Summary

Steps	Costs
Transfer Fees	R65 000
Registration Fees	R650
Legal Fees	
Total Additional	R65 650

# How to buy a House: Legal Fees

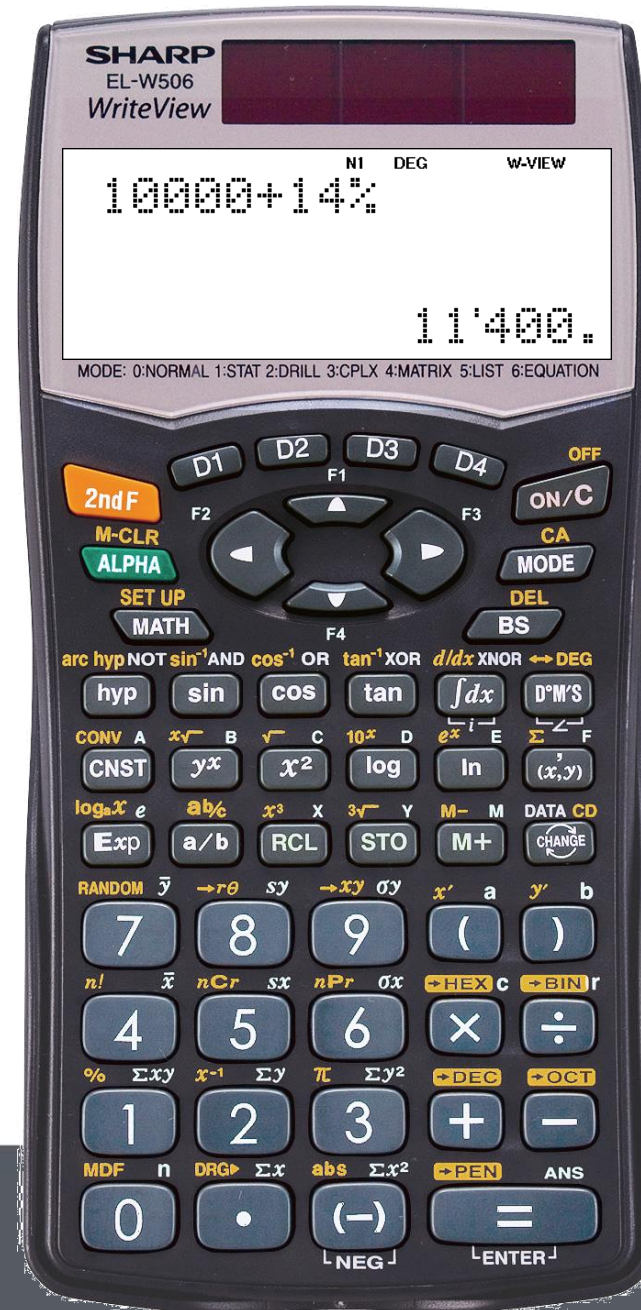
- ZAR 1,250–36,000 ZAR  
(plus VAT at 14 percent).
- E.g. R10 000 + 14% vat

• 10 000

•  $\boxed{+}$

• 14

•  $\boxed{2ndF}$   $\boxed{1}$   $\%$   $\Sigma xy$



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# Summary

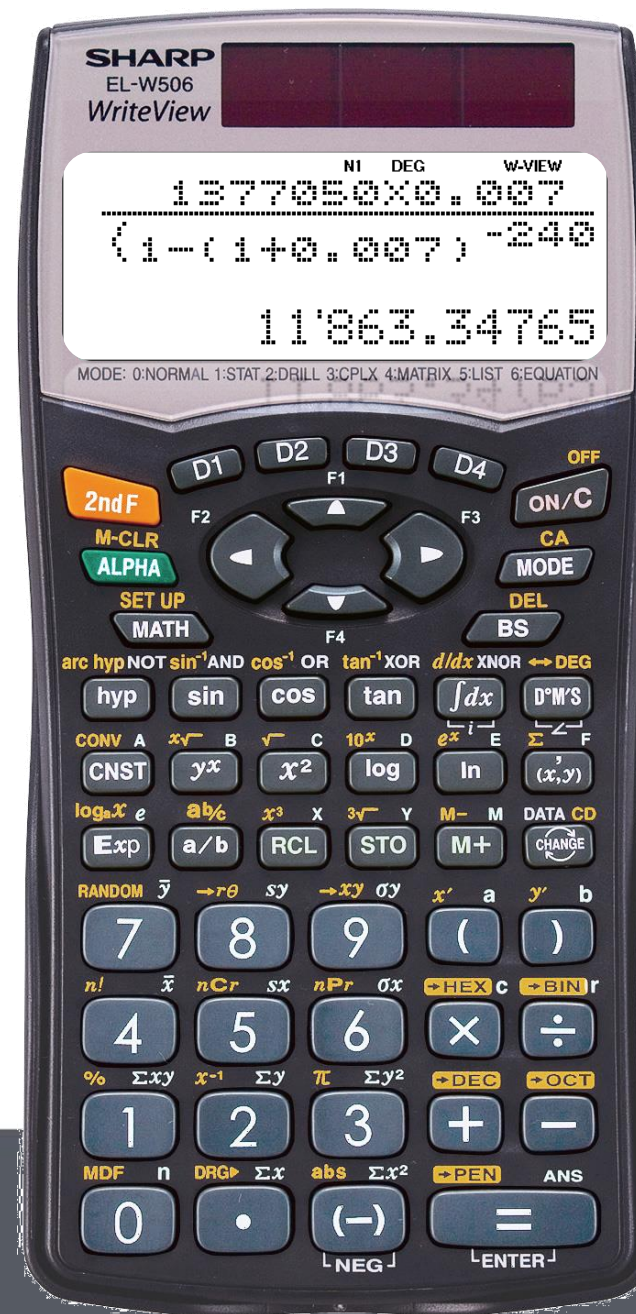
Steps	Costs
Transfer Fees	R65 000
Registration Fees	R650
Legal Fees	R11 400
Total Additional	R77 050

# Bond Repayments



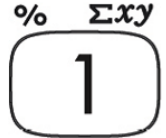

- Formula:  $Payment = \frac{Pi}{(1 - (1+i)^{-n})}$
- Cost: 1 300 000 + 77 050  
= 1 377 050
- Interest rate is 8.4% per annum compounded monthly  
=  $0.084 \div 12 = 0.007$
- Over 20 years so  $n = 20 \times 12 = 240$ .


# On the calculator:

- $\frac{a}{b}$  1 3 7 7 0 5 0
- $\times$  0.007
- $\sqrt{\phantom{x}}$
- $( 1 - ($
- $1 + 0.007 )$
- $y^x$   $(-)$  240  $\rightarrow$
- $) =$

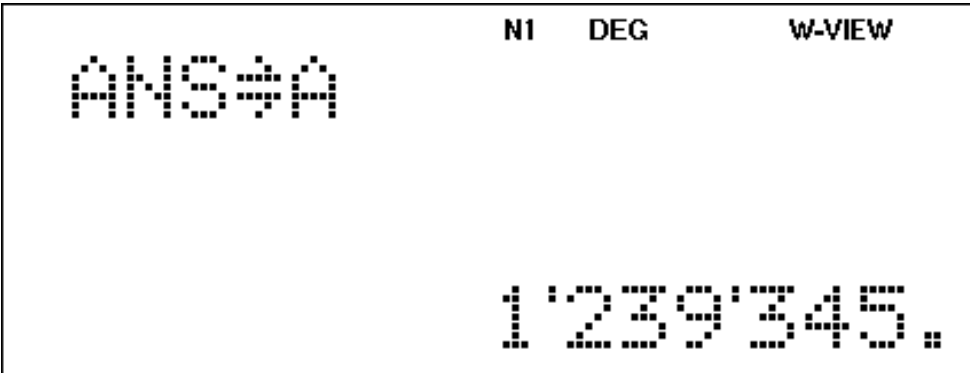


# And if we paid a 10% deposit?

- 10 % of 1 377 050
- Type in: 1 3 7 7 0 5 0
-  10
-  
- Then save it in the A memory key.
- Press  CNST



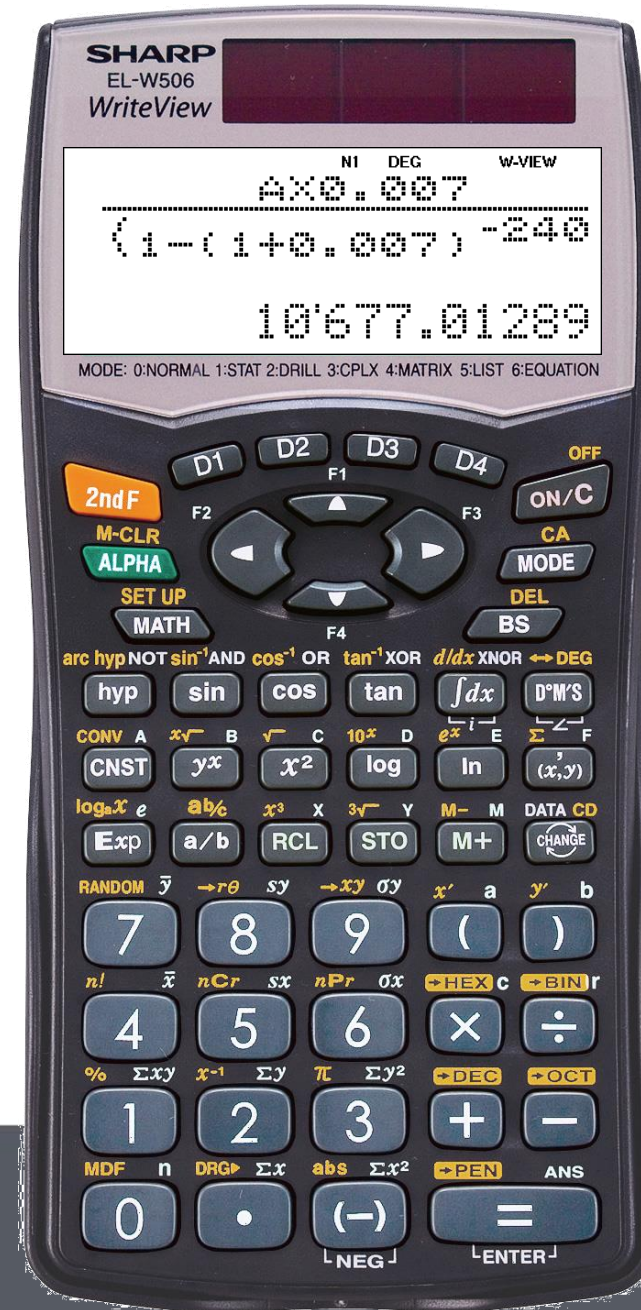
N1 DEG W-VIEW  
1377050-10%  
1'239'345.








N1 DEG W-VIEW  
ANS→A  
1'239'345.

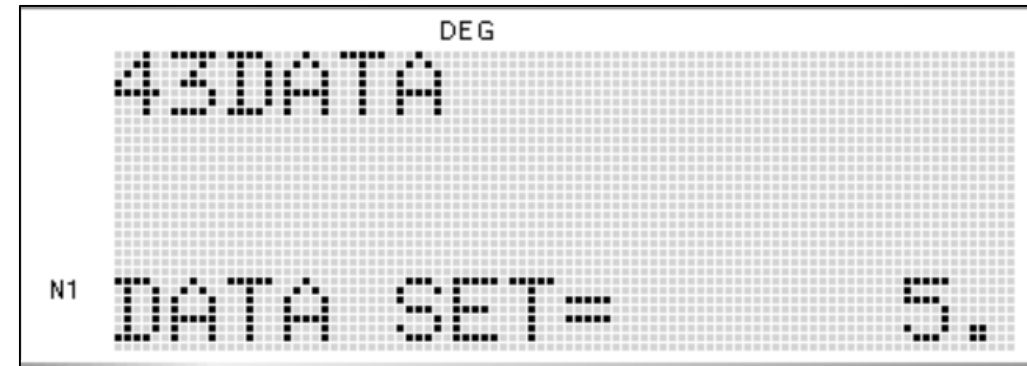
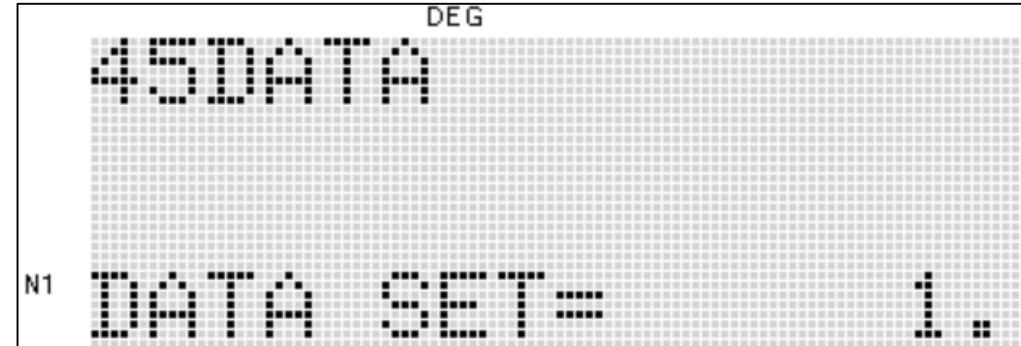
# Now redo the calculation:

- $\frac{a}{b}$  ALPHA CNST
- $\times$  0.007
- $\downarrow$
- $( 1 - ($
- $1 + 0.007 )$
- $yx$   $(-)$  240  $\rightarrow$
- $) =$  ENTER



# Statistics

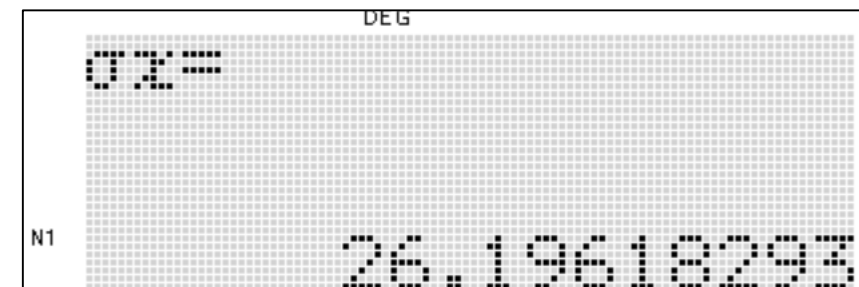
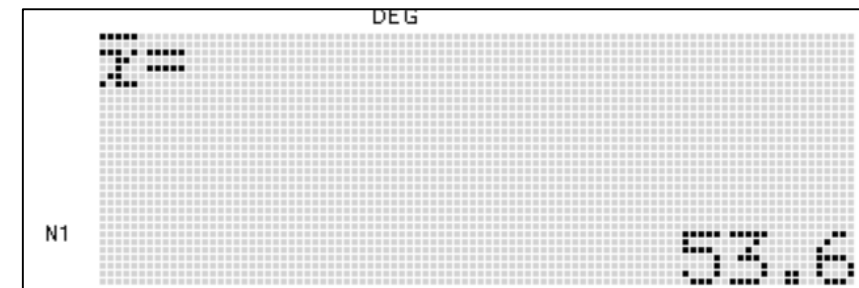
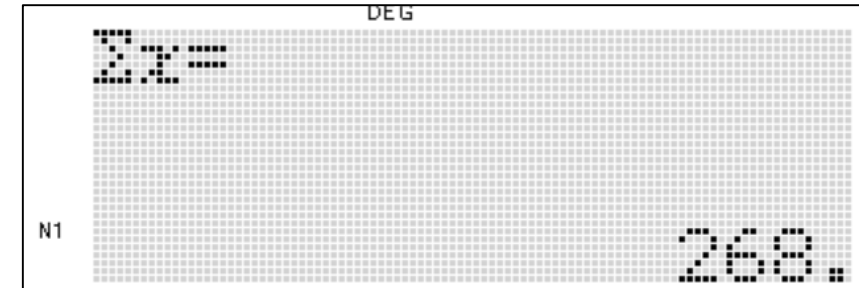
- **MODE** 1 For STAT
- Choose 0 for SD
- E.g. 45, 76, 89, 15 and 43
- Type in 45 
- 76  89 
- 15  43 





# Sum, Mean and Standard Deviation

- To find the sum of your data press **ALPHA**  $\overset{\text{DRG}}{\cdot}$   $\overset{\Sigma x}{=}$
- To find the mean press **ALPHA**  $\overset{n!}{4}$   $\overset{\bar{x}}{=}$
- To find the standard deviation press **ALPHA**  $\overset{nPr}{6}$   $\overset{\sigma x}{=}$



# Oh no! Tax:

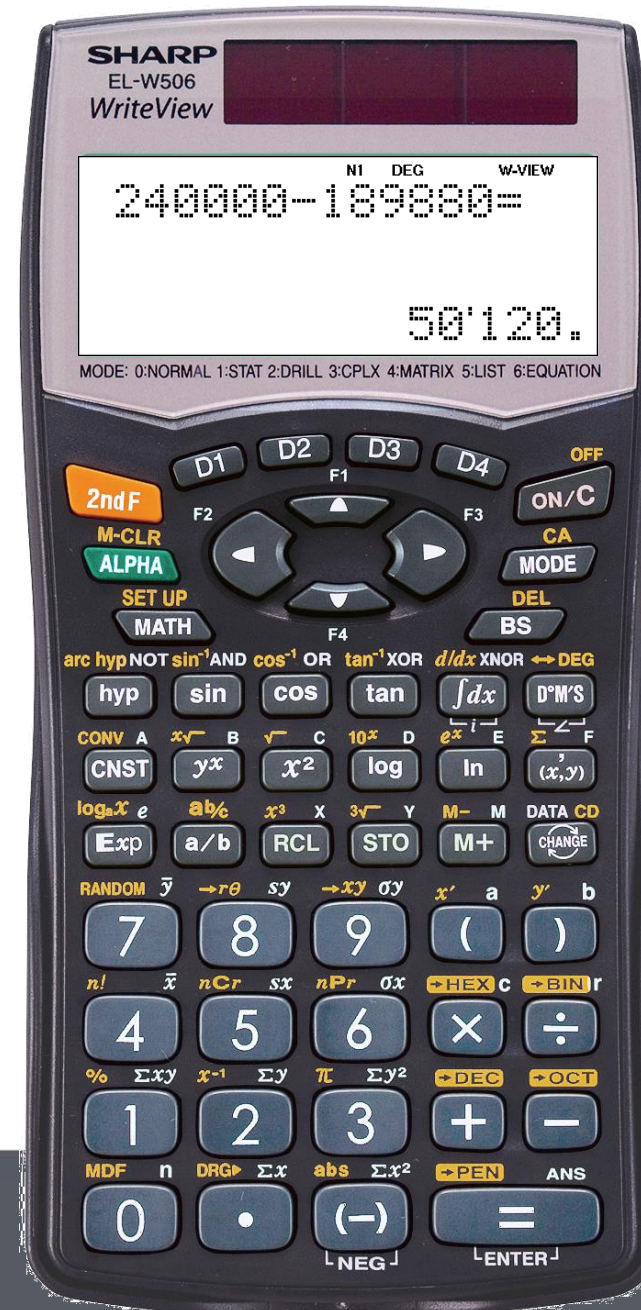
Taxable income (R)	Rates of tax (R)
0 – 189 880	18% of taxable income
189 881 – 296 540	34 178 + 26% of taxable income above 189 880
296 541 – 410 460	61 910 + 31% of taxable income above 296 540
410 461 – 555 600	97 225 + 36% of taxable income above 410 460
555 601 – 708 310	149 475 + 39% of taxable income above 555 600
708 311 – 1 500 000	209 032 + 41% of taxable income above 708 310
1 500 001 and above	533 625 + 45% of taxable income above 1 500 000

# Tax Rebates:

Tax Rebate	Tax Year				
	<b>2018</b>	<b>2017</b>	2016	2015	2014
Primary	R13 635	R13 500	R13 257	R12 726	R12 080
Secondary (65 and older)	R7 479	R7 407	R7 407	R7 110	R6 750
Tertiary (75 and older)	R2 493	R2 466	R2 466	R2 367	R2 250

# E.g. Earning R20 000 per month

- Press Mode 0
- Find what is earned per year:
  - $20\ 000 \times 12 = R240\ 000$
  - Between :189 881 – 296 540 gives:
    - R34 178 + 26% of taxable income above 189 880
- So  $240\ 000 - 189\ 880 = R50\ 120$



- So  $34\,178 + 26\%$  of  $50\,120$ .
- Press  $50\,120 \times 26$  **2ndF**  $\frac{1}{5}$
- $+ 34\,178 = R47209.2$
- Take away the 2017 rebate of  $R13\,500$
- $47\,209.20 - 13\,500 = 33\,709.2$
- Divide this by 12 to get monthly tax payments:  $R2\,809.10$ .

N1 DEG W-VIEW

50120×26%

13031  $\frac{1}{5}$

N1 DEG W-VIEW

ANS+34178=

47209  $\frac{1}{5}$

N1 DEG W-VIEW

ANS-13500=

33709  $\frac{1}{5}$

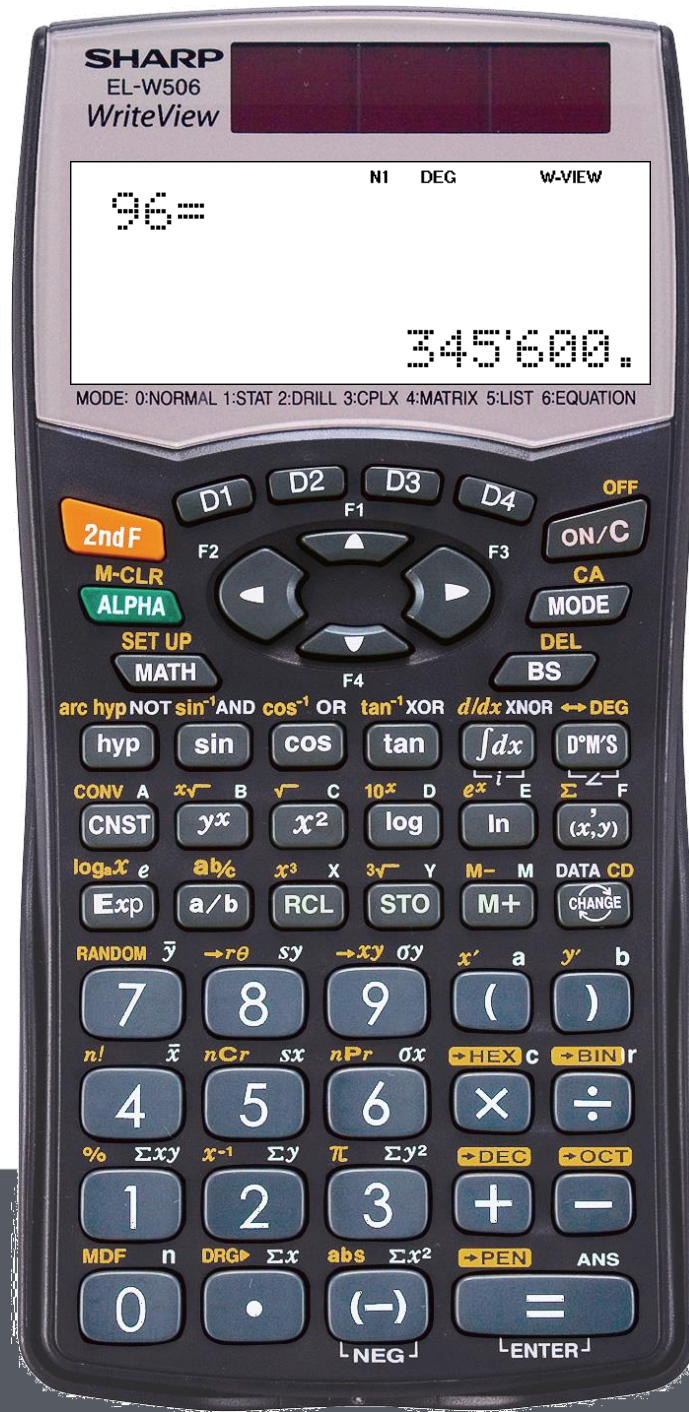
N1 DEG W-VIEW

ANS÷12=

2809  $\frac{1}{10}$




# Conversions

- Hours to seconds:
  - E.g. 96 hours
  - Type in 96
  - Press MATH
  - 4
- You can also convert hours to minutes by choosing 5



# Conversions

## E.g Ounces to grams

- 23 ounces:
- Press 23
-  CNST
- Press  until you find  
OZ → g
- Press 1 3 
- There are 44 conversions.

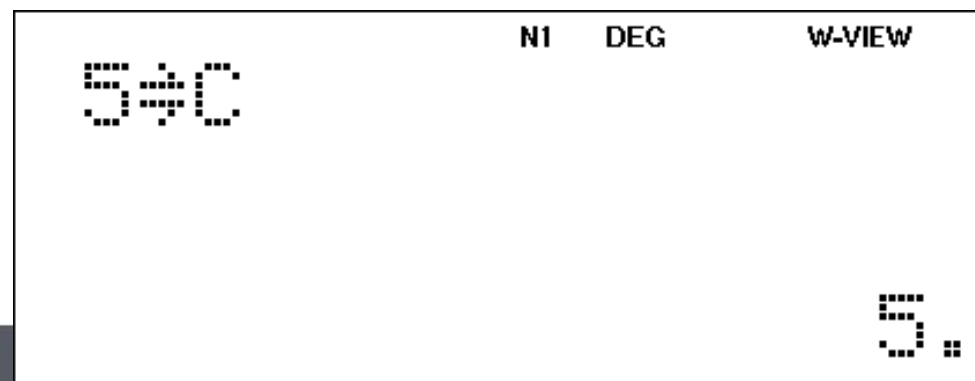
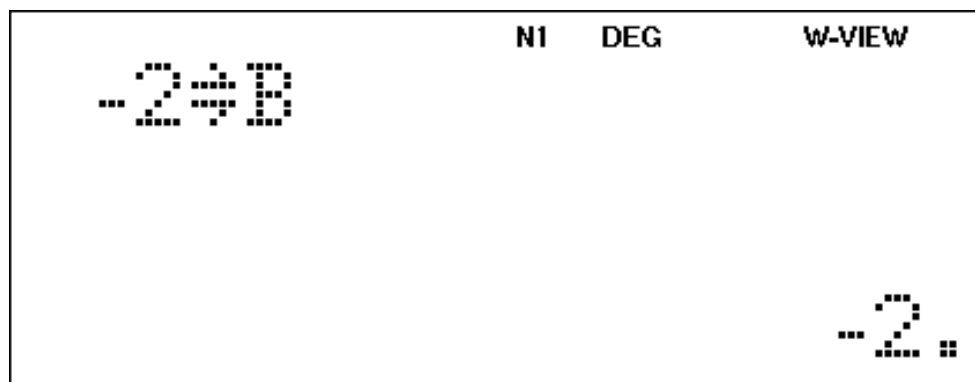
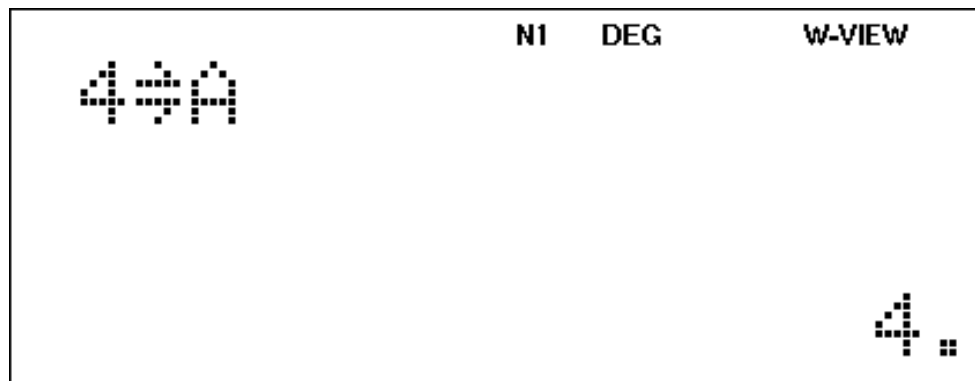
```
          NI  DEG      W-VIEW  
          <CONV-1>      .....  
01: in→cm  
02: cm→in  
↓ 03: ft→m
```

```
          NI  DEG      W-VIEW  
          <CONV-5>      .....  
13: oz→g  
14: g→oz  
↓ 15: lb→kg
```

```
          NI  DEG      W-VIEW  
23→cv13=  
  
652.03896
```

# Substitution

- E.g.  $A^2 + 3B - C$
- $A = 4$ ,  $B = -2$  and  $C = 5$
- Store these values:
  - 4 **STO** **CNST**
  - **(-)** 2 **STO** **yx**
  - 5 **STO** **x<sup>2</sup>**



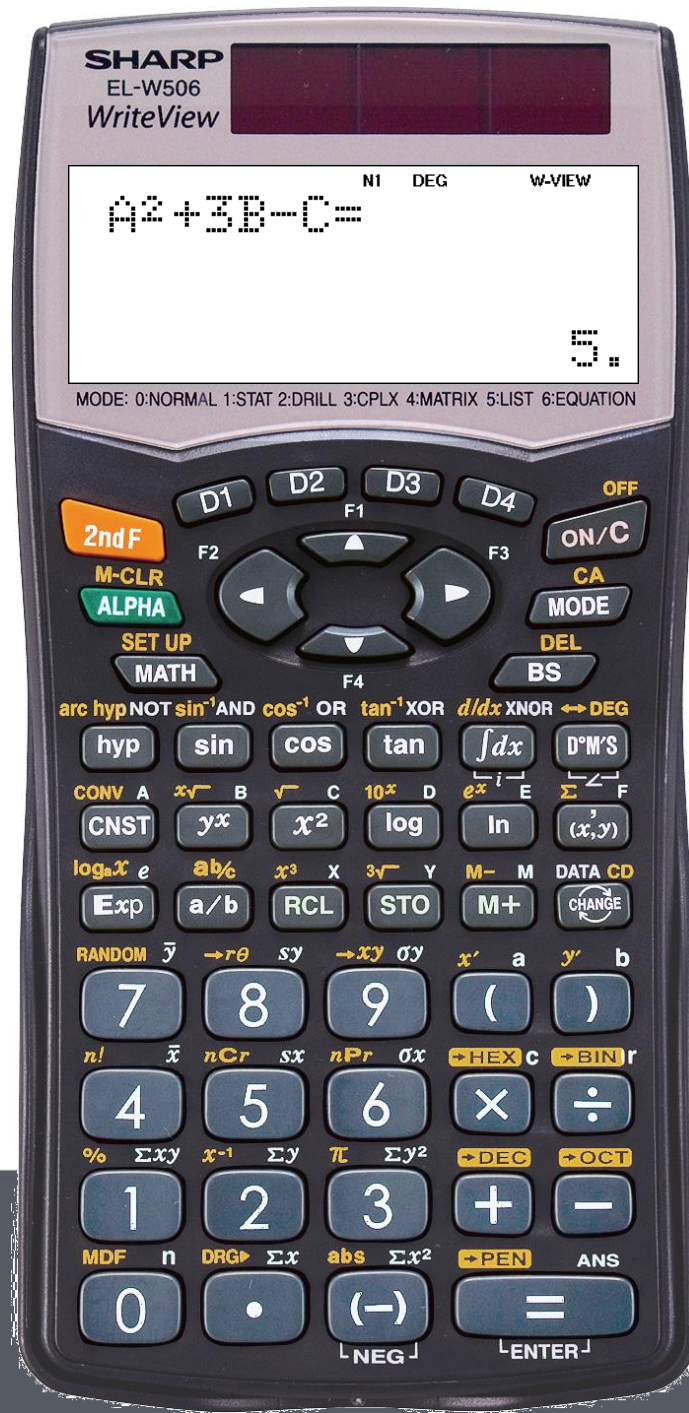


# Substitution

- Now type in the expression:



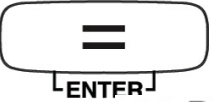


- E.g.  $A^2 + 3B - C$

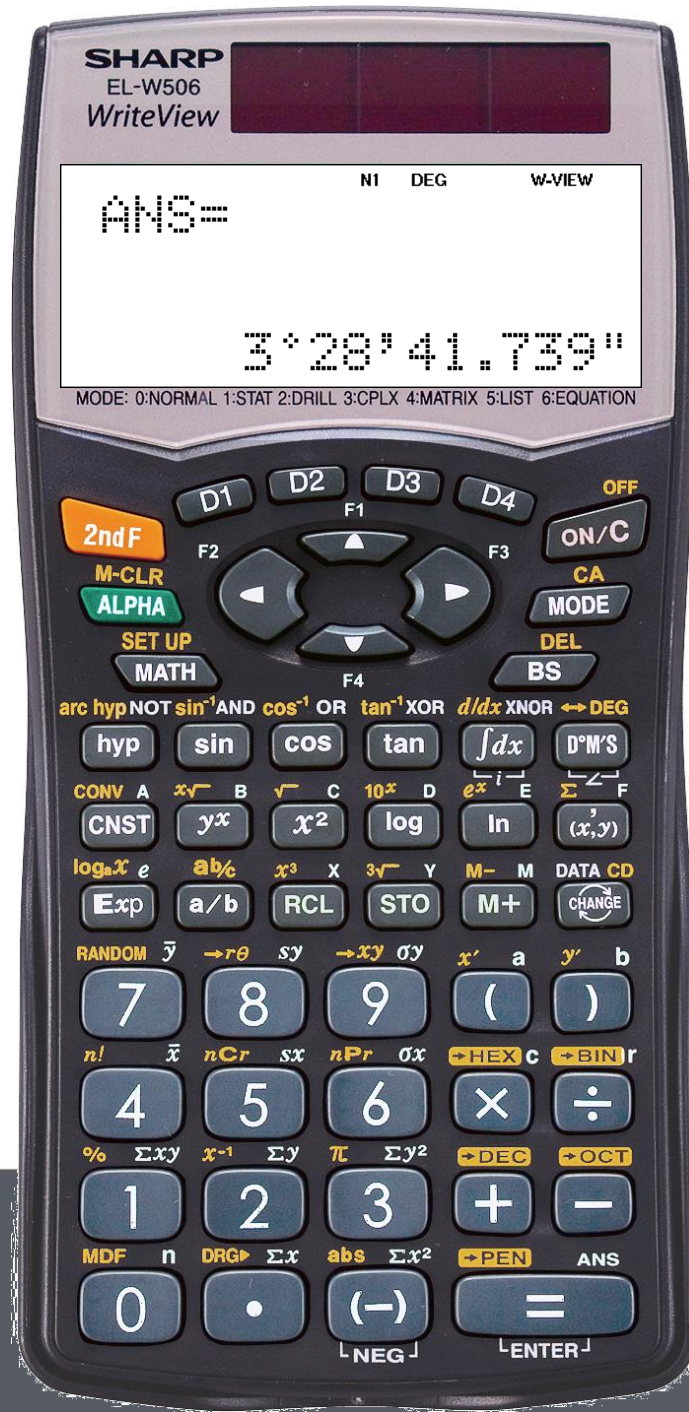
- ALPHA CNST  $x^2$
- + 3 ALPHA  $yx$
- - ALPHA  $x^2$
- =  
ENTER



# Time

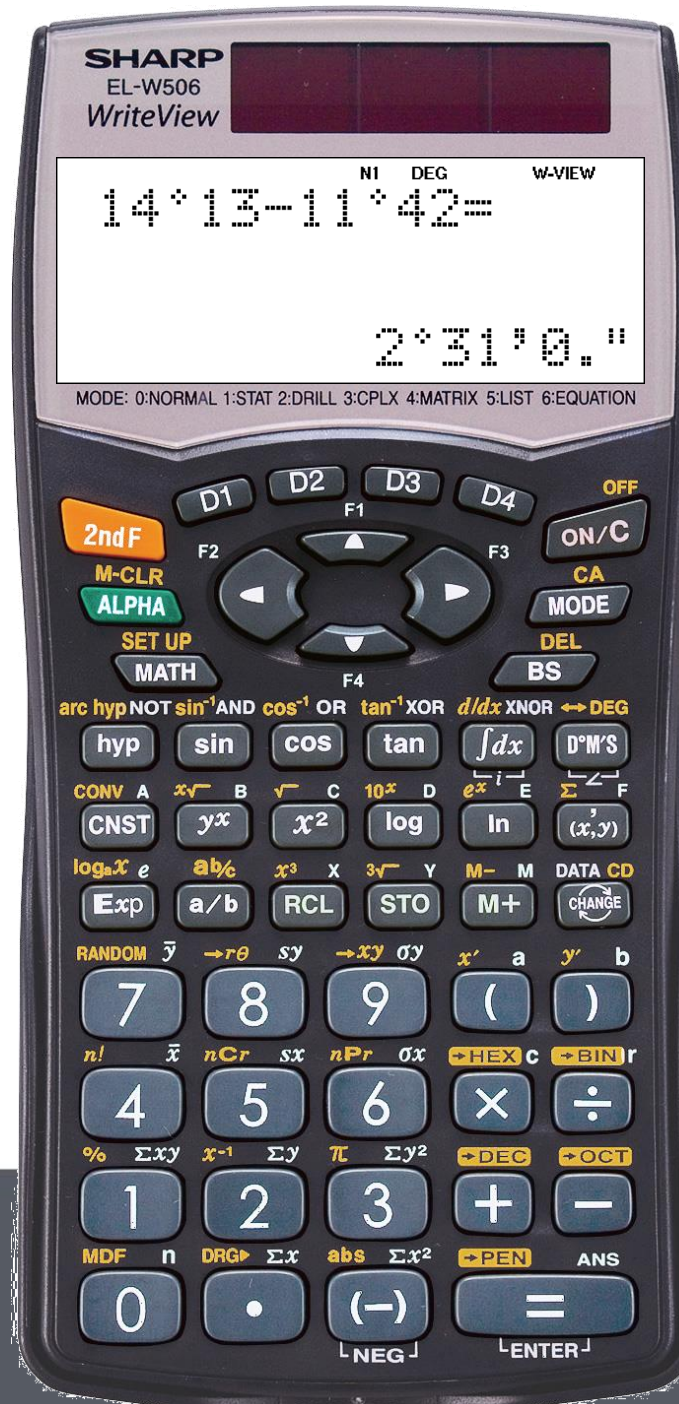
- Speed, distance, time.
- To find time, for example – travel 400km at a speed of 115km/h, how long does it take?

- Press 
- 400 
- 115 
-  





# Time

- Leave at 11:42 and arrive at 14:13. How long did it take?
- Press 1 4  $\overset{\leftrightarrow \text{DEG}}{\boxed{\text{D}^\circ\text{M}'\text{S}}}$  1 3
- $\boxed{-}$  1 1  $\overset{\leftrightarrow \text{DEG}}{\boxed{\text{D}^\circ\text{M}'\text{S}}}$  42
- $\boxed{=}$   
└ENTER┘



# Don't forget the competition 😊

- Drill mode (Press **MODE** 2 0)
- Choose 25 questions (press )
- Choose + - x ÷ (press )
- Fastest time this week wins a microwave 😊



Thank you 😊

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