AAT Metrication Month 2023 *(MMe3)*

description of two leap year algorithms

two leap year algorithms are described below . the Rule set of algorithms were validated on a version of Excel Spreadsheet . the Score set of algorithms were validated on a version of Apple Numbers . both algorithms agreed on values of leap or common years for a set of years including 1900 to 2024 . some annotations were sourced from AAT ICAS 2042 -- UC calculation factors .

Rule4n100
```
=IF((A10/4)=(INT(A10/4))*AND(NOT((A10/100)=(INT(A10/100)))),"TRUE","FALSE")
```
IF (yNC/400) = INTEGER(yNC/400) , THEN year is a leap year .

Rule400
```
=IF((A11/400)=(INT(A11/400)),"TRUE","FALSE")
```
IF (yNC/400) = INTEGER(yNC/400) , THEN year is a leap year .

RuleLeap
```
=IF(A10<1,"?",IF(D10="TRUE",366,IF(E10="TRUE",366,365)))
```
IF (yNC/4) = INTEGER(yNC/4) AND IF (yNC/100) does NOT EQUAL integer of (yNC/100) , THEN yNC
    is a leap year .
400 year rule
    IF (yNC/400) = INTEGER(yNC/400) , THEN year is a leap year .
year zero rule
    IF yNC = zero , THEN yNC is a leap year .
leap year rule
    IF either the 4 and 100 year rule , the 400 year rule , OR the year zero rules is TRUE , THEN a yNC
    is a leap year .

Score4
```
IF((($A4÷4)=INT(($A4÷4))),4,0)
```
if a year number divided by 4 does not have a remainder , then the algorithm assigns a score of 4 .

Score100
```
IF((($A4÷100)=INT(($A4÷100))),-12,0)
```
if a year number divided by 100 does not have a remainder , then the algorithm assigns a score of -12 .

Score400
```
IF((($A4÷400)=INT(($A4÷400))),24,0)
```
if a year number divided by 400 does not have a remainder , then the algorithm assigns a score of 24 .

Score0
```
IF(($A4=0),10,0)
```
if a year number is 0 , then the algorithm assigns a score of 10 .

ScoreRuleLeap
```
IF(($E5+$F5+$G5+$H5)>0,"LEAP","")
```
if the algorithm score for a year is greater than 0 , then the year is a leap year .