CS-150L
Computing for Business Students
Lab 5: Date Functions and Currency Conversion

Instructor:

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Upcoming Schedule

- Week of Feb 22: Lab 5 Date Functions and Currency Conversion.
- Week of March 1: Lab 6: Excel charts
- Week of March 8: Midterm Exam:
  - Taken during lab class
  - Covers labs 4, 5, and 6.
  - Practice exam in textbook.
  - Lecture: Tuesday (Wednesday night) Review
  - Lecture: Thursday: No Class.
- Week of March 15: Spring Break
- Week of March 22: Lab 7 - Loan Amortizations Schedules.

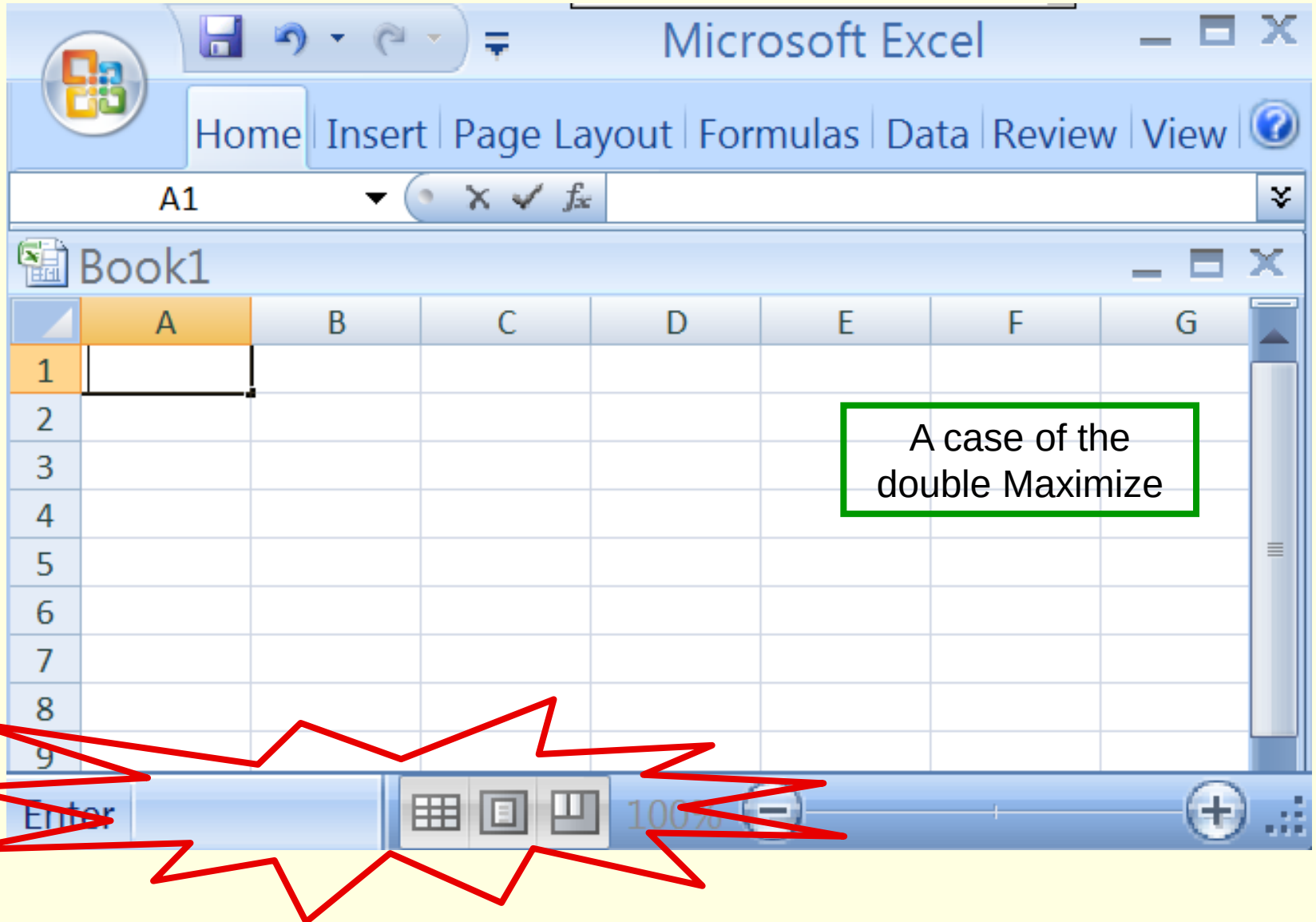
i-Clicker 101

- When you register your i-Clicker on line, **DO NOT USE YOUR UNM ID (i.e. 101135341).**
- **YOU MUST USE YOUR UNM NetID** (joel@unm.edu)
- After this weekend, grades for quizzes 1 & 2 are closed.
- When you forget or have a problem with your clicker:
  - You can borrow one of mine – first come first serve.
  - You cannot borrow mine repeatedly.
  - If you borrow, you MUST e-mail me, barrick@cs.unm.edu, THAT SAME DAY!
    - Subject: CS-150: borrowed clicker.
    - Body: Clicker Animal (frog, snake, owl, or fish)

Lab 5: Excel

- TODAY(),
- EOMONTH(),
- WEEKDAY(),
- Date Formatting (including custom dddd),
- Date Arithmetic,
- Web Queries,
- Currency Conversion,
- Simple Interest,
- Balance Calculation.

It lost my Workbook Tabs!



Clicking Around

Quiz: Weighted Average

	A	B	C	D	E
1	Name	Lab 1	Lab 2	Exam	Grade
2	Michael Stipe	90	95	95	
3	Peter Buck	90	97	85	
4	Mike Mills	92	99	75	
5	Bill Berry	95	98	65	
6					
7	Weight	5	10	50	
8	Total Weight			65	

Which equation can be filled down from cell E2, to correctly calculate the weighted average in cells E2:E5?

a) =(($B$2*$B$7) + ($C$2*$C$7) + ($D$2*$D$7))/$B$8

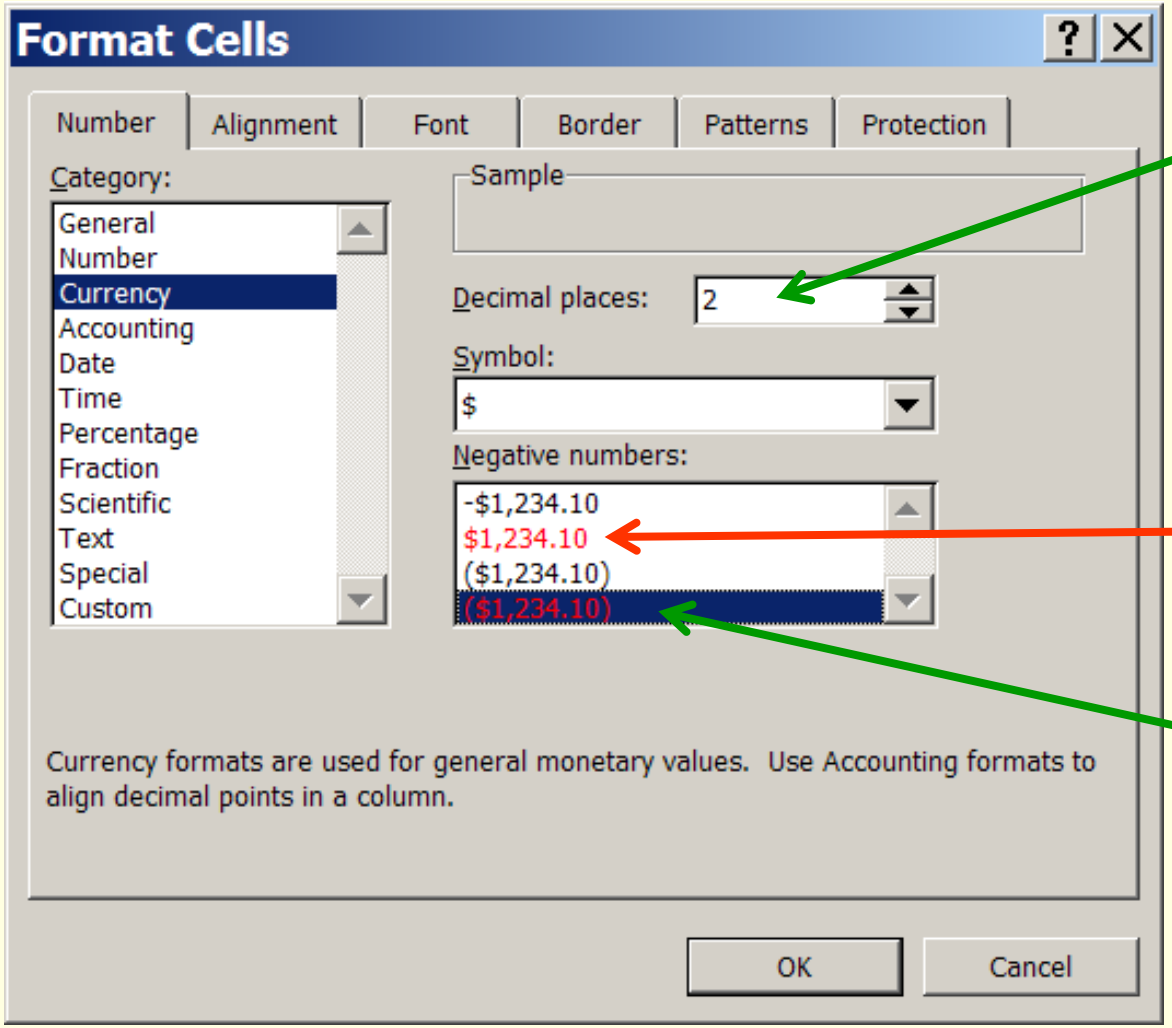
b) =(($B$2*$B$7) + ($C$2*$C$7) + ($D$2*$D$7))/B8

c) =(($B$2*B7) + ($C$2*C7) + ($D$2*D7))/B8

d) =((B2*$B$7) + (C2*$C$7) + (D2*$D$7))/$B$8

e) =($B$2*B7) + ($C$2*C7) + ($D$2*D7)/B8

Currency Formatting

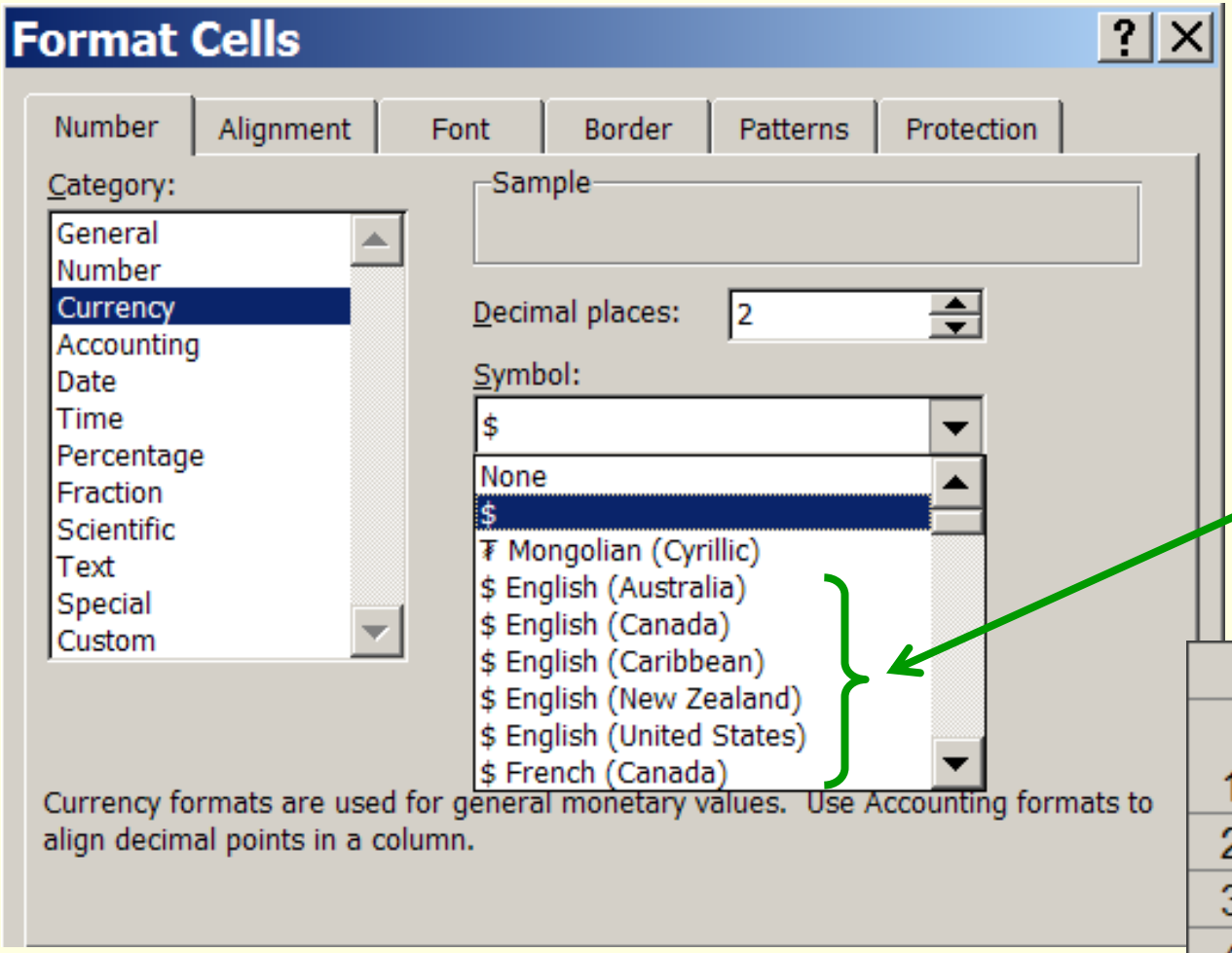


Should be 0 or 2

Bad – what if print in B&W or colorblind?

	A	B
1	10	$10.00
2	-10	($10.00)
3	5.5	$5.50
4	-5.5	($5.50)

Currency Formatting - Symbol

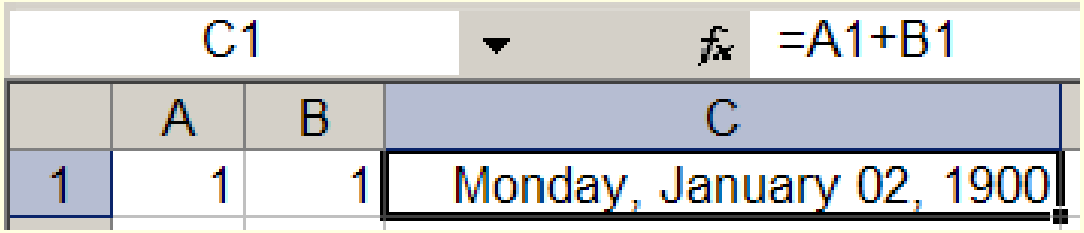


Even though all of these use the same symbol $, some use it in a different place.

	A	B
1	United States	French Canada
2	$10.00	10.00 $
3	($10.00)	10.00 $
4	$5.50	5.50 $
5	($5.50)	5.50 $

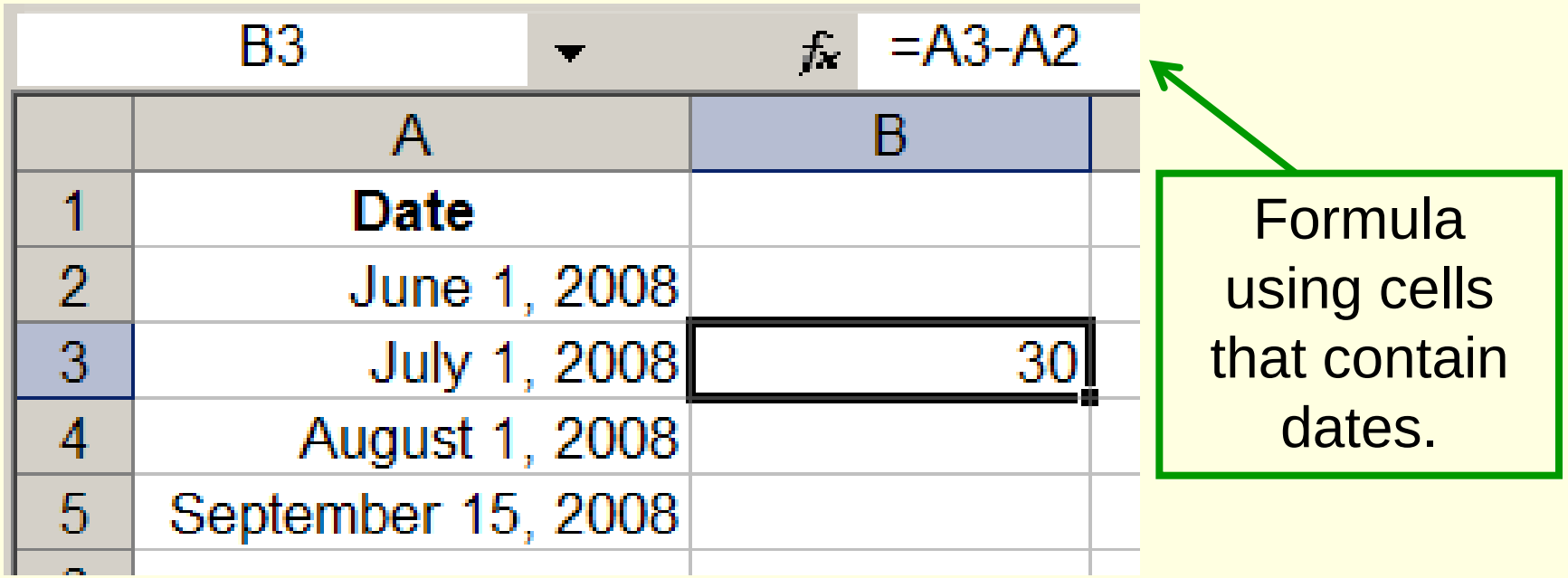
Excel Date – Serial Number

- Microsoft Excel stores dates as sequential serial numbers so they can be used in calculations.
- By default, January 1, 1900 is serial number 1. Thus, if you format a cell that contains the value 2 as a date, then the cell will display 1/2/1900.



- January 1, 2008 is serial number 39448 because it is 39,448 days after January 1, 1900.
- Microsoft Excel for the Macintosh uses a different date system as its default.

Date Arithmetic

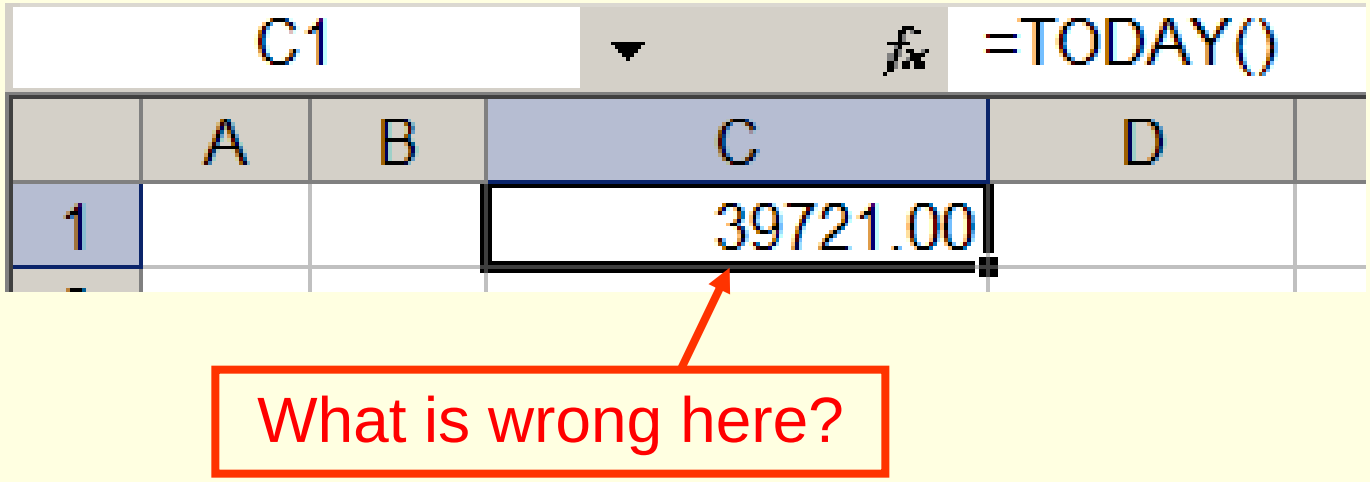


- Excel knows about months with 30 days, 31 days and leap years.
- What is the value of A5-A4?

45

TODAY()

- Reads the local computer's system clock and returns the Excel Serial Number.



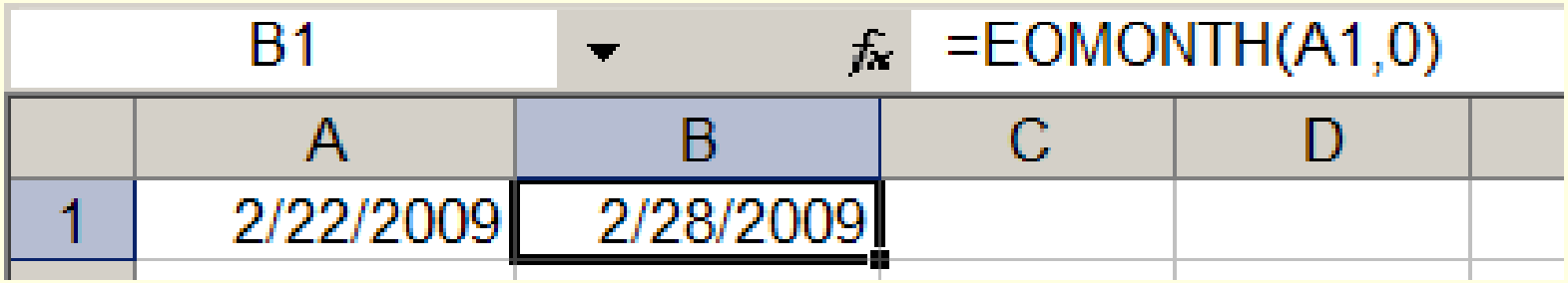
WEEKDAY(serial_number)

- Returns the day of the week corresponding to a given date.
- The day is given as an integer, ranging from 1 (Sunday) to 7 (Saturday)
- To see the actual day names, use ***custom formatting*** **ddd** or **dddd**.

EOMONTH(start_date, number_of_months)

Returns the serial number for the last day of the month that is number_of_months after start_date.

=EOMONTH("2/15/2008", 0)	➔	2/29/2008
=EOMONTH("2/15/2008", 1)	➔	3/31/2008
=EOMONTH(1, 1)	➔	2/28/1900
=EOMONTH(2/15/2008, 1)	➔	2/28/1900



EOMONTH() #NAME?

If this function is not available, and returns the #NAME? error, install and load the Analysis ToolPak add-in:

1. On "Tools" menu, ➔ "Add-ins".
2. In the "Add-ins" available list, select the "Analysis ToolPak" box, and click OK.

Quiz: EOMONTH

Which of the following will fill down from cell A2 through cell A6 to produce the 1st of each successive month?

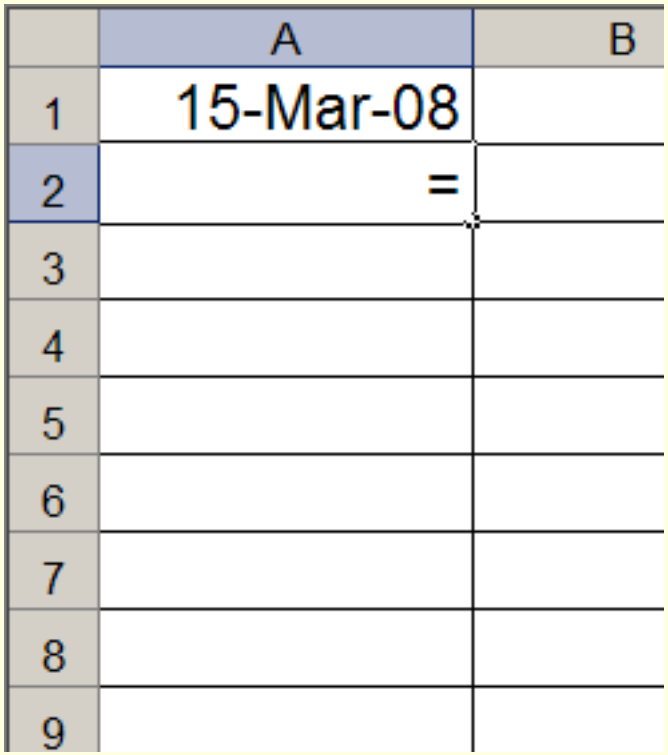
a) = EOMONTH(A1,1)

b) = EOMONTH(A2:A6,1)

c) = EOMONTH(A1:A6,1)

d) = EOMONTH(A1,0) + 1

e) = EOMONTH(15,A1)



Quiz: EOMONTH

If the value in cell A1 is 1/1/2008, which of the following will fill down from cell A2 through cell A6 to produce the 1st of each successive year?

a) = EOMONTH(A1,0) + 365

b) = EOMONTH(A1,11) + 365

c) = EOMONTH(A1,11) + 1

d) = A1 + 365

e) = EOMONTH(A1,365)

Simple Interest

Interest = Principal * Periodic Rate * Number of Periods

If $100 was borrowed for ***2 years*** at an ***annual periodic*** interest rate of 10%, the ***simple interest*** would be:

$100 * 10% * 2 periods = $20.

$100 * (10/100) * 2 = $20.

If $100 was borrowed for ***5 months*** at a ***monthly periodic*** interest rate of 1.00%, the ***simple interest*** would be:

$100 * 1.0% * 5 periods = $5.

$100 * (1.0/100) * 5 = $5.

Simple interest is generally charged for borrowing money for short periods of time.

Simple Interest – more examples

Interest = Principal * Periodic Rate * Number of Periods

If $100 was borrowed for ***5 months*** at a ***annual periodic*** interest rate of 10.0%, the ***simple interest*** would be:

$100 * 10.0% * (5/12) periods = $4.17.

$100 * (1.0/100) * 0.4167 = $4.17.

If $100 was borrowed for ***228 days*** at a ***annual periodic*** interest rate of 10.0%, the ***simple interest*** would be:

$100 * 10.0% * (228/365) periods = $6.24.

$100 * (1.0/100) * 0.6247 = $6.24.

Compound Interest

The account balance (interest plus principal) is calculated at the end of each ***period***.

During the next period, interest is calculated on the ***full balance*** at the end of the last period.

If $100 was borrowed for ***2 years*** at an ***annual periodic*** interest rate of 10%, the ***interest compounded annually*** would be:

$100 * 10% * 1 period = $10 (in the 1st period).

Balance at the end of the first period: $100 + $10 = $110.

$110 * 10% * 1 period = $11 (in the 2nd period).

Thus, the total interest in the loan is:

$10.00 + $11.00 = $21.00

Simple verses Compound Interest

Simple Interest:

Future Value = Principal +
Principal $\times$ Periodic Rate $\times$ Number of Periods

$100 + $100*10%*2 years = $120.00

Compound Interest:

Future Value =

Principal $\times$ (1 + Periodic Rate)$^{\text{Number of Periods}}$

$100 $\times$ (1 + 10%)^2 = 100*(1+10%)^2 = $121

Annual Percentage Rate & Yield

- **APR** (Annual Percentage Rate) is the annual rate of interest without taking into account the compounding of interest within that year.
- **APY** (Annual Percentage Yield) does take into account the effects of intra-year compounding.
- For example, a credit card company might charge 2% interest each month.
  - APR = 24% (2% x 12 months).
  - APY = $(1 + 0.02)^{12} - 1 = 26.82\%$

Credit Card Interest

Credit cards usually charge ***simple interest*** for each day with in the month, and ***compound interest*** between months.

For example:

- A credit card that charges 27.99% APR.
- The Daily Periodic Rate = 27.99%/365= 0.0786%
- During a month with 29 days, your interest is:

  balance * 0.0786% * 29 days
- At the end of the month, this interest is added into the balance.

Quiz: Interest

	A	B	C	D
1	Daily Periodic Interest Rate:			0.0630%
2				
3	Number of Days	Balance	Interest	
4	41	$1,257.52		

The simple interest in cell C4 can be calculated by which equation?

a) =$D$1*B4

b) =$D$1*B4 + A4

c) =$D$1 + B4*A4

d) =$D$1 + A4*B4

e) =$D$1*A4*B4

Quiz: Order of Operations

Which of the following equations calculate the same value as =A1+A2*A3-B1/B3?

1) =(A1+A2*A3-B1)/B3

2) =A1+(A2*A3)-(B1)/B3

3) =A1+(A2*A3)-(B1/B3)

a) Just 1

b) Just 2

c) Just 3

d) 1 & 2

e) 2 & 3

Account Balance

	A	B	C	D	E	F
1				APR	Daily Rate	
2				7.00%	0.0192%	
3	Date	Days	deposit	Withdraw	Interest	Balance
4	01/01/08		1,000.00	(3,000.00)		(2,000.00)
5	01/01/09	366	270.00	(1,500.00)	(140.38)	=F4+C5+D5+E5
6	01/01/10	365	270.00		(235.93)	(3,336.31)
7	01/01/11	365	270.00		(233.54)	(3,299.85)
8	01/01/12	365	270.00		(230.99)	(3,260.84)
9	01/01/13	366	270.00		(228.88)	(3,219.73)
10	01/01/14	365	270.00		(225.38)	(3,175.11)

- Since the ***withdraw*** amounts and ***interest*** amounts are negative numbers, they are ***added to the balance***.

Quiz: Account Balance

	A	B	C	D	E
1	Date	Purchases	Payments	Finance Charge	Balance
2	12-Jan	($525.00)			($525.00)
3	12-Feb	($729.00)	$200.00	($26.25)	($1,080.25)
4	12-Mar	($433.00)	$200.00	($54.01)	($1,367.26)
5	12-Apr	($1,002.00)	$200.00	($68.36)	($2,237.63)

Which equation will produce the correct value in cell E3?

a) **=E3+B3+C3+D3**

b) **=E2+B3+C3+D3**

c) **=E3+B2+C2+D2**

d) **=E3-B3+C3+D3**

e) **=E2-B3+C3-D3**

Quiz: Account Balance

	A	B	C	D	E
1	Date	Purchases	Payments	Finance Charge	Balance
2	12-Jan	($525.00)			($525.00)
3	12-Feb	($729.00)	$200.00	($26.25)	($1,080.25)
4	12-Mar	($433.00)	$200.00	($54.01)	($1,367.26)
5	12-Apr	($1,002.00)	$200.00	($68.36)	($2,237.63)

Which equation entered in cell E3 can be correctly filled down to cell E5?

a) **=E2+B3+C3+D3**

b) **=$E$2+B3+C3+D3**

c) **=E2+$B$3+C3+D3**

d) **=E2+B3+$C$3+D3**

e) **=E2+B3+C3+$D$3**

Constants

- **!Throughout this exam, no equations may include “hard coded” assumptions (CONSTANTS). As usual, this prohibition does not apply to universal constants such as using “7” for the number of days in a week, nor “1” as a unit increment.**

Converting a number to a percentage by dividing by 100, is a perfectly fine use of a constant. The 100 does not need to be placed in a cell and referenced as would an interest rate or a salary.

Quiz: Interest

	A	B	C	D
1	Daily Periodic Interest Rate:			0.0630%
2				
3	Number of Days	Balance	Interest	
4	41	$1,257.52		

The simple interest on the balance in cell B4 over a period of days given in cell A4 can be calculated by?

a) =$D$1*B4

b) =$D$1 + B4 + A4

c) =$D$1*B4*A4

d) =$D$1 + B4*A4

e) =$D$1*B4 + A4