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

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It lost my Workbook Tabs!

A case of the Double Maximize
Clicking Around

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.
**EDATE**(startDate, months)

Returns the serial number representing the date that is `months` after `startDate`.

- `=EDATE("2/15/2010", 1)` ➔ 3/15/2010
- `=EDATE("2/7/2010", 2)` ➔ 4/7/2010
- `=EDATE(1, 1)` ➔ 2/1/1900
- `=EDATE(2/15/2010, 1)` ➔ 1/31/1900
- `=EDATE(A1, 1)` ➔ 3/22/2010
- `=EDATE(A2, 1)` ➔ #VALUE!

**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(A1, 0)` ➔ 2/28/2010
- `=EOMONTH(A2, 0)` ➔ #VALUE!
EDATE & EOMONTH() #NAME?

If these functions are not available, then #NAME? error will display. You need to install and load the Analysis ToolPak add-in:

**Excel 2003:**
1. On "Tools" menu, ➔ "Add-ins".
2. In the "Add-ins" available list, select the "Analysis ToolPak" box, and click OK.

**Excel 2007:**
1. From the Excel Options dialog select: "Add-ins".
2. In the "Add-ins" available list, select the "Analysis ToolPak" box, and click OK.

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**Quiz: EOMONTH**

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
<td>15-Mar-08</td>
</tr>
<tr>
<td>2</td>
<td>=</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

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)

Web Query

In general, a query is one question in a line of inquiry. In computer science, a query is a request for information from a database.
### Currency Conversion

**Currency Rates Provided by MSN Money**

<table>
<thead>
<tr>
<th>Name</th>
<th>In US$</th>
<th>Per US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexican Peso to US Dollar</td>
<td>0.0781</td>
<td>12.8030</td>
</tr>
<tr>
<td>Norwegian Krone to US Dollar</td>
<td>0.1642</td>
<td>6.0910</td>
</tr>
<tr>
<td>Omani Rial to US Dollar</td>
<td>2.5967</td>
<td>0.3850</td>
</tr>
<tr>
<td>Peruvian New Sol to US Dollar</td>
<td>0.3578</td>
<td>2.7950</td>
</tr>
<tr>
<td>Philippine Peso to US Dollar</td>
<td>0.0226</td>
<td>44.2400</td>
</tr>
<tr>
<td>Pakistani Rupee to US Dollar</td>
<td>0.0116</td>
<td>86.2600</td>
</tr>
</tbody>
</table>

One US Dollar is more than one Mex Peso. Thus, convert dollars to pesos by multiplying by the conversion rate that is > 1.

### 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:

\[
\text{Interest} = \text{Principal} \times \text{Periodic Rate} \times \text{Number of Periods} \\
\text{Interest} = 100 \times 0.10 \times 2 \\
\text{Interest} = 20
\]

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

\[
\text{Interest} = \text{Principal} \times \text{Periodic Rate} \times \text{Number of Periods} \\
\text{Interest} = 100 \times 0.01 \times \frac{5}{12} \\
\text{Interest} = 5
\]

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 an annual periodic interest rate of 10.0%, the simple interest would be:

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

$100 * (10.0/100) * 0.4167 = $4.17.

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

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

$100 * (10.0/100) * 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 × Periodic Rate × Number of Periods
$100 + $100*10%*2 years = $120.00

Compound Interest:
Future Value = Principal × (1 + Periodic Rate)\(^{Number\ of\ Periods}\)
$100 \times (1 + 10\%)^2 = 100*(1+10\%)^2 = $121

Quiz: Order of Operations

Assuming there are non-zero numerical values in each of the referenced cells, which of the following equations calculate the same value as \(=A1+A2*A3-B1/B3\)?

a) \(=(A1+(A2*A3))-(B1/B3)\)
b) \(=(A1+(A2*A3)-B1)/B3\)
c) \(=(A1+A2)*A3-B1/B3\)
d) \(=A1*A2*(A3-B1)/B3\)
e) \(=A1+A2*(A3-B1/B3)\)
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 within 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

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: Units

Which of the following calculates a nonsensical quantity?

a) =C2 + C3  \( \Rightarrow \) dollar + dollar = dollar
b) =C2 + D3  \( \Rightarrow \) dollar + dollar = dollar
c) =A2 + D3  \( \Rightarrow \) day + dollar = ????
d) =A3*B3*D2  \( \Rightarrow \) day*(percent/day)*dollar = dollar
e) =D2+C3+A3*B3*D2  \( \Rightarrow \) dollar+dollar+(dollar) = dollar
Since the withdraw amounts and interest amounts are negative numbers, they are added to the balance.

Quiz: Account Balance

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

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Date</td>
<td>Purchases</td>
<td>Payments</td>
<td>Finance Charge</td>
</tr>
<tr>
<td>2</td>
<td>12-Jan</td>
<td>($525.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12-Feb</td>
<td>($729.00)</td>
<td>$200.00</td>
<td>($26.25)</td>
</tr>
<tr>
<td>4</td>
<td>12-Mar</td>
<td>($433.00)</td>
<td>$200.00</td>
<td>($54.01)</td>
</tr>
<tr>
<td>5</td>
<td>12-Apr</td>
<td>($1,002.00)</td>
<td>$200.00</td>
<td>($68.36)</td>
</tr>
</tbody>
</table>

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

a) \( =E2+B3+C3+D3 \)

b) \( =E2+B3+C3+D3 \)

c) \( =E2+B3+C3+D3 \)

d) \( =E2+B3+C3+D3 \)

e) \( =E2+B3+C3+D3 \)

### 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

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