S&P CAPITAL IQ'S EXCEL PLUG-IN: FREQUENTLY USED FORMULAS

BALANCE SHEET

Item	Formula
Cash And Equivalents	= IQ_CASH_EQUIV
Short Term Investments	= IQ_ST_INVEST
Total Cash & ST Investments	= IQ_CASH_ST_INVEST
Accounts Receivable	= IQ_AR
Total Receivables	= IQ_TOTAL_RECEIV
Inventory	= IQ_INVENTORY
Total Current Assets	= IQ_TOTAL_CA
Gross Property, Plant & Equipment	= IQ_GPPE
Net Property, Plant & Equipment	= IQ_NPPE
Long-term Investments	= IQ_LT_INVEST
Total Intangibles	= IQ_GW_INTAN
Total Assets	= IQ_TOTAL_ASSETS
Accounts Payable	= IQ_AP
Short-term Borrowings	= IQ_ST_DEBT
Current Portion of Long Term Debt	= IQ_CURRENT_PORT_DEBT
Curr. Port. of Cap. Leases	= IQ_CURRENT_PORT_LEASES
Total Current Liabilities	= IQ_TOTAL_CL
Long-Term Debt	= IQ_LT_DEBT
Capital Leases	= IQ_CAPITAL_LEASES
Total Liabilities	= IQ_TOTAL_LIAB
Minority Interest	= IQ_MINORITY_INTEREST
Total Pref. Equity	= IQ_PREF_EQUITY
Common Stock	= IQ_COMMON
Retained Earnings	= IQ_RE
Treasury Stock	= IQ_TREASURY
Total Common Equity	= IQ_TOTAL_COMMON_EQUITY
Total Equity	= IQ_TOTAL_EQUITY
Total Liabilities And Equity	= IQ_TOTAL_LIAB_EQUITY
Supplemental Items	
Filing Date	= IQ_FILINGDATE_BS
Period Date	= IQ_PERIODDATE_BS
Shares Outstanding on Filing Cover	= IQ_OUTSTANDING_FILING_DATE
Shares Outstanding on Balance Sheet Date	= IQ_OUTSTANDING_BS_DATE
Total Shares Out. On Filing Date	= IQ_TOTAL_OUTSTANDING_FILING_DATE
Total Shares Outstanding on BS Date	= IQ_TOTAL_OUTSTANDING_BS_DATE
Book Value/Share	= IQ_BV_SHARE
Tangible Book Value	= IQ_TBV
Tangible Book Value/Share	= IQ_TBV_SHARE
Total Debt	= IQ_TOTAL_DEBT
Total Current Debt	= IQ_TOTAL_DEBT_CURRENT
Total Non-Current Debt	= IQ_TOTAL_DEBT_NON_CURRENT
Net Debt	= IQ_NET_DEBT
Total Capitalization	= IQ_TOTAL_CAP
Full Time Employees	= IQ_FULL_TIME

INCOME STATEMENT

Item	Formula
Total Revenues	= IQ_TOTAL_REV
Cost Of Revenues	= IQ_COST_REV
Cost Of Goods Sold	= IQ_COGS
Gross Profit	= IQ_GP
Selling General & Admin Exp.	= IQ_SGA_SUPPL
R & D Exp.	= IQ_RD_EXP
Depreciation & Amort.	= IQ_DA_SUPPL
Amort. of Goodwill and Intangibles	= IQ_GW_INTAN_AMORT
Operating Income	= IQ_OPER_INC
Net Interest Exp.	= IQ_NET_INTEREST_EXP
EBT Excl Unusual Items	= IQ_EBT_EXCL
Total Unusual Items	= IQ_TOTAL_UNUSUAL
EBT Incl Unusual Items	= IQ_EBT
Income Tax Expense	= IQ_INC_TAX
Earnings from Cont. Ops.	= IQ_EARNING_CO
Earnings of Discontinued Ops.	= IQ_DO
Extraord. Item & Account. Change	= IQ_EXTRA_ACC_ITEMS
Net Income	= IQ_NI
Pref. Dividends and Other Adj.	= IQ_PREF_DIV_OTHER
Merger/Restructuring Costs	= IQ_MERGER_RESTRUCTURE
NI to Common Incl Extra Items	= IQ_NI_AVAIL_INCL
NI to Common Excl Extra Items	= IQ_NI_AVAIL_EXCL
Basic EPS	= IQ_BASIC_EPS_INCL
Basic EPS Excl. Extra Items	= IQ_BASIC_EPS_EXCL
Weighted Avg. Basic Shares Out.	= IQ_BASIC_WEIGHT
Diluted EPS	= IQ_DILUT_EPS_INCL
Diluted EPS Excl Extra Itmes	= IQ_DILUT_EPS_EXCL
Weighted Avg. Diluted Shares Out.	= IQ_DILUT_WEIGHT
Normalized Basic EPS	= IQ_EPS_NORM
Normalized Diluted EPS	= IQ_DILUT_EPS_NORM
Supplemental Items	
EBITDA	= IQ_EBITDA
EBITDA (Incl. Equity Inc. from Affiliates)	= IQ_EBITDA_EQ_INC
EBITA	= IQ_EBITA
EBIT	= IQ_EBIT
EBITDAR	= IQ_EBITDAR
Net Rental Expense	= IQ_NET_RENTAL_EXP_FN
Normalized Net Income	= IQ_NI_NORM
Same Store Sales Growth %	= IQ_SAME_STORE
Effective Tax Rate	= IQ_EFFECT_TAX_RATE
Payout Ratio	= IQ_PAYOUT_RATIO
Interest On Long Term Debt	= IQ_INT_EXP_LTD
Total Current Taxes	= IQ_CURR_TAXES
Total Deferred Taxes	= IQ_DEFERRED_TAXES_TOTAL

CASH FLOW STATEMENT

Item	Formula
Net Income	= IQ_NI_CF
Depreciation & Amort., Total	= IQ_DA_CF
Asset Writedown & Restructuring Costs	= IQ_ASSET_WRITEDOWN_CF
Stock-Based Compensation	= IQ_STOCK_BASED_CF
Net Cash From Discontinued Ops.	= IQ_DO_CF
Change In Accounts Receivable	= IQ_CHANGE_AR
Change In Inventories	= IQ_CHANGE_INVENTORY
Change in Acc. Payable	= IQ_CHANGE_AP
Change in Unearned Rev.	= IQ_CHANGE_UNEARN_REV
Change in Inc. Taxes	= IQ_CHANGE_INC_TAX
Change in Def. Taxes	= IQ_CHANGE_DEF_TAX
Cash from Ops.	= IQ_CASH_OPER
Capital Expenditure	= IQ_CAPEX
Sale of Property, Plant, and Equipment	= IQ_SALE_PPE_CF
Cash Acquisitions	= IQ_CASH_ACQUIRE_CF
Divestitures	= IQ_DIVEST_CF
Sale (Purchase) of Intangible Assets	= IQ_SALE_INTAN_CF
Net Cash from Investments	= IQ_INVEST_SECURITY_CF
Cash from Investing	= IQ_CASH_INVEST
Short Term Debt Issued	= IQ_ST_DEBT_ISSUED
Long-Term Debt Issued	= IQ_LT_DEBT_ISSUED
Total Debt Issued	= IQ_TOTAL_DEBT_ISSUED
Short Term Debt Repaid	= IQ_ST_DEBT_REPAID
Long-Term Debt Repaid	= IQ_LT_DEBT_REPAID
Total Debt Repaid	= IQ_TOTAL_DEBT_REPAID
Issuance of Common Stock	= IQ_COMMON_ISSUED
Repurchase of Common	= IQ_COMMON_REP
Issuance of Preferred Stock	= IQ_PREF_ISSUED
Repurchase of Preferred	= IQ_PREF_REP
Common Dividends Paid	= IQ_COMMON_DIV_CF
Pref. Dividends Paid	= IQ_PREF_DIV_CF
Common and/or Pref. Dividends Paid	= IQ_COMMON_PREF_DIV_CF
Total Dividends Paid	= IQ_TOTAL_DIV_PAID_CF
Cash from Financing	= IQ_CASH_FINAN
Net Change in Cash	= IQ_NET_CHANGE
Supplemental Items	
Cash Interest Paid	= IQ_CASH_INTEREST
Cash Taxes Paid	= IQ_CASH_TAXES
Net Debt Issued	= IQ_NET_DEBT_ISSUED
Levered Free Cash Flow	= IQ_LEVERED_FCF
Unlevered Free Cash Flow	= IQ_UNLEVERED_FCF
Change in Net Working Capital	= IQ_CHANGE_NET_WORKING_CAPITAL
EBITDA - Capex	= IQ_EBITDA_CAPEX

Basic CIQ Formula: (Ticker, Data Point, Period)

for example: ("MSFT","IQ_TOTAL_REV", IQ_FY) would display Microsoft Corporation's most recent fiscal year revenue

Advanced CIQ Formula:

(Ticker, Data Point, **Period**, As of Date, **Reporting Type**, **Period/Filing Mode**, **Currency**, **Conversion Mode**)

IQ_FY	"L" = Latest
IQ_FQ	"LFR" = Reported
IQ_LTM	"O" = Original
IQ_YTD	"P" = Preliminary
IQ_CY	"LRI" = Latest Reported Instance
IQ_CQ	"LRP" = Latest Reported Period
IQ_NTM	
IQ_FH	
IQ_CH	

"P" = Period Date
"F" = Filing Mode

"C" = Current
"H" = Historical

Period Reference*

IQ_FY = 1,000
IQ_FQ = 500
IQ_LTM = 2,000
IQ_YTD = 3,000
IQ_CY = 10,000
IQ_CQ = 5,000
IQ_NTM = 6,000
IQ_FH = 100,000
IQ_CH = 110,000

* Subtract reference number by one for previous periods.

i.e. IQ_FY-1 = 999,

IQ_FY-2 = 998, etc.

for example: ("MSFT","IQ_TOTAL_REV", IQ_FY, "8/14/04", "LFR", "P", "EUR", "C")

or with ticker cell reference: (A1,"IQ_TOTAL_REV", IQ_FY, "8/14/04", "LFR", "P", "EUR", "C")

or with period reference*: (A1,"IQ_TOTAL_REV", A2, "8/14/04", "LFR", "P", "EUR", "C")

*cell A2 contains the number 1000, 500, 2000, etc.

CIQ Range Function:

Holder Name Example:

= CIQRANGE(Ticker,"IQ_HOLDER_NAME",1,"X",,,,,"Header")

"X" equals to number of data points you want to extract

Example:

If X=5, CIQ will show upto 5 holders names of Noble Group Ltd.

,,,,, is the place holder for the header

"Header" is the column name

S&P CAPITAL IQ
McGRAW HILL FINANCIAL

S&P CAPITAL IQ'S EXCEL PLUG-IN: FREQUENTLY USED FORMULAS

RATIOS

Return on Assets %	= IQ_RETURN_ASSETS
Return on Equity %	= IQ_RETURN_EQUITY
Gross Margin %	= IQ_GROSS_MARGIN
SG&A Margin %	= IQ_SGA_MARGIN
EBITDA Margin %	= IQ_EBITDA_MARGIN
Net Income Margin %	= IQ_NI_MARGIN
Levered Free Cash Flow Margin %	= IQ_LFCF_MARGIN
Accounts Receivable Turnover	= IQ_AR_TURNS
Inventory Turnover	= IQ_INVENTORY_TURNS
Current Ratio	= IQ_CURRENT_RATIO
Quick Ratio	= IQ_QUICK_RATIO
Avg Days Sales Outstanding	= IQ_DAYS_SALES_OUT
Avg Days Payable Outstanding	= IQ_DAYS_PAYABLE_OUT
Total Debt/Equity	= IQ_TOTAL_DEBT_EQUITY
Total Debt/Capital	= IQ_TOTAL_DEBT_CAPITAL
EBIT / Interest Expense	= IQ_EBIT_INT
Capex as % of Revenues	= IQ_CAPEX_PCT_REV
Total Debt/EBITDA	= IQ_TOTAL_DEBT_EBITDA
Net Debt/EBITDA	= IQ_NET_DEBT_EBITDA

GROWTH

Total Revenues, 1 Yr Growth %	= IQ_TOTAL_REV_1YR_ANN_GROWTH
Gross Profit, 1 Yr Growth %	= IQ_GP_1YR_ANN_GROWTH
EBITDA, 1 Yr Growth %	= IQ_EBITDA_1YR_ANN_GROWTH
EBIT, 1 Yr Growth %	= IQ_EBIT_1YR_ANN_GROWTH
Net Income, 1 Yr Growth %	= IQ_NI_1YR_ANN_GROWTH
Normalized Net Income, 1 Yr Growth %	= IQ_NI_NORM_1YR_ANN_GROWTH
Diluted EPS before Extra, 1 Yr Growth %	= IQ_EPS_1YR_ANN_GROWTH
Common Equity, 1 Yr Growth %	= IQ_COMMON_EQUITY_1YR_ANN_GROWTH
Inventory, 1 Yr Growth %	= IQ_INV_1YR_ANN_GROWTH
Total Assets, 1 Yr Growth %	= IQ_TOTAL_ASSETS_1YR_ANN_GROWTH
Tangible Book Value, 1 Yr Growth %	= IQ_TBV_1YR_ANN_GROWTH
Cash from Operations, 1 Yr Growth %	= IQ_CFO_1YR_ANN_GROWTH
Capital Expenditures, 1 Yr Growth %	= IQ_CAPEX_1YR_ANN_GROWTH
Levered Free Cash Flow, 1 Yr Growth %	= IQ_LFCF_1YR_ANN_GROWTH
Unlevered Free Cash Flow, 1 Yr Growth %	= IQ_UFCF_1YR_ANN_GROWTH
Dividend per Share, 1 Yr Growth %	= IQ_DPS_1YR_ANN_GROWTH

CAPITAL STRUCTURE

Total Commercial Paper	= IQ_CP
Total Revolving Credit	= IQ_RC
Total Term Loans	= IQ_TERM_LOANS
Total Sr. Bonds and Notes	= IQ_SR_BONDS_NOTES
Total Sub. Bonds and Notes	= IQ_SUB_BONDS_NOTES
Cap. Leases (Incl. Curr. Portion)	= IQ_CAPITAL_LEASES_TOTAL
Other Borrowings	= IQ_OTHER_DEBT
Total Principal Due	= IQ_TOTAL_PRINCIPAL
Total Senior Debt	= IQ_SR_DEBT
Total Senior Debt (% of Total Debt)	= IQ_SR_DEBT_PCT
Total Sub. Debt	= IQ_TOTAL_SUB_DEBT
Total Convertible Debt	= IQ_CONVERT
Total Short-Term Debt	= IQ_ST_DEBT
Total Short-Term Debt (% of Total Debt)	= IQ_ST_DEBT_PCT
Long-Term Debt (Incl. Cap. Leases)	= IQ_LT_DEBT_CAPITAL_LEASES
Senior Debt/EBITDA	= IQ_SR_DEBT_EBITDA
Senior Debt/(EBITDA-CAPEX)	= IQ_SR_DEBT_EBITDA_CAPEX
Total Sub. Debt/ EBITDA	= IQ_TOTAL_SUB_DEBT_EBITDA

COMPANY INFORMATION

Company Name	= IQ_COMPANY_NAME
Chinese Short Native Name	= IQ_CHINESE_SHORT_NATIVE_TICKER
Business Description	= IQ_BUSINESS_DESCRIPTION
Headquarters	= IQ_COMPANY_ADDRESS
Primary Industry	= IQ_PRIMARY_INDUSTRY
CEO Name	= IQ_CEO_NAME

MACROECONOMIC

Unemployment Rate	= IQ_UNEMPLOYMENT_RATE
GDP	= IQ_GDP
Real GDP	= IQ_GDP_REAL
Inflation Rate	= IQ_INFLATION_RATE
Budget Spending	= IQ_BUDGET_SPENDING
CPI	= IQ_CPI
Consumer Lending	= IQ_CONSUMER_LENDING

CONSENSUS ESTIMATES

Avg Broker Recommendation (Text)	= IQ_AVG_BROKER_REC
Avg Broker Recommendation (#)	= IQ_AVG_BROKER_REC_NO
Price Target	= IQ_PRICE_TARGET
Est. Annual EPS Growth - 5 Yr	= IQ_EST_EPS_GROWTH_5YR
Primary EPS Estimate	= IQ_EPS_EST
Revenue Estimate	= IQ_REVENUE_EST
EBITDA Estimate	= IQ_EBITDA_EST
EBIT Estimate	= IQ_EBIT_EST
Net Income Estimate	= IQ_NI_EST
Cash Flow Per Share Estimate	= IQ_CFPS_EST
# of Analyst Buy Recomm.	= IQ_EST_NUM_BUY
# of Analyst Hold Recom.	= IQ_EST_NUM_HOLD
# of Analyst Sell Recom.	= IQ_EST_NUM_SELL
Estimated Next Earnings Date	= IQ_EST_NEXT_EARNINGS_DATE
Next Earnings Date	= IQ_NEXT_EARNINGS_DATE
EPS Difference	= IQ_EST_EPS_DIFF
EPS Surprise %	= IQ_EST_EPS_SURPRISE_PERCENT
Revenue Difference	= IQ_EST_REV_DIFF
Revenue Surprise %	= IQ_EST_REV_SURPRISE_PERCENT

VALUATION

TEV/Total Revenues	= IQ_TEV_TOTAL_REV
TEV/EBITDA	= IQ_TEV_EBITDA
TEV/EBIT	= IQ_TEV_EBIT
TEV/Unlevered FCF	= IQ_TEV_UFCF
Market Cap/Levered FCF	= IQ_MARKET_CAP_LFCF
P/Diluted EPS before extra	= IQ_PE_EXCL
P/BV	= IQ_PBV
P/TangBV	= IQ_PTBV
P/ Sales	= IQ_PRICE_SALES
Forward Trading Multiples	
TEV/Forward Total Revenue	= IQ_TEV_TOTAL_REV_FWD
TEV/Forward EBITDA	= IQ_TEV_EBITDA_FWD
TEV/Forward EBIT	= IQ_TEV_EBIT_FWD
P/Forward Diluted EPS before extra	= IQ_PE_EXCL_FWD
PEG Ratio	= IQ_PEG_FWD
P/Forward CFPS	= IQ_PRICE_CFPS_FWD

FIXED INCOME

Issue Name	= IQ_ISSUE_NAME
Issuer	= IQ_ISSUER
Issuer Parent Ticker Symbol	= IQ_ISSUER_PARENT_TICKER
Issuer Ticker Symbol	= IQ_ISSUER_TICKER
Amount Outstanding	= IQ_AMT_OUT
Maturity Date	= IQ_MATURITY_DATE
Offering Coupon	= IQ_OFFER_COUPON
Offering Date	= IQ_OFFER_DATE
Offering Price	= IQ_OFFER_PRICE
Security Type	= IQ_SECURITY_TYPE
Security Level	= IQ_SECURITY_LEVEL
YTW	= IQ_YTW
YTW Date	= IQ_YTW_DATE
STW	= IQ_STW
Offering Yield	= IQ_OFFER_YIELD
Principal Amount	= IQ_PRINCIPAL_AMT
Current Price	= IQ_BOND_PRICE
Callable Feature	= IQ_CALLABLE

MARKET DATA

Today's Date	= CIQGETDATE(IQ_TODAY)
Pricing Date	= IQ_PRICEDATE
Stock Exchange	= IQ_EXCHANGE
Last Sale Price	= IQ_LASTSALEPRICE
Close Price	= IQ_CLOSEPRICE
Dividend Adjusted Day Close Price	= IQ_CLOSEPRICE_ADJ
Volume Weighted Average Price	= IQ_VWAP
52 Week High Price	= IQ_YEARHIGH
52 Week High Date	= IQ_YEARHIGH_DATE
Daily Volume	= IQ_VOLUME
Daily Value Traded	= IQ_VALUE_TRADED
Market Capitalization	= IQ_MARKETCAP
Enterprise Value	= IQ_TEV
Shares Outstanding	= IQ_SHARESOUTSTANDING
5 Year Beta	= IQ_BETA_5YR
5 Year Price Volatility	= IQ_PRICE_VOL_HIST_5YR
Fund NAV	= IQ_FUND_NAV
Dividend Yield	= IQ_DIVIDEND_YIELD
Latest Annualized Dividend Per Share	= IQ_ANNUALIZED_DIVIDEND

CREDIT RATINGS

S&P Long-Term Company Rating	= IQ_SP_LC_LT
S&P Long-Term Company Rating Date	= IQ_SP_LC_DATE_LT
S&P Outlook/Credit Watch	= IQ_SP_OUTLOOK_WATCH
S&P Long Term Security Rating	= IQ_SP_ISSUE_LT
S&P Security Rating Date	= IQ_SP_ISSUE_DATE
S&P Security Rating Action	= IQ_SP_ISSUE_ACTION

CIQ FUNCTIONS

Pricing	= CIQRANGE(T,Market Item, D1, D2)
Financials	= CIQRANGE(T,Financial Metric, Period, D2)
Multiples	= CIQRANGE(T,Multiple Metric, Period, D1, D2)
Dividends	= CIQRANGE(T, Divident Metric, D1, D2)
Average Value Function (Dates)	= CIQAVG(T, Market Item, D1, D2)
Average Value Function (Period)	= CIQAVG (T, Market Item, Period)
Average Value Function (Finan. Metric)	= CIQAVG (T, Financial Metric, Period, D2)
High Value Function (Dates)	= CIQHI(T, Market Item, D1, D2)
High Value Function (Period)	= CIQHI(T, Market Item, Period)
Low Value Function (Dates)	= CIQLO(T, Market Item, D1, D2)
Low Value Function (Period)	= CIQLO(T, Market Item, Period)
Percent Change Function	= CIQPC(T, Market Item, D1, D2)
Percent Change Function (Period)	= CIQPC(T, Market Item, Period)
News Headline	= CIQRANGE(T,IQ_NEWS,Start Rank,End Rank)
Key Development ID	= CIQRANGE(T,IQ_KEY_DEV_ID,D1,D2,Category(ies))
Event ID	= CIQRANGE(T,IQ_EVENT_ID,D1,D2,Category(ies))
Quick Comps	= CIQRANGE(T,IQ_QUICK_COMP,Start Rank,End Rank)
* T = Ticker Input, D1 = Start Date, D2 = End Date	

RANGE FUNCTIONS*

COMPANY INFO

Institutional Holder	= IQ_INSTITUTIONAL_OWNER
Institutional Holder Total Shares	= IQ_INSTITUTIONAL_SHARES
Insider Holder	= IQ_INSIDER_OWNER
Insider Holder Total Shares	= IQ_INSIDER_SHARES
Holder Name	= IQ_HOLDER_NAME
Holder CIQ ID	= IQ_HOLDER_CIQID
Holder Total Shares	= IQ_HOLDER_SHARES
Mutal Fund Name	= IQ_HOLDER_FUND_NAME
Mutal Fund Shares Held	= IQ_HOLDER_FUND_SHARES
Mutual Fund % of Shares Outstanding	= IQ_HOLDER_FUND_PERCENT

COMPANY INFO - Private Equity

All Direct Investments	= IQ_INVESTMETNS_ALL
All Direct Investments CIQ ID	= IQ_INVESTMETNS_ALL_ID
Fund Families	= IQ_PE_FUND_FAMILIES
Recent Funds	= IQ_RECENT_FUNDS
Fund Name	= IQ_PE_FUND_NAME
Fund Size (USD)	= IQ_PE_FUND_SIZE
Limited Partner	= IQ_LIMITED_PARTNERS
Industries of Interest	= IQ_INVEST_CRITERIA_INDUSTRY
Equity Investment- Min(mm-USD)	= IQ_INVEST_CRITERIA_EQUITY_MIN

FINANCIALS - Segments

Business Segment Description	= IQ_BUS_SEG_DESCRIPTION
Business Segment Name	= IQ_BUS_SEG_NAME
Business Segment Revenue	= IQ_BUS_SEG_REV
Business Segment Assets	= IQ_BUS_SEG_ASSETS
Geographic Segment Name	= IQ_GEO_SEG_NAME
Geographic Segment Revenue	= IQ_GEO_SEG_REV
Geographic Segment Assets	= IQ_GEO_SEG_ASSETS

TRANSACTIONS - List

Index Constituents	= IQ_CONSTITUENTS
All Transactions	= IQ_TRANSACTION_LIST
M&A Transactions	= IQ_TRANSACTION_LIST_MA
Equity Indentifiers	= IQ_EQUITY_LIST
Fixed Income Indentifiers	= IQ_FIXED_INCOME_LIST
Bond Identifiers	= IQ_BOND_LIST
Preferred Security Indentifiers	= IQ_PREFERRED_LIST
Bank Loan Identifiers	= IQ_BANK_LOAN_LIST
Credit Default Swap Identifiers	= IQ_CDS_LIST

*Please refer to the front page for the syntax of CIQRANGE formula