

4. INTERMEDIATE EXCEL

Problem 4.1

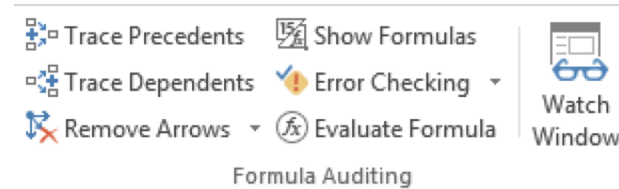
- Import and format:
 - zeus.cs.pacificu.edu/chadd/cs130w17/Problem41.html

	A	B	C	D	E
1	Item #	Product	Price	After Discount A	After Discount B
2	125A	Scooter	\$55.99	\$50.39	\$44.79
3	789A	Tricycle	\$129.95	\$116.96	\$103.96
4	78B	Soccer Ball	\$12.99	\$11.69	\$10.39
5	489B	Baby Doll	\$12.99	\$11.69	\$10.39
6	57B	Art Kit	\$14.95	\$13.46	\$11.96
7					
8	Discounts				
9	A	B			
10	10%	20%			

- For the above worksheet, write a formula in the highlighted cell in such a way that you can fill down and then across to calculate the other prices.

Debug Your Worksheet

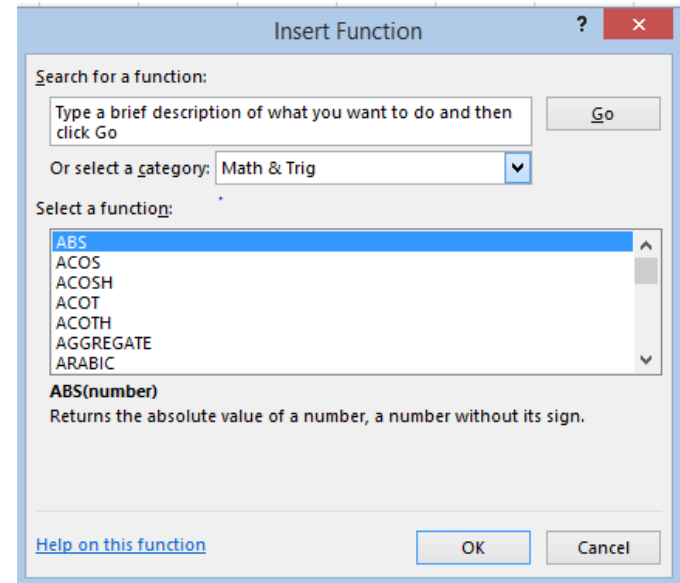
- Go to the Formulas tab



- Select cell D2 and use “Trace Precedents” to see which cells are used by cell D2.
- Select cell B10 and use “Trace Dependents” to see which cells use B10.
- Click “Remove Arrows” to remove the tracing lines at any given time.

Variety of Functions

- Excel has over 350 built-in functions divided into related categories.
- To invoke the “Paste Function” dialog box, click on the f_x icon on the tool bar.



Financial Built-in Functions

- The financial functions can be isolated in Excel. Simply go to the Function Library on the Formulas tab and select Financial.
- PMT Function

The screenshot shows the 'Function Arguments' dialog box for the PMT function. The dialog has a title bar with a question mark and a close button. The main area is titled 'PMT' and contains five input fields, each with a small icon to its right and an equals sign followed by the word 'number' to its right. The fields are labeled 'Rate', 'Nper', 'Pv', 'Fv', and 'Type'. Below the fields, there is a description: 'Calculates the payment for a loan based on constant payments and a constant interest rate.' and a note: '**Rate** is the interest rate per period for the loan. For example, use 6%/4 for quarterly payments at 6% APR.' At the bottom, there is a 'Formula result =' field, a 'Help on this function' link, and 'OK' and 'Cancel' buttons.

Argument	Type
Rate	number
Nper	number
Pv	number
Fv	number
Type	number

Calculates the payment for a loan based on constant payments and a constant interest rate.

Rate is the interest rate per period for the loan. For example, use 6%/4 for quarterly payments at 6% APR.

Formula result =

[Help on this function](#)

OK Cancel

PMT Function

- The PMT function calculates the payment for a loan based on constant payments and a constant interest rate
- Syntax is `PMT(rate,nper,pv,fv,type)` where
 - rate is the interest rate for the loan
 - nper is the total number of payments for the loan
 - pv is the present value (principal)
 - fv is the future value (usually zero)
 - type indicates when payments are due
 - 0 = end of month = default
 - 1 = beginning of month

PMT Function Continued

- Remarks
 - The payment returned by PMT includes principal and interest
 - Taxes & fees are not included
- Units must be consistent between rate and nper
 - **Monthly** payments means
rate = annual interest rate / **12**

PMT Function Continued

- Examples

- The following formula returns the monthly payment on a \$10,000 loan at an annual rate of 8 percent that you must pay off in 10 months:

- `=PMT(8%/12, 10, 10000)` equals `-$1,037.03`

- For the same loan, if payments are due at the beginning of the period, the payment is:

- `=PMT(8%/12, 10, 10000, 0, 1)` equals `-$1,030.16`

Why?

PMT Function Continued

- What do these mean?
 - $\text{=PMT}(12\%/12, 5, -5000)$ = \$1,030.20
 - $\text{=PMT}(6\%/12, 18*12, 0, 50000)$ = -\$129.08

Problem 4.2

- Now, let's imagine that you want to purchase a car worth \$29,899. The car dealer is ready to grant you a 5-year loan at 6.5% annual interest rate, but you must put down 10% of the car price as down payment.
- Design an Excel spreadsheet to allow the user the ability to input:
 - (a)The price of the car, (b)The yearly interest rate, (c)The length of the loan in years
- Your spreadsheet should then compute and display:
 - (d)The amount of the down payment, (e) The amount of the loan , (f) The monthly payment of the loan
- Be sure to Define a Name for each of the input cells appropriately.

Problem 4.2 Continued

- Once you get the above worksheet working, add a row that shows the total interest paid.

	A	B	C
1	Car Loan		
2			
3	Enter Car Price		
4	Enter Yearly Interest Rate		
5	Enter Time in Years		
6			
7	Down Payment Is		
8	Loan Amount Is		
9	Monthly Payment Is		

Problem 4.2 Continued

- Add a payment schedule to your current worksheet with columns: Payment #, Starting Balance, Monthly Payment, Monthly Interest, and Ending Balance.

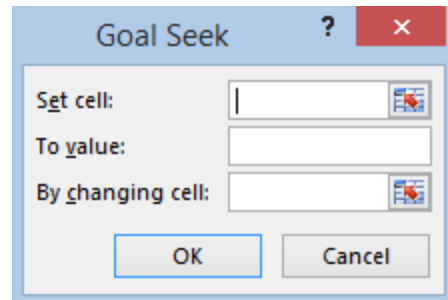
Payment #	Starting Balance	Monthly Payment	Interest	Ending Balance
1	\$26,909.10	\$526.51	\$145.76	\$26,528.35
2	\$26,528.35	\$526.51	\$143.70	\$26,145.54
3	\$26,145.54	\$526.51	\$141.62	\$25,760.65
4	\$25,760.65	\$526.51	\$139.54	\$25,373.68
..

Problem 4.2 Continued

- How can you be sure that your payment schedule is correct?
- Change the interest rate to 6%. Does your worksheet update correctly?

Goal Seek Question

How much car can I afford if I am willing to pay \$600 a month under the initial scenario?



Problem 4.3

- Go back to the worldometers.info page
- Check New book titles
- How many total books have been published this year?
- How many books have been published per day this year?
- Build a table showing the total number of books that will be published for each day of this year (given the growth rate above)

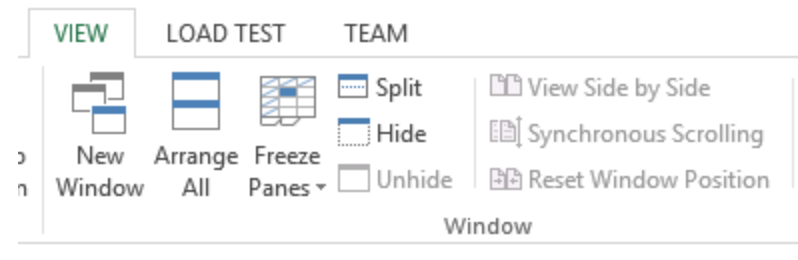
Example

	A	B	C	D
1	Number of books published per day			
2	6,519			
3				
4	Day of Year	Date	Total Book Sold to this date	
5	1	1/1/2016	6,519	
6	2	1/2/2016	13,038	
7	3	1/3/2016	19,557	
8	4	1/4/2016	26,077	
9	5	1/5/2016	32,596	
10	6	1/6/2016	39,115	

These numbers are made up and don't reflect the current values from Worldometers!

Freeze Panes

- Freezing panes is a useful technique for keeping an area of a worksheet visible while you scroll to another area of the worksheet.
- Excel displays thick black lines to indicate frozen rows and/or columns.
- Select **View->Freeze Panes->Freeze Panes**
- Excel will freeze the panes at the location of the highlighted cell.
- To unfreeze panes, select:
View->Freeze Panes->Unfreeze Panes



Splitting the Workbook Window

- You can split the workbook window into two or four resizable panes, all with independent scroll bars
- Go to View->Split

Outside Practice

- You want to buy a car for \$10,000. You have \$2,000 for a down payment and can get a 5 year loan with a yearly interest rate of 5.6%
- Build a spreadsheet that will allow you to input the cost of the car, down payment, and interest rate.
- The spreadsheet should determine the monthly payment and the total amount of money paid for the car over the 5 years (including interest).
- Use Goal Seek to determine what your down payment needs to be for your monthly payment to be \$150

Outside Practice

- You want to start funding your retirement account and hope to have saved \$1,500,000 in 40 years.
- If you can achieve a 7% yearly interest rate with your retirement account, what does your monthly payment need to be to reach your goal?
- What yearly interest rate would you need to reach your goal if you could only save \$450 a month? Show your answer to two digits past the decimal point.