

HP-38G**Simple Interest Program**

This program can be used to find the amount of simple interest earned on a given principal at a given annual interest rate for a certain amount of time.

```
SIMPINT PROGRAM
INPUT P; "SIMPINT"; "ENTER
PRINCIPAL";1:
INPUT R; "SIMPINT"; "INTEREST RATE IN DECIMAL
FORM";1:
INPUT T; "SIMPINT"; "ENTER NUMBER OF YEARS";1:
P*R*T►I:
DISP 3; "INTEREST IS" I:
FREEZE:
```

Quadratic Formula Program

This program will display the solutions to quadratic equations or the words "No Real Solution." To use the program, write the quadratic equation in standard form and enter the values of a , b , and c . This program displays the answer in complex form (x, y) , where x is the real part and y is the imaginary part.

```
QUADRAT PROGRAM
INPUT A;"AX2+BX+C=0";
"ENTER A";";1:
INPUT B;"AX2+BX+C=0";
"ENTER B";";1:
INPUT C;"AX2+BX+C=0";
"ENTER C";";1:
B2-4AC►D:
(-B+√D)/(2A)►Z1:
(-B+√D)/(2A)►Z2:
DISP 3;Z1:
DISP 5;Z2:
FREEZE
```

Two-Point Form of a Line

This program will display the slope and y-intercept of the line that passes through two points, (x_1, y_1) and (x_2, y_2) , entered by the user.

```
TWOPTFM PROGRAM
INPUT X: "ENTER X1, Y1";
"ENTER X1";";1:
INPUT Y: "ENTER X1, Y1";
"ENTER Y1";";1:
INPUT C: "ENTER X2, Y2";
"ENTER X2";";1:
INPUT D: "ENTER X2, Y2";
"ENTER Y2";";1:
(D-Y)/(C-X)►M
M*-X+Y►B
DISP 1;"SLOPE ="M:
DISP 3;"Y-INT ="B:
FREEZE:
```

Reflections and Shifts Program

This program will sketch a graph of the function $y = R(x + H)^2 + V$, where $R = \pm 1$, H is an integer between -6 and 6 , and V is an integer between -3 and 3 . This program gives you practice working with reflections, horizontal shifts, and vertical shifts.

1. Press `LIB`. Highlight the Function applet. Press `SAVE`. Enter the name PARABOLA for the new applet and press `OK`.
2. Press `SETUP-PLOT` and set XRNG: from -12 to 12 , YRNG: from -6 to 6 , and XTICK: and YTICK: to 1 .
3. Enter the 3 programs
PARABOLA, PARANS, PARABOLA.SV.
4. Run the program
PARABOLA.SV.
5. Enter the PARABOLA applet.
6. Press `VIEWS`. Highlight RUN PARABOLA and press `OK`.
7. After viewing the graph press `VIEWS`. Highlight ANSWER and press `OK` to see the values of the integers.
8. Press `OK` to return to the graph.
9. Repeat steps 6, 7, and 8 for a new parabola.

```
PARABOLA PROGRAM
-6+INT(12RANDOM)►H:
-3+INT(6RANDOM)►V:
RANDOM ►R:
IF R>.5
  THEN -1►R:
  ELSE 1►R:
END:
'R*(X+H)2+V'►F1(X):
CHECK 1:
```

```
PARANS PROGRAM
ERASE:
DISP 2;"Y=R(X+H)2+V":
DISP 3;"R="R:
DISP 4;"H="H:
DISP 5;"V="V:
FREEZE:
```

```
PARABOLA.SV PROGRAM
SETVIEWS "RUN
PARABOLA";PARABOLA;1;
"ANSWER";PARANS;1;
" ";PARABOLA.SV;0;
```

Graph Reflection Program not available

Systems of Linear Equations Program

This program will display the solution of a system of two linear equations in two variables of the form

$$ax + by = c$$

$$dx + ey = f$$

if a unique solution exists.

1. Input the 2 programs SOLVE and SOLVE.SOLN.
2. Run the SOLVE program.

```
SOLVE
SOLVE PROGRAM
INPUT A;"AX+BY=C";
  "ENTER A";" ";1:
INPUT B;"AX+BY=C";
  "ENTER B";" ";1:
INPUT C;"AX+BY=C";
  "ENTER C";" ";1:
INPUT D;"DX+EY=F";
  "ENTER D";" ";1:
INPUT E;"DX+EY=F";
  "ENTER E";" ";1:
INPUT F;"DX+EY=F";
  "ENTER F";" ";1:
ERASE:
IF AE-DB==0
THEN DISP 3; "NO UNIQUE
  SOLUTION":
ELSE RUN "SOLVE.SOLN":
END:
FREEZE:
SOLVE.SOLN PROGRAM
(CE-BF)/(AE-DB)►X:
(AF-CD)/(AE-DB)►Y:
DISP 3;"X="X:
DISP 5;"Y="Y:
```

Sum Program

1. Input the 2 programs SUM and SUM.STEP.
2. Store the n th term of the sequence in the F1 function (in terms of x) in the Function applet. Be sure that F1 is checked.
3. Run the SUM program.

```
SUM
SUM PROGRAM
INPUT M;"LOWER BOUND";
  "ENTER M";" ";1:
INPUT N;"UPPER BOUND";
  "ENTER N";" ";1:
0►S:
ERASE:
SELECT "Function":
FOR I=M TO N
STEP 1;
RUN "SUM.STEP":
END:
SUM.STEP PROGRAM
S+F1(I)►S:
DISP 4;"  "S:
FREEZE:
```