Chapter 14: Printing

With BASIC-256 you can create output and send it to a printer or to a PDF document. The printer page it treated as if it was a big graphics area that you can draw text, shapes, polygons, stamps, lines, and points using the same graphics statements that you have used in previous chapters.

Turning Printing On and Off

To start printing, all you need to do is turn the printer on with the **print on** statement. Once you are finished creating your page or pages to print execute the **print off** statement.

```
1     # printpage.kbs
2     # print a page with text
3
4     printer on
5
6     x = 100 # start first line 100 pixes down on page
7
8     font "Times New Roman", 30, 100
9     for t = 1 to 10
10       text 0, x, "The number t is " + t
11       x = x + textheight()
12    next t
13
14    printer off
```

Program 86: Printing a Page with Text

```
The number t is 1
The number t is 2
The number t is 3
The number t is 4
The number t is 5
The number t is 6
The number t is 7
The number t is 8
The number t is 9
The number t is 10
```

Sample Output 86: Printing a Page with Text

(New Concept)	**printer on** *printeron* Turn printing on. Once printing is turned on the graphic statements (**line**, **plot**, **text**, **rect**, **circle**, **poly**, **stamp**, **graphwidth**, **graphheight**, **textwidth**, and **textheight**) now draw on and return information about the printer page.

	printer off *printeroff*
	Ends the current print document. If your output is being send to a print device the document will start printing. If you output is going to a PDF file the file will be written to the specified location.

	textwidth(*string*) **textheight()**
	Returns the width or height of a string in pixels when it is draw on the graphics or printer output area with the **text** statement. The actual width of the string is returned by **textwidth** but **textheight** returns the standard height in pixels of the currently active font.

You may change the printing destination and properties about the page by selecting "Printing" tab on the "Preferences" window. You may select any configured printer, the size of the page, and the orientation of the page.

Additionally you may select the printer page resolution. Screen resolution, the default, draws on the printer page in a similar manner to how the computer screen is drawn on. In this resolution there are approximately 96 pixels per inch (0.26mm/pixel) . In the High resolution mode you are drawing on the printer page in the printer's native resolution. For most printers and for PDF output that resolution is 1,200 pixels per inch (.021mm/pixel).

Remember that the **font** statement uses the unit of "point" to measure the size of text that is drawn to the graphics display. A point is 1/72 of an inch (3.5mm) so the text will remain constant regardless of the printer mode specified.

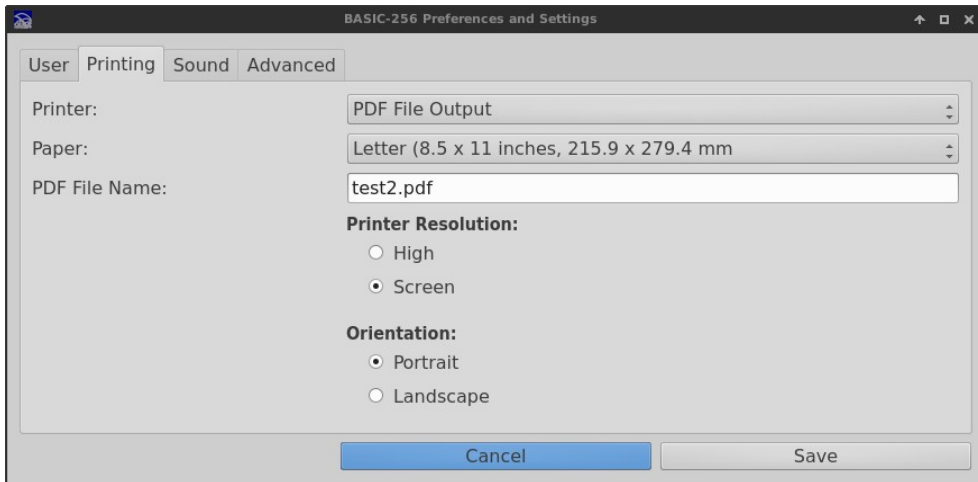All of the examples in this chapter are formatted for Letter (8 ½ x 11 inch) paper in Screen resolution.

Illustration 23: Preferences – Printing Tab
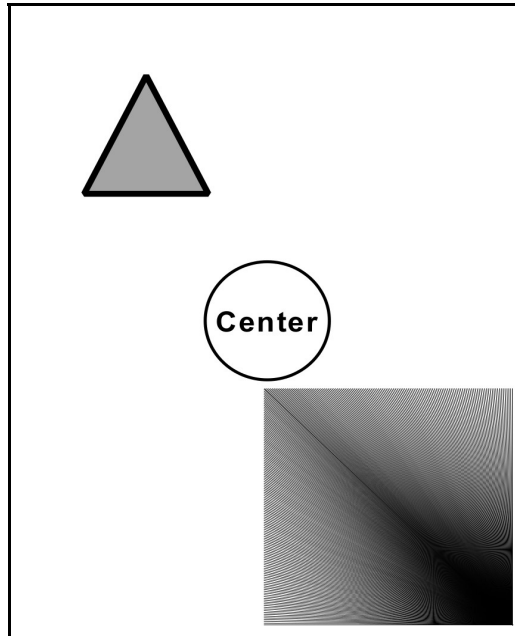
```
1      # drawpage.kbs
2      # Draw on the page
3
4      printer on
5
6      # put the text in the CENTER of the page
7      color black
8      font "Arial", 40, 500
9      words = "Center"
10     x = ( graphwidth - textwidth(words) ) / 2
11     y = ( graphheight - textheight() ) / 2
12     text x,y,words
13
14     # draw a circle around the text
15     # fill with clear
16     color black, clear
17     penwidth 5
```

```
18     circle graphwidth/2, graphheight/2, 100
19
20     # draw a triangle using poly
21     color black, grey
22     penwidth 10
23     poly {200,100, 300,300, 100,300 }
24
25
26     # draw a morier pattern on the page
27     color black
28     penwidth 1
29     for t = 0 to 400 step 3
30         line graphwidth, graphheight, graphwidth-400,
       graphheight-t
31         line graphwidth, graphheight, graphwidth-t,
       graphheight-400
32     next t
33
34     printer off
```

Program 87: Printing a Page with Graphics

Sample Output 87: Printing a Page with Graphics

New Concept	**printer page** *printerpage* if you need to print to a new page just execute the **printer page** statement. This will save the current page and all new output will go into the next page.

New Concept	`printer cancel` *printercancel* If you have started to print a document but decide you do not want to finish it, the **printer cancel** statement will turn off printing and not output the document.

Big Program	The "Big Program" for this chapter uses the printer statements to generate and print a multiplication table.

```
1       # multtable.kbs
2       # print a 12x12 multiplication table
3
4       printer on
5       color black
6       font "Arial", 12, 100
7
8       # size of a cell on grid
9       w = 700/13
10      h = textheight()*2
11      #
12      pad = 5
13
14      # draw the grid
15      penwidth 2
16      for x = 0 to 14
17          line x*w,0,x*w,14*h
```

```
18      next x
19      for y = 0 to 14
20          line 0,y*h,14*w,y*h
21      next y
22
23      # put the row and column header numbers
24      font "Arial", 12, 100
25      for x = 0 to 12
26          text (x+1)*w+pad,pad,x
27      next x
28      for y = 0 to 12
29          text pad,(y+1)*h+pad,y
30      next y
31
32      # put the products
33      font "Arial", 12, 50
34      for x = 0 to 12
35          for y = 0 to 12
36              text (x+1)*w+pad,(y+1)*h+pad,(x*y)
37          next y
38      next x
39
40      printer off
```

Program 88: Multiplication Table

	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Sample Output 88: Multiplication Table

Exercises:

Word Search	k l a n d s c a p e j f d r e p a p t g p o r t r a i t x a b s g n i t t e s p t h g i e h t x e t r e s o l u t i o n o k p r i n t e r o m a r g i n d f d p g h t d i w t x e t o z c a n c e l x p cancel, landscape, margin, page, paper, pdf, portrait, printer, resolution, settings, textheight, textwidth

Problems	1. Take your program from Problem 1 or 2 from the sound and music chapter and have it print the song lyrics on a page after the user types in words to fill in the blanks. You may need to keep a variable with the line number you are outputting so that you can calculate how far down the page each to start the line. 2. Use the smiling face subroutine you created for Problem 1 from the subroutines chapter to create a page with a smiling face in the four corners and "Smile!" centered on the page.