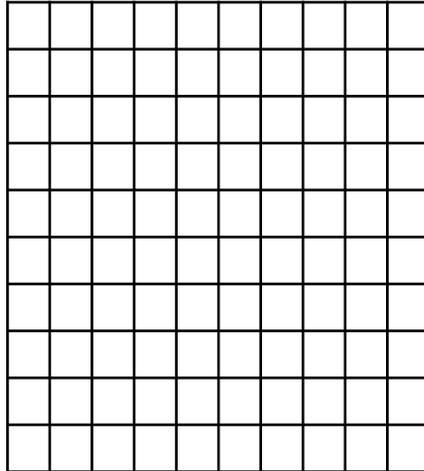# Worksheet 1: Hidden Pictures

Now that you know how numbers can represent pictures, try to draw these hidden pictures using the encoding scheme discussed.

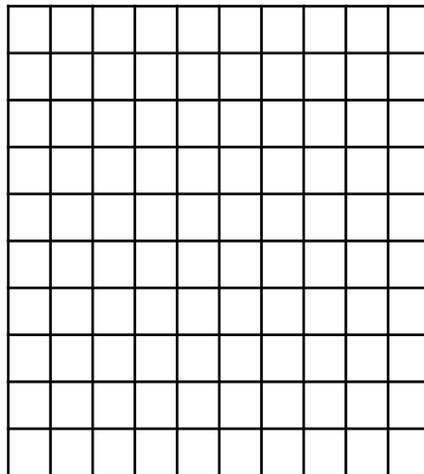Use "X" characters in the boxes – do not color each box!

Grid	Encoding
	4, 2, 4
	3, 4, 3
	2, 6, 2
	1, 8, 1
	0, 10
	4, 2, 4
	4, 2, 4
	4, 2, 4
	4, 2, 4
	2, 6, 2

| Grid	Encoding
	10,0
	3, 1, 2, 1, 3
	3, 1, 2, 1, 3
	10,0
	5, 1, 4
	2, 1, 4, 1, 2
	2, 1, 4, 1, 2
	3, 1, 2, 1, 3
	4, 2, 4
	10,0

Worksheet 2: Share with A Friend

In this section, draw a picture in the 10x10 grid, compress the image using the method we taught you to the right of the image, then copy the compressed image numbers on the lines on the bottom half of the picture. Rip off the bottom half of the page, trade with a neighbor, and see if they can recreate your picture just as a computer would!
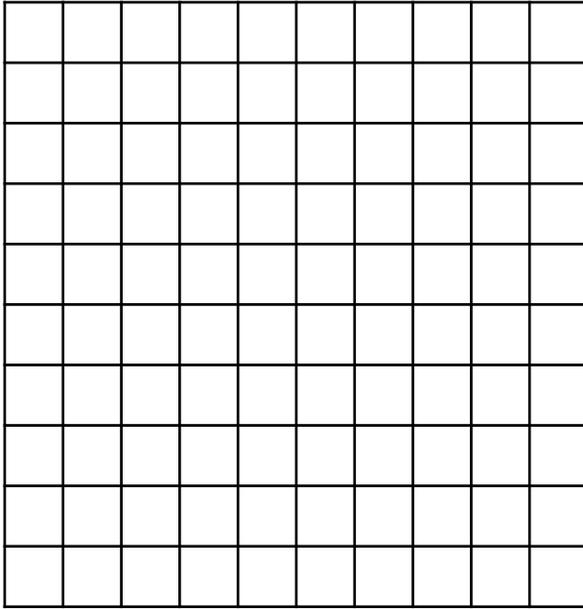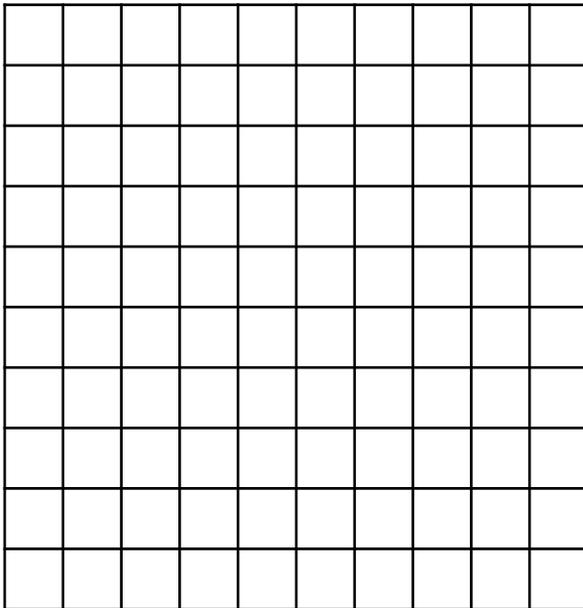
Worksheet 3: Compression

Does compression really make transferring files faster? Let's see!

First cut this page vertically along the dashed line, and again horizontally along the solid lines. Person A will first send the image while person B receives and draws it. The sender can give out ONLY one number at a time.

When the entire image has been drawn, Person B will send while Person A draws.

If you're downloading a movie, do you want to wait for uncompressed??

UNCOMPRESSED IMAGE

Use the uncompressed encoding scheme. Remember: a "0" means white, and a "1" means to color in the square (just use an "X" for speed).

-- 0, 1, 0, 0, 0, 1, 0
-- 1, 1, 1, 0, 1, 1, 1
-- 1, 1, 1, 1, 1, 1, 1
-- 1, 1, 1, 1, 1, 1, 1
-- 0, 1, 1, 1, 1, 1, 0
-- 0, 0, 1, 1, 1, 0, 0
-- 0, 0, 0, 1, 0, 0, 0

COMPRESSED IMAGE

Use the compressed encoding scheme. Again use an "X" for speed. Remember: the number of white pixels is always listed first!

-- 1,1,3,1,1
-- 0,3,1,3
-- 0,7
-- 0,7
-- 1, 5,1
-- 2, 3, 2
-- 3, 1, 3