

Digital Imaging, Scanning, & Communication - Form A

Name of Encoder: _____

Step 1 – Image capture

Draw a graphic in the grid below by darkening the square pixels with a pencil. Make sure that nobody else sees what you are drawing.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										
H										
I										
J										

Step 2 – Scanning

View from left to right, row by row to determine the marked and unmarked pixels. Write your name in the “Name of Encoder” blanks.

Name of Encoder: _____

Step 3 --- Encoding the serial data frame

Encode the data frame below by moving through the pixels in the order that you scanned and record the appropriate binary digit. Write a “1” in each blank for each pixel that was darkened in and a “0” in each blank for the pixels that were not marked. Every blank in the data frame below must have either a “1” or a “0” in it.

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START-----A1__A2__A3__A4__A5__A6__A7__A8__A9__A10__B1__
B2__B3__B4__B5__B6__B7__B8__B9__B10__C1__C2__C3__
C4__C5__C6__C7__C8__C9__C10__D1__D2__D3__D4__D5__
D6__D7__D8__D9__D10__E1__E2__E3__E4__E5__E6__E7__
E8__E9__E10__F1__F2__F3__F4__F5__F6__F7__F8__F9__
F10__G1__G2__G3__G4__G5__G6__G7__G8__G9__G10__
H1__H2__H3__H4__H5__H6__H7__H8__H9__H10__I1__I2__
I3__I4__I5__I6__I7__I8__I9__I10__J1__J2__J3__J4__J5__
J6__J7__J8__J9__J10__END
    
```

Step 4 --- Remove the bottom part of this form and keep it handy. Keep the top part hidden so the other students can't see your graphic. Only share this data frame.

Digital Imaging, Scanning, & Communication - Form B

Name of Encoder: _____

Name of Decoder: _____

Step 5 – Wait for teacher instructions about meeting up with another student

Keep your Form A graphic hidden.

Fill in the names above; you are the Decoder, the other student is the Encoder.

Step 6 – Serial communication

You will read your data frame (the bottom part of Form A) to your partner, pixel by pixel. As you read, they will record the binary digits for each pixel on their Form B.

Next, your partner will read their data frame to you and you will record the binary digits on your Form B.

START-----A1__A2__A3__A4__A5__A6__A7__A8__A9__A10__B1__
 B2__B3__B4__B5__B6__B7__B8__B9__B10__C1__C2__C3__
 C4__C5__C6__C7__C8__C9__C10__D1__D2__D3__D4__D5__
 D6__D7__D8__D9__D10__E1__E2__E3__E4__E5__E6__E7__
 E8__E9__E10__F1__F2__F3__F4__F5__F6__F7__F8__F9__
 F10__G1__G2__G3__G4__G5__G6__G7__G8__G9__G10__
 H1__H2__H3__H4__H5__H6__H7__H8__H9__H10__I1__I2__
 I3__I4__I5__I6__I7__I8__I9__I10__J1__J2__J3__J4__J5__
 J6__J7__J8__J9__J10__END

Step 7 – Decoding

After the data frames have been communicated to each partner, decode the data frame on this page. If a pixel communicates a “1”, darken in the appropriate pixel on the grid below. If a pixel communicates a “0”, leave the pixel blank. When you are finished darkening in the “1” pixels you should see a completed image.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										
H										
I										
J										

Step 8 - Feedback

Partners can show the Form A image that each started with. Do they match?