

**SCANTRON Imaging**

A HARLAND COMPANY

Counted on most.<sup>SM</sup>

Scantron Corporation & BOCES

In partnership

Present

NY State Regents automation



[www.scantron.com](http://www.scantron.com)

# Solutions

- ◆ Paper and electronic forms
- ◆ Document imaging
- ◆ Form design and printing
- ◆ Hardware installation and service
- ◆ Professional services



# Facts

- ◆ Many schools have used Scantron for testing and surveys
- ◆ Federal, state and local government departments use Scantron technology



# June 2002 Regents Math A pilot

- ◆ 8 BOCES RIC centers participated
  - Forms design provided by Scantron
  - Two meeting locations Westchester & Syracuse
  - Scanned two page form and graded MC questions
  - Verification of data done at meeting site
  - Data analysis reports

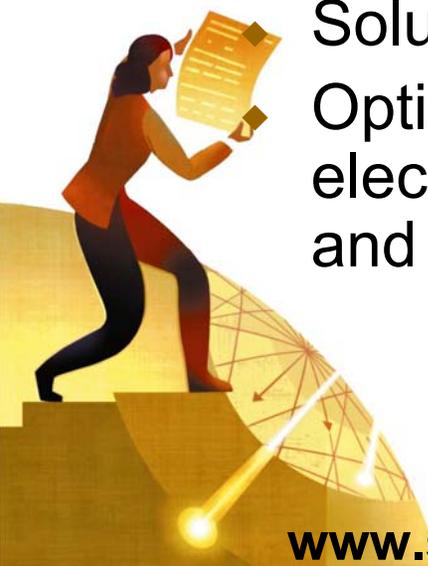


# Advantages

- ◆ Ability to design form to current look.
- ◆ Ability to preprint data to form by using the “Auto Merge Publisher” in software or by using a merge product.
- ◆ Does not require special paper.
- ◆ Can be scanned by any image device that creates a .tif group 4 file.

Solution is scalable to any size district.

Option to scan score sheets at school and send electronically for scoring, scan at BOCES or process and score on site.



The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Wednesday, June 19, 2002 - 1:15 to 4:15 p.m. only

ANSWER SHEET

CANBE ALLWAY

Student \_\_\_\_\_ Sex  M  F Grade \_\_\_\_\_

Teacher \_\_\_\_\_ School \_\_\_\_\_

Your answers to Part I should be recorded on this answer sheet.

Part I

Answer all 20 questions in this part

Please shade circles completely as shown:

Correct: ● Incorrect: ☒ ✓

- |   |  |  |  |
|---|--|--|--|
| 1. <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 | 6. <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4  | 11. <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 | 16. <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input checked="" type="radio"/> 4 |
| 2. <input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 | 7. <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4  | 12. <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 | 17. <input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 |
| 3. <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input checked="" type="radio"/> 4 | 8. <input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4  | 13. <input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 | 18. <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 |
| 4. <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 | 9. <input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4  | 14. <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input checked="" type="radio"/> 4 | 19. <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 |
| 5. <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 | 10. <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input checked="" type="radio"/> 4 | 15. <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input checked="" type="radio"/> 4 | 20. <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 |

Your answers for Parts II, III, and IV should be written in the test booklet.

The declaration below should be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination and that I have neither given nor received assistance in answering any of the questions during the examination.

Signature \_\_\_\_\_

Student ID (for office use only)

610189905

District ID (for office use only)

0998

Walk-in

61782



1 2 3

MATHEMATICS A

Question	Maximum Credit	Credits Earned	Rater's/Scorer's Initials	
Part I 1-20	40			
Part II 21	2	<input type="checkbox"/>		Rater's/Scorer's Name (minimum of three)
22	2	<input type="checkbox"/>		
23	2	<input type="checkbox"/>		
24	2	<input type="checkbox"/>		
25	2	<input type="checkbox"/>		
Part III 26	3	<input type="checkbox"/>		
27	3	<input type="checkbox"/>		
28	3	<input type="checkbox"/>		
29	3	<input type="checkbox"/>		
30	3	<input type="checkbox"/>		
Part IV 31	4	<input type="checkbox"/>		
32	4	<input type="checkbox"/>		
33	4	<input type="checkbox"/>		
34	4	<input type="checkbox"/>		
35	4	<input type="checkbox"/>		
Maximum Total	85			

Total Raw Score      Checked by      Scaled Score

District ID (for office use only)



# The process

**SCANTRON Imaging**

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**SCANTRON Imaging**

A HARLAND COMPANY

Counted on most.<sup>SM</sup>

# Easy Steps

- ◆ Create
  - Rapid creation of test forms
- ◆ Distribute
  - Email PDF file, print on any laser printer
- ◆ Images from school to RIC
  - Scanner, fax, digital copier, multifunction device, etc.
- ◆ Software picks up images
  - Identification, sorting, translation
- ◆ Verification
  - Multiple marks, missing data
- ◆ Data and images exported
  - Par, local and image databases
- ◆ Scoring and reporting
- ◆ Images available via Internet for search and retrieval



**Design**



**Student Test Form**  
Unique for NY State Regents



**Print**



**Test Forms with Student Data**



**Distribute**



**Scan**



**Scan Test Forms**

**Score**



**ARCHIVE**



**Electronic Storage**  
**SCANTRON Imaging**  
A HARLAND COMPANY

Counted on most.™



[www.scantron.com](http://www.scantron.com)

# Define the form

- ◆ Use built-in designer for new forms
- ◆ Scan existing paper forms
- ◆ Import existing PDF forms



The screenshot shows a software dialog box titled "New Form Wizard - Form Type". It is divided into two main sections: "Preview" and "Type".

The "Preview" section on the left displays a grid of 10 columns and 10 rows of dotted lines. In the top-left corner of the grid, there is a small icon of a document with a "cut" label and a small black square in the corner, representing a reference block.

The "Type" section on the right is titled "Type" and contains the instruction "Select the form type to create". It lists three options, each with a radio button:

- T**raditional: Four square reference blocks and a digital Form ID for form/user identification. Block/ID positions are the same for all pages. Ideal for fax broadcast and receipt tracking.
- V**ersiForm: Movable reference marks that can be individually configured, plus a text or bar code ID. Each page can be setup differently offering a great deal of design versatility. Ideal for scanning applications.
- E**xisting: For forms that have been designed and printed outside of TELEform. Available in TELEform Elite and TELEform Enterprise only.

At the bottom of the dialog box, there are five buttons: "Cancel", "< Back", "Next >", "Finish", and "Help".

# Design Forms

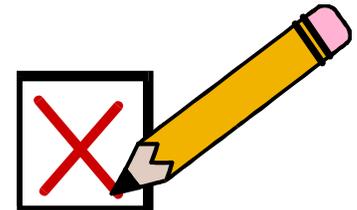
- ◆ Hand print (ICR)

M	I	K	E	
---	---	---	---	--

- ◆ Machineprint (OCR)

4563418
---------

- ◆ Check marks (OMR)



- ◆ Bar codes

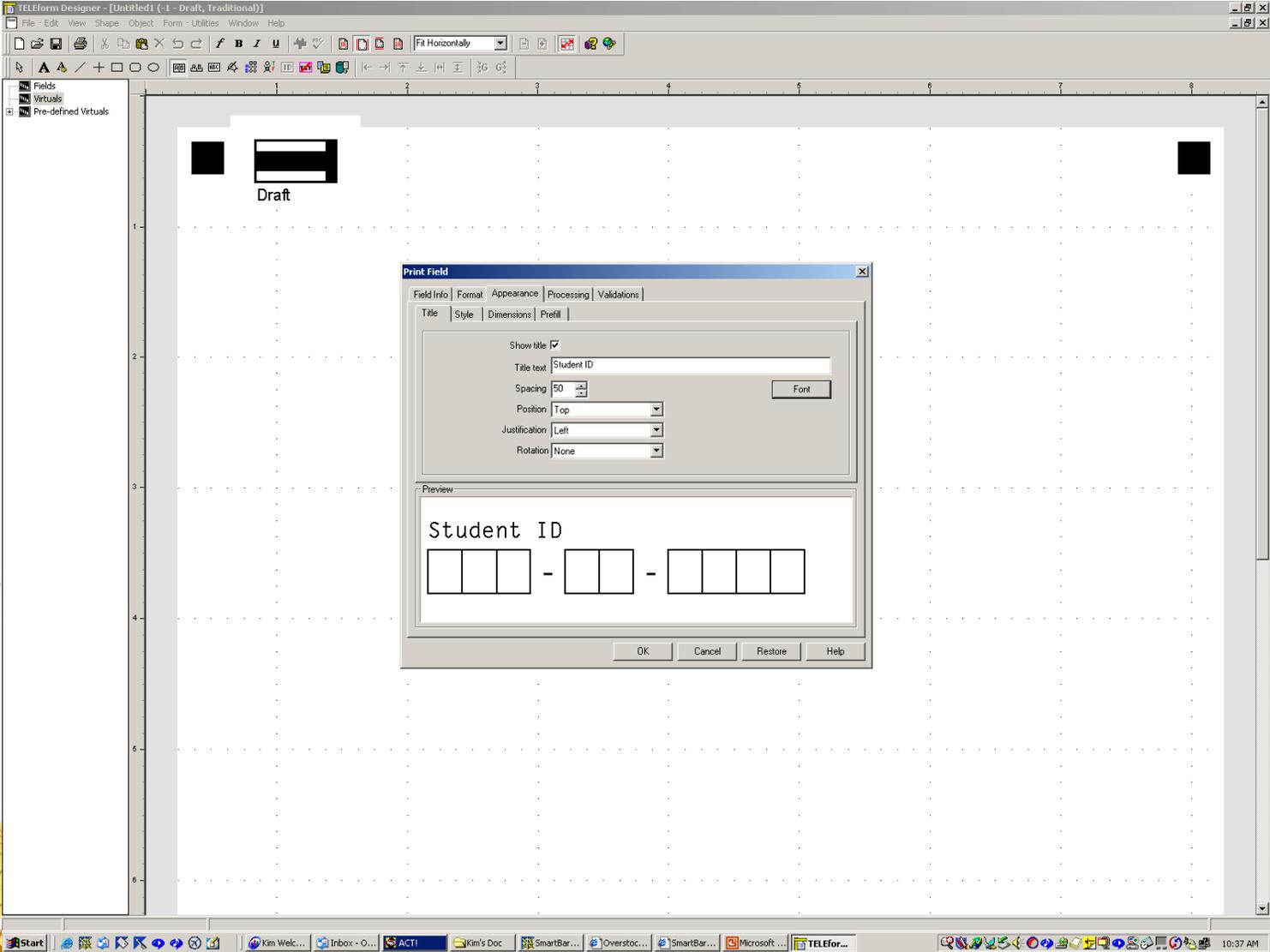
4563418
---------



# Versatility

	Imaging	OMR
Handprint	Y	N
Machineprint	Y	N
OMR / Bar code	Y	Y
Timing tracks req'd	N	Y
Image capture	Y	N
Fax input	Y	N

# Create fields



# Setup validations



**Print Field** [X]

Field Info | Format | Appearance | Processing | **Validations**

Entry required       Data review  
 Always review       Double key

Range

Review field if value outside of range

From: 0  
To: 0

Field Validation

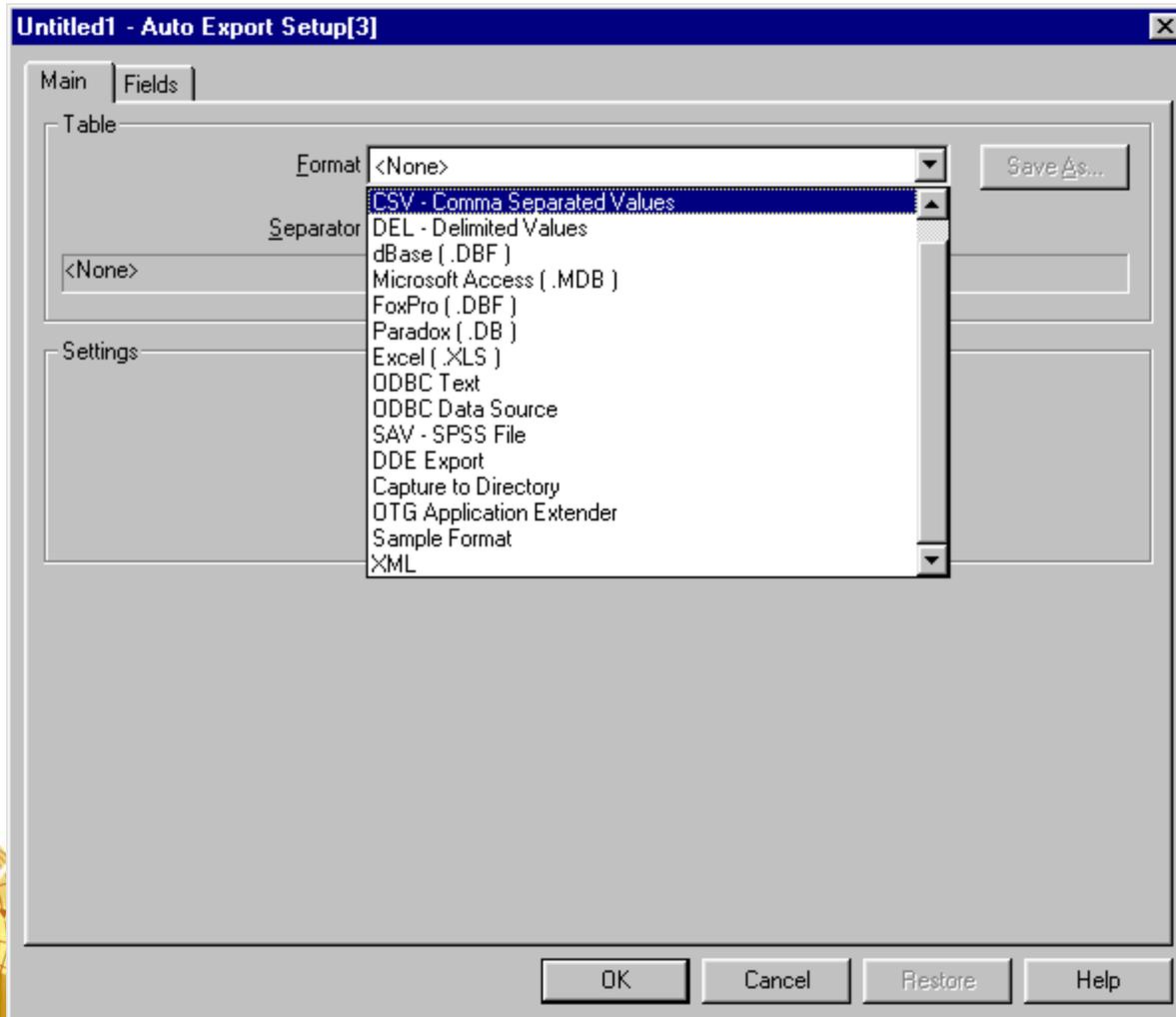
Database lookup

Modify...

CSV - Comma Separated  
DEL - Delimited  
ODBC Text  
Excel ( .XLS )  
Paradox ( .DB )  
FoxPro ( .DBF )  
Microsoft Access ( .MDB )  
dBase ( .DBF )  
ODBC Data Source

OK    Cancel    Restore    Help

# Determine export



# Print form to PDF and distribute

Adobe Acrobat - [boces june 2002 math test icr.pdf]

File Edit Document Tools View Window Help

The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Wednesday, June 19, 2002 - 1:15 to 4:15 p.m. only

ANSWER SHEET

Student \_\_\_\_\_ Sex  M  F Grade \_\_\_\_\_

Teacher \_\_\_\_\_ School \_\_\_\_\_

Your answers to Part I should be recorded on this answer sheet.

Part I

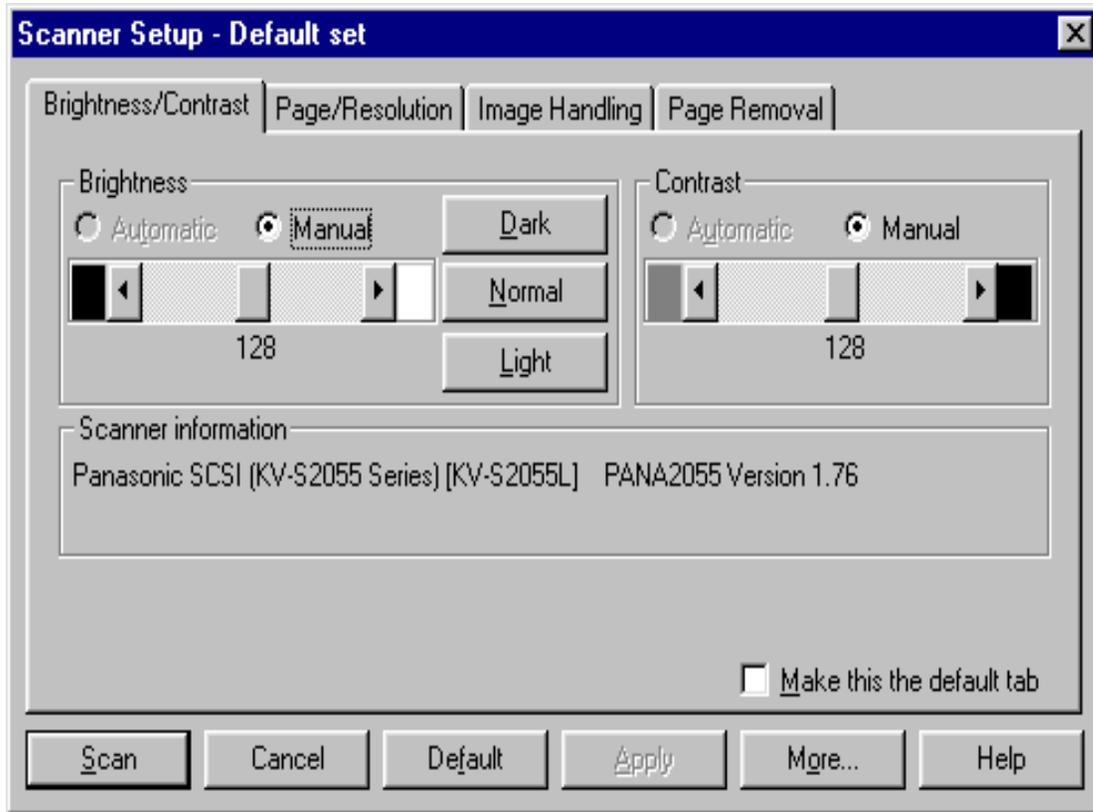
Answer all 20 questions in this part

Please shade circles completely as shown:  
Correct: ● Incorrect: ⊗ ⊙

1.  1  2  3  4      6.  1  2  3  4      11.  1  2  3  4      16.  1  2  3  4

www.scantron.com

# Scan Answer Sheets to Images



# Verify

- ◆ Pre-defined rules automatically flag problems for the operator
- ◆ Verification is on the screen for easy viewing and correction
- ◆ Output to database and imaging system simultaneously



# Verify questionable information- too many marks

TELEform Verifier - [boeces sample icr (4862) ]

File Correction View Options Utilities Window Help

Fit Horizontally

Student Andrea Doneaway Sex  M  F Grade 10

Teacher John Doe School Hardway HS

Part One

Answer all 20 questions in this part

Please shade circles completely as shown:

Correct: ● Incorrect: ⊗ ✓

1.	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	11.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4
2.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	12.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4
3.	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	13.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4
4.	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	14.	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
5.	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	15.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4
6.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	16.	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input checked="" type="radio"/> 4
7.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	17.	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
8.	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	18.	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4
9.	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	19.	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4
10.	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	20.	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4

1  
2  
3  
4

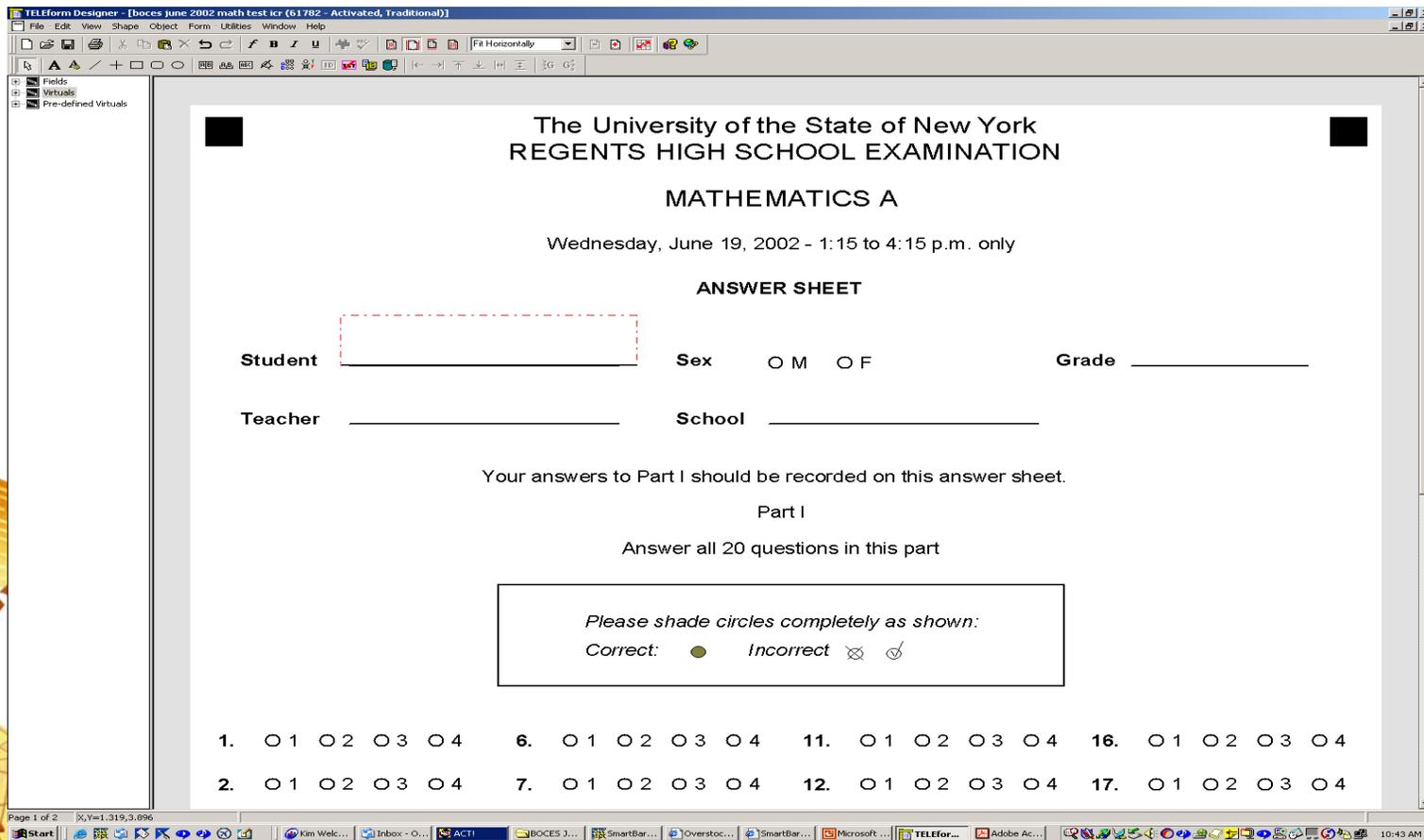
5 Remaining q\_16 Too many marks

Start Network and Dial... Kim Welch - Inbo... Inbox - Outlook... Microsoft Power... TELEform Reade... TELEform Verif... 10:04 PM



# Export data and images

“Jane”, “Doe”, 558-61-6552, “F”, 714-555-1212, 6,, 3,  
“John”, “Doe”, 596-54-5678, “M”, 619-555-1212, 1,,, 1



TELEform Designer - [bores june 2002 math test.icr (61782 - Activated, Traditional)]

File Edit View Shape Object Form Utilities Window Help

Fields  
Virtuals  
Pre-defined Virtuals

The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Wednesday, June 19, 2002 - 1:15 to 4:15 p.m. only

ANSWER SHEET

Student  Sex  M  F Grade

Teacher  School

Your answers to Part I should be recorded on this answer sheet.

Part I

Answer all 20 questions in this part

Please shade circles completely as shown:  
Correct: ● Incorrect: ⊗ ⊙

1.  1  2  3  4    6.  1  2  3  4    11.  1  2  3  4    16.  1  2  3  4  
2.  1  2  3  4    7.  1  2  3  4    12.  1  2  3  4    17.  1  2  3  4

Page 1 of 2 [X,Y=1,319,3,696]

Start Kim Welc... Inbox - O... ACT... BOCES J... SmartBar... Overstoc... SmartBar... Microsoft... TELEfor... Adobe Ac... 10:43 AM

# Records are imported to a database for **DATA ANALYSIS**

MS Office  
ParScore (Scantron)  
Cognos  
Data Warehouse



# Detailed Item Analysis Report

Adobe Acrobat - [Math A FLRIC Report.pdf]

File Edit Document Tools View Window Help

Individual Item Analysis for Math A Multiple Choice

Dist Name: Allway CSD June 2002 Correct = Period (.) No Resp = Blank ( )  
 Bldg Name: Easyway HS Incorrect = Answer Mult. Resp. = Plus (+)

ITEM NUMBERS

Student Name	Student ID	MC RS	Total RS	Scaled Score	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0		
Airway Cloudy	140000439	38	64	76	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.		
Allway Canbe	610189905	32	42	55	2	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	3
Anyway Allen	140000549	32	62	74	.	.	.	.	.	.	.	.	.	.	.	.	2	.	3	.	.	.	.	.	.	3	2
Backway Hinder	610190103	28	54	67	4	.	1	.	.	.	.	.	.	.	.	.	.	3	.	.	1	.	.	.	4	4	.
Causeway Olive	140000274	22	39	52	4	.	3	.	.	3	4	.	.	.	2	.	3	1	.	.	2	.	.	.	1	.	
Chaseway Larry	610190338	24	56	68	.	.	.	3	.	.	.	.	.	4	.	4	3	.	1	2	4	.	.	3	.	.	
Conway Harry	610189174	30	56	68	.	.	.	.	.	.	.	3	.	2	3	2	.	.	.	.	.	.	1	.	.	.	
Easyway Slick	140000440	28	52	65	4	.	.	.	3	.	3	.	.	2	.	3	.	.	.	.	.	.	.	4	.	.	
Fiveway Quint	610188549	30	56	68	4	.	.	2	3	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
Fourway Quad	610188536	28	44	57	4	.	.	.	.	1	.	.	1	.	.	3	.	.	.	3	4	.	.	.	.	.	
Freeway Crowded	610189671	26	53	66	4	.	.	.	.	3	.	.	.	2	.	3	.	.	.	.	.	.	.	1	4	2	
Hisway Helmut	140000749	28	52	65	4	.	.	.	.	3	.	.	.	.	3	3	1	.	.	.	.	.	.	1	.	.	
Layaway Loomis	140002549	24	52	65	4	.	.	.	.	.	.	.	.	1	1	3	.	.	.	.	.	.	4	1	1	2	
Myway Nancy	610001234	30	60	72	4	.	.	.	.	.	.	2	.	.	4	3	.	.	.	.	.	.	1	.	.	.	
Newway Idea	610189544	24	58	70	4	.	.	.	1	1	.	.	.	2	4	.	4	.	2	.	.	.	.	1	.	.	
Noway Neverlita	140000494	28	60	72	.	.	3	.	.	1	.	.	2	3	.	1	.	.	.	.	.	.	.	1	.	.	

Correct Answer: 3 3 2 1 2 4 1 4 3 3 2 1 2 1 4 4 3 2 2 4



# Custom reports using captured data

Adobe Acrobat - [Math A FLRIC Report.pdf]

File Edit Document Tools View Window Help

Individual Open-Ended Item Analysis for Math A

Dist Name: Allway CSD  
Bldg Name: Easyway HS

June 2002

QUESTION NUMBERS

Student Name	Student ID	OE RS	Total RS	Scaled Score	QUESTION NUMBERS														
					----Part II----					----Part III----					----Part IV----				
					2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
					1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
Airway Cloudy	140000439	26	64	76	0	1	2	2	2	3	0	2	3	3	1	2	3	1	1
Allway Canbe	610189905	10	42	55	0	1	2	0	1	0	1	0	3	1	0	0	0	0	1
Anyway Allen	140000549	30	62	74	0	2	2	0	1	1	3	2	3	1	2	3	2	4	4
Backway Hinder	610190103	26	54	67	0	1	1	2	1	1	2	1	0	2	2	4	4	1	4
Causeway Olive	140000274	17	39	52	0	2	1	0	0	3	2	0	3	1	2	0	0	0	3
Chaseway Larry	610190338	32	56	68	0	1	2	2	2	3	3	0	3	3	3	4	2	1	3
Conway Harry	610189174	26	56	68	1	0	1	0	1	2	0	3	2	1	3	4	2	2	4
Easyway Slick	140000440	24	52	65	0	1	1	2	1	3	2	2	3	3	1	1	3	0	1
Fiveway Quint	610188549	26	56	68	0	1	1	1	1	3	1	3	1	2	1	4	3	1	3
Fourway Quad	610188536	16	44	57	1	0	1	1	0	3	1	0	3	1	1	2	0	0	2
Freeway Crowded	610189671	27	53	66	0	2	2	0	2	2	0	3	1	3	1	3	3	1	4
Hisway Helmut	140000749	24	52	65	0	1	1	2	1	3	2	2	1	1	2	2	3	0	3
Layaway Loomis	140002549	28	52	65	1	1	1	1	2	3	1	1	3	0	3	4	3	0	4
Myway Nancy	610001234	30	60	72	1	2	1	2	1	3	0	2	3	1	3	4	2	1	4
Newway Idea	610189544	34	58	70	1	1	1	2	1	3	3	2	3	3	4	4	2	1	3
Noway Neverlita	140000494	32	60	72	0	2	2	2	2	3	1	2	3	1	2	4	3	1	4
Oneway Only	610188295	23	53	66	1	0	1	2	1	3	2	0	3	1	0	4	2	0	3
Pathway Dawn	610189890	32	64	76	2	1	2	0	1	3	0	3	3	3	4	3	2	1	4
<b>Maximum Credit:</b>					2	2	2	2	2	3	3	3	3	3	4	4	4	4	4

Start | 194% | 3 of 5 | 11 x 9.5 in | 12:34 PM



# More reports...

Adobe Acrobat - [Math A FLRIC Report.pdf]

File Edit Document Tools View Window Help

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## Group Open-Ended Item Analysis for Math A

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**Dist Name:** Allway CSD  
**Bldg Name:** Easyway HS

**June 2002**

\*\*\* RATINGS \*\*\*

---

**Part II**

**QUESTION**	% OF POSS	0		1		2		3		4	
NUM - MAX - KEY IDEA		NUM	%	NUM	%	NUM	%	NUM	%	NUM	%
21 - 2 - 1	16.7	17	70.8	6	25.0	1	4.2	0	0.0	0	0.0
22 - 2 - 5	54.2	5	20.8	12	50.0	7	29.2	0	0.0	0	0.0
23 - 2 - 5	70.8	0	0.0	14	58.3	10	41.7	0	0.0	0	0.0
24 - 2 - 2	58.3	8	33.3	4	16.7	12	50.0	0	0.0	0	0.0
25 - 2 - 7	52.1	5	20.8	13	54.2	6	25.0	0	0.0	0	0.0

**Part III**

**QUESTION**	% OF POSS	0		1		2		3		4	
NUM - MAX - KEY IDEA		NUM	%	NUM	%	NUM	%	NUM	%	NUM	%
26 - 3 - 4	77.8	1	4.2	4	16.7	5	20.8	14	58.3	0	0.0
27 - 3 - 4	45.8	7	29.2	5	20.8	8	33.3	4	16.7	0	0.0
28 - 3 - 5	44.4	8	33.3	4	16.7	8	33.3	4	16.7	0	0.0
29 - 3 - 7	68.1	4	16.7	5	20.8	1	4.2	14	58.3	0	0.0
30 - 3 - 4	58.3	2	8.3	11	45.8	2	8.3	9	37.5	0	0.0

**Part IV**

**QUESTION**	% OF POSS	0		1		2		3		4	
NUM - MAX - KEY IDEA		NUM	%								
31 - 4 - 5	41.7	4	16.7	8	33.3	6	25.0	4	16.7	2	8.3
32 - 4 - 7	71.9	3	12.5	1	4.2	4	16.7	4	16.7	12	50.0
33 - 4 - 3	56.3	4	16.7	1	4.2	8	33.3	7	29.2	4	16.7
34 - 4 - 6	19.8	9	37.5	13	54.2	1	4.2	0	0.0	1	4.2
35 - 4 - 7	67.7	1	4.2	4	16.7	4	16.7	7	29.2	8	33.3

Friday, September 27, 2002

Page 1 of 1

194% | 4 of 5 | 11 x 9.5 in | Start | Inbox - Outlook E... | New Memo - Lotu... | weather.com - Lo... | CarrotsInk - Micr... | Water in Aruba | Microsoft PowerP... | Adobe Acrobat ... | 12:36 PM

# Important features

- ◆ ParScore
- ◆ Ability to change answer key without re-scanning
- ◆ Enhanced to score Regents Exams
- ◆ Ability to export scores for additional statistical analysis
- ◆ Ability to import answer key and scoring criteria from file
- ◆ Teleform
- ◆ Can scan page one to get immediate results and add data from page two after teacher scored
- ◆ Ability to export images to electronic storage and data retrieval software indexing fields
- ◆ Can be used for other applications including eforms

# ParScore software changes for NY State Regents

- ◆ Ability to receive scored open ended questions
- ◆ Ability to analyze open ended questions
- ◆ Ability to do score conversions to NY State issued Scale Scores
- ◆ Additional reports and features to be determined by NY State Department of Education and input from BOCES



# Reward Opportunities

- ◆ Eliminate manual data entry
- ◆ Increase accuracy
- ◆ Automate paper, electronic and hybrid (paper/electronic) forms



# Supports Other Applications

- ◆ Surveys
- ◆ Tests
- ◆ Evaluations
- ◆ Class Scheduling
- ◆ Report card data collection
- ◆ eForms conversion software available to change a form to a fillable PDF or HTML
- ◆ Ability to collect data with a fax modem



# Imaging and OMR Technology Comparison



**SCANTRON Imaging**

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[www.scantron.com](http://www.scantron.com)

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# Goals

- ◆ Image recognition systems and conventional OMR systems share the same goal of reducing data entry
- ◆ Fundamental differences exist in flexibility, form development and printing, ongoing costs, accuracy and compatibility with other technologies



# Form development & printing

- ◆ Form development
  - With imaging, forms can be developed with any computer program with few guidelines
  - With OMR, forms generally must be developed by the manufacturer
- ◆ Form printing
  - With imaging, forms can be printed by anyone
  - With OMR, forms generally must be printed by the manufacturer



# Cost differences

- ◆ Scanner is limited with OMR to only the manufacturer's scanner
- ◆ Scanner service is limited with OMR to only the manufacturer's service company

Forms design and printing costs are usually higher with OMR

# Accuracy

- ◆ Imaging systems are more tolerant of “invalid” marks such as check’s, x’s and /’s
- ◆ Imaging systems are reasonably tolerant of damaged forms
- ◆ OMR machines only guarantee 100% accuracy with a “valid” mark and the appropriate instrument
- ◆ OMR machines are generally intolerant of any form damage



# Compatibility

- ◆ Imaging systems are more open in terms of database connectivity and the ability to pass images to a retrieval system or the Internet
- ◆ OMR systems are restricted to interactive database connections accepting text only files (ASCII) and cannot pass images to a retrieval system or the Internet



# Conclusion

- ◆ Although imaging and OMR systems have similar goals, imaging systems have clear advantages in form development and printing, ease of use in quality control, versatile compatibility with other technologies & databases.



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