Practice Materials for Algebra 1 Mathematics

The following prompt, rubric, and sample student work can be used by educators with either the Student Work Analysis Protocol or the Calibration Protocol for Scoring Student Work.¹ In addition, since these samples have been scored and annotated, they can be used to help guide educators with aligning their scoring to these anchor samples developed by the original group of scorers. Follow the protocol(s) when using these materials.

Student work samples from the Rhode Island Interim Assessment Mathematics Algebra 1 Assessment

Math Selection: "Jess' Business Cards"

Prompt:

Jess plans to have new business cards designed and printed. She will use one of the following companies.

- Company P charges a \$20 design fee and \$15 per 200 cards printed.
- Company Q charges a \$50 design fee and \$7.50 per 200 cards printed.

At both companies, the number of cards printed must be in batches of 200.

- a. Write an expression to represent the cost of printing business cards at each company. Use n to represent the number of batches of 200 cards printed. Be sure to clearly label each expression with the correct company.
- b. Jess wants 1000 cards printed. Show which company is less expensive.
- c. For what **number of cards** printed, if any, is the cost of printing the cards the same for both companies? Show your work or explain how you found your answer.

¹ Both protocols can be found on the RIDE website at www.ride.ri.gov/EdEval-OnlineModules
Rhode Island Department of Education & the National Center for the Improvement of Educational Assessment, Inc.

Rubric: The rubric used for this task is a holistic rubric, therefore educators will decide on an overall score for the response.

Score	Description
4	5 Points
3	4 Points
2	2 or 3 Points
1	1 Point
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes: The following information should be used to guide the discussion of what constitutes a proficient response on this assessment.

Part a. 1 point for two correct expressions, correctly labeled (see sample response)

Part b. 2 points for correct demonstration that company Q is less expensive, with sufficient explanation or work shown to indicate correct strategy

OR

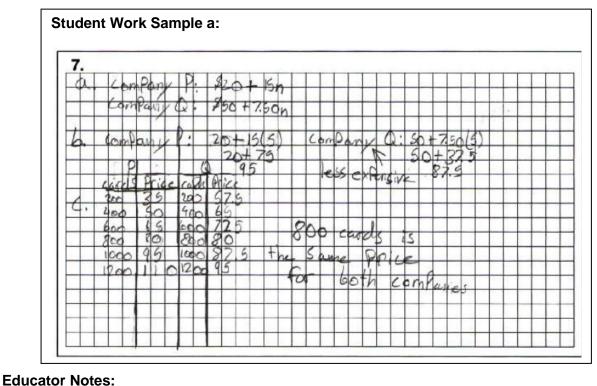
1 point for correct cost for each company with insufficient or no explanation or work shown or for correct strategy with incorrect or no answer

Part c. 2 points for correct answer, 800 (cards), with sufficient explanation or work shown to indicate correct strategy

OR

1 point for correct answer with insufficient or no explanation or work shown or for correct strategy with incorrect or no answer

Student Work: The following are samples of student work in response to this prompt. Anchor scores and annotations are included on a separate page for the facilitators use with the protocols.



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Student Work Sample B:

A) co.P - 20+15n co.Q - 50+7.50n

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B) co.P- 20+15(5) =95 co.Q- 50+7.50(5) = 87.50 Company Q is less expensive C) If Jess wanted 800 cards printed the prices from both companies would be the same. Both would cost her \$80. This is because for co.P 15(4)=60 +20= 80. For co.Q 7.50(4)=30 + 50= 80 as well.

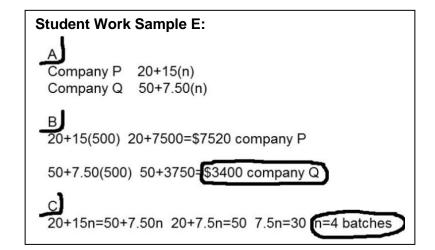
Student Work Sample C:

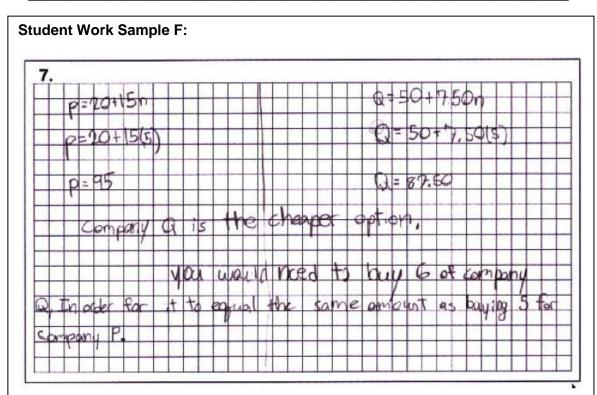
- a. company p: 15n+20company q:7.5n+50=
- b. company p: 15(5)+20=95 company q: 7.5(5)+50=87.5
- c. 800 cards 15(4)+20=80 7.5(4)+50=80

Educat	or Notes:			

Student Work Sample D:

C.) 800 cards is the same





Educat	or Notes:		

Student Work Sample G:

P; 20+15(n) Q; 50+7.50(n)

p; 20+15(500) 20+7500= 7520

Q; 50+7.50(500) 50+3250= 3300 Company Q is cheaper

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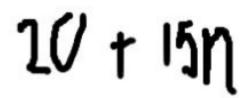
Student Work Sample H:

20+200n company P

50+200n company Q

Educat	tor Notes:			

Student Work Sample I:



Educat	or Notes:			

Student Work Sample J:

$$p= 20 + 15x$$

 $Q= 50 + 7.50x$

Student Work Sample K: 3. 20 + 15n Company P: 20 + 15n Company Q: 50 + 7.50n

Educator Notes:

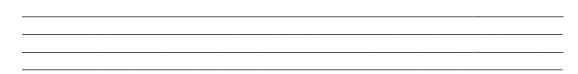
Student Work Sample L:

Q=7.50(5)+50

37.50+50

38.00

B.



Student Work Sample M:

A) C= cards c=20(15x200) C=50(7.50x200, C) 800 cards, both prices are 80\$.

B) 200x5=1000 15x5=75\$+20\$=9 5\$ (company p) 7.50x5=37.50+50\$=87.5 0(company q) company q is cheaper.

Educator Notes:

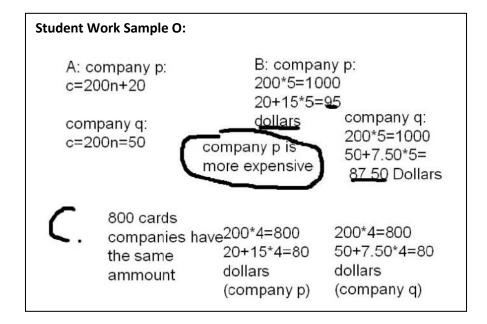
Student Work Sample N:

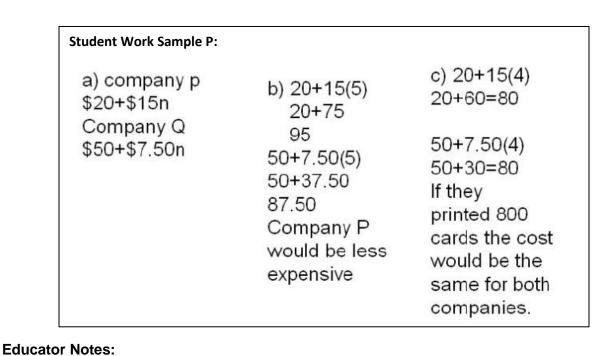
a:P=20+15n Q=50+7.50n

b:20+15(5)=\$95 50+7.5(5)=

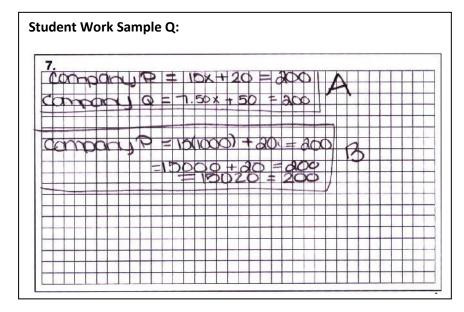
\$87.50

c:800 cards

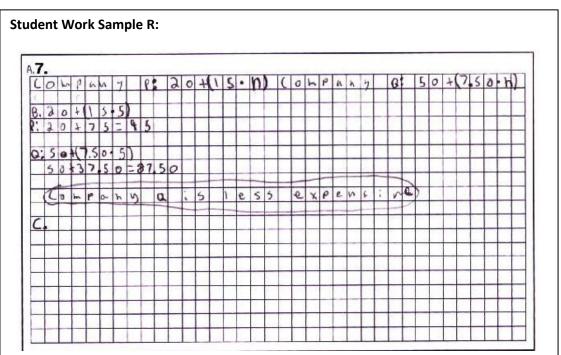




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Educator Notes:						
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Facilitator Notes: These samples of student work have been scored and annotations have been provided. See below to help guide educators with aligning their scoring to these anchor samples developed by the original group of scorers.

Sample A

Score: 4

A-1 B-2 C-2 = 5pts

Annotation:

Sample B

Score: 3

A-1 B-2 C-1 = 4pts

Annotation: In Parts A and B, the student is using dashes between the company label and the expressions, and not negative signs. Part C is a correct answer only, as the work only verifies the answer is correct (does not show where 4 comes from)

Sample C

Score: 3

A-1 B-2 C-1 = 4pts

Annotation: Part B has the correct costs, with sufficient work shown. Part C is a correct answer without work or explanation.

Sample D

Score: 2

A-0 B-1 C-1=2pts

Annotation: Part A is incorrect, as there are no variables used. Part B has the correct costs for each company without work. The work shown in A is incorrect, as it is set equal to incorrect amounts. Part C is answer only.

Sample E

Score: 2

A-1 B-0 C-1 = 2pts

Annotation: Part A is correct. Part B is incorrect. Uses 500 instead of 5. Part C shows correct strategy in solving, but leaves the answer as batches, and not number of cards.

Sample F

Score: 2

A-1 B-2 C-0 = 3pts

Annotation: In Part A, the expressions are clear, despite not being labeled Part A. Part B has the correct company totals, with work shown. Part C is incorrect.

Sample G

Score: 1

A-1 B-0 C-0 = 1pt

Annotation: Part A is correct. Part B is incorrect. While student has Q being cheaper, there is no correct work shown, and no correct company totals are given.

Sample H

Score: 0

A-0 B-0 C-0 = 0pts;

Annotation: Part A has incorrect expressions. Parts B and C are not attempted.

Sample I

Score: 0

A-0 B-0 C-0 = 0pts

Annotation: Only having 1 correct expression in Part A is insufficient for credit.

Sample J

Score: 2

A-1 B-2 C-0 =3pts

Annotation: In Part A, the use of x instead of n is fine. Part B has the correct costs with sufficient work shown. Part C is not attempted.

Sample K

Score: 1

A-1 B-0 C-0 = 1pts

Annotation: Part A has two correct expressions. Part B makes no attempt to solve, and Part C is not attempted.

Sample L

Score: 2

A-1 B-1 C-0 = 2pts

Annotation: Part A is correct. Part B has correct strategy shown, with a computation error in the total for Company Q. Part C is not attempted.

Sample M

Score: 2

A-0 B-1 C-1 = 2pts

Annotation: Part B has correct costs for each company, but the work shown involves incorrect math notation (run on equal signs), so no work credit. Part C has a correct answer only. The cost is not enough explanation.

Sample N

Score: 3

A-1 B-2 C-1 = 4pts

Annotation: Part B has correct costs, with sufficient explanation shown. Part C is answer only.

Sam	ple	0

Score: 3

A-1 B-2 C-1 = 4pts

Annotation: Part A has correct answers. Setting them equal to C is fine. Part B is correct. Part C has a correct answer, but insufficient explanation. Only proves the answer is correct, and does not show how the answer was found.

Sample P

Score: 2

A-1 B-1 C-1 = 3pts

Annotation: Part A is correct. Part B determines the correct costs for each company, but then says that P is cheaper. Correct strategy only. Part C has a correct answer, but does not show how the answer was found.

Sample Q

Score: 0

A-0 B-0 C-0 = 0pts

Annotation:

Sample R

Score: 2

A-1 B-2 C-0 = 3pts

Annotation: