

2004-2005 CSAP DEMONSTRATION PACKET

Grades 3 and 4 Mathematics





Demonstration Materials For the Grades 3 and 4 Mathematics CSAP

This packet was assembled through the Student Assessment Unit of the Colorado Department of Education. Its purpose is to inform Colorado teachers of the structure and focus of the new 3rd and 4th grade Mathematics CSAP tests, provide examples of items that could be included, and give references to other related resources.

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Thanks to Patty Bell, Mathematics educator, for helping define the necessary contents of this packet and to Margaret Delgado, Program Assistant, for assembling the packet to be available in both hardcopy and electronic form.

Glenn Bruckhart, Senior Consultant – Mathematics
Beth Celva, Director

coe Student Assessment Unit

September, 20, 2004

Grades 3 and 4 Mathematics CSAP Factsheet

Grade 3		Grade 4
2	Number of Sessions	3
55 min.	Time Allowed per Session	55 min.
20	Items per Session	23
	Item types per Session	
16	Multiple Choice (1 point)	18
	Constructed Response	
3	Short (2 points)	2
1	Medium (3 points)	2
0	Extended (4 points)	1
50	Total Test Points	96
	% of Points per Standard	
1> 20%		1> 20%
2 & 3> 25%		2> 15%
4 & 5> 35%		3> 15%
6> 20%		4 & 5>30%
		6> 20%
Pattern Blocks	Manipulative Allowed	Pattern Blocks
Ruler		Ruler
Counters		Counters
None	Subcontent Areas	Number and Operation
		Patterns
		Measurement
None	Spanish Version	None

Thoughts for your consideration from the item reviewers as you prepare 3rd and 4th grade students for the Math CSAP

- 1. Be sure to look at the Standards and Frameworks for the test. Available on the CDE website http://www.cde.state.co.us/cdeassess/csap/frameworks/index.htm. This will guide you in knowing what is expected and what vocabulary to introduce. Familiarity with this document will guide you in planning for your lessons.
- 2. There are sample items available there as well. Also, visit the NAEP (National Assessment of Educational Progress), http://nces.ed.gov/nationsreportcard.htm, website for similar items that come with results from previous administrations of that test and student work samples.
- 3. Teach a balanced program. Students need to be able to do computation on the test, but all strands are covered by the test. Most computation is in word problems and embedded in problem solving situations.
- 4. Give students practice with multiple-step problems.
- 5. Help students learn to communicate about the mathematics they are using. In the classroom this may take the form of class discourse, sharing strategies, presentations of solutions, and written explanations in journals.
- 6. Train students to work with units/identifying labels when answering a math question. This will attach meaning to the number and help to make sense of the question posed and the answer found. Another way to think about this is that the number is an adjective that further explains the noun that answers the question.
- 7. When there is a line after a question or in a box, that is where an answer is to be written. Graders will make every attempt to give credit to students for any work done, but training children to write the answer on the line when prompted to do so will enhance their work.
- 8. In some items, critical parts of the directions may be in boldface. Students should pay attention to those words. In addition, problems that have multiple parts will signal that to students with Part A, Part B, etc. Alert students to watch for these.
- 9. Students are to use the test booklet for scratch paper, showing their work. Try to get students to not erase attempts. They may get some credit for partially correct work/attempts even if incomplete or incorrect answers result.
- 10. Manipulatives provided for this test will be: a punch-out set of Pattern Blocks, inch square counters, a ruler marked in centimeters and inch/half inch. Students should be familiarized with pattern blocks and use of a ruler through lessons in your classroom.
- 11. Students should be taught to deal with names used in prompts and story problems as they do in the reading and writing tests.
- 12. Number talks are an excellent teaching tool for getting students to think about how computation concepts are developed. Make sure that students see many different presentations of computation problems: horizontal and vertical, blank and box, different signs.

Sample Test Items

Items that appear on the CSAP test are written for the Colorado State Mathematics Standards. Specifically, each item must match one of the statements on the grade level Assessment Framework for which it was written. (See Grades 3 and 4 Math Assessment Frameworks at http://www.cde.state.co.us/cdeassess/csap/frameworks/index.htm) A panel of Colorado teachers reviews the match and appropriateness of each item. Only those items that are approved by this panel appear on the CSAP tests.

The seven problems that follow are samples of items that have gone through this process and could have been used on the 3rd and 4th grade Math CSAP for 2005, but are released to serve as examples. The specification for each item follows:

Item	Item	Framework	Approved
Number	Type*	Reference	for Grade
1	MC	5.1a	3
2	SCR	3.1a	3 or 4
3	MCR	6.1a	3
4	ECR	2.3a	4 or 5
5	SCR	1.2c	4 or 3
6	MC	4.1a	4 or 3
7	MC	1.1a	4 or 5

4 or 3 = 4th grade item also approved for grade 3.

SCR = Short Constructed Response

MCR = Medium Constructed Response

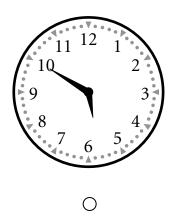
ECR = Extended Constructed Response

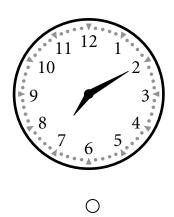
Note: An item may cover more than one statement but will be listed with only one reference. For example, item 3 above might also reference frameworks statement 1.2c.

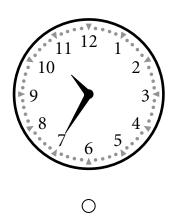
Each constructed response item is scored using the appropriate holistic rubric found at http://www.cde.state.co.us/cdeassess/csap/rubrics/as math rubrics.htm. More specific scoring guides are provided for review with items that are released to the public. There are also sample student responses for each possible score of an item.

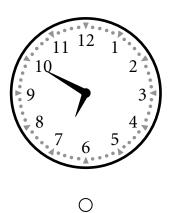
^{*} MC = Multiple choice

1 Which clock shows the time 6:50?







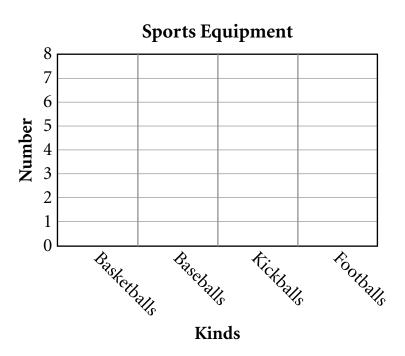


2 Look at the table below.

Sports Equipment

Kind	Number
Basketballs	5
Baseballs	2
Kickballs	3
Footballs	2

Use the information from the table to complete the bar graph below.



3 Marcus has the blocks shown in the picture below.

Part A How many blocks does Marcus have? On the line below, write your answer.

Part B Marcus gives 10 blocks to a friend. On the picture of blocks, draw a circle around 10 blocks.

Part C On the line below, write the number sentence Marcus can use to find the number of blocks that remain.

Part D Look at the number sentence below.

$$24 - 13 =$$

In the space below, draw blocks to show this number sentence.

The table below shows the number of hot dogs and the number of hot dog buns there are in different numbers of packages.

Hot Dogs and Hot Dog Buns

Number of Packages	Number of Hot Dogs	Number of Hot Dog Buns
1	8	10
2	16	
3		30
4	32	
5		50

Part A Complete the table to show the number of hot dogs and the number of hot dog buns in different numbers of packages.

Part B On the lines below, write the rule you used to find the number of hot dogs in the packages.

On the lines below, write the rule you used to find the number of hot dog buns in the packages.

Part C Kevin is bringing hot dogs and hot dog buns to a picnic. He has 8 packages of hot dogs and 8 packages of hot dog buns. On the lines below, explain how you know that Kevin will not have the same number of hot dogs and hot dog buns.
Part D Kevin has 8 packages of hot dog buns. What is the total number of packages of hot dogs he needs in order to have one hot dog for each hot dog bun? In the space below, show your work and write your answer on the line.
packages of hot dogs

5 Two different ways of representing the number 527 are shown below.

$$527 = 500 + 20 + 7$$

 $527 = 4 \text{ hundreds} + 11 \text{ tens} + 17 \text{ ones}$

Part A On the line below, write another way to represent 527.

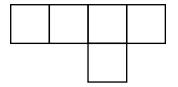
$$527 =$$

One way of representing a number is shown below.

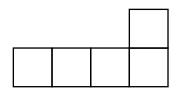
1 thousand + 3 hundreds + 18 tens + 2 ones

Part B On the line below, write the number that is represented.

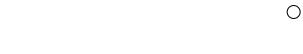
6 Kyle made the figure below with his counters.

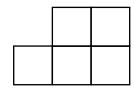


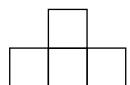
Which of these is congruent to Kyle's figure?





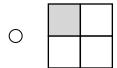


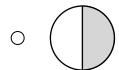




0

7 Which figure is shaded **more** than 0.50?









NAEP Questions and Other Resources

The National Assessment of Educational Progress (NAEP) has tested students nationwide for the last twenty years at grades 4, 8 and 12. Over those years they have developed a resource bank that now contains about 160 release items just for 4th grade. Most of these items are close enough to the Colorado Model Content Standards that they could appear on CSAP tests. The NAEP website not only contains items but a wealth of information about students performance on these items. What follows is a sample of some of these items and also some of the performance information available.

Item	Item	Colorado	Related Information Included
Number	Type	Standard	
11	MC	6	Simple and disaggregated performance results
4	MC	6	Simple performance results
15	CR	1	Results, scoring guide, student work
18	CR	1	Scoring guide, results, student work

Disaggregated performance results are available for all release items on the NAEP website. They included not only how certain groups performed, but for multiple choice, they show what percent of students choose each distracter. All constructed response items do contain scoring guides and student work for each score level.

Although the sample selected for this demonstration packet represents only two of the Colorado Standards, all of the Colorado Standards are represented in the NAEP release item bank available to you at the website shown below. This is an excellent source of items for Colorado teachers to use instructionally.

It should be noted that in the last NAEP data release, Colorado students fared very well with our 8th grade results being in the top four states in the nation. At grade 4, Colorado students were slightly above the average.

NAEP Website: http://nces.ed.gov/nationsreportcard/ITMRLS/qtab.asp

In addition, one can visit the Department of Education website for any state and find sample test items. For example the website http://www.ode.state.oh.us/proficiency/Diagnostic_Achievement/materials.asp contains a sample grade 3 mathematics achievement test for the state of Ohio.

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The Nation's Report Card (home)

Previous Search Results

Question 11 of 176

Tool Help

Add Question

To Print Folder: Empty

Subject:Math [Subject Info] Description: Given a context, identify a multiple of 6 Grade: 4 Block: 2003-4M6 No.:11

Question Performance Data Content Classification Scoring Guide/Key Student Responses More Data

Printable Version

11. Six students bought exactly enough pens to share equally among themselves. Which of the following could be the number of pens they bought?

A) 46 B) 48 C) 50 D) 52

NAEP NQT v2.0 -- Performance Data

Subject: Math

Grade: 4

Block: 2003-4M6

No.: 11

2003 National Performance Results

0	Omitted Item 2%	Incorrect 47%	Correct 51%	Score Percentage of Students
100		%	1%	of Students

- These results are for public and nonpublic school students. Percentage may not add to 100 due to rounding.

Subject: Math

Grade: 4

Block: 2003-4M6

Given a context, identify a multiple of 6 [M018401] Average Scale Score and Row Percentage (with Standard Errors)	ntify a mul	tiple o	of 6 /м ntage	018401 (with	<i>)</i> Stand	ard E	rrors)	•				-								
Overall Performance				>			В	·			ဂ				D				Omitted	ă.
TOTAL	Avg. Row Avg. Row Avg. Row Score (S.E.) Pct (S.E.) Score (S.E.) Pct. (S.E.) Pct. (S.E.) Pct. (S.E.) Score (S.E.) Pct. (S.E.)	Avg. 4 Score (S.E.) 9 223 0.4	(S.E.)	Row Pot 29%	Row Avg. Pct (S.E.) Score(S.E.) 29% 0.4 248 0.4	Avg. Score 248	(S.E.) 0.4	Row Pd. 51%	(S.E.)	Row Avg. Pd.(S.E.) Score (S.E.) 51% 0.5 218 0.7	(S.E.) 0.7	Row Pct. 12%	(S.E.) 0.3	Avg. Score (219	Avg.) Score (S.E.) 3 219 0.8		S.E.) 0.2	Row Avg. Row Pct. (S.E.) Score (S.E.) Pct. (S 7% 0.2 222 2.0 2%	s.E.) 2.0	Row Pct. (\$ 2%
ACHIEVEMENT LEVEL			_	⊳			œ	*			ဂ	•			ם				Omitted	ğ.
	7	Avg. I Score	Avg. Score (S.E.)	Row Pct.	Row Avg. Pct. (S.E.) Score (S.E.)	Avg. Score	(S.E.)	Row Pd.	(S.E.)	Avg. Score (S.E.)	(S.E.)	Row	(S.E.)	Avg. Score (S.E.)	S.E.)	Row Pdt. (S.E.)	Avg. Row Score (S.E.) Pct. (S	S.E.)	Row Pct. (\$
Advanced	1370			2%	0.6	291 0.5	0.5	78% 96%	96% 0.8) 	0	1%	0.4	250	0	3 % %	0.4	260	<u> </u>	1 8 8
Basic	17240	231	0.2	36%	0.5	234 0.2	0.2	43%	0.7	230	0.5	13%	0.5	231	0.4	7%	0.4	231	1.5	2%
Below Basic	9840	9840 197 0.5	0.5	41%	0.8	197	0.6	24%	0.9	194	0.7	21%	0.7	192	1.0	12%	0.5	191	1.9	3% %

options to consider. They are: A word about the options that exist under NAEP questions as shown on the previous page with Item 11. For each item there are six

Question – This displays the actual item as it appeared on the test.

Scoring Guidelines – This contains the correct answer for a multiple choice item and the criteria for awarding different scores for a to Colorado Mathematics Standards 1 and 6. The NAEP classifications fit very easily with the Colorado Mathematics Standards. Performance Data – This shows how students did on this item. For item 11, 51% answered correctly, 47% incorrectly and 2% not at all. Content Classification – For Item 11 content classification was given as "Number Sense, properties and operations". This corresponds

selected by 24% of this group. This can provide insights into misconceptions students may have. In addition, one can find performance more students (41%) who were "Below Basic" selected option A [46] for the answer rather than the correct option B [48] which was only Student Responses - These are only available for constructed response items. (See Items 15 and 18 in this packet.) constructed response item. (See Items 15 and 18 in this packet.) breakouts by different genders, ethnicities, and residential status (city, suburbs, or rural) to name just a few. multiple choice by subgroups of students. This packet shows only the subgroup defined by different performance level. It shows that More Data – A small portion of the data available for item 11 is shown above. It informs you what selections students made for a

0.2 0.2 0.3 0.3 0.3 O.

Subject: Math

Grade: 4

Block: 2003-4M7

No.: 04

4. Sam placed cookies on a cookie sheet to form 2 rows with 6 cookies in each row. Which of the following number sentences best describes this situation?

C) 6 ÷ 2 = 💹 B) 2 + 6 = 💹

D) 6 – 2 = 🔝

Did you use the calculator on this question?

0 700

°s 0

2003 National Performance Results

Subject: Math

Grade: 4

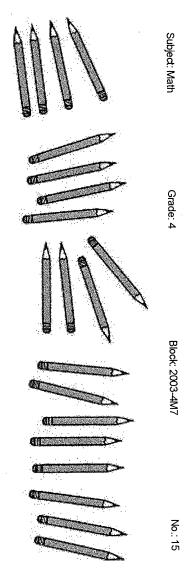
Block: 2003-4M7

%::04

100	0	
	3%	Omitted Item
	14%	Incorrect
83%		Correct
Percentage of Students	Percen	Score

Note:

- These results are for public and nonpublic school students.
 Percentage may not add to 100 due to rounding.



15. Together, Sara and Brendan have 20 pencils. Sara says 1/4 of the pencils are hers. Brendan says 15 of the pencils belong to him. Explain how they both could be right. Use words or drawings.

Did you use the calculator on this question?

O Yes

Subject: Math

Grade: 4

Block: 2003-4M7

No.: 15

°S 0

2003 National Performance Results

100	O	
	1%	Off Task
	9%	Omitted Item
61%		Incorrect
	18%	Partial
	11%	Correct
Percentage of Students	Percer	Score

- Note: These results are for public and nonpublic school students.
- Percentage may not add to 100 due to rounding.

Subject: Math

Block: 2003-4M7

No.: 15

Scoring Guide

Solution:

They can both be right because 1/4 of 20 = 5 and 20 - 5 = 15

1/4 is 5 and 3/4 is 15

Sara 1/4 or 5 Brendan 3/4 or 15

Score & Description

Correct response

Correct

Partial

Demonstrates any one of the following 1/4 is 5

3/4 is 15

Note: Answer must be connected to a fraction. 5 + 15 = 20 is NOT sufficient for a score of 2.

유 "Sara has 5" (5 must be connected to Sara; if states Sara has 5 because 20 - 15 = 5, score is

Incorrect

Incorrect response (includes 20 - 15 = 5, 5 + 15 = 20, and switching names)

situation were consistent. To answer the question, the student needed to observe that the fractional part has meaning in terms of the number of items, or that the number of items can be number of items—and the student needed to justify that these two interpretations of the same In this question the student was given information in two different ways—a fractional part and a represented as a fractional part of the whole amount. Students were permitted to use a calculator.

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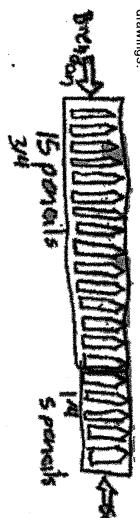
Subject: Math

Grade: 4

Block: 2003-4M7

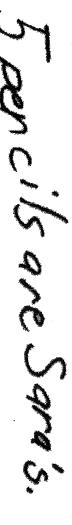
No.: 15

15. Together, Sara and Brendan have 20 pencils. Sara says 1/4 of the pencils are hers. Brendan **Correct - Student Response** says 15 of the pencils belong to him. Explain how they both could be right. Use words or drawings.



Partial - Student Response

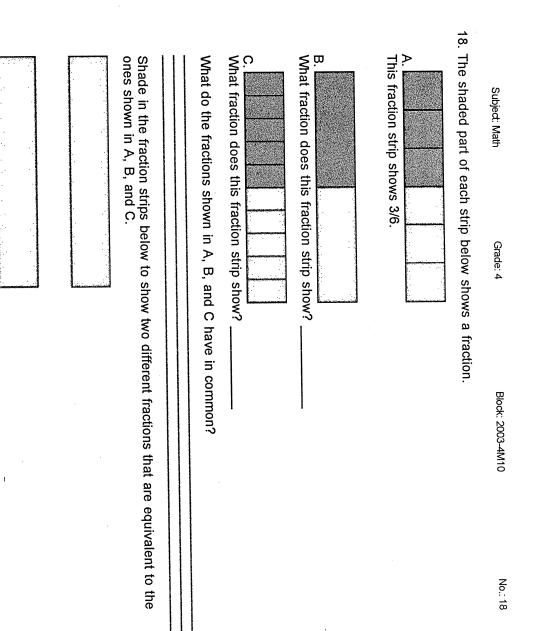
15. Together, Sara and Brendan have 20 pencils. Sara says 1/4 of the pencils are hers. Brendan says 15 of the pencils belong to him. Explain how they both could be right. Use words or drawings.



Incorrect - Student Response

15. Together, Sara and Brendan have 20 pencils. Sara says 1/4 of the pencils are hers. Brendan says 15 of the pencils belong to him. Explain how they both could be right. Use words or drawings.





)

Subject: Math

Grade: 4

Block: 2003-4M10

No.: 18

Solution:

Scoring Guide

Response 1: There are a total of 5 responses required for this problem:

Part 1 (B) 1/2

Note: If student draws a model for B or C and names it correctly, it will be accepted Acceptable forms of 1/2: 1 out of 2, one half, 1:2, $1 \div 2$, 50%, 1\2, $\frac{1}{3}$ Note: If student draws a model for B or 0 and 1:2.

Response 2:

Part 1 (C) 5/10 or 1/2

Response 3:

Part 2. There are many possible answers, e.g.,

They are equivalent fractions.

They all equal 1/2.

They are all equal.

They are all the same size.

They all end at the same place.

They are all 3 centimeters long. The bottom number is twice the top number.

Unacceptable responses:

They are all rectangles.

They are the same.

They are all long and skinny.

The top number is odd and the bottom number is even.

They are all shaded.

They are all 6 cm. long.

They are even.

They are alike.

Responses 4 and 5:

Part 3. Any fraction equivalent to 1/2, other than those shown in Part 1

(2 different responses required), e.g.,

6/12 acceptable (but needs "6/12"since division marks on right are missing.)

Acceptable responses:

Correct divisions and shading, wrong fraction. Correct divisions, no shading, right fraction.

Unacceptable responses: Right fraction but wrong shading.

again in Part 3. equivalent to 1/2) correctly, it was scored correct. However, the same fraction cannot receive credit Note: If a student draws a model for B or C (Response 1 or 2) and names the fraction (it must be

Score & Description
Extended
All 5 responses correct
Satisfactory
Any 4 responses correct
Partial
Any 3 responses correct
Minimal
Any 1 or 2 responses correct
Incorrect
Incorrect response

In this question the student needed to demonstrate an understanding of equivalent fractions in the context of a pictorial representation of the fractions. Students were asked to convert both from pictorial representations to numerical representations and from numerical representations to pictorial representations.

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National Center for Education Statistics

Institute of Education Sciences, U.S. Dept. of Education (map) 1990 K Street, NW, Washington, DC 20006, USA, Phone: (202) 502-7300

Subject: Math

Grade: 4

Block: 2003-4M10

No.: 18

2003 National Performance Results

100	0
0%	Off Task
7%	Omitted Item
6%	Incorrect
36%	Minimal
21%	Partial
11%	Satisfactory
19%	Extended
Percentage of Students	Score

- These results are for public and nonpublic school students. Percentage may not add to 100 due to rounding. Note:

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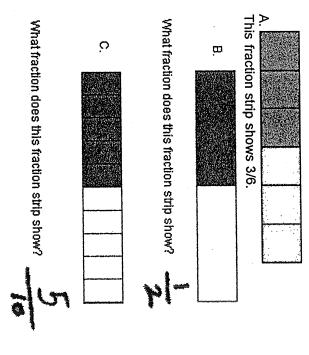
National Center for Education Statistics

Institute of Education Sciences, U.S. Dept. of Education (map) 1990 K Street, NW, Washington, DC 20006, USA, Phone: (202) 502-7300

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Extended - Student Response

18. The shaded part of each strip below shows a fraction.



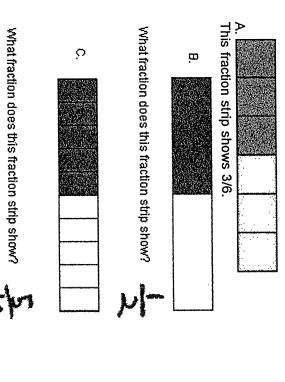
What do the fractions shown in A, B, and C have in common?

all equipment fractions

Shade in the fraction strips below to show two different fractions that are equivalent to the ones shown in A, B, and C.

Satisfactory - Student Response

18. The shaded part of each strip below shows a fraction.



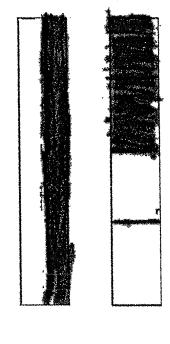
What do the fractions shown in A, B, and C have in common? They all shade half of

the replanate

8/17/04 8:04 AM

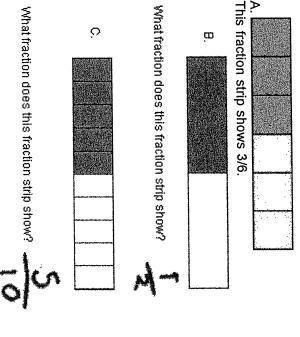
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Shade in the fraction strips below to show two different fractions that are equivalent to the ones shown in A, B, and C.



Partial - Student Response

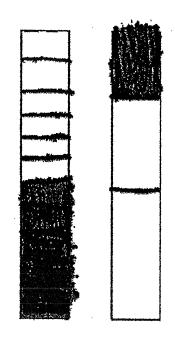
18. The shaded part of each strip below shows a fraction.



What do the fractions shown in A, B, and C have in common?

You Just and two marks to count many bor.

Shade in the fraction strips below to show two different fractions that are equivalent to the ones shown in \mathbb{A} , \mathbb{B} , and \mathbb{C} .



Minimal - Student Response

18. The shaded part of each strip below shows a fraction.

ς.	What fraction does this fraction strip show?	В.	A. A. This fraction strip shows 3/6.
	2		

What fraction does this fraction strip show?

What do the fractions shown in A, B, and C have in common?

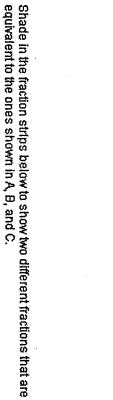










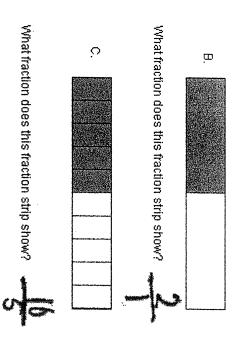




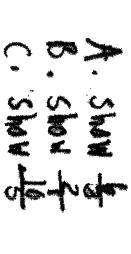


18. The shaded part of each strip below shows a fraction.





What do the fractions shown in A, B, and C have in common?



Shade in the fraction strips below to show two different fractions that are equivalent to the ones shown in A, B, and C.

