

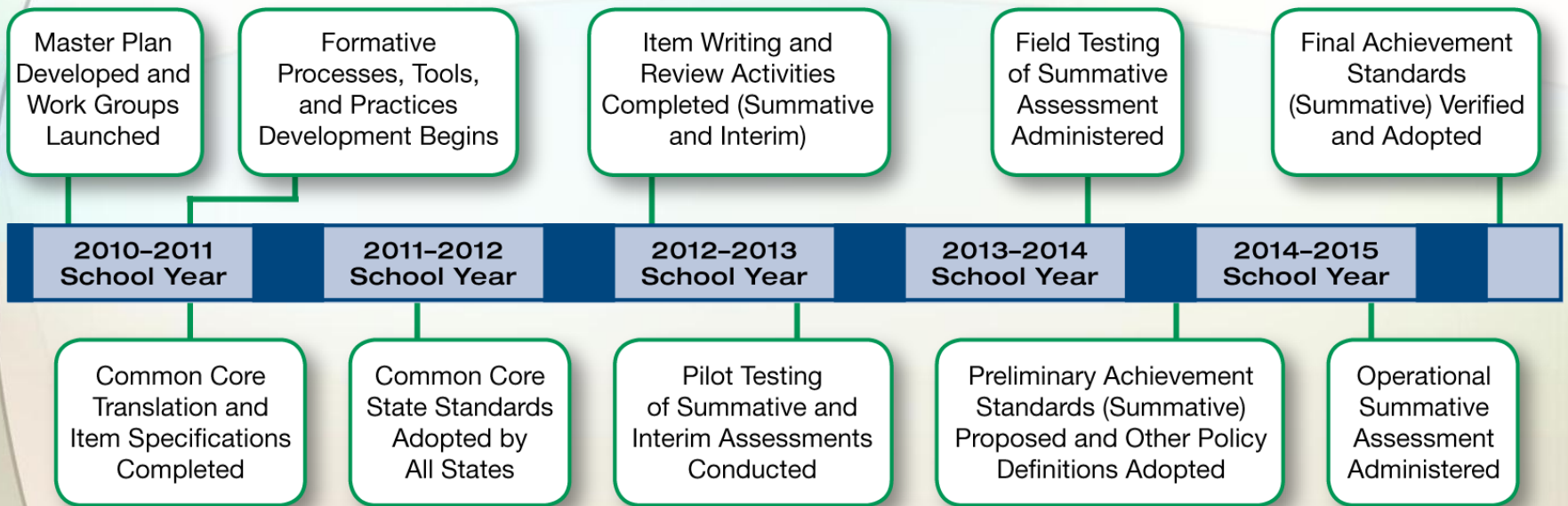


Preparing for Smarter Balanced Math Assessments

Bryan Toller

Mathematics Assessment Specialist
Oregon Department of Education

DEVELOPMENT TIMELINE



STUDENT PERSPECTIVES

“Typing was hard but I thought it [test] was more different and cool. Writing is good because I can write down my thoughts. I have good explanations that I want someone to hear.” –**Jacklyn, 5th Grade**

“Practice typing because there’s a lot of typing, and practice essays...how to do them...how to write them.” –**Van, 4th Grade**

“Practice typing.” –**Darbi, 5th Grade**

“...Good to teach us [students] how to go more in-depth with essay, paragraph, and sentence structure.” –**Ella, 6th Grade**

“Tell them they need to prepare for not just clicking an answer but wording it [responses] in a way that makes sense...work on typing and work on how to answer in words.” –**Sicily, 6th Grade**



MOVING FORWARD

2013-14	2014-15 and beyond
OAKS Reading and Writing	Smarter Balanced ELA
OAKS Math	Smarter Balanced Math
OAKS Science and Social Sciences	OAKS Science and Social Sciences
Extended Assessment	Extended Assessment
ELPA	ELPA
Kindergarten Assessment	Kindergarten Assessment

New Portal Address for OAKS: <http://oaksportal.org>



TESTING WINDOWS

Smarter Balanced Math	March 3 rd to June 12 th **
Smarter Balanced ELA	March 3 rd to June 12 th **
Science and Social Sciences	January 6 th to June 12 th
12 th Grade Retest Math and Reading	January 6 th to June 12 th
12 th Grade Retest Writing	January 6 th to March 13 th
ELPA	January 6 th to April 15 th
Kindergarten Assessment	August 11 th to October 23 rd

**Testing may begin after students receive 66% of instruction Grades 3-8, and 80% of instruction High School



Mathematics

Summative Spring 2015
Effective Date: 3/28/2015

The scale, units, and cut-scores are illustrative and are expected to change. Score summaries will be revised in Summer 2014, and tailored by grade and subject in terms of the knowledge, skills, and processes that you have demonstrated you can do.

8 Students in Grades 8 through 12 will see Consortium-common Higher Ed policy information, and a State-Customizable link to state resources:
<http://stateresources.link>

Overall Score

1829 Adequate Understanding

6 Score summary: A student at Level 3 demonstrates Adequate Understanding of and ability to apply the mathematics knowledge and skills needed for success in college and careers, as specified in the Common Core State Standards.

[Find out more >>](#)



π Concepts & Procedures

9 At/Near Standard

Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.

Problem Solving and Modeling & Data Analysis

At/Near Standard

Students can solve a range of complex, well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies. Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

Communicating Reasoning

At/Near Standard

Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

10 Student was eligible for these accommodations, but they were not used

Scribe

Print on Demand

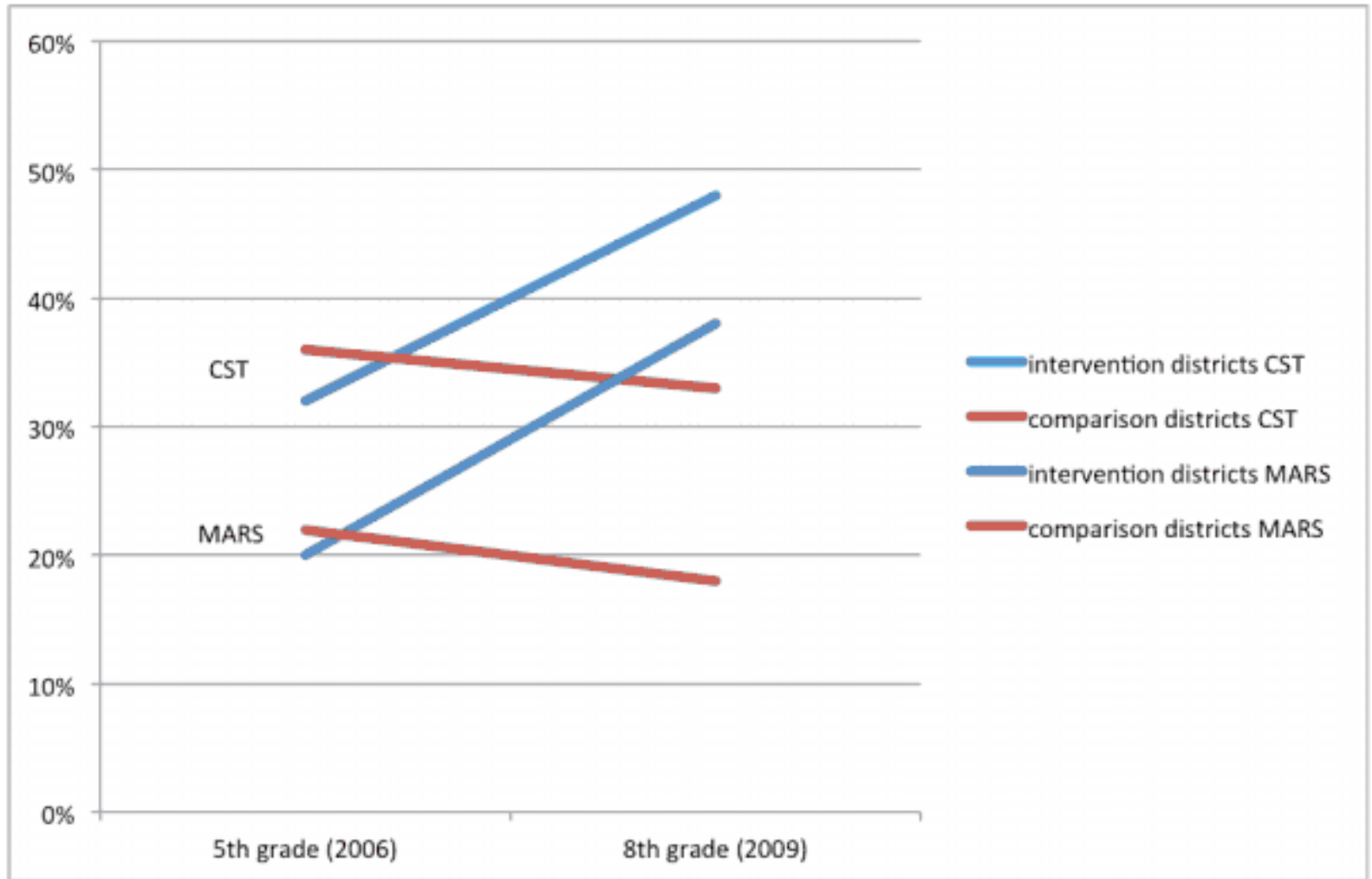


“...the best preparation for the CCSS assessments, with their commitment to assessing all the standards, including the Standards for Mathematical Practice, is high-quality instruction...”

NCTM President Diane J. Briars



STUDENT ACHIEVEMENT BEFORE AND AFTER INTERVENTION



(Boaler & Foster, 2014)



MARS TASK

Baseball Jerseys

This problem gives you the chance to:

- work with equations that represent real life situations
-

Bill is going to order new jerseys for his baseball team.

The jerseys will have the team logo printed on the front.

Bill asks two local companies to give him a price.



1. 'Print It' will charge \$21.50 each for the jerseys.

Using n for the number of jerseys ordered, and c for the total cost in dollars, write an equation to show the total cost of jerseys from 'Print It'.

2. 'Top Print' has a one-time setting up cost of \$70 and then charges \$18 for each jersey.

Using n to stand for the number of jerseys ordered, and c for the total cost in dollars, write an equation to show the total cost of jerseys from 'Top Print'.

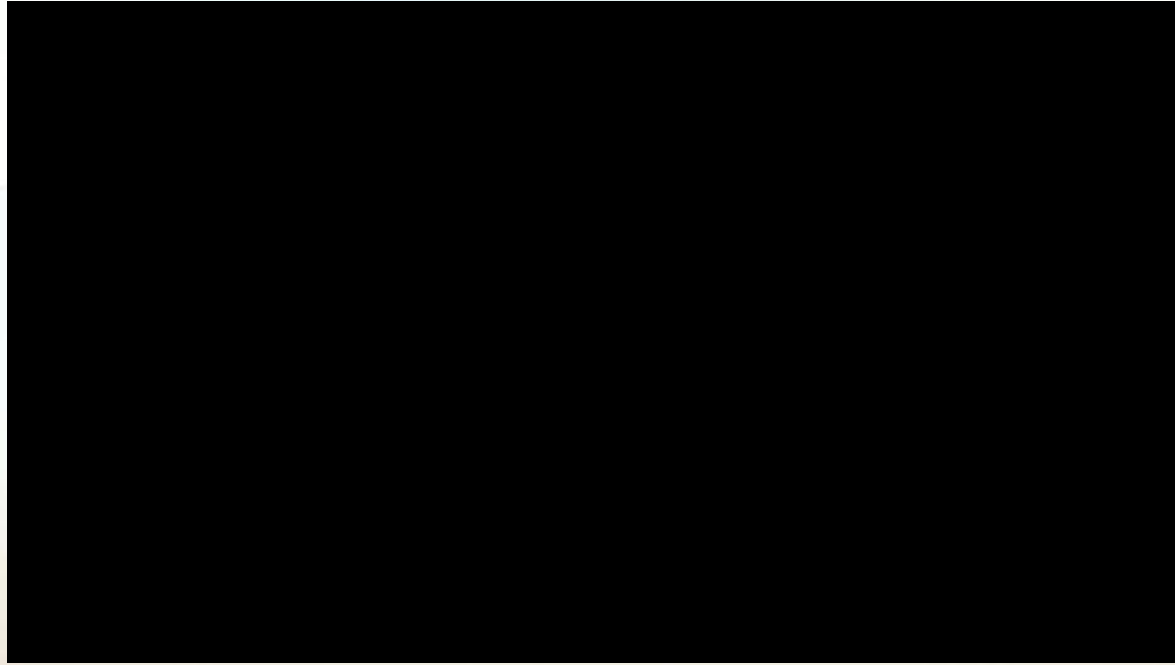
3. Bill decides to order 30 jerseys from 'Top Print'.

How much more would the jerseys cost if he buys them from 'Print It'?
Show all your calculations.

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from 'Top Print' to be less than from 'Print It'.
Explain how you figured it out.
-



PERFORMANCE ASSESSMENT TASKS



Video: How to Learn Math: Teaching for a
Growth Mindset

<http://youtu.be/EbhJk62N05I>



SIX ITEM TYPES

1. Selected Response
2. Constructed Response
3. Extended Response
4. Technology Enabled
5. Technology Enhanced
6. Performance Tasks



SELECTED RESPONSE

SINGLE RESPONSE— MULTIPLE CHOICE

Select the statement that explains how the values of the numbers 420 and 4200 are different.

- Ⓐ 4200 is 1000 times as large as 420
- Ⓑ 4200 is 100 times as large as 420
- Ⓒ 4200 is 10 times as large as 420
- Ⓓ 4200 is 1 time as large as 420



SELECTED RESPONSE

MULTIPLE CORRECT OPTIONS

Select **all** equations that are true.

$\frac{4}{10} = 0.04$

$\frac{17}{100} = 0.17$

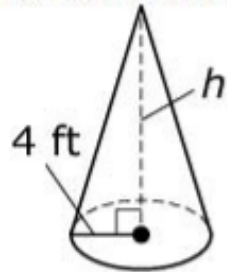
$\frac{9}{100} = 0.09$

$\frac{6}{100} = 0.60$



CONSTRUCTED RESPONSE

A cone with radius 4 feet is shown. Its approximate volume is 165 cubic feet.



Enter the height of the cone, in feet. Round your answer to the nearest hundredth.



1	2	3
4	5	6
7	8	9
0	.	-



CONSTRUCTED RESPONSE

Multiply and combine like terms to determine the product of these polynomials.

$$(2x - 3)(5x + 6)$$

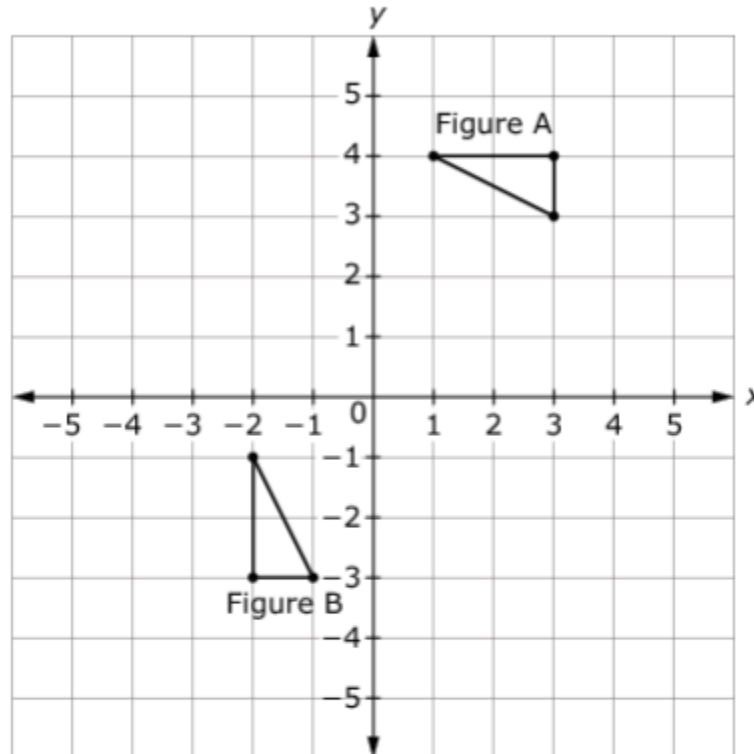
← → ↶ ↷ ✖

1	2	3	x								
4	5	6	+	-	*	÷					
7	8	9	<	≤	=	≥	>				
0	.	-	$\frac{\square}{\square}$	\square^\square	\square_\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π	i
			sin	cos	tan	arcsin	arccos	arctan			



EXTENDED RESPONSE

Two figures are shown on the coordinate grid.

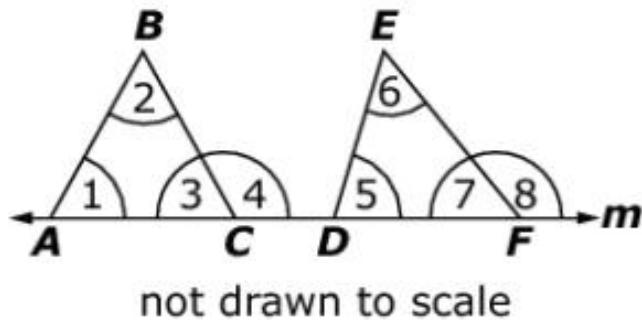


Show that Figure A and Figure B are congruent by describing a sequence of basic transformations that maps Figure A onto Figure B. In your response, be sure to identify the transformations in the order they are performed.



TECHNOLOGY ENABLED

The base of triangle ABC and the base of triangle DEF lie on line m , as shown in the diagram.



The measure of $\angle 4$ is less than the measure of $\angle 8$.

For each comparison, select the symbol ($<$, $>$, $=$) that makes the relationship between the first quantity and the second quantity true.

First Quantity	Comparison	Second Quantity
$m\angle 3$	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> $<$ $=$ $>$ </div>	$m\angle 7$
$m\angle 1 + m\angle 2$	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> $<$ $=$ $>$ </div>	$m\angle 5 + m\angle 6$



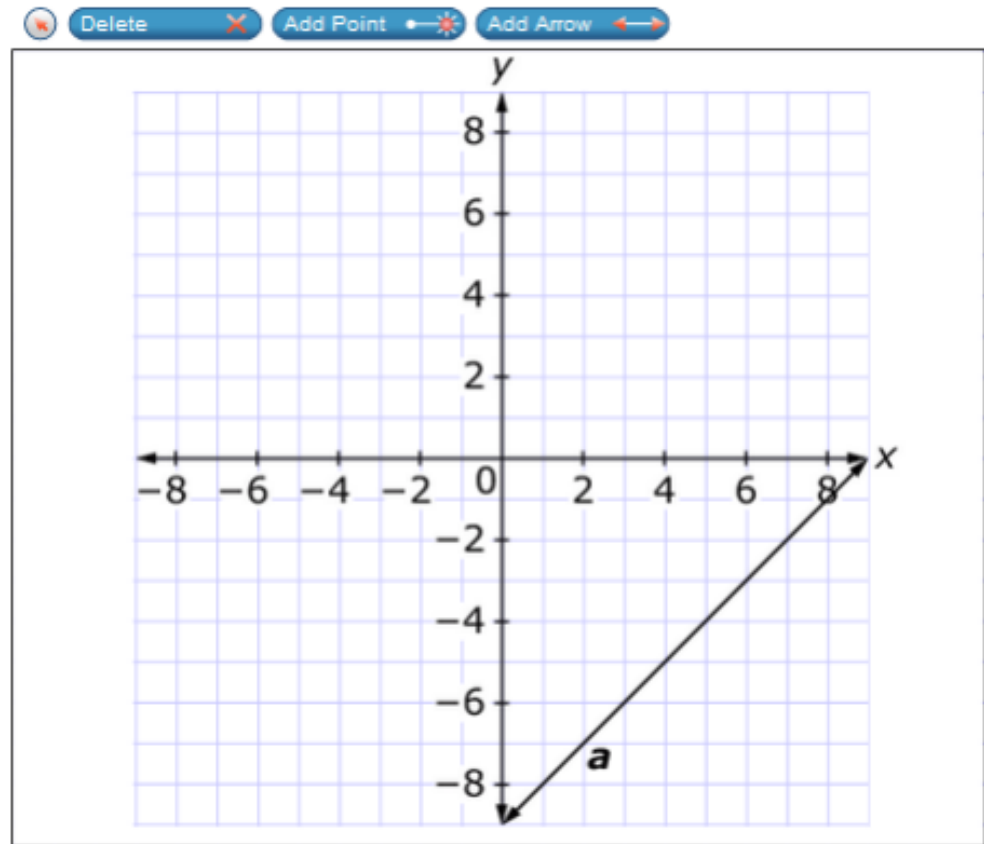
TECHNOLOGY ENHANCED

1834



Line a is shown on the graph. Use the Add Arrow tool to construct line b on the graph so that:

- Line a and line b represent a system of linear equations with a solution of $(7, -2)$.
- The slope of line b is greater than -1 and less than 0 .
- The y -intercept of line b is positive.



4TH GRADE PERFORMANCE TASK

A TRIP TO THE ZOO

Anna and her family go to the zoo. The zoo ticket prices, snack shop menu, and gift store prices are shown in the tables.


Snack Shop Menu

Food	Price
Hamburger	\$5
Cheeseburger	\$6
Salad	\$3
Pizza	\$3
Drinks	Price
Water	\$1
Milk	\$2
Juice	\$3
Soda	\$3

Zoo Ticket Prices

Type of Ticket	Price
Adult (ages 12-64)	\$16
Senior (ages 65+)	\$13
Child (ages 2-11)	\$11
Under 2	Free

Gift Store Prices

Gift	Price
 Stuffed panda bear	\$ 9
 Zoo magnet	\$4
 Pack of 4 pens	\$6
 Photo frame	\$8

The family has \$100 to spend at the zoo...



6TH GRADE PERFORMANCE TASK

GUEST, GUEST (State-SSID: GUEST -175237) G6 Math Performance Task (



CEREAL BOXES

A cereal company uses cereal boxes that are rectangular prisms. The boxes have the dimensions shown.

- 12 inches high
- 8 inches wide
- 2 inches deep

The managers of the company want a new size for their cereal boxes. The new boxes have to be rectangular prisms. You will evaluate one box design the company proposed. Then you will create and propose your own design for the company.

Requirements for the new boxes:

- The new boxes have to use less cardboard than the original boxes.
- The new boxes have to hold the same or a greater volume of cereal as the original boxes.

Passage



1

Determine the volume of the current cereal box with the dimensions 12 inches high, 8 inches wide, and 2 inches deep.

Find the volume, V , in cubic inches, of each box.

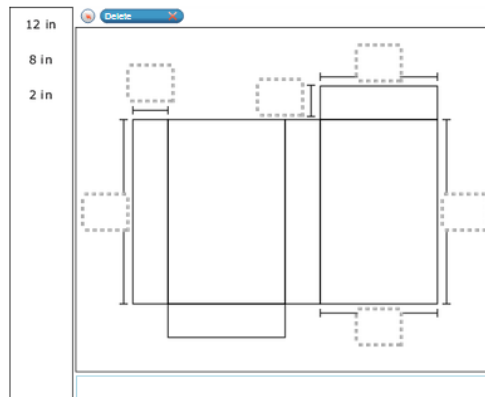
Volume of Original Box: $V = \underline{\hspace{1cm}}$ in³



1	2	3
4	5	6
7	8	9
0	.	-

2

Label the dimensions of the net for the current cereal box with dimensions 12 inches high, 8 inches wide, and 2 inches deep.



3

Determine the surface area, S , in square inches, of the current cereal box with dimensions 12 inches high, 8



SCORING QUESTION 1

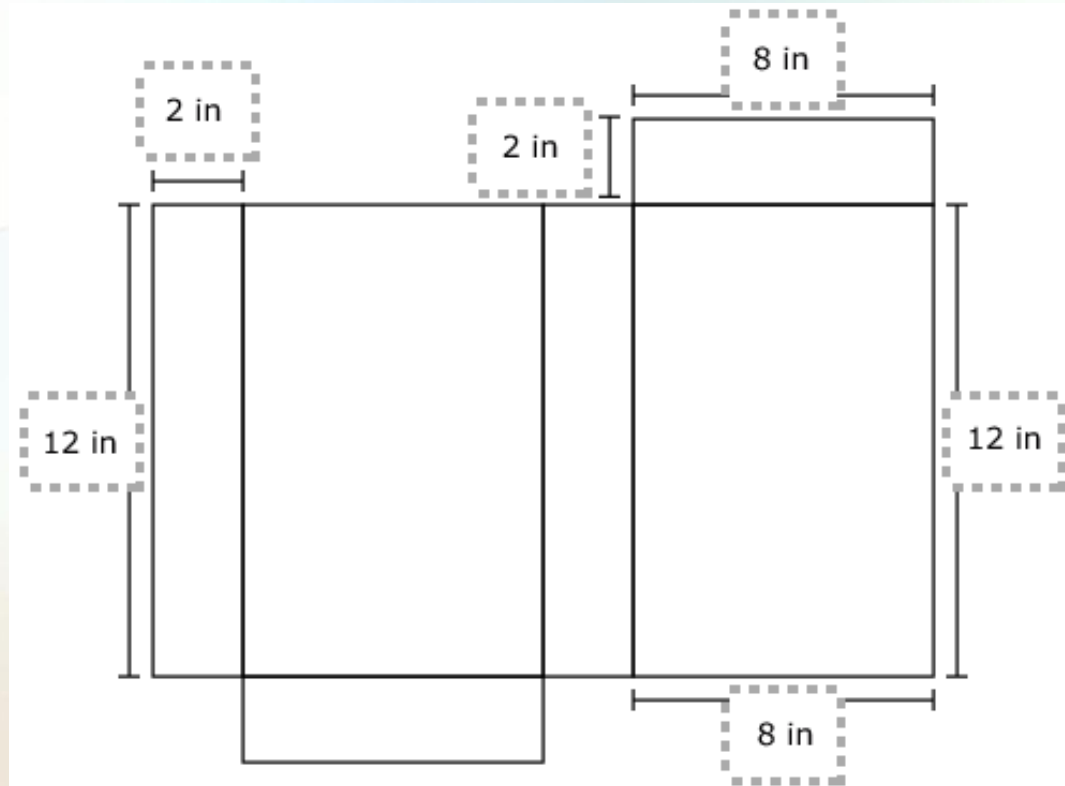
Full credit response (1 point) includes
 192 in^3

No credit response (0 points) includes none of
the features of a full credit response



SCORING QUESTION 2

Full credit response (1 point) includes



No credit response (0 points) includes none of the features of a full credit response



SCORING QUESTION 3

Full credit response (2 point) includes
 272 in^2

Partial credit response (1 point) includes all of the following common mistakes 136, 176, 248, 256, 80, 224, 240 or square inches consistent with an error in question 2

No credit response (0 points) includes none of the features of a full or partial response



SCORING QUESTION 4

Full credit response (2 point) includes

Comparing the proposed volume to the requirements **-and-**

Comparing the proposed surface area to the requirements **-and-**

Judging the proposed dimensions to be inappropriate

Partial credit response (1 point) includes

Valid comparisons but no judgment call

No credit response (0 points) includes none of the features of a full credit response



SCORING QUESTION 5

Full credit response (3 points) includes

Giving the dimensions for the cereal box design **-and-**

Explaining how the design meets the volume requirement **-and-**

Explaining how the design meets the surface area requirement

Partial credit response (2 points) includes two of the full credit features

Partial credit response (1 point) includes one of the full credit features

No credit response (0 points) includes none of the full credit features



SCORE STUDENT RESPONSES



SCORING PERFORMANCE TASKS

Practice Test Grade 6 Performance Task Question 4

Question 4.

The company proposes a new cereal box with dimensions 10.5 inches high, 7.5 inches wide, and 4 inches deep. The new cereal box is a rectangular prism. Determine if this new box meets each of the requirements*. Explain why or why not.

*requirements (from question 1) The volume must be greater than or equal to 192 in^3 and the surface area must be less than 272 in^2



6TH GRADE QUESTION 4

Full credit response (2 points) includes

Comparing the proposed volume to the requirements

-and-

Comparing the proposed surface area to the requirements

-and-

Judging the proposed dimensions to be inappropriate

Partial credit response (1 point) includes

Valid comparisons but no judgment call (vise versa)

No credit response (0 points) includes

None of the features of the full or partial response



6TH GRADE QUESTION 4

Full credit response (2 points) example:

$V = 315$ cubic inches and $315 > 192$. $S = 301.5$ square inches and $301.5 > 272$. The box should not be used because the surface area is too large.

Partial credit response (1 point) examples:

$V = 315$ cubic inches and $315 > 192$. $S = 301.5$ square inches and $301.5 > 272$.

-or-

The box should not be used because the surface area is too large

No credit response (0 points) example:

The box can be used because it meets the requirements.



QUESTION 4 STUDENT RESPONSES

$$10.5 \times 7.5 \times 4 = 315 \text{ in}^3$$

$$2(10.5 \times 7.5 + 10.5 \times 4 + 7.5 \times 4) = 301.5$$

No it doesn't meet the requirements the volume is greater $315 \text{ in}^3 > 192 \text{ in}^3$, but the surface area is larger $301.5 \text{ in}^2 > 272 \text{ in}^2$ using more cardboard.

2 points



QUESTION 4 STUDENT RESPONSES

Volume of a new box is 315 in^3 and $315 > 192$.
Surface area of new box is 301.5 in^2 and
 $272 > 301.5$. The box does not follow the new
requirements, because the surface area is too
big.

1 point



QUESTION 4 STUDENT RESPONSES

$$\text{Volume} = 315 \text{ in}^2 \quad \text{S.A} = 301.5 \text{ in}$$

Surface area is too big! Takes too much cardboard

$$42 \times 2 = 84$$

$$30 \times 2 = 60$$

$$78.75$$

$$78.75$$

$$157.50$$

$$10.5$$

$$\times \quad 4$$

$$2$$

$$+ \quad 40$$

$$42$$

$$84$$

$$260$$

$$+ 157.50$$

$$301.50$$

1 point



QUESTION 4 STUDENT RESPONSES

$$\begin{array}{r} 157 \\ + 60 \\ + 84 \\ \hline 301 \end{array}$$

$$V = 315$$

$$SA = 301$$

Yes

0 points



QUESTION 4 STUDENT RESPONSES

$$10.5 \times 7.5 \times 4 = 315 \text{ volume}$$

$$10.5 \times 4 \times 2 = 80$$

$$7.5 \times 4 \times 2 = 60$$

$$10.5 \times 7.5 \times 2 = 157.5 \quad 297.5 \text{ surface area}$$

It doesn't work because the new cereal box
uses more cardboard 297.5 (new sa) 272
(old sa)

1 point



QUESTION 4 STUDENT RESPONSES

$$V = 315\text{in}^3$$

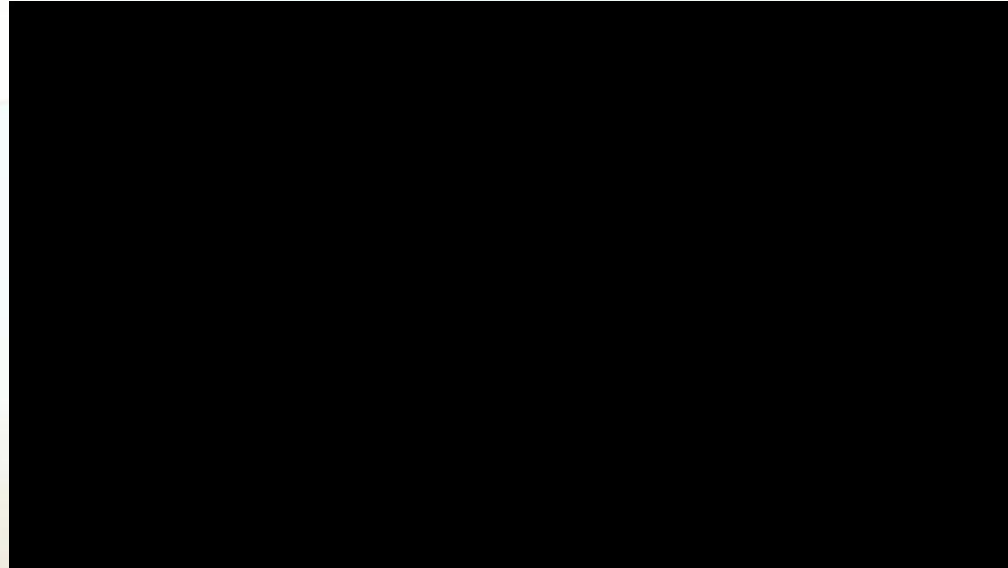
$$SA = 301.5\text{in}^2$$

This does not work. The volume is bigger, but it uses more cardboard.

2 points



MAKE WRITING A PART OF THE LEARNING



Video: Steve McKinney: Keeping It Real

<http://www.Americaachieves.org>

<http://bcove.me/eqw8vuyz>



BLOG

WESLEY'S BLOG

MONDAY, JANUARY 10, 2005


Derived Measurement Extended Response

Mark's heart beats 16 times in 15 seconds. At that rate, how many times will it beat in one minute? Be sure to include the appropriate unit.

I know that Mark's heart beats 16 times in 15 seconds. I also know that 15 seconds is a quarter of a minute. So I multiplied 16 by 4, and the product was 64 BPM. The reason I multiplied 16 by 4 is because I know that 15 seconds divides into 1 minute 4 times. That is how I got my solution.

POSTED BY PERIOD5WB AT 10:34 AM

1 COMMENTS:

 misterteacher said...

Wesley,

Here is how I scored your response:

[ABOUT ME](#)

[PERIOD5WB](#)

[VIEW MY COMPLETE PROFILE](#)

[PREVIOUS POSTS](#)

[Rational or Irrational?](#)

[Short Cycle 2](#)



GOOGLE FORMS

The Box Factory



* Required

The portion of the graph with domain $x > 10$ shows positive volume. What does this mean in the context of the problem? *

Explain the meaning of the parts of the graph showing a negative volume. *







Name and Password



GOOGLE DOC MATH JOURNAL

Sharing settings

Permissions:

 Private - Only the people listed below can access	Change
 Test Teacher (you)	Is owner 
 Eric Curts	Can edit  

Add people:

Editors will be allowed to add people and change the permissions. [\[Change\]](#)

Close



CRITERIA

Criteria	
1. Clear Purpose	Why am I assessing?
2. Clear Learning Target(s)	What am I assessing?
3. Quality Assessment	How can I assess it well?
4. Proper Test Administration	How will I ensure test conditions do not interfere with a student's ability to perform well on a test?
5. Effective Communication of Results	How will I share results for maximum impact?



RESOURCES

Study: Boaler, J., & Foster, D. (2014). Raising Expectations and Achievement. The Impact of Wide Scale Mathematics Reform Giving All Students Access to High Quality Mathematics.
<http://www.youcubed.org>

Tasks: SBAC Grade 4 and 6 Math Performance Task
<http://sbac.portal.airast.org/practice-test/resources/>

Mathematics Assessment Project: Baseball Jerseys
<http://map.mathshell.org/materials/tasks.php?taskid=362&subpage=apprentice>

Videos: Steve McKinney: Keeping It Real Americaachieves.org
<http://bcove.me/eqw8vuyz>

How to Learn Math: Teaching for a Growth Mindset
<http://youtu.be/EbhJk62N05I>





bryan.toller@state.or.us

503-947-5832

