New York State Testing Program

2017 Common Core

Mathematics Test

Grade 6

Scoring Leader Materials

Training Set

Grade 6 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5,280 feet
1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilogram
1 kilogram = 2.2 pounds
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallon
1 liter = 1,000 cubic centimeters

FORMULAS

Triangle	$A = \frac{1}{2}bh$
Right Rectangular Prism	$V = Bh$ or $V = lwh$

2-Point Holistic Rubric

2 Point	A two-point response includes the correct solution to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task. This response • indicates that the student has completed the task correctly, using mathematically sound procedures • contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures • may contain inconsequential errors that do not detract from the correct solution and the demonstration of a thorough understanding
1 Point	A one-point response demonstrates only a partial understanding of the mathematical concepts and/or procedures in the task. This response • correctly addresses only some elements of the task • may contain an incorrect solution but applies a mathematically appropriate process • may contain the correct solution but required work is incomplete
0 Point*	A zero-point response is incorrect, irrelevant, incoherent, or contains a correct solution obtained using an obviously incorrect procedure. Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

*Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted).

3-Point Holistic Rubric

Score Points:

3 Point	A three-point response includes the correct solution(s) to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task. This response • indicates that the student has completed the task correctly, using mathematically sound procedures • contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures • may contain inconsequential errors that do not detract from the correct solution(s) and the demonstration of a thorough understanding
2 Point	A two-point response demonstrates a partial understanding of the mathematical concepts and/or procedures in the task. This response • appropriately addresses most, but not all aspects of the task using mathematically sound procedures • may contain an incorrect solution but provides sound procedures, reasoning, and/or explanations • may reflect some minor misunderstanding of the underlying mathematical concepts and/or procedures
1 Point	A one-point response demonstrates only a limited understanding of the mathematical concepts and/or procedures in the task. This response • may address some elements of the task correctly but reaches an inadequate solution and/or provides reasoning that is faulty or incomplete • exhibits multiple flaws related to misunderstanding of important aspects of the task, misuse of mathematical procedures, or faulty mathematical reasoning • reflects a lack of essential understanding of the underlying mathematical concepts • may contain the correct solution(s) but required work is limited
0 Point*	A zero-point response is incorrect, irrelevant, incoherent, or contains a correct solution obtained using an obviously incorrect procedure. Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

*Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted).

2017 2- and 3-Point Mathematics Scoring Policies

Below are the policies to be followed while scoring the mathematics tests for all grades:

1. If a student shows the work in other than a designated "Show your work" or "Explain" area, that work should still be scored.

2. If the question requires students to show their work, and the student shows appropriate work and clearly identifies a correct answer but fails to write that answer in the answer blank, the student should still receive full credit.

3. If students are directed to show work, a correct answer with **no** work shown receives **no** credit.

4. If students are **not** directed to show work, any work shown will **not** be scored. This applies to items that do **not** ask for any work and items that ask for work for one part and do **not** ask for work in another part.

5. If the student provides one legible response (and one response only), the rater should score the response, even if it has been crossed out.

6. If the student has written more than one response but has crossed some out, the rater should score only the response that has **not** been crossed out.

7. Trial-and-error responses are **not** subject to Scoring Policy #6 above, since crossing out is part of the trial-and-error process.

8. If a response shows repeated occurrences of the same conceptual error within a question, the conceptual error should **not** be considered more than once in gauging the demonstrated level of understanding.

9. In questions requiring number sentences, the number sentences must be written horizontally.

10. Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted). This is not to be confused with a score of zero wherein the student does respond to part or all of the question but that work results in a score of zero.

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

Answer

_____

EXEMPLARY RESPONSE

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

Dana:
4 days/week
$15 \times 4 = 60$

Monique:
5 days/week
$10 \times 5 = 50$

$60 - 50 = 10$
$10 \times 12.75 = 127.50$
The difference is $127.50

Or other valid process

Answer $127.50

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

Dana: $765 a week

40 ÷ 10 = 4 days a week
$12.75 × 15 dogs = $191.25 ← one day
$191.25 × 4 days = $765 ← a week

Monique: $637.50 a week

40 ÷ 8 = 5 days a week
$12.75 × 10 dogs = $127.50 ← one day
$127.50 × 5 days = $637.50 ← a week

$765 − $637.50 = $127.50

Answer

$127.50

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The weekly earnings of both groomers and the difference between their earnings are correctly determined using mathematically sound procedures.

GUIDE PAPER 2

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

$15 \cdot 4 = 60 \times 12.75 = \$765$

$10 \cdot 5 = 50 \times 12.75 \ \$637.5$

765.0
$-\ 637.5$
127.5

Answer

Dana will earn 127.5 more than Monique.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The weekly earnings of both groomers and the difference between their earnings are correctly determined using mathematically sound procedures.

GUIDE PAPER 3

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

D 15 · 4 = 60

M 10 · 5 = 50

60 − 50 = 10

$12.75 · 10 = $127.50

Answer

$127.50

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The difference in the number of dogs groomed per week is correctly calculated, and the difference between earnings is correctly determined using mathematically sound procedures.

GUIDE PAPER 4

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

15
×12.75 (2)
6375
+12750
191.25

12.75(2)
×10
127.50

191.25
×4
765.00

127.50
×5
687.50

765.00
−687.50
77.50

Answer

$77.50

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. Dana's weekly earnings are calculated correctly; however, a calculation error occurs when determining Monique's weekly earnings (127.5 × 5), resulting in an incorrect final solution. The response contains an incorrect solution but applies a mathematically appropriate process.

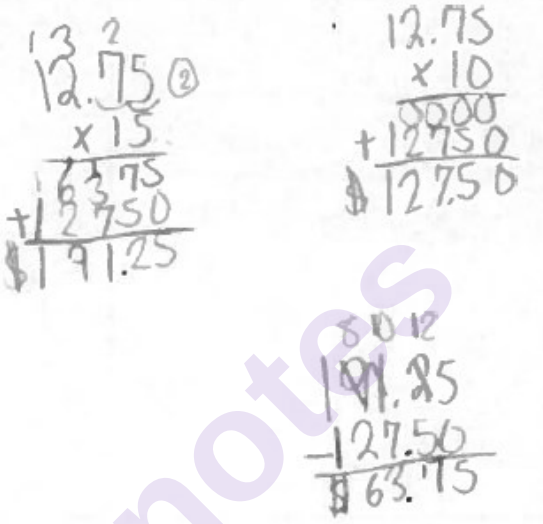
GUIDE PAPER 5

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.



Answer

63.75

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The difference between daily earnings rather than weekly earnings is calculated. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

D= 4 days
M= 5 days

191.25
127.5

765
637.5

ANSWER

The difference is $127.50.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. Although correct answers are provided for daily and weekly earnings as well as the difference between weekly earnings, the response contains limited work to support them. The response contains the correct solution but required work is incomplete.

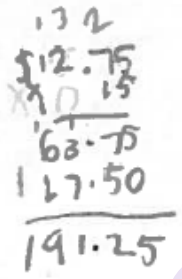
GUIDE PAPER 7

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.



Answer

191.25 is my answer

Score Point 0 (out of 2 points)

Although Dana's daily earnings are calculated correctly, holistically this calculation alone is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

52

Dana and Monique are dog groomers. Dana's workday is 10 hours and Monique's workday is 8 hours. Dana and Monique each work 40 hours per week.

On Monday, Dana groomed 15 dogs in 10 hours and Monique groomed 10 dogs in 8 hours. They each earn $12.75 for each dog groomed. Assuming that for the rest of the week Dana and Monique groom the same number of dogs per workday as they did on Monday, what will be the difference between their weekly earnings?

Show your work.

Dana
$12.75
− 10
$12.65
− 15
$12.50

Monique
$12.75
− 8
12.67
− 15
$12.52

Answer

Their earnings will decrease.

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect procedure of subtracting hours from dollars is used to determine the solution.

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

Answer _____°F

EXEMPLARY RESPONSE

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

$F = 1.8 \times 15 + 32$

$F = 27 + 32 = 59$

Or other valid process

Answer 59 °F

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

$F = 1.8C + 32$

$F = 1.8(15) + 32$

$F = 27 + 32$

$F = 59$

59°F

Answer 59 °F

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The response correctly uses the given formula to convert the high temperature to degrees Fahrenheit.

GUIDE PAPER 2

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

$F = 1.8 \cdot 15 + 32$

59° F

Answer 59 °F

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The response correctly uses the given formula to convert the high temperature to degrees Fahrenheit.

GUIDE PAPER 3

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

1.8 • 15 + 32
27 + 32
59

1.8
• 15
90
+ 180
270

Answer 59 °F

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The response correctly uses the given formula to convert the high temperature to degrees Fahrenheit.

GUIDE PAPER 4

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

$F = 1.8C + 32$

$F = 1.8 \times 15 + 32$

$F = 270 + 32$

$F = 302$

415
X1.8
1200
150
270

Answer 302 °F

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. This response contains a correct equation ($F = 1.8 \times 15 + 32$); however, there is a calculation error in solving for the degrees Fahrenheit, ($1.8 \times 15 = 270$). This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 5

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

1.8 x 15

$$\begin{array}{r} 1.8 \\ \times 15 \\ \hline 90 \\ 180 \\ \hline 27.0 \end{array}$$

27 °f

Answer 27 °F

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The response correctly multiples 1.8 and 15 to get 27°; however, the constant in the formula is omitted while converting from degrees of Celsius to degrees of Fahrenheit. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

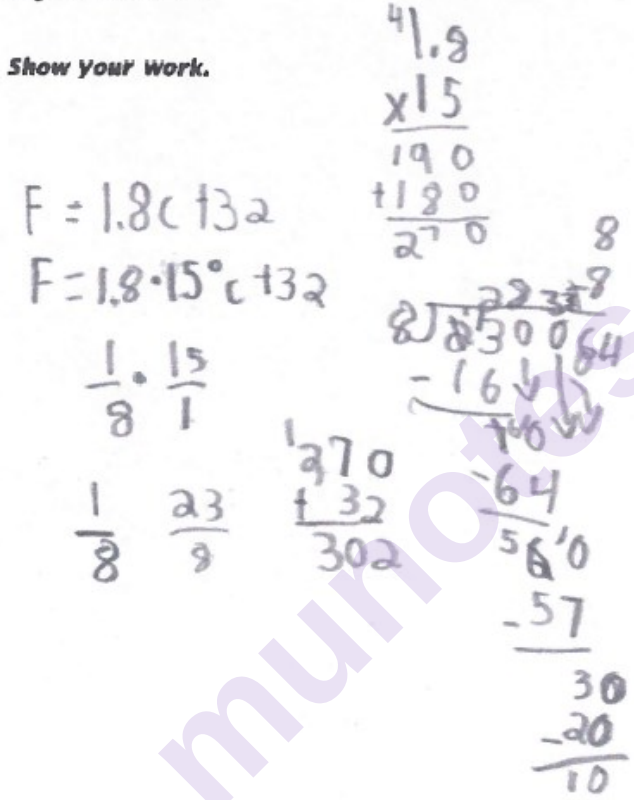
53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.



Answer 302 °F

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. This response contains a correct equation ($F = 1.8 \cdot 15°c + 32$); however, there is a calculation error in solving for the degrees Fahrenheit, ($1.8 \times 15 = 270$). This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 7

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

$32+1.8(15)$

33.8×15

507

Answer 507 °F

Score Point 0 (out of 2 points)

Although this response correctly writes the expression to convert to degrees Fahrenheit, the student does not apply the order of operations properly. Holistically this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

53

The formula below is used to convert a temperature in degrees Celsius, C, to a temperature in degrees Fahrenheit, F.

$$F = 1.8C + 32$$

The high temperature in a mountain city was 15°C. What was the high temperature in degrees Fahrenheit?

Show your work.

15÷1.8=8.3

8.3+32=40.3

40.3°F

Answer °F

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. This response incorrectly divides 15 by 1.8.

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.

Answer _____ pieces

EXEMPLARY RESPONSE

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.

9 feet × 12 inches = 108 inches per roll of ribbon

108 ÷ 15 = 7.2 pieces per roll

7 × 5 = 35 pieces

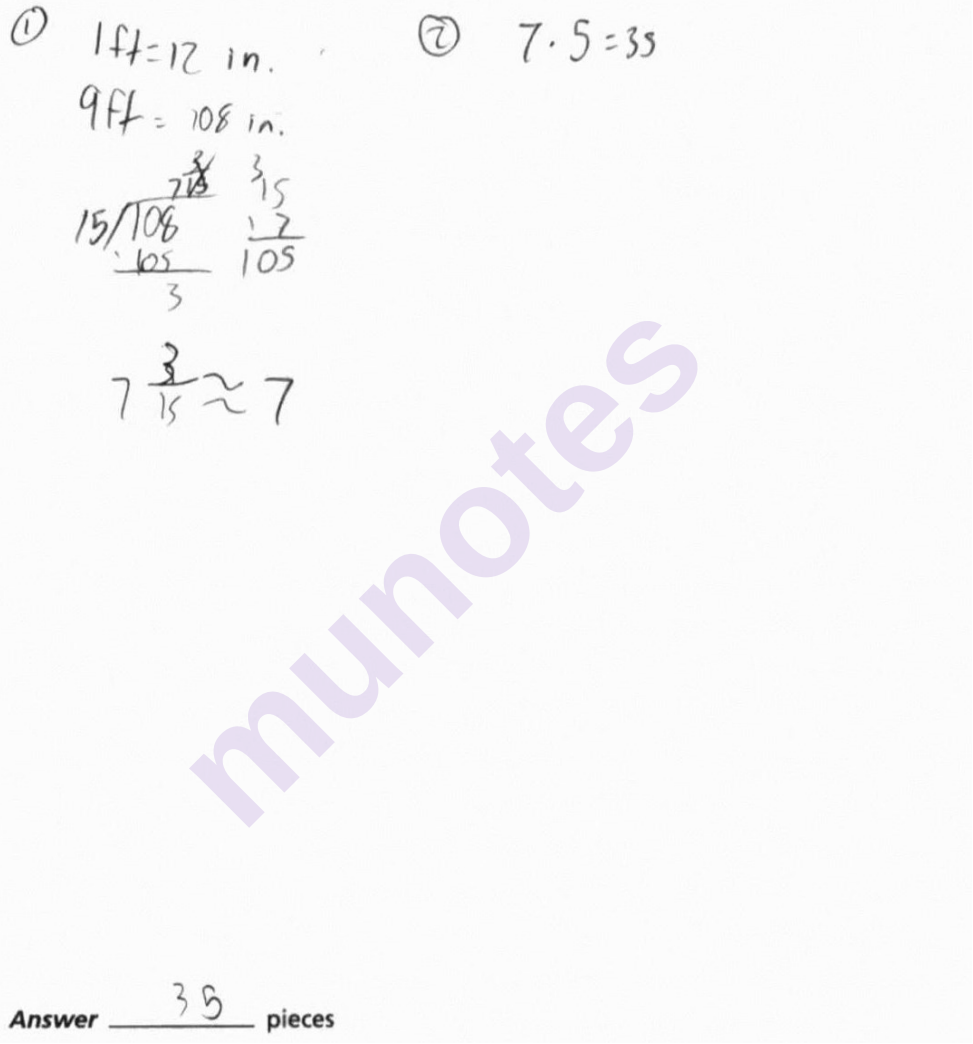
Or other valid process

Answer 35 pieces

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.



Answer 35 pieces

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of pieces that can be cut from a single roll of ribbon is calculated correctly and appropriately multiplied to account for all 5 rolls of ribbon.

GUIDE PAPER 2

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.

$$\frac{9 \cdot 12}{15} = \frac{108}{15} = 7\frac{3}{15} \to 7$$

$$15 \overline{)108} = 7,\quad 108 - 105 = 3$$

$$15 \times 6 = 90,\quad 90 + 15 = 105$$

$$7 \cdot 5 = 35$$

Answer 35 pieces

Score Point 2 (out of 2 points)

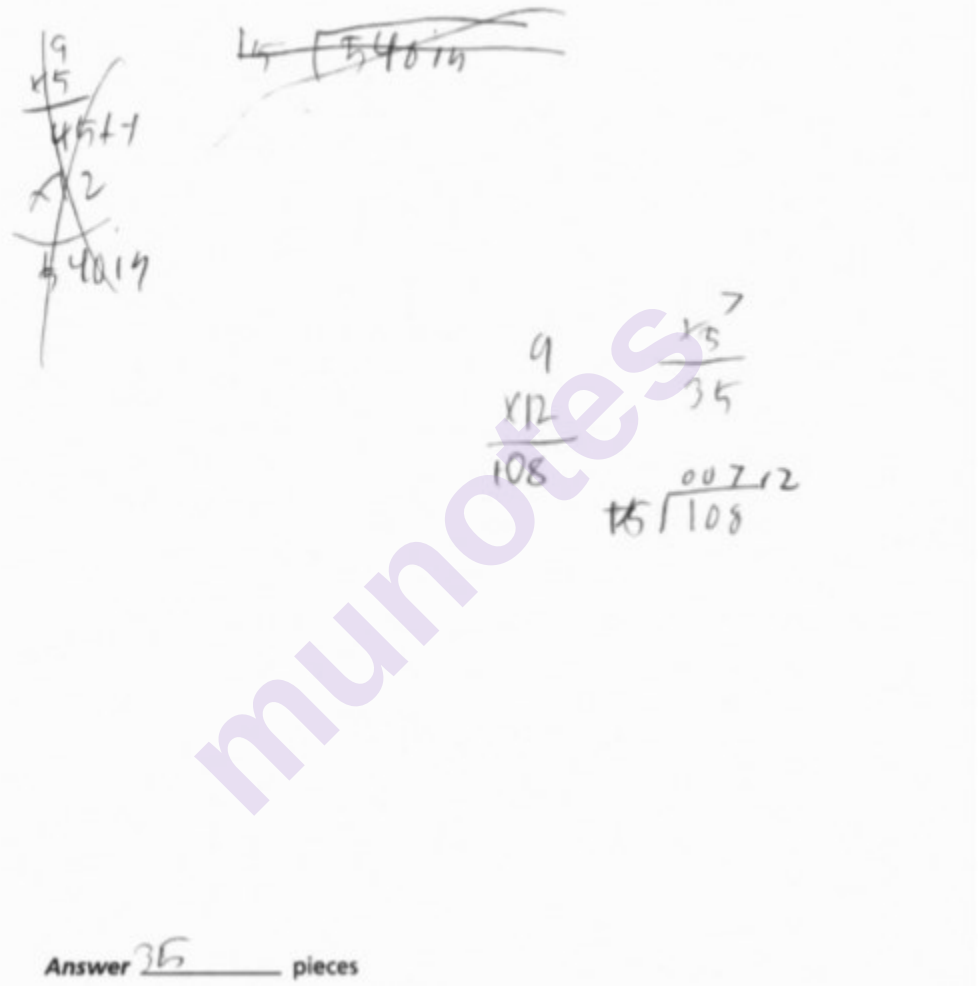
This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of pieces that can be cut from a single roll of ribbon is calculated correctly and appropriately multiplied to account for all 5 rolls of ribbon.

GUIDE PAPER 3

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.



Answer 35 pieces

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of pieces that can be cut from a single roll of ribbon is calculated correctly and appropriately multiplied to account for all 5 rolls of ribbon. As per Scoring Policy #6, the work that has been crossed out should not be considered in scoring.

GUIDE PAPER 4

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.

12 inches - 1 foot

9
×5
45 feet total

1 Peice - 1 foot 3 inches
2 Peices - 2 feet 6 inches
3 Peices - 3 feet 9 inches
4 Peices - 5 feet
5 Peices - 6 feet 3 inches
7 Peices - 7 feet 6 inches
8 Peices - 8 feet 9 inches

8 Peices per roll

8
×5
40

Answer 40 pieces

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. 15-inch pieces are cumulatively added until 9 feet is reached; however, the count of pieces skips from 5 pieces to 7 pieces, resulting in an incorrect number of pieces per roll. The result is then appropriately multiplied to account for all 5 rolls of ribbon. The response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 5

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.

9 · 5 · 12

45 · 12

540 in.

540 ÷ 15

36

Answer 36 pieces

Score Point 1 (out of 2 points)

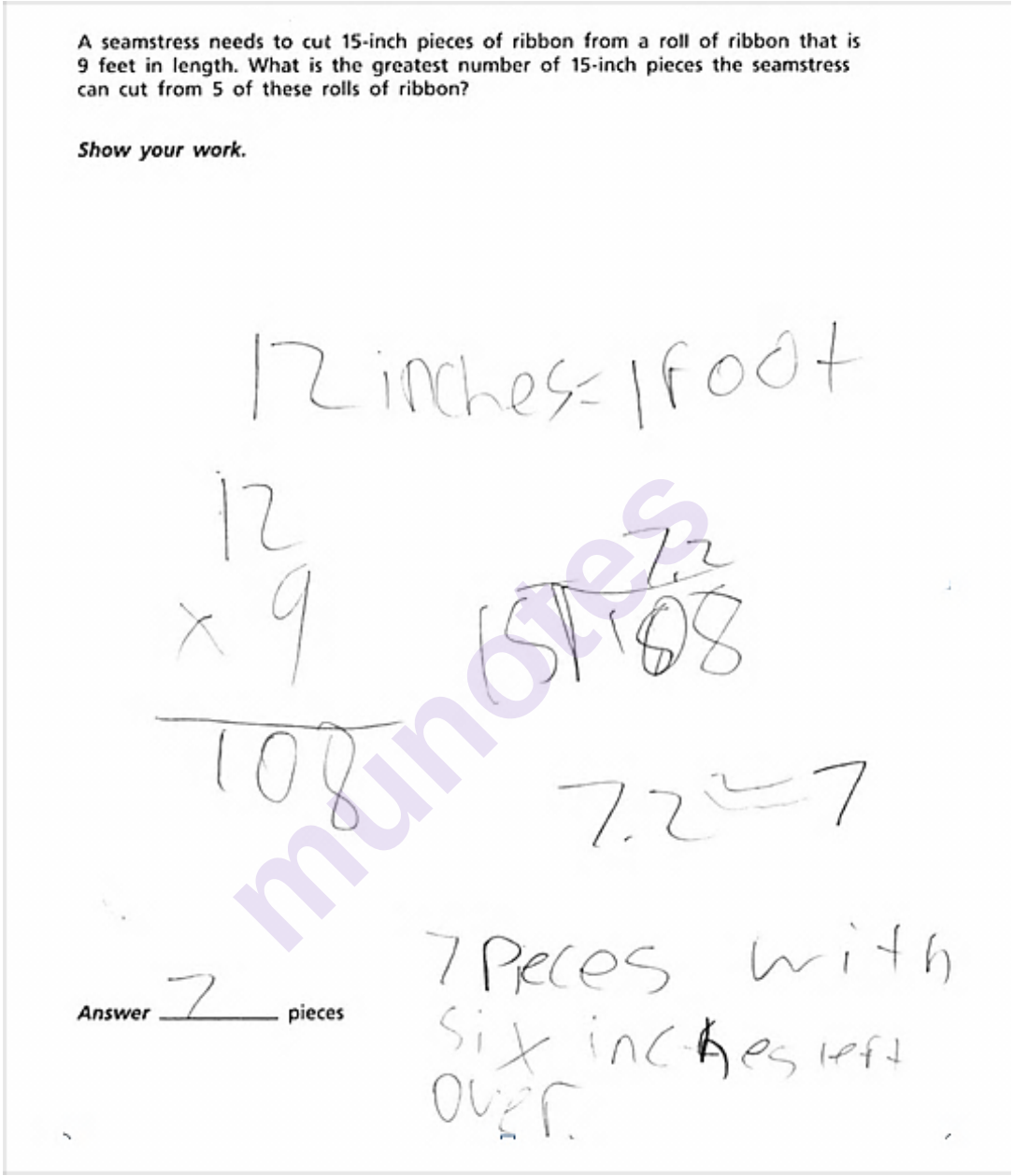
This response demonstrates only a partial understanding of the mathematical concepts in the task. The total length in inches of all 5 rolls of ribbon is calculated correctly and appropriately divided by 15 to calculate the number of pieces that can be cut; however, this approach fails to account for each individual roll having some length of scrap material left over. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.



Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The number of pieces that can be cut from a single roll of ribbon is calculated correctly; however, this result is never multiplied to account for all 5 rolls of ribbon. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.

9 × 5 = 45

45 × 15 = 675

Answer 675 pieces

Score Point 0 (out of 2 points)

Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The total length in feet of all 5 rolls of ribbon is calculated correctly; however, it is never converted into inches and is inappropriately multiplied by 15 rather than divided by 15.

GUIDE PAPER 8 **Additional**

54

A seamstress needs to cut 15-inch pieces of ribbon from a roll of ribbon that is 9 feet in length. What is the greatest number of 15-inch pieces the seamstress can cut from 5 of these rolls of ribbon?

Show your work.

9f = 108 in

15)108 = 72

72
x 15
360
720
1080

Answer 72 pieces

Score Point 0 (out of 2 points)

Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The length of one roll of ribbon is correctly converted to inches and then divided by 15 to calculate the number of pieces that can be cut; however, this result is never multiplied to account for all 5 rolls of ribbon and a decimal point is missing from the solution.

55 It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

Answer _____ fire extinguishers

EXEMPLARY RESPONSE

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine *x*, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

$6{,}000 \times x = 135{,}000$

$x = 135{,}000 \div 6{,}000$

$x = 22.5$

Or other valid process

Answer 22 or 23 or 22.5 fire extinguishers

GUIDE PAPER 1 Additional

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

$6{,}000x = 135{,}000$

$6000 \times 2 = 12000$

$$\begin{array}{r} 22.5 \\ 6000\overline{)135,000} \\ -12000 \\ \hline 15000 \\ -12000 \\ \hline 30000 \\ -30000 \\ \hline 0 \end{array}$$

Answer 23 fire extinguishers

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The equation is correctly written and solved with the appropriate answer indicated. This response indicates that the student has completed the task correctly, using mathematically sound procedures.

GUIDE PAPER 2

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

6000 x 2 = 12000
6000 x 5 = 30,000
6000 x 7 = 42,000
6000 x 66 = 396,000
6000 x 22 = 132,000
6000 x 23 = 138,000
6000 x 22.5 = 135,000

6000 x $\frac{1}{2}$ = 135,000
6000 x 22.5 = 135,000

Answer 22.5 fire extinguishers

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The correct equation is provided along with the correct solution.

GUIDE PAPER 3

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

$6,000X = 135,000$

$$
\begin{array}{r}
22.5 \\
6{,}000\overline{)135{,}000} \\
\underline{120} \\
15 \\
\underline{12} \\
30 \\
\underline{30} \\
0
\end{array}
$$

Answer 22 fire extinguishers

Score Point 2 (out of 2 points)

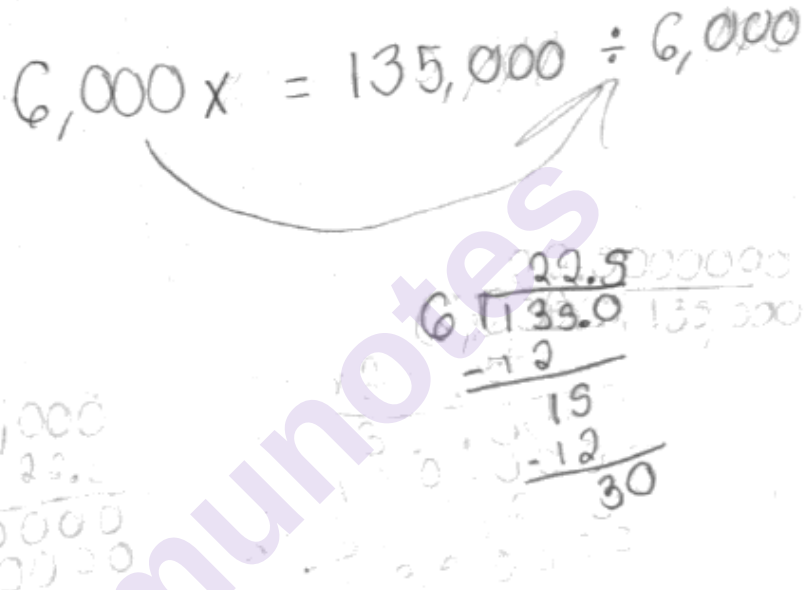
This response demonstrates a thorough understanding of the mathematical concepts in the task. The equation is correctly written and solved with the appropriate answer indicated. This response indicates that the student has completed the task correctly, using mathematically sound procedures.

GUIDE PAPER 4

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.



Answer 22.5 fire extinguishers

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The number of fire extinguishers is correctly determined; however, an incorrect equation is provided to solve for the solution. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

135,000 ÷ 6,000

6000 | 135000 → 225 → 23
120 00
15000
12000
30000
30000
0

6000
3

300 00 ÷ 6000 = 5

Answer You would need 23 fire extinguishers

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The response correctly solves for the proper number of fire extinguishers (135,000 ÷ 6,000); however, an equation is not provided. This response contains the correct solution but required work is incomplete.

GUIDE PAPER 6

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

22.5
6000 | 135,000

Answer 22.5 fire extinguishers

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The response correctly solves for the proper number of fire extinguishers; however, an equation is not provided. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

$x + 6,000 = 135,000$

$x = 129,000$

$$\begin{array}{r} {}^{1}129,000 \\ 6,000 \\ \hline 135,000 \end{array}$$

Answer 129,000 fire extinguishers

Score Point 0 (out of 2 points)

Holistically, this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The equation written is incorrect and is used to determine the incorrect number of fire extinguishers.

55

It is recommended that one fire extinguisher be available for every 6,000 square feet in a building. Write and solve an equation to determine x, the number of fire extinguishers needed for a building that has 135,000 square feet.

Show your work.

1
135,000
+ 6,000
141,000

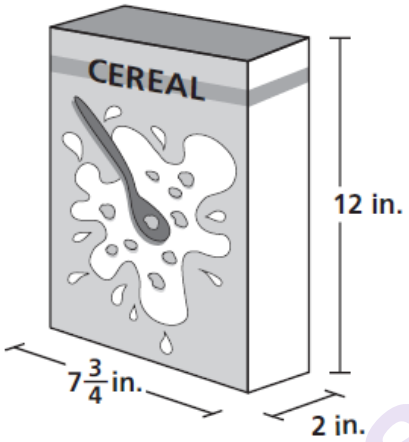
Answer 141,000 fire extinguishers

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Values from the prompt are inappropriately added.

56 A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

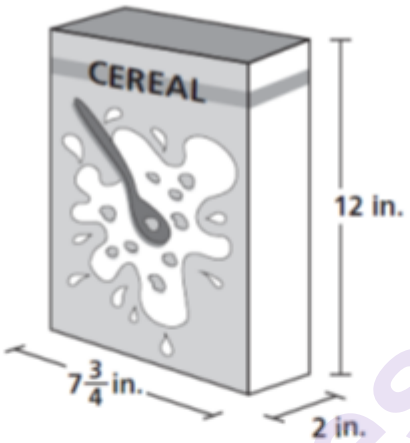
Show your work.

Answer _____ cubic inches

EXEMPLARY RESPONSE

56 A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

Volume of smaller box: $7^3/_4 \times 2 \times 12 = 186$ cubic inches

Volume of larger box:
$0.8h = 12$
$h = 12 \div 0.8$
$h = 15$ inches
$7^3/_4 \times 2 \times 15 = 232.5$ cubic inches

Difference in the volume: $232.5 - 186 = 46.5$

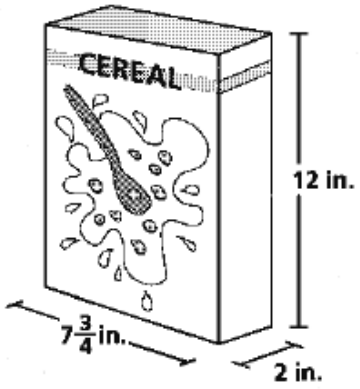
Or other valid process

Answer 46.5 cubic inches

56

A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

$h = 12 \div .8$

$15 = 12 \div .8$

Small $= 12 \times 2 \times 7\frac{3}{4} = 186\ in^3$

Large $= 15 \times 2 \times 7\frac{3}{4}$ $232\frac{1}{2} in^3$

$232\frac{1}{2} in^3 - 186\ in^3 = 46\frac{1}{2} in^3$

Answer $46\frac{1}{2}$ cubic inches

Score Point 2 (out of 2 points)

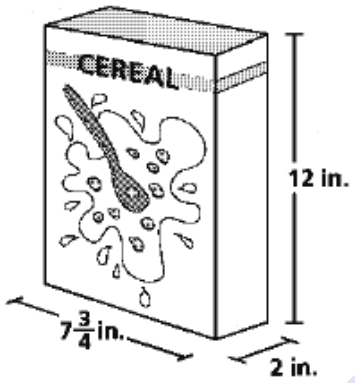
This response demonstrates a thorough understanding of the mathematical concepts in the task. The response correctly determines the volume of both cereal boxes and then subtracts for a correct solution of the difference in the volumes. This response indicates that the student has completed the task correctly, using mathematically sound procedures.

GUIDE PAPER 2

56

A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

$\frac{12}{x} = \frac{8}{10}$

$8x = 120$

$x = 15$

$A = 12 \times 2 \times 7\frac{3}{4}$

$= 24 \times \frac{31}{4}$

$= 186 \text{ in}^3$

$B = 15 \times 2 \times 7\frac{3}{4}$

$= 30 \times \frac{31}{4}$

$= \frac{465}{2}$

$= 232.5 \text{ in}^3$

$232.5 - 186.0 = 46.5$

Answer 46.5 cubic inches

Score Point 2 (out of 2 points)

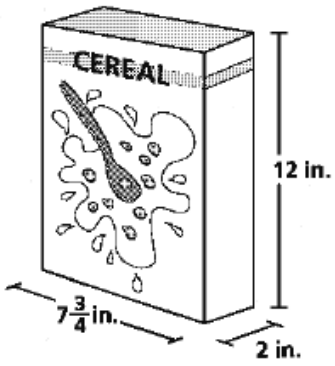
This response demonstrates a thorough understanding of the mathematical concepts in the task. The response uses ratios to correctly determine the height of the larger box. The volume of both cereal boxes is correctly calculated and the difference in the volumes is determined for the correct solution. This response indicates that the student has completed the task correctly, using mathematically sound procedures.

GUIDE PAPER 3

56

A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

12 ÷ 4 = 3
3 x 5 = 15

Small Box
H = 12in
L = $7\frac{3}{4}$ in
W = 2in
12 x 2 = 24
24 x $7\frac{3}{4}$ = 186

Big Box
H = 15in
L = $7\frac{3}{4}$ in
W = 2in
15 x 2 = 30
$7\frac{3}{4}$ x 30 = $232\frac{1}{2}$

$232\frac{1}{2}$
-186
$46\frac{1}{2}$

Answer $46\frac{1}{2}$ cubic inches

Score Point 2 (out of 2 points)

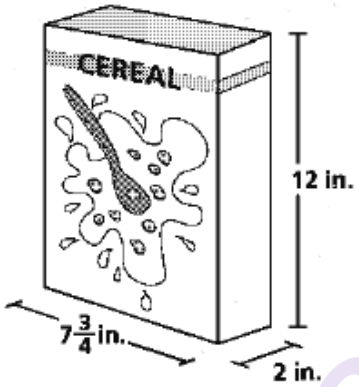
This response demonstrates a thorough understanding of the mathematical concepts in the task. The response correctly determines the volume of both cereal boxes and then subtracts for a correct solution of the difference in the volumes. As per Scoring Policy #6, if the student has written more than one response but has crossed some out, raters should score only the response that has not been crossed out.

GUIDE PAPER 4

56

A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

S $V = 12 \times 2 \times 7.75 = 186$

L $V = 15 \times 2 \times 7.75 = 235.5$

235.5
-186
49.5

15
80|1,200

$\frac{2}{15} = \frac{80}{100}$

Answer 49.5 cubic inches

Score Point 1 (out of 2 points)

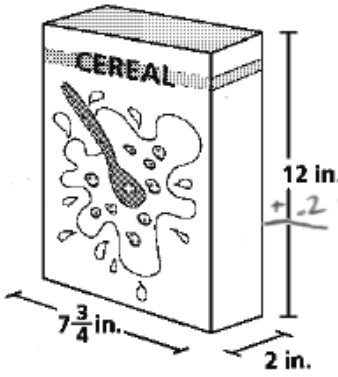
This response demonstrates only a partial understanding of the mathematical concepts in the task. The volume of the smaller cereal box is correctly calculated; however, the work for the volume of the larger cereal box contains a calculation error. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 5

56

A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

$12.2 \times 2 \times 7\frac{3}{4}$ 189.1

$12 \times 2 \times 7\frac{3}{4} = 186$

3.1

Answer 3.1 cubic inches

Score Point 1 (out of 2 points)

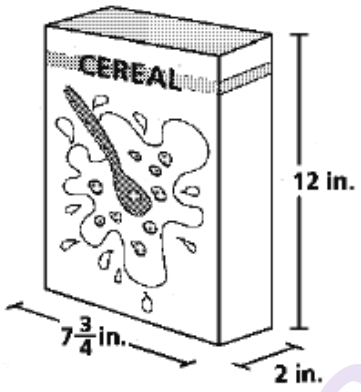
This response demonstrates only a partial understanding of the mathematical concepts in the task. The volume of the smaller cereal box is correctly calculated; however, the height of the larger cereal box is incorrect resulting in an incorrect volume of the larger cereal box. The difference between the two volumes is then used to determine the solution. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 6

56

A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

$7\frac{3}{4} \rightarrow \frac{31}{4}$

12 × 2 = 24

24 × 31/4 = 186

12 × 2 = 24

24 × 31/4 = 186

186 × 2 = 372

372 − 186 = 186

Answer 186 cubic inches

Score Point 1 (out of 2 points)

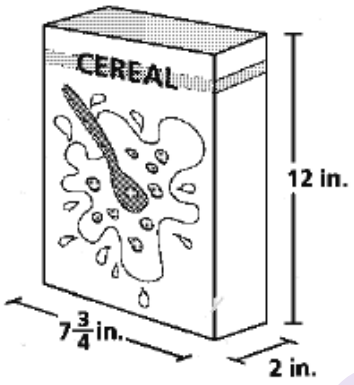
This response demonstrates only a partial understanding of the mathematical concepts in the task. The volume of the smaller cereal box is correctly calculated. The volume of the larger cereal box is calculated incorrectly (186 × 2), then the difference between the two volumes is determined for the solution. This response contains an incorrect solution but applies some mathematically appropriate processes.

GUIDE PAPER 7

56

A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.

$V = L \cdot W \cdot H$

$V = 7\,3/4 \cdot 2 \cdot 12$

$V = 124$

Answer 126 cubic inches

Score Point 0 (out of 2 points)

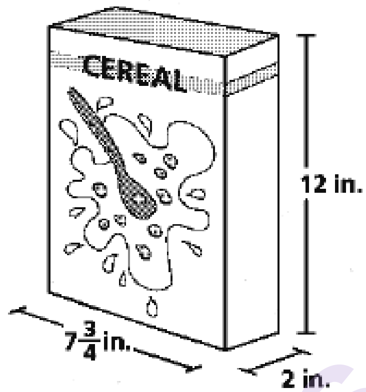
Holistically this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the equation for the volume of the small cereal box is correctly shown, it contains a calculation error and no other work is provided.

GUIDE PAPER 8 **Additional**

56

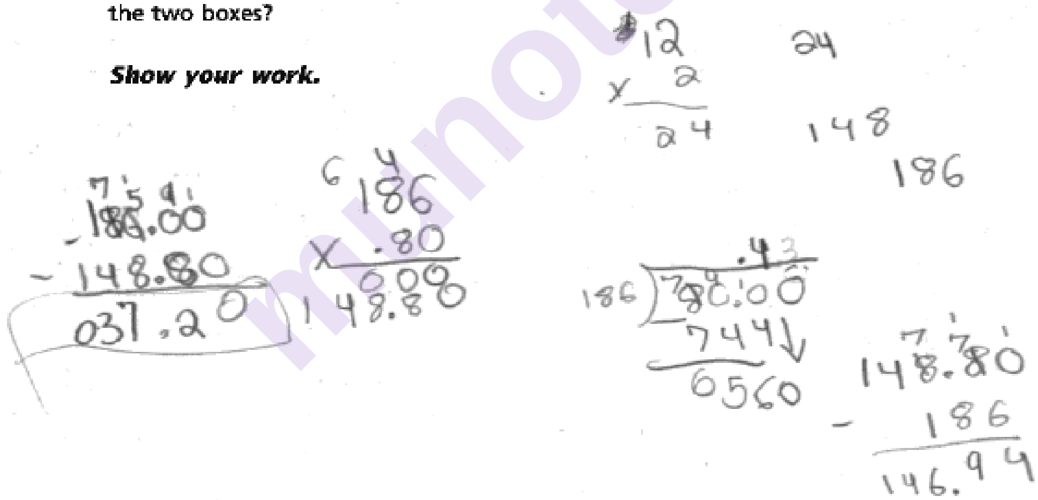
A company sells cereal in two different-sized boxes. The smaller box has the dimensions shown below.

Smaller Cereal Box



The height of the smaller box is 80% of the height of the larger box, while the other two dimensions are the same for both boxes. What is the difference in the volumes of the two boxes?

Show your work.



Answer 37.2 cubic inches

Score Point 0 (out of 2 points)

Holistically this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The volume of the smaller box is shown; however, it is unclear how it was calculated. The other work contains multiple incorrect procedures that demonstrate no understanding of how to use this value.

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x+5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression _____

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x=3$ and $y=4$.

Show your work.

Area _____ square feet

EXEMPLARY RESPONSE

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x+5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

$12x + 30y$

Equivalent expression _____

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x = 3$ and $y = 4$.

Show your work.

$12(3) + 30(4)$

$36 + 120$

156

Or other valid process

Area 156 square feet

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x + 5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression $(12x)+(30y)$

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x = 3$ and $y = 4$.

Show your work.

$12(3)+30(4)$

$36 + 120$

156

Area 156 square feet

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The distributive property is correctly applied to the expression to construct an equivalent expression. This equivalent expression is used to correctly solve for the area of the garden. This response indicates that the student has completed the task correctly, using mathematically sound procedures.

GUIDE PAPER 2

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x + 5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression 12x+30y

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x = 3$ and $y = 4$.

Show your work.

12(3)+30(4)
36+120=156

Area 156 **square feet**

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The distributive property is correctly applied to the expression to construct an equivalent expression. This equivalent expression is used to correctly solve for the area of the garden.

GUIDE PAPER 3

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x+5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression 6(2x+5y) 12x+30y

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x=3$ and $y=4$.

Show your work.

12x3=36
30x4=120
120+36=156

Area 156 square feet

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The distributive property is correctly applied to the expression to construct an equivalent expression. This equivalent expression is used to correctly solve for the area of the garden.

GUIDE PAPER 4

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x + 5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression 12x + 5y

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x = 3$ and $y = 4$.

Show your work.

12x + 5y
12 X 3 + 5 X 4
36 + 20
56 square feet

Area 56 square feet

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The value of 6 is only distributed to the term $2x$ rather than to both terms within the parentheses; as a result, the expression is not equivalent to the given expression. The student then correctly solves for the area of the garden using the expression they created. As per Scoring Policy #8, if a response shows repeated occurrences of the same conceptual error within a question, the conceptual error should not be considered more than once in gauging the demonstrated level of understanding.

GUIDE PAPER 5

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x + 5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression {12X+30Y}

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x = 3$ and $y = 4$.

Show your work.

(NO STUDENT RESPONSE GIVEN)

Area 156 **square feet**

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The distributive property is correctly applied to construct an equivalent expression; however, no work is provided for the calculation of the area for the garden. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x+5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression $6(4x+2y+6)$

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x=3$ and $y=4$.

Show your work.

$6(2x+5y)=156$

$6\times 26=156$

$6(4x+2y+6)=$

Area 156 square feet

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. This response follows a correct procedure to determine the solution of 156 square feet; however, the expression provided is not equivalent. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

57 The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x + 5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression 1[6(2X+5Y)]

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x = 3$ and $y = 4$.

Show your work.

(NO STUDENT RESPONSE GIVEN)

Area 156 square feet

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The expression provided is copied from the prompt, multiplied by 1 and does not use the distributive property. Although the final solution is correct, as per Scoring Policy # 3, if students are directed to show work, a correct answer with no work shown receives no credit.

GUIDE PAPER 8 Additional

57

The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x+5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression $6(\overset{20}{5y}+\overset{6}{2x})$

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x=3$ and $y=4$.

Show your work.

$5y \times 4\ 20 + 6$ 26

$2x \times 36$

$6\overline{)26}$

Area $4.\overline{3}$ square feet

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The expression is copied from the prompt and work is incorrect.

58 A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation _____

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

Answer _____ chairs

EXEMPLARY RESPONSE

58

A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation $325m = c$

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

$325 \times 7 = c$

$2275 = c$

Or other valid process

Answer 2275 chairs

58

A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation C=325m

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

7x325=2275

Answer 2275 chairs

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. An appropriate equation is written and used to correctly solve for the total number of chairs. This response indicates that the student has used mathematically sound procedures.

GUIDE PAPER 2

58 A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation M.325=c

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

325.7

Answer 2275 chairs

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. An appropriate equation is written and used to correctly solve for the total number of chairs. Although a period is used in place of a multiplication sign, this constitutes an inconsequential error that does not detract from the correct solution and the demonstration of a thorough understanding.

GUIDE PAPER 3

58 A hotel has a number of meeting rooms, *m*, available for events. Each meeting room has 325 chairs. Write an equation to represent *c*, the total number of chairs, in all of the meeting rooms at the hotel.

Equation m*325=c

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

3 2 5*7=(7*5=35)+(7*20=140)+(7*300=2100)=2275

Answer 2275 chairs

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. An appropriate equation is written and used to correctly solve for the total number of chairs. This response indicates that the student has used mathematically sound procedures.

GUIDE PAPER 4

58

A hotel has a number of meeting rooms, *m*, available for events. Each meeting room has 325 chairs. Write an equation to represent *c*, the total number of chairs, in all of the meeting rooms at the hotel.

Equation m325

If *m* = 7 use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

I multiplied 325 charis by the number of rooms which was 7 and got 2275 chairs total.

Answer 2275 **chairs**

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. A correct solution is determined by appropriately multiplying the number of chairs by the number of meeting rooms; however, the work does not contain an equation, only an expression is provided. The response addresses most, but not all aspects of the task.

GUIDE PAPER 5

58

A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation 325x7=c

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

325x7=2875
c=2875

Answer 2875 chairs

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. An appropriate equation is written; however, the value of 7 is used in place of the variable m. The response contains an incorrect solution due to a calculation error, but provides sound procedures.

GUIDE PAPER 6

58 A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation 325timesM

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

You have to multiply the # of meeting rooms by how many chairs are in each meeting room and it will equal 2275

Answer 2275 chairs

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. A correct solution is determined by appropriately multiplying the number of chairs by the number of meeting rooms; however, only an expression is provided. The response addresses most, but not all aspects of the task.

GUIDE PAPER 7

58

A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation 1M+C=325

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

7*325=1175

Answer 1175 chairs

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The number of chairs per meeting room is appropriately multiplied by the number of meeting rooms; however, the solution contains a calculation error and the equation provided is incorrect. This response exhibits multiple flaws related to misunderstanding of important aspects of the task.

58

A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation 7x325=

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

7x
325=3275

Answer 3275 chairs

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. A solution is determined by appropriately multiplying the number of chairs by the number of meeting rooms; however, the solution contains a calculation error and the equation provided is incomplete. This response addresses some elements of the task correctly but reaches an inadequate solution.

GUIDE PAPER 9

58

A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation c+(m*325)

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

(NO STUDENT RESPONSE GIVEN)

Answer 2275 chairs

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. A correct solution is determined by appropriately multiplying the number of chairs by the number of meeting rooms, which is related to the (m*325) term shown; however, the expression provided is incorrect and is not an equation.

GUIDE PAPER 10

58 A hotel has a number of meeting rooms, m, available for events. Each meeting room has 325 chairs. Write an equation to represent c, the total number of chairs, in all of the meeting rooms at the hotel.

Equation m x c

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

(NO STUDENT RESPONSE GIVEN)

Answer 2275 chairs

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The expression provided does not support the final solution. Although the solution is correct, as per Scoring Policy #3, if students are directed to show work, a correct answer with no work shown receives no credit.

58

A hotel has a number of meeting rooms, *m*, available for events. Each meeting room has 325 chairs. Write an equation to represent *c*, the total number of chairs, in all of the meeting rooms at the hotel.

Equation 325/c=m

If $m = 7$ use your equation to find the total number of chairs in all of the meeting rooms at the hotel.

Show your work.

325/c=m
325/c=7 325/7= 46.42857142857143 rounded 47

Answer 47 chairs

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. This response contains an incorrect solution obtained using an obviously incorrect procedure.

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

Answer _____ hours

EXEMPLARY RESPONSE

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

$4(60) + 6(65) + x(60) = 780$

$240 + 390 + 60x = 780$

$630 + 60x = 780$

$60x = 150$

$x = 2.5$ **hours**

Or other valid process

Answer 2.5 hours

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

Day 1 240 miles

Day 2 630 miles

Day 3 150 miles

780
- 630
150

2.5 hours
60 | 150

Answer 2.5 hours

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of miles traveled on the first two days is correctly calculated and then subtracted from the total miles to determine the number of miles to be traveled on the third day. The speed from the third day is then used to correctly calculate the solution.

GUIDE PAPER 2

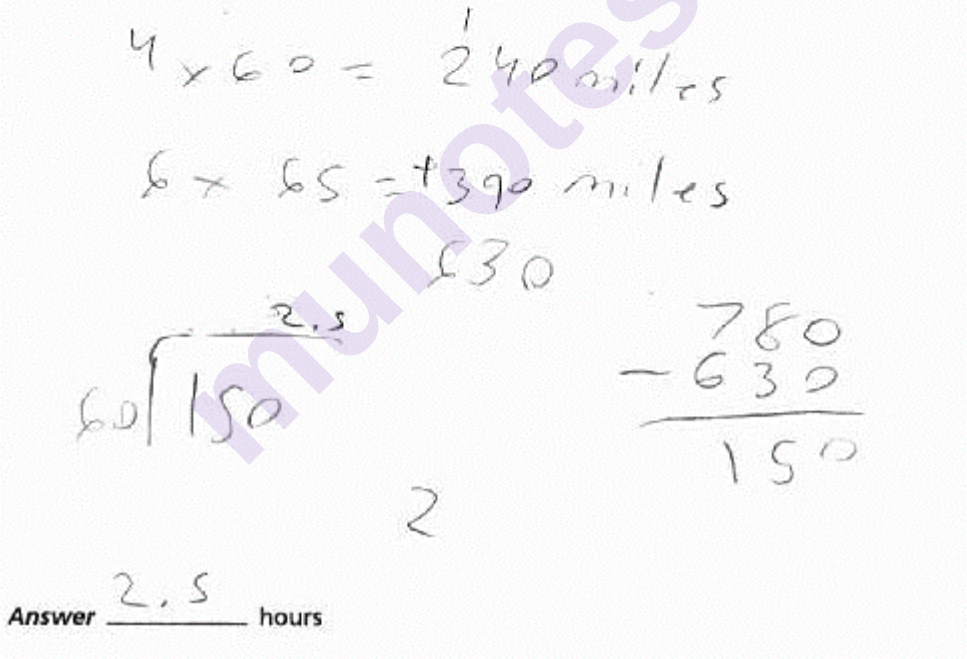
59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.



Answer 2.5 hours

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of miles to be traveled on the third day is correctly calculated and the speed from the third day is then used to correctly calculate the solution. This response indicates that the student has used mathematically sound procedures.

GUIDE PAPER 3

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

60 × 4 = 240

365 × 6 = 390

390 + 240 = 630

780 − 630 = 150

Answer $2\frac{1}{2}$ hours

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of miles to be traveled on the third day is correctly calculated and a correct solution is determined, using mathematically sound procedures. The final division is performed mentally, which is acceptable.

GUIDE PAPER 4

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

60 × 4 = 240

65 × 6 = 390

780 − 630 = 150

390 + 240 = 630

Answer 2h 3m hours

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The number of miles to be traveled on the third day is correctly calculated; however, the solution of 2h 3m recorded on the answer blank is incorrect and not supported by the work shown. The response contains an incorrect solution but provides sound reasoning.

GUIDE PAPER 5

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

630
+ 60 1hr
690
+ 60 2hr
750

60 × 4 = 240

65 × 6 = 390

390 + 240 = 630

Answer 2 hours

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The number of miles traveled on the first two days is correctly calculated. The speed for the third day is added to the total miles for the first two days until 750 miles is reached; however, 30 miles is unaccounted for and the 2 hours is misinterpreted as the final solution The response appropriately addresses most, but not all aspects of the task using mathematically sound procedures.

GUIDE PAPER 6

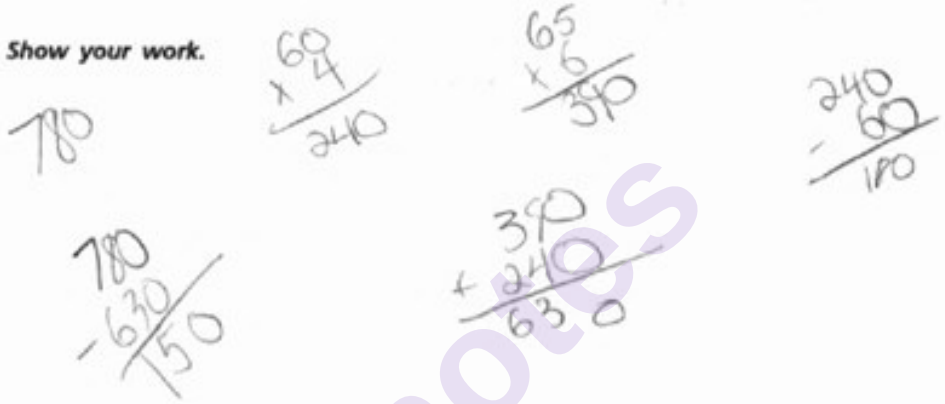
59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.



Answer 3 hours

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The number of miles to be traveled on the third day is correctly calculated; however, the solution of 3 hours recorded on the answer blank is incorrect and it is unclear how it was obtained. The response contains an incorrect solution but provides sound reasoning.

GUIDE PAPER 7

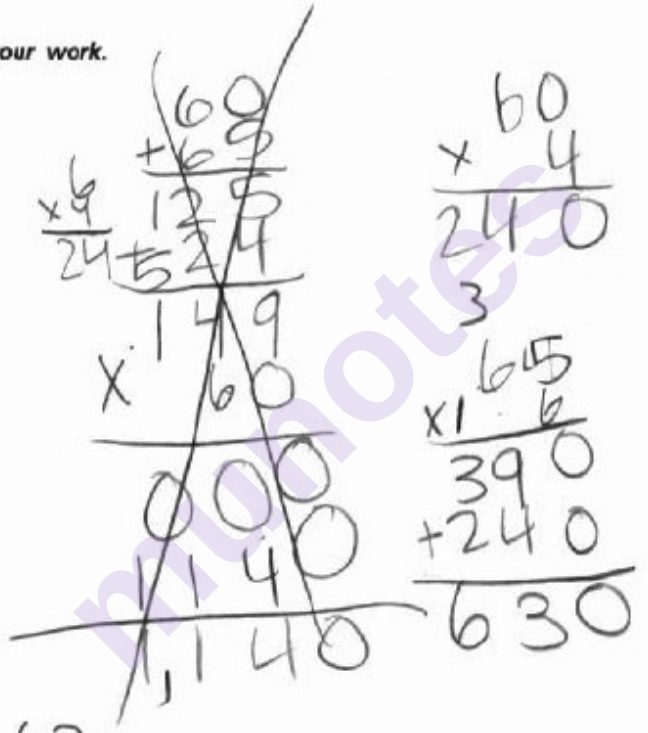
59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.



Answer 630 hours

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. Although the total miles traveled on the first and second day are correctly calculated and added together; it was incorrectly interpreted as the final solution. This response exhibits multiple flaws related to misunderstanding of important aspects of the task. As per Scoring Policy #6, if the student has written more than one response but has crossed some out, raters should score only the response that has not been crossed out.

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

240
390
630

Answer 2 1/2 hours

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The total miles traveled on the first two days is correctly calculated and added together; however, no other work is shown. This response contains the correct solution but required work is limited.

GUIDE PAPER 9

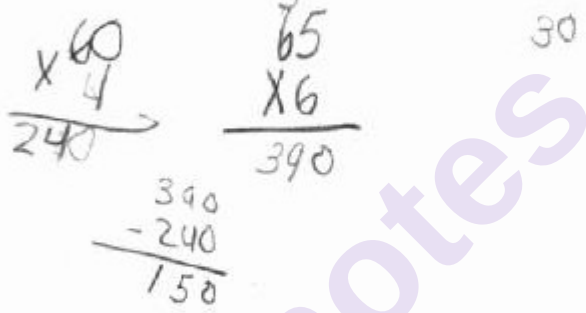
59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.



Answer 2.5 hours

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The number of miles traveled on the first and second day is correctly calculated; however, the difference between the first day and second day is determined. This response addresses some elements of the task correctly but provides reasoning that is faulty.

GUIDE PAPER 10

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

6
x 4
240

780
−240
540

Answer 540 hours

Score Point 0 (out of 3 points)

The total miles traveled on the first day is correctly stated; however, the operation provided to show this calculation contains a transcription error for the speed traveled on the first day ($6 \times 4 = 240$), which is technically not calculated correctly. This value is subtracted from the total distance, ignoring the total miles traveled on the second day, and the result is provided as the final solution. Holistically the response is not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

59

Jimmy and his family are on their way to visit some family friends who live 780 miles away from them. Based on the route they chose, they expect to complete their trip in three days. The distances and average speeds for the first two days driven are shown below.

- First day: 4 hours at an average speed of 60 miles per hour
- Second day: 6 hours at an average speed of 65 miles per hour

If the average speed on the third day is 60 miles per hour, how many more hours will it take for them to reach their family friends' home?

Show your work.

Days	1	2	3	4	5	6
Hours	4	6	8	10	12	14
miles	60	65	70	75	80	85

Answer 8 hours

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The table provided incorrectly infers a pattern of 2 more hours at a speed of 5 more miles per hour each additional day.

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

Answer _____ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

Answer _____ unit cubes

EXEMPLARY RESPONSE

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$l \times w \times h = V$

$2\frac{1}{2} \times 3 \times 1\frac{1}{2} = 11\frac{1}{4}$

Or other valid process

Answer 11¼ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$

$11\frac{1}{4} \div \frac{1}{8} = 11\frac{1}{4} \times 8 = 90$

Or other valid process

Answer 90 unit cubes

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$V = LWH$

$V = 2\frac{1}{2} \cdot 1\frac{1}{2} \cdot 3$

$V = 11\frac{1}{4}$

Answer $11\frac{1}{4}$ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

Cube = $\frac{1}{2}$ ft sides

$11\frac{1}{4} \div \frac{1}{8} = 90$

$11\frac{1}{4}$ = Volume of prism

$V = LWH$

$V = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

$V = \frac{1}{8}$

Answer 90 unit cubes

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The volumes of the rectangular prism and the unit cube are correctly calculated. The volume of the rectangular prism is then divided by the volume of a unit cube to correctly solve for the number of unit cubes that will fit in the prism. This response indicates that the student has completed the task correctly, using mathematically sound procedures.

GUIDE PAPER 2

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$3 \cdot 2\frac{1}{2} = 7\frac{1}{2}$

$7\frac{1}{2} \cdot 1\frac{1}{2} = 11\frac{1}{4}$

Answer $11\frac{1}{4}$ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

I know $\left(\frac{1}{2}\right)^3$ is $\frac{1}{8}$, and $11\frac{1}{4} \div \frac{1}{8}$ is the same as $11\frac{1}{4} \cdot 8$, so I multiplied them to get the answer of 90 unit cubes.

Answer 90 unit cubes

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The volumes of the rectangular prism and the unit cube are correctly calculated. The volume of the rectangular prism is then divided by the volume of a unit cube to correctly solve for the number of unit cubes that will fit in the prism. This response is complete and correct.

GUIDE PAPER 3

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$\frac{5}{2} \div \frac{1}{2} = \frac{5}{2} \times \frac{2}{1} = \frac{5}{1} = 5$ $\frac{3}{1} \div \frac{1}{2} = \frac{3}{1} \times \frac{2}{1} = \frac{6}{1} = 6$

$\frac{3}{2} \div \frac{1}{2} = \frac{3}{2} \times \frac{2}{1} = \frac{6}{2} = 3$ $2\frac{1}{2} \times \frac{1}{2} \times 1\frac{1}{2} = 11\frac{1}{4}$

$V = lwh$

$V = 5 \cdot 6 \cdot 3$

$V = 30 \times 3$

$V = 90$

Answer $11\frac{1}{4}$ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

$V = 5 \times 6 \times 3$

$V = 90 \text{ in.}^3$

Answer 90 unit cubes

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The volume of the rectangular prism is correctly calculated. The number of unit cubes that will fit along each side of the prism is calculated and then multiplied to determine the correct total number of unit cubes per prism.

GUIDE PAPER 4

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

L = 2,5

W = 3

H = 1,5

2,5 x 3 x 1,5 = 11,25

Answer 11,25 cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4} \times \frac{6}{1} = \frac{6}{4} = 1\frac{2}{4} = 1\frac{1}{2}$

7,5
1,5 | 11,25

Check!
7,5
x 1,5
11,25

Answer 7,5 unit cubes

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The volume of the rectangular prism is correctly calculated; however, the volume of a unit cube is not calculated correctly, the product of two side lengths is multiplied by 6 rather than by ½. The number of unit cubes is correctly calculated using the incorrect volume of a unit cube. The response addresses most, but not all aspects of the task and reflects some minor misunderstanding of the underlying mathematical concepts.

GUIDE PAPER 5

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$\frac{5}{2} \times \frac{6}{2} \times \frac{3}{2} = \frac{60}{2}$

30

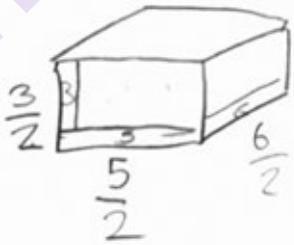
$V = L \times W \times H$

$V = 2\frac{1}{2} \times 3 \times 1\frac{1}{2}$

$V = \frac{5}{2} \times \frac{6}{2} \times \frac{3}{2} = \frac{90}{2} = 45$

Answer 45 cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.



$3 \times 5 \times 6 =$

Answer 90 unit cubes

Score Point 2 (out of 3 points)

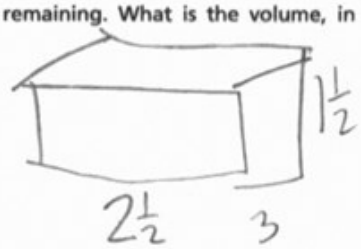
This response demonstrates a partial understanding of the mathematical concepts in the task. A correct procedure is followed to determine the volume of the rectangular prism ($V = 2\frac{1}{2} \times 3 \times 1\frac{1}{2}$); however, a calculation error results in an incorrect solution. A diagram of the prism is used to count the number of unit cubes that will fit on each side of the prism and then those numbers are multiplied to determine the correct total number of unit cubes per prism. This response contains an incorrect solution but provides sound procedures.

GUIDE PAPER 6

60

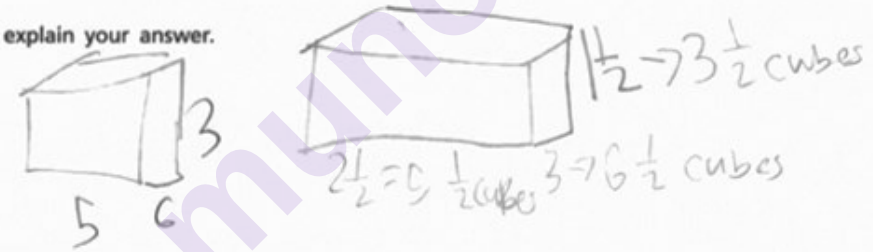
A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.



Answer 11.25 cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.



Answer 90 77 unit cubes

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The volume of the rectangular prism is calculated correctly and a drawing of the rectangular prism with a label on each side is provided. Another diagram is provided and each side is labeled with a length of the prism and how many ½-foot unit cubes will fit on each side of the rectangular prism ($1\frac{1}{2}$ → 3- ½ cubes, 3 → 6- ½ cubes, $2\frac{1}{2}$ → 5- ½ cubes); however, no additional operation is shown to support how the correct solution is obtained. The response appropriately addresses most, but not all aspects of the task.

GUIDE PAPER 7

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$l = 2\frac{1}{2}$

$w = 3$

$h = 1\frac{1}{2}$

$2\frac{1}{2} \cdot 3 \cdot 1\frac{1}{2} =$

$\frac{5}{2} \cdot \frac{3}{1} \cdot \frac{3}{2} = \frac{45}{4} = 11\frac{1}{4}$

$AO = \frac{1}{2}$

$11\frac{1}{4} + 1 = 12\frac{1}{4}$

Answer $12\frac{1}{4}$ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

You would take one unit cube and divide that into 100, and you should get 200 unit cubes.

Answer 200 unit cubes

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The volume of the rectangular prism is correctly shown ($2\frac{1}{2} \times 3 \times 1\frac{1}{2}$) and a correct solution of $11\frac{1}{4}$ is calculated; however, an additional 1 is added to the answer resulting in an incorrect final solution of $12\frac{1}{4}$. The work shown for the number of unit cubes per prism is incorrect and incoherent. This response exhibits multiple flaws related to misunderstanding of important aspects of the task.

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

L-2.5
W-3
h 1.5

2.5
×1.5
125
250
37.5

37.5
× 3
112.5

Answer 112.5 cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

26
.5)112.5
.10
12
12
0

Answer 26 unit cubes

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The volume of the rectangular prism is correctly determined; however, the misplacement of the decimal point leads to an incorrect final solution for the volume of the prism. The volume of the prism is incorrectly divided by the length of one of the unit cubes sides. This response exhibits multiple flaws related to misunderstanding of important aspects of the task.

GUIDE PAPER 9

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

Answer 11 ¼ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

Answer 22 ½ unit cubes

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The volume of the rectangular prism is calculated correctly and a drawing of the rectangular prism with a label on each side is provided; however, no operations are shown to support how the solution is obtained. This response contains the correct volume for the rectangular prism but required work is limited. The number of unit cubes per prism is incorrect and no work is provided.

GUIDE PAPER 10

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$2\frac{1}{2} + 1\frac{1}{2} + \frac{1}{2} = 3\frac{3}{2}$

$\frac{5}{2} + \frac{3}{2} + \frac{1}{2} = \frac{9}{2} = 4\frac{1}{2}$

Answer $4\frac{1}{2}$ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

Answer 3 unit cubes

Score Point 0 (out of 3 points)

All of the given dimensions are improperly added together; holistically this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

60

A right rectangular prism has a length of $2\frac{1}{2}$ feet, a width of 3 feet, and a height of $1\frac{1}{2}$ feet. Unit cubes with side lengths of $\frac{1}{2}$ foot are added to completely fill the prism with no space remaining. What is the volume, in cubic feet, of the right rectangular prism?

Show your work.

$2\frac{1}{2} \times 3 \times 1\frac{1}{2} = \frac{5}{2} \times \frac{3}{1} \times \frac{3}{2} = \frac{15}{4} = 3\frac{3}{4}$

Answer $3\frac{3}{4}$ cubic feet

How many $\frac{1}{2}$-foot unit cubes can be added to fill the prism completely? Use what you know about unit cubes or the side lengths of prisms to show your work or explain your answer.

$3\frac{3}{4} \times \frac{1}{2} = \frac{15}{4} \times \frac{1}{2} = \frac{15}{8} = 1\frac{7}{8}$

Answer $1\frac{7}{8}$ unit cubes

Score Point 0 (out of 3 points)

Although two of the given dimensions are properly multiplied, holistically this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

_____

_____

_____

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

_____

_____

_____

EXEMPLARY RESPONSE

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

arrow head = +15; bone = +721; clay bowl = 0; necklace = +462;

woven basket = -1200

Or other valid response

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

Artifacts found above sea level have a positive integer;

artifacts found at sea level are zero; artifacts found below

sea level have a negative integer. Or other valid response

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

Arrow head= 15 ft
Bone=721 ft
Clay bowl=0 ft
Necklace=462 ft
Woven basket= -1200 ft

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

To find the answers to this problem you need to know that above sea level means that the numbers are postive so you dont add anything to the begining of the number. Below sea level means the number is negative so you put a negative sign in front of the number. At sea level means that you make the number zero because it is like the starting point and it isn't negative or positive.

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The artifacts are listed correctly with a positive integer for above sea level, zero for at sea level and a negative integer for below sea level with a correct explanation of how the student determined if the integers are positive or negative or zero. This response indicates that the student has used mathematically sound procedures.

GUIDE PAPER 2

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

-1,200, 0, +15, +462, +721

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

If a elevation requires a positive interger it has to say above sea level, for it to be zero it has to say sea level, and if it is a negative interger it has to say below sea level

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The elevations are listed correctly with a plus or negative sign as indicated and a zero for sea level. This response contains sufficient work to demonstrate a thorough understanding of the mathematical concepts.

GUIDE PAPER 3

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

Arrow Head: 15 ft
Bone: 721 ft
Clay Bowl: 0 ft
Necklace: 462 ft
Woven Basket: -1,200 ft

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

I determined if an elevation required a positive integer, zero, or negative integer by looking at the elevation. If the elevation is below sea level it has a negative integer. If the elevation is above sea level it has a positive integer. If the elevation is on sea level it has a zero for its elevation.

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The artifacts are listed correctly with a positive integer for above sea level, zero for at sea level and a negative integer for below sea level with a correct explanation of how the student determined if the integers were positive, negative or zero. This response indicates that the student has used mathematically sound procedures.

GUIDE PAPER 4

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

arrow head +15

bone +721

clay bowl 0

necklace +462

woven basket -1,200

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

The words above , below or sea level .

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The artifacts are listed correctly with a positive integer for above sea level, zero for at sea level and a negative integer for below sea level. The explanation is incomplete as to how the student determined if it was a positive, negative or zero integer. This response appropriately addresses most, but not all aspects of the task.

GUIDE PAPER 5

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

arrow head:15ft.
bone:721ft.
clay bowl:0ft.
necklace:-462ft.
woven basket:-1,200ft.

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

Sea level is equal to 0 so ,anything above sea level is positive and anything below than sea level is negative.

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. All of the artifacts are listed correctly with the exception of the necklace, which should have a positive sign by the integer. The explanation provides sound reasoning on how the negative, positive and zero are determined. This response contains an incorrect solution but provides sound reasoning and explanation.

GUIDE PAPER 6

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

Arrow Head 15 Feet Bone 721 Feet Clay Bowl 0 Feet Necklace 462 Feet Woven Basket -1,200 Feet

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

Below Sea level means a negative integer and above sea level means a positive integer.

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The artifacts are listed correctly with a positive integer for above sea level, zero for at sea level and a negative integer for below sea level. The explanation is incomplete as it does not address the zero at sea level. This response appropriately addresses most, but not all aspects of the task.

GUIDE PAPER 7

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

(Arrow Head: +15ft); (Bone:+721ft); (Clay Bowl:0ft); (Necklace:+462ft); (Woven Basket:-1,200ft)

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

(NO STUDENT RESPONSE GIVEN)

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The artifacts are listed correctly with a positive integer for above sea level, zero for at sea level and a negative integer for below sea level; however, the explanation is missing. This response contains the correct solution but required work is limited.

GUIDE PAPER 8 Additional

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

CLAy bowl 0,arrow head -15,bone 721,necklace 462

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

if it was below sea leval it was a negative integer.if it was above sea leval it was a positive integer.

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The clay bowl, bone, and necklace artifacts are all listed correctly; however, the arrow head incorrectly has a negative sign and the woven basket is missing altogether. The explanation has correctly identified below as negative and above as positive; however, at sea level is not addressed. This response exhibits multiple flaws related to misunderstanding of important aspects of the task.

GUIDE PAPER 9

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

arrow head=+15
bone=+721
clay bowl=0
necklace=-462
woven basket=-1,200

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

by the text telling me below or above sea level.0 meant on sea level

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. All of the artifacts are listed correctly with the exception of the necklace, which should have a positive sign by the integer. The explanation for how the zero is determined is correct; however, the explanation for how the positive or negative integers are determined is incomplete. This response addresses some elements of the task correctly but reaches an inadequate solution and provides reasoning that is incomplete.

GUIDE PAPER 10

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

0-0

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

sea level

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The response is incoherent and incorrect.

GUIDE PAPER 11 Additional

61 The table below shows the elevations at which different artifacts were found during an archeological dig.

Artifact	Elevation
arrow head	15 feet above sea level
bone	721 feet above sea level
clay bowl	sea level
necklace	462 feet above sea level
woven basket	1,200 feet below sea level

Write the name of each artifact and the elevation at which each artifact was found using a positive integer, zero, or negative integer.

15 above sea level arrow head 721 above sea level bone 462 above sea level necklace sea level clay bowl 1,200 below sea level woven basket

Explain how you determined if an elevation required a positive integer, zero, or negative integer.

on the chart it says if it is below sea level or above sea level or at sea level

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The response only copies the chart from the prompt.