5MA SLM-T

New York State Testing Program

2016 Common Core

Mathematics Test

Grade 5

Scoring Leader Materials

Training Set

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Grade 5 Mathematics Reference Sheet

CONVERSIONS

1 mile = 5,280 feet
1 mile = 1,760 yards

1 pound = 16 ounces
1 ton = 2,000 pounds

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

FORMULAS

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).

2016 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 does the work in other than a designated "Show your work" area, that work should still be scored. (Additional paper is an allowable accommodation for a student with disabilities if indicated on the student's Individual Education Program or Section 504 Accommodation Plan.)
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. In questions that provide ruled lines for students to write an explanation of their work, mathematical work shown elsewhere on the page should be considered and scored.
4. If the student provides one legible response (and one response only), teachers should score the response, even if it has been crossed out.
5. If the student has written more than one response but has crossed some out, teachers should score only the response that has **not** been crossed out.
6. Trial-and-error responses are **not** subject to Scoring Policy #5 above, since crossing out is part of the trial-and-error process.
7. If a response shows repeated occurrences of the same conceptual error within a question, the student should **not** be penalized more than once.
8. In questions that require students to provide bar graphs,
    - in Grades 3 and 4 only, touching bars are acceptable
    - in Grades 3 and 4 only, space between bars does **not** need to be uniform
    - in all grades, widths of the bars must be consistent
    - in all grades, bars must be aligned with their labels
    - in all grades, scales must begin at 0, but the 0 does **not** need to be written
9. In questions requiring number sentences, the number sentences must be written horizontally.
10. In pictographs, the student is permitted to use a symbol other than the one in the key, provided that the symbol is used consistently in the pictograph; the student does not need to change the symbol in the key. The student may **not**, however, use multiple symbols within the chart, nor may the student change the value of the symbol in the key.
11. 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.
12. 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.

46 Rearrange the numbers below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6

Answer _____ _____ _____ _____ _____
Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between _____ and _____

EXEMPLARY RESPONSE

46 Rearrange the numbers below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6

Answer 32.102 (Least) 32.94 33.6 34.039 34.198 (Greatest)

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 32.94 and 33.6

OR other valid response

46

Rearrange the decimals below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6

Answer 32.102 | 32.94 | 33.6 | 34.039 | 34.198
Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 32.94 and 33.6

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The given values are correctly ordered from least to greatest and 33.01 is placed between the correct two numbers.

GUIDE PAPER 2

46

Rearrange the decimals below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6

Answer 32.102, 32.94, 33.6, 34.039, 34.198
Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 32.94 and 33.6

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The given values are correctly ordered from least to greatest and 33.01 is placed between the correct two numbers.

GUIDE PAPER 3

46

Rearrange the decimals below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6

Answer 32.102 32.94 33.6 34.039 34.198

Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 32.94 and 33.6

33.010

34.039
32.940
34.198
32.102
33.600

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The given values are correctly ordered from least to greatest and 33.01 is placed between the correct two numbers.

GUIDE PAPER 4

46

Rearrange the decimals below so that they are listed in numerical order from least to greatest.

~~34.039 32.94 34.198 32.102 33.6~~

Answer 33.6 32.94 32.102 34.039 34.198
Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 33.6 and 32.94

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. 33.01 is placed between the correct two numbers; however, the given values are not correctly ordered from least to greatest (33.6 and 32.102 are transposed).

GUIDE PAPER 5

46

Rearrange the decimals below so that they are listed in numerical order from least to greatest.

34.059 32.94 34.198 32.102 33.6

Answer 32.94 32.102 33.6 34.059 34.198
Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 32.94 and 33.6

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. 33.01 is placed between the correct two numbers; however, the given values are not correctly ordered from least to greatest (32.94 and 32.102 are transposed).

GUIDE PAPER 6

46

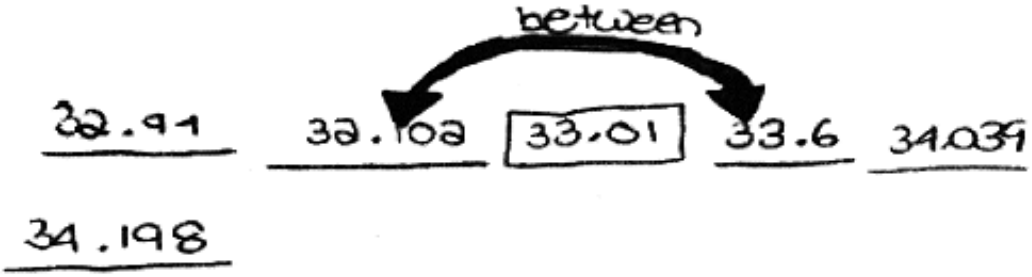
Rearrange the decimals below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6

Answer 32.94 32.102 33.6 34.039 34.198
Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 32.102 and 33.6



Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The value of 33.01 does fall between 32.102 and 33.6; however, the given values are not correctly ordered from least to greatest (32.94 and 32.102 are transposed). Note that, although one of the values expected in the second part of the response is 32.94 and not 32.102 as written, this error is a direct result from the previous incorrect ordering of the given list. As per Scoring Policy #7, the student should not be penalized more than once for the same error.

GUIDE PAPER 7

46

Rearrange the decimals below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6

Answer 33.6, 32.94, 32.102, 34.039, 34.198,
Least Greatest

The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 30.00 and 35.01

33.01
30.00
35.01

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 given values are not correctly ordered from least to greatest (33.6 and 32.102 are transposed) and although the value of 33.01 does fall between 30.00 and 35.01, those values are not drawn from those given in the prompt.

GUIDE PAPER 8

Additional

46

Rearrange the decimals below so that they are listed in numerical order from least to greatest.

34.039 32.94 34.198 32.102 33.6
4 1 5 2 3

Answer 32.94 32.102 33.6 34.039 34.198
Least Greatest

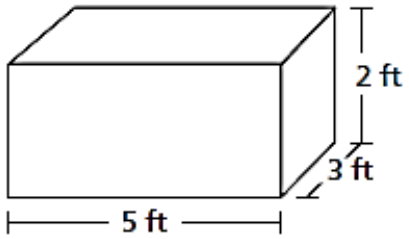
The number 33.01 is added to the list so that the new list is still in numerical order. Between which two numbers should 33.01 be placed?

Answer Between 32.94 and 32.102

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 given values are not correctly ordered from least to greatest (32.94 and 32.102 are transposed) and the value of 33.01 does not fall between 32.94 and 32.102.

47 A toy company uses the box shown below to package wooden cubes.



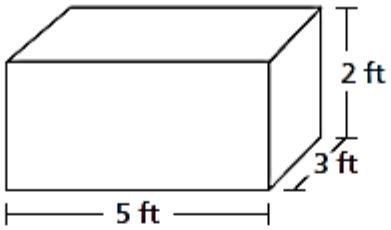
Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

Answer _____ wooden cubes

EXEMPLARY RESPONSE

47 A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

5 ft × 3 ft × 2 ft = 30 cubic feet

$30 \div \frac{1}{8} = 30 \times 8 = 240$ cubes

OR other valid response

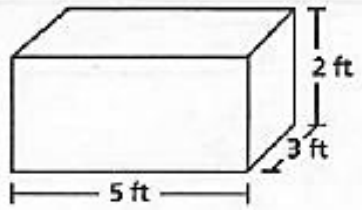
Answer 240 wooden cubes

GUIDE PAPER 1

Additional

47

A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

① volume of box
V=LxWxH
V=5x3x2
V=15x2
V=30 cu.ft.

② volume of the box shown (in ft) − volume of 1 wooden box
30 ÷ 1/8 = volume of 1 wooden box
30/1 ÷ 1/8 = 30/1 x 8/1 = 240/1

③ check
240/1 x 1/8 = 30/1
30
8|240
24
00

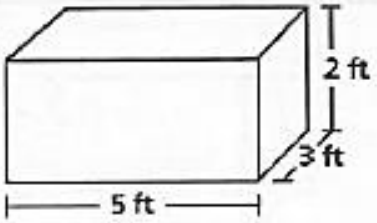
Answer 240 wooden cubes

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. All multiplication and division is carried out appropriately and correctly to arrive at a correct solution.

GUIDE PAPER 2

47 A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

$5 \times 3 = 15 \times 2 = \frac{30}{1} \div \frac{1}{8} = \frac{30}{1} \times \frac{8}{1} =$

$\frac{240}{1} = 240$

Answer 240 wooden cubes

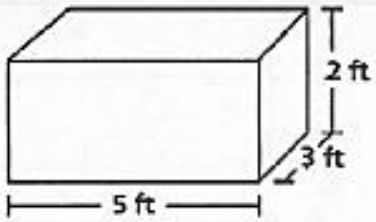
Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. All multiplication and division is carried out appropriately and correctly to arrive at a correct solution.

GUIDE PAPER 3

47

A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

5 x 3 = 15 x 2 = 30

30

5

8-4
14

60 60 60 60

15 15

2
60
60
60
+ 60
240

Answer 240 wooden cubes

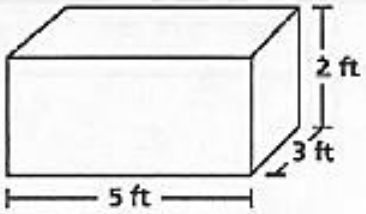
Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. A visual representation of partial products is employed appropriately to arrive at a correct solution.

GUIDE PAPER 4

47

A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

1
15
× 2
30

V=L×W×h
V=5×3×2
V=15×2
V=30

$\frac{1}{8} \times \frac{1}{30} = \frac{1}{240}$

30
× 8
240

Answer 1/240 wooden cubes

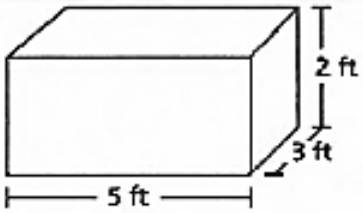
Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The correct total volume is found; however, it is then inappropriately multiplied as $\frac{1}{8} \times \frac{1}{30}$ rather than correctly dividing $30 \div \frac{1}{8}$, resulting in the reciprocal of the correct answer. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

47

A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

$5 \times 3 \times 2 = \frac{30}{8} = 3\frac{6 \div 2}{8 \div 2}\frac{3}{4}$

Answer $3\frac{3}{4}$ wooden cubes

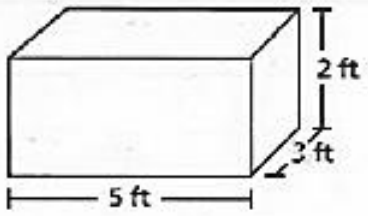
Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The correct total volume is found; however, it is then inappropriately multiplied by $\frac{1}{8}$ instead of dividing by $\frac{1}{8}$. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

47

A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

$V = l \times w \times h$

$V = 5ft \times 3ft \times 2ft$

$V = 15ft^3 \times 2$

$V = 30ft^3$

Answer $30ft^3$ wooden cubes

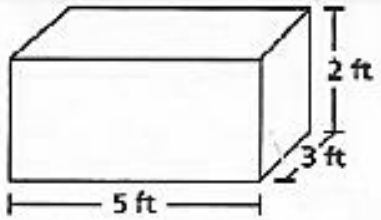
Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The correct total volume is found; however, no attempt is made to solve how many wooden cubes will fit in that volume. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

47

A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

$5 \times \frac{1}{8} = \frac{5}{8}$

$3 \times \frac{1}{8} = \frac{3}{8}$

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

$\frac{5}{8} + \frac{3}{8} + \frac{2}{8} = \frac{10}{8}$

$1\frac{2}{8}$

$8\overline{)10}$ (×1 ×2) $-\ 8$ $= 2$

Answer $1\frac{2}{8}$ wooden cubes

Score Point 0 (out of 2 points)

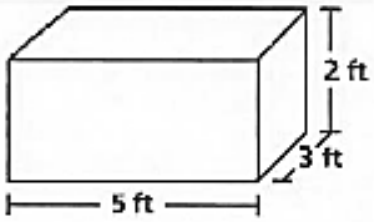
This response is irrelevant and does not demonstrate even a limited understanding of the mathematical concepts in the task. No attempt is made to determine the total volume of the package and $\frac{1}{8}$ is inappropriately multiplied by the individual sides of the package.

GUIDE PAPER 8

Additional

47

A toy company uses the box shown below to package wooden cubes.



Each wooden cube has a volume of $\frac{1}{8}$ cubic foot. In total, how many wooden cubes will fit in the box?

Show your work.

5
3
2
+
10

Answer 10 ft wooden cubes

Score Point 0 (out of 2 points)

This response is irrelevant and does not demonstrate even a limited understanding of the mathematical concepts in the task. No attempt is made to determine the total volume of the package and the individual sides of the package are inappropriately added together.

48 A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.

Answer _____ CDs

EXEMPLARY RESPONSE

48

A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.

6422 ÷ 26 = 247

```
   247
26 ) 6422
  -52
   122
  -104
    182
   -182
      0
```

OR other valid response

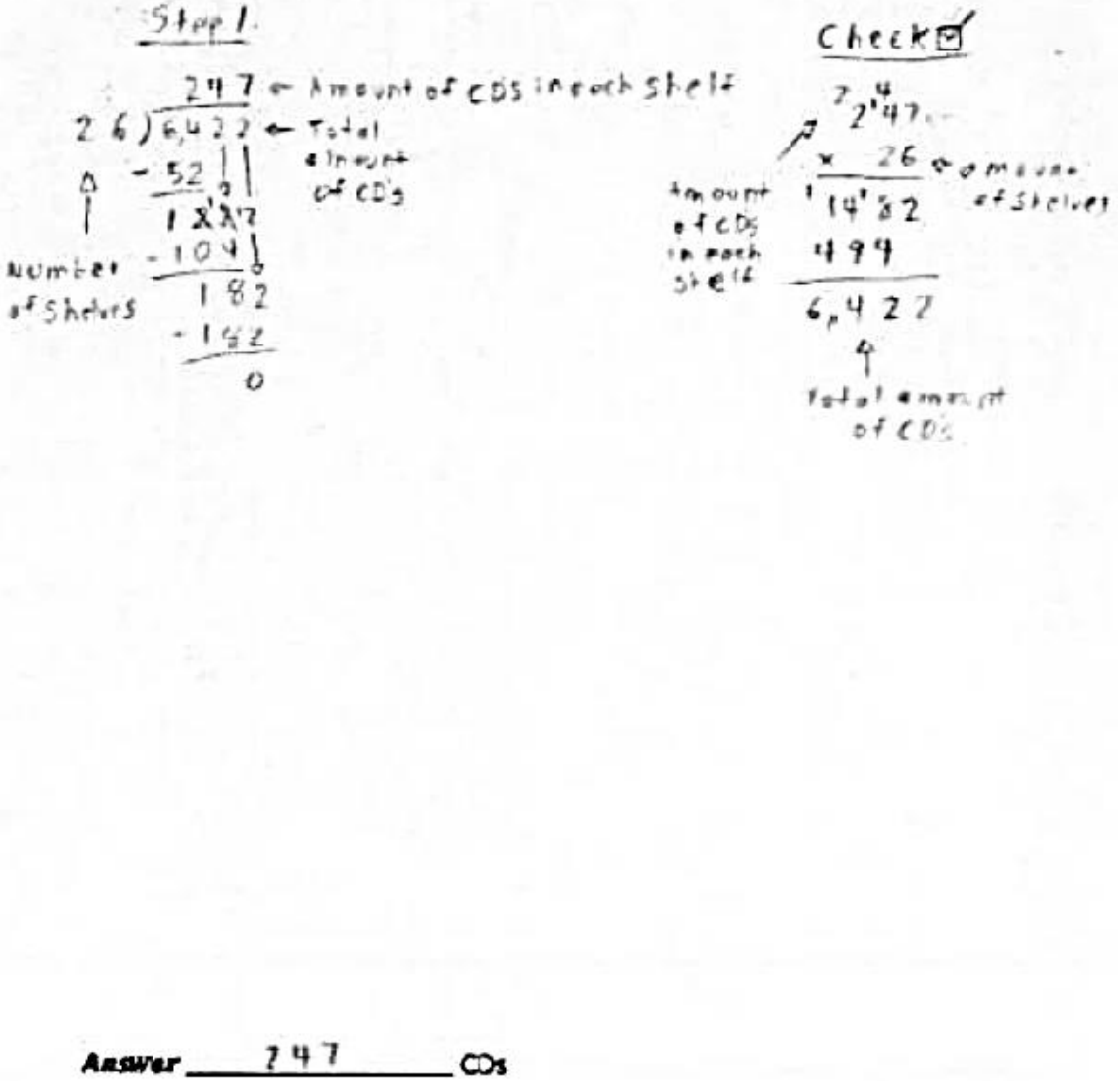
Answer 247 CDs

GUIDE PAPER 1

Additional

48 A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.



Answer 247 CDs

Score Point 2 (out of 2 points)

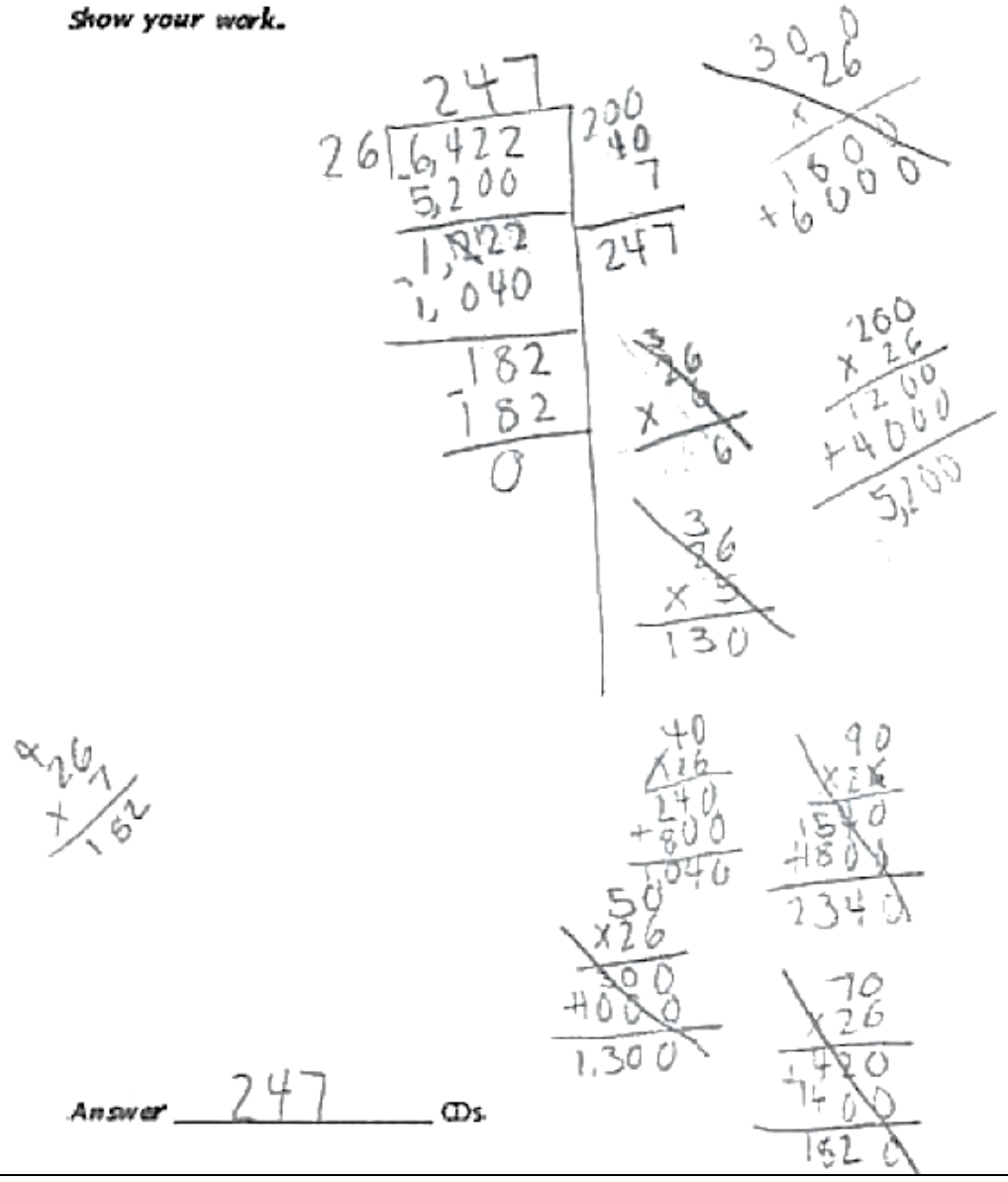
This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of CDs is appropriately and correctly divided by the number of shelves.

GUIDE PAPER 2

48

A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.



Score Point 2 (out of 2 points)

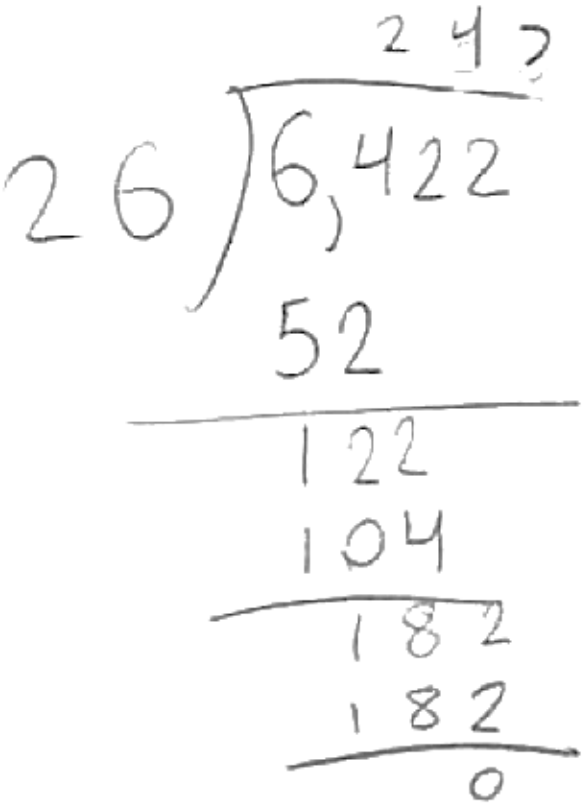
This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of CDs is appropriately and correctly divided by the number of shelves.

GUIDE PAPER 3

48

A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.



Answer 247 CDs

Score Point 2 (out of 2 points)

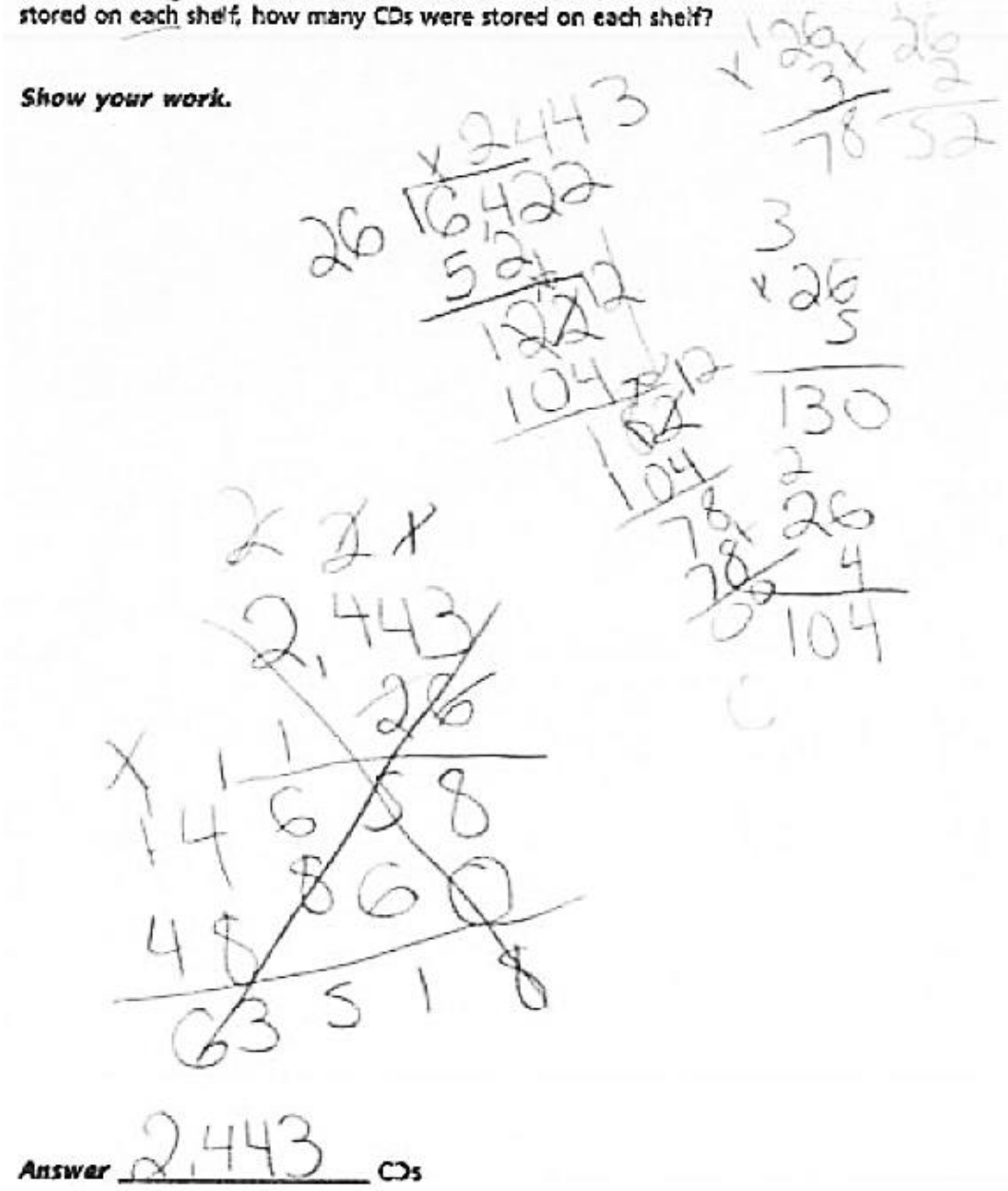
This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of CDs is appropriately and correctly divided by the number of shelves.

GUIDE PAPER 4

48

A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.



Answer 2,443 **CDs**

Score Point 1 (out of 2 points)

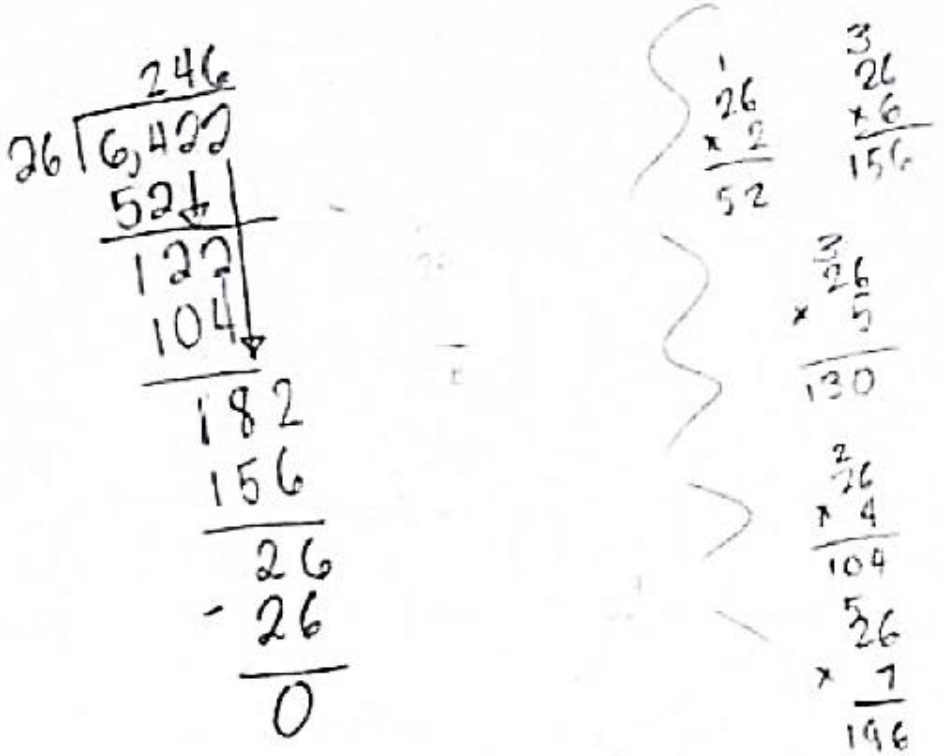
This response demonstrates only a partial understanding of the mathematical concepts in the task. The number of CDs is appropriately divided by the number of shelves; however, a calculation error results in an incorrect solution.

GUIDE PAPER 5

48

A library had 6422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.



Answer 246 CDs

Score Point 1 (out of 2 points)

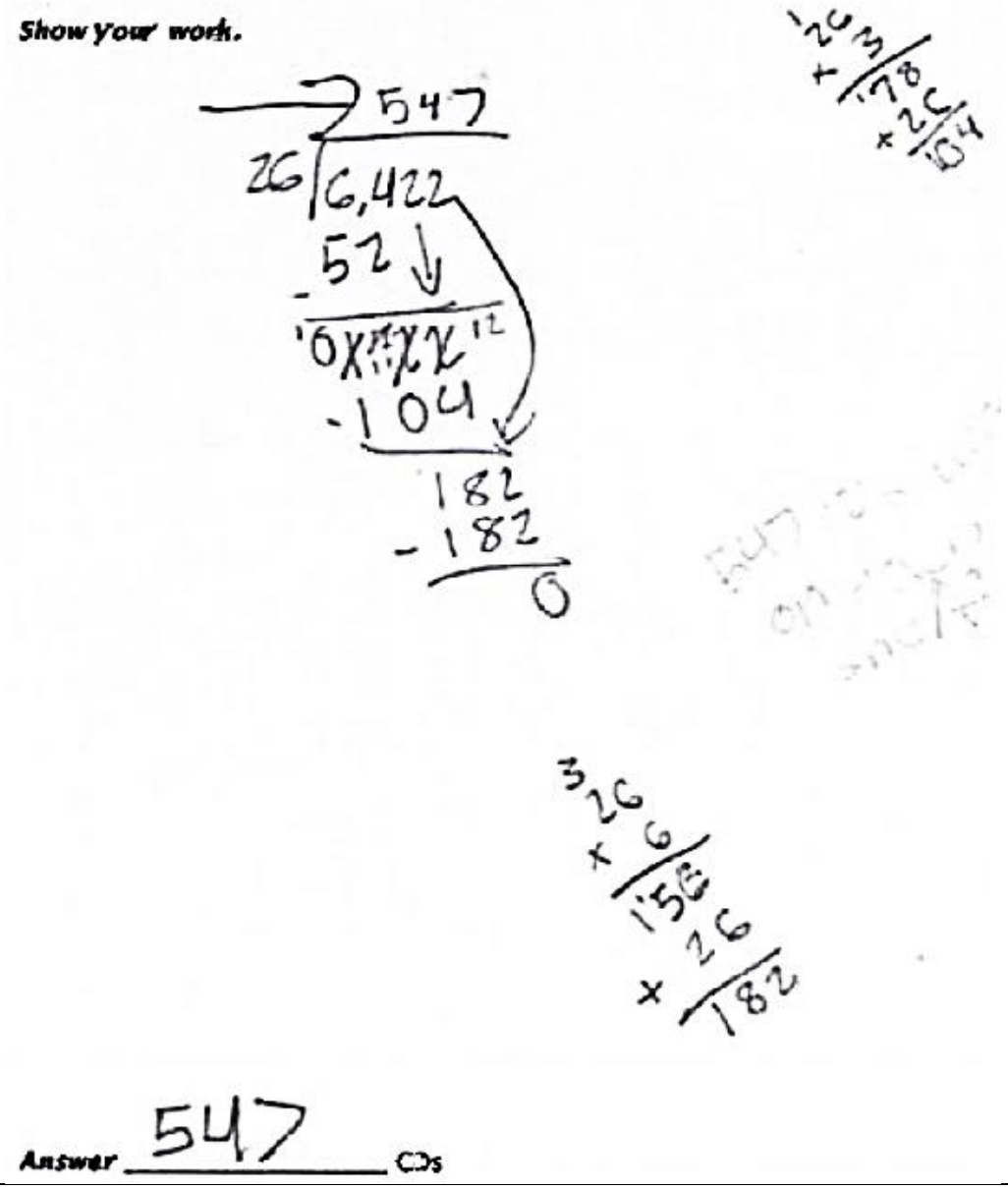
This response demonstrates only a partial understanding of the mathematical concepts in the task. The number of CDs is appropriately divided by the number of shelves; however, a calculation error results in an incorrect solution.

GUIDE PAPER 6

48

A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

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 CDs is appropriately divided by the number of shelves; however, a calculation error results in an incorrect solution.

GUIDE PAPER 7

48

A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.

$$\begin{array}{r} 6,422 \\ +\quad 26 \\ \hline 6,448 \end{array}$$

Answer 6,448 CDs

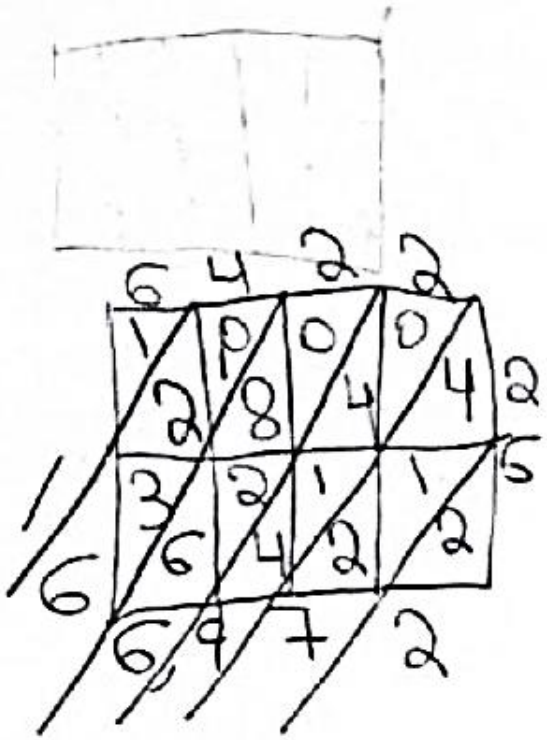
Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The number of CDs is inappropriately added to the number of shelves.

48

A library had 6,422 music CDs stored on 26 shelves. If the same number of CDs were stored on each shelf, how many CDs were stored on each shelf?

Show your work.



Answer 6,972 CDs

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 number of CDs is inappropriately multiplied with the number of shelves.

49 Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

EXEMPLARY RESPONSE

49 Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

n must be greater than four, in order for the fraction to be greater than one.

Seven must be multiplied by a number greater then one so that the answer is larger than itself.

Or other valid explanation

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

a and b must be equal, so that the fraction equals one. When seven is multiplied by one it will equal the answer seven.

Or other valid explanation

49

Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

when the numerator is greater than the denominator the answer will be greater than 7 ($n > 4$).

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

for the answer to be equal to 7 the numerator and denomin have to be the same so they can equal to 1. And any numb mutiplied by 1 will be that number

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The relationship between numerator and denominator required for the given conditions is correctly described for both expressions.

GUIDE PAPER 2

49

Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

Relationship between N and 4
is N is greater than 4

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

Relationship here ... B and A
are soppose to be the same

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The relationship between numerator and denominator required for the given conditions is correctly described for both expressions.

GUIDE PAPER 3

49 Describe the relationship between n and 4 that will make the value of the expression $\frac{7}{1} \times \frac{n}{4}$ greater than 7.

Answer

The n has to be greater than 4.

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

$\frac{7}{1} * \left(\frac{1}{1}\right) = \frac{7}{1} = 7$ $1 * \frac{4}{4}$

Answer

a and b have to be the same number.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The relationship between numerator and denominator required for the given conditions is correctly described for both expressions.

GUIDE PAPER 4

49

Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

The relationship between n and 4 is that n is greater then 4.

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

The relationship between a and b is that B is greater than a.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The relationship between *n* and 4 is correctly described; however, the relationship between *a* and *b* is incorrect.

GUIDE PAPER 5

49

Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

$7 \times \frac{4}{4}(1) = 7$

If you do n=? then you have to do the x and figure out what fits to make the answer correct. The correct answer is: n=4! $7 \times \frac{4}{4}$ is really 7x1 and 7 x 1 = 7!

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

A and b = 4, because $\frac{4}{4}$ is 1 and 7 x 1 is equal to 7. You didn't even have to do 4, you could of done any # as long as it was the same!

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The relationship between *a* and *b* being equal is correctly described; however, the relationship between *n* and 4 is incorrect.

GUIDE PAPER 6

49 Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

The N would be a 3, which $7 \times \frac{3}{4}$ would be greater than 7.

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

A would be 1 and b would also be a $1.7 \times \frac{1}{1} = 7.$

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The relationship between a and b being equal is correctly described; however, the relationship between n and 4 is incorrect. Note that although a and b are assigned the specific value of 1 even though they could be any value as long as they are equal, this error is considered inconsequential and does not detract from the response.

GUIDE PAPER 7

49

Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

Cause 7X4 = 28 So 28 is greater than 7.

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

Cause a and b are not a number they have no value So 7 is equal to 7.

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 variable n is not addressed and the explanation for the second expression reflects a lack of understanding of variables.

49

Describe the relationship between n and 4 that will make the value of the expression $7 \times \frac{n}{4}$ greater than 7.

Answer

n=1 because 7x4 is 7x4 and 7x4=28 and 28 is greater than 7.

Describe the relationship between a and b that will make the value of the expression $7 \times \frac{a}{b}$ equal to 7.

Answer

b=1 because 7x1=7 and 7=7. The relationship is that any number multiplied by 1 = that number. That's why b=1

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 explanation for the first expression incorrectly equates $7 \times \frac{1}{4}$ and 7×4. Although there is a correct explanation of the identity property of multiplying by 1 for the second expression, only b is set equal to 1: the variable a is not addressed.

50 Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total		

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

Answer _____ meters

EXEMPLARY RESPONSE

50 Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total		

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

Rosalva

1.5km = 1500m; 0.69km = 690m; 1.04km = 1040m; 2.1km = 2100m

1500 + 690 = 2190 2190 + 1040 = 3230 3230 + 2100 = 5330

Jake

1450 + 1590 = 3040 3040 + 1204 = 4244 4244 + 1977 = 6221

Difference

6221 – 5330 = 891

Or other valid process

Answer 891 meters

GUIDE PAPER 1

50

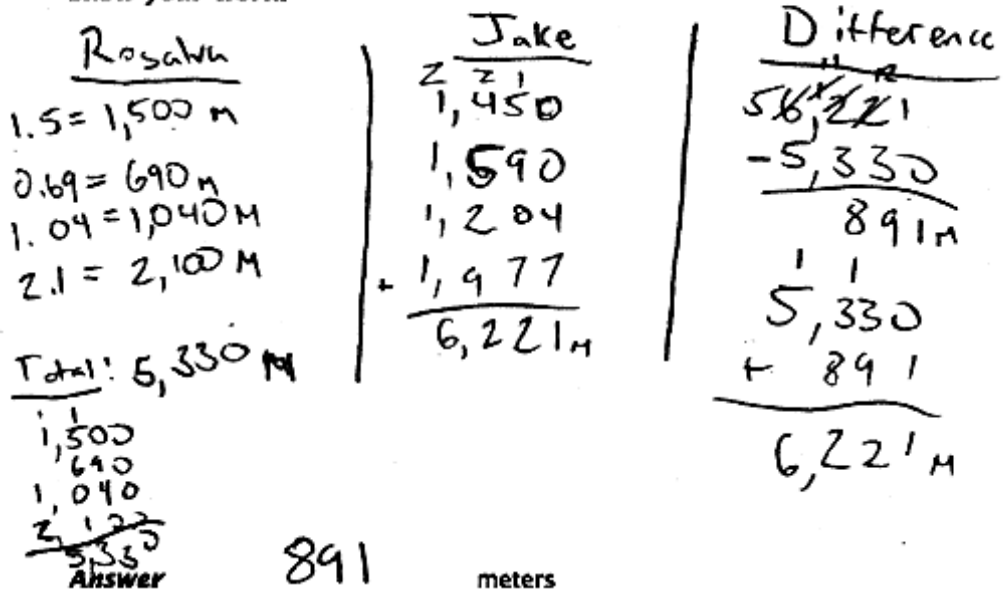
Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total		

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.



Answer 891 meters

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The distances in kilometers are correctly converted into meters, the total distance walked for each person is appropriately and correctly calculated, and the difference between them is found.

GUIDE PAPER 2

50

Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total	5.33	6,221

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

5 1 12
5,221
- 5,330
891

1 1
2.10
1.50
1.04
+0.69
5.33

2 3 1
1,450
1,590
1,204
+1,977
6,221

Answer 891 meters

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total distance walked for each person is appropriately and correctly calculated, kilometers are correctly converted into meters, and the difference between the two totals is found.

GUIDE PAPER 3

50

Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	21,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total	5.33	6,221

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

11
5, 1 12
6,221
- 5,330
891

KHD (B) DCM

5.33
1 zero 53.3
2 zeros 533
3 zeros 5,330

Answer 891 meters

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total distance walked for each person is appropriately and correctly calculated, kilometers are correctly converted into meters, and the difference between the two totals is found.

GUIDE PAPER 4

50

Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total	5.33	6,221

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

Rosalva

Mon 1.5
tues 0.69
Wed 1.04
thurs 2.1
5.33

Jake

Mon 1,450
tues 1,590
wed 1,204
thurs 1,977
6,221

122

Answer 122 meters

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total distance walked for each person is appropriately and correctly calculated; however, an incorrect solution of 122 meters is given with no support in the work for how that value was obtained. The response addresses only some elements of the task.

GUIDE PAPER 5

50

Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1,500	1,450
Tuesday	0.69 0	1,590
Wednesday	1,040	1,204
Thursday	2,100	1,977
Total		

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

56,211
- 5,330
0.881

2,100 + 1,500 + 1,040 + 690 = 5,330

1,450 + 1,590 + 1,204 + 1,977 = 6,211

Answer 881 meters

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total distance walked for each person is appropriately calculated, kilometers are correctly converted into meters, and the difference between the two totals is found; however, a calculation error occurs when determining the total distance walked by Jake (6,211), resulting in an incorrect solution. Although the solution is incorrect, appropriate procedures are applied.

GUIDE PAPER 6

50

Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total		

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

1 1
1.5
.69
+ 1.04
2.1
5.33

2 2 1
1,450
1,590
+ 1,204
1,977
6,221

6,221
− 533
5,688

Answer 5,688 meters

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total distance walked for each person is appropriately and correctly calculated and the difference between the two totals is found; however, a calculation error occurs when converting kilometers into meters (533), resulting in an incorrect solution. Although the solution is incorrect, appropriate procedures are applied.

GUIDE PAPER 7

50

Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total	1.25	3,181

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

1.04
+ 2.1
1.25

1,204
+1,977
3,181

3,181
+ 1.25
3,306

Answer 3,306 meters

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. Only two values from each column are added and those results are then inappropriately calculated.

50

Rosalva and Jake walked a certain distance each day. They recorded the distances in the table shown below.

DISTANCE WALKED

	Rosalva (kilometers)	Jake (meters)
Monday	1.5	1,450
Tuesday	0.69	1,590
Wednesday	1.04	1,204
Thursday	2.1	1,977
Total		

What is the difference, in meters, between Rosalva's and Jake's total distances walked over the four days?

Show your work.

$$\begin{array}{r} {}^{2}{}^{2}{}^{1} \\ 1450 \\ 1590 \\ 1204 \\ +1977 \\ \hline 6,231 \text{ Meters} \end{array}$$

Answer 6,231 meters

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. Only the distances walked by Jake are added and a calculation error results in an incorrect solution.

51 Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

Answer

EXEMPLARY RESPONSE

51 Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

Only the number outside needs to be multiplied, so
$4 \times 8 = 32$

Answer

Since the only difference between Expression A and B is the unknown in expression B, only the number outside of the brackets needs to be multiplied by 8. Therefore the unknown number would be 32.

OR other valid explanation

GUIDE PAPER 1

Additional

51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

4x8=32

Answer

I know that the box in expression B. is equal to 32. This is because expression B. is told to be eight times Expression A. So, all you have to do is take 4x8. This will equal 32.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The correct solution is given and the explanation correctly identifies the need to only multiply the number outside of the brackets.

GUIDE PAPER 2

51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

Answer

32 because 4X8=32 and in the promblem it said 8 times the value of Expression A

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The correct solution is given and the explanation correctly identifies the need to only multiply the number outside of the brackets.

GUIDE PAPER 3

51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\boxed{32} \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

4
×8
32

Answer

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. While no verbal explanation is written, the work shown is sufficient to establish the need to only multiply the number outside of the brackets: the prompt only directed students to either show their work *OR* explain how they determined the number. Note that as per Scoring Policy #2, although the answer is not written in the answer blank it should still receive full credit.

GUIDE PAPER 4

51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

Answer

I think the number in the box will be 32. I'm determined this number is it because it said the value of expression B is 8 times the value of expression A.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The correct solution of 32 is given; however, the explanation given is only a repetition of the prompt. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

100.25
+ 1.50
101.75

[(1.5 + 100.25) × 3.65]

[101.75 × 3.65]

371.3875
× 32
7427750
+1021,4162500
10288.41000

101.75
× 3.65
508.75
6105.00
+3054.2500
371.3875

Answer

Times 4 by 8. Then do the math problem

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. A correct explanation is given of multiplying 4 × 8; however, the product of 32 is never recorded. Additionally, the full expression is evaluated when the prompt directed not to do so. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

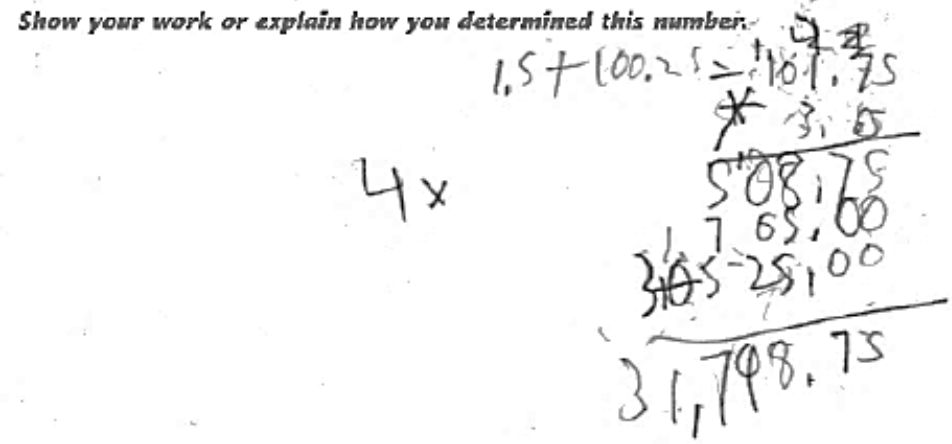
51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.



Answer

The determined number in Expression B is 32 because they have the same numbers exept 1 number is 8 times greater from the other.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The correct solution of 32 is given; however, the language in the explanation given is insufficient to distinguish it from a repetition of the prompt. Additionally, the full expression is evaluated when the prompt directed not to do so. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\boxed{8} \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

Answer

I determined this number because in the text it say that expression B was eight times the value the expression A.

Score Point 0 (out of 2 points)

This response is incorrect and does not demonstrate even a limited understanding of the mathematical concepts in the task. The value of 8 written does not take into account the value of 4 already existing in Expression A and the explanation given is only a repetition of the prompt.

51

Antoine wrote the expressions shown below.

- Expression A: $4 \times [(1.5 + 100.25) \times 3.65]$
- Expression B: $\square \times [(1.5 + 100.25) \times 3.65]$

The value of Expression B is eight times the value of Expression A. Without evaluating Expression A, determine what number belongs in the box in Expression B. Explain how you determined this number.

Show your work or explain how you determined this number.

4x8 | 155x8 | 100.25x8 | 3.65x8 |
32 | 1240 | 124 + 32 = 156

Answer

I times "Expression A by 8" and then I added what I got.

Score Point 0 (out of 2 points)

This response is incorrect and does not demonstrate even a limited understanding of the mathematical concepts in the task. Although some elements of the work contain correct mathematical procedures ($4 \times 8 = 32$), other values inside of the brackets were also inappropriately multiplied by 8 and the verbal explanation given is incorrect.

52 Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action," and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

***Answer*_____**

EXEMPLARY RESPONSE

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action," and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because he did not find a common denominator to add the fractions. He just added the numerators and denominators as they are, he should have gotten 17/20. OR other valid explanation

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$3/5 + 1/4 = 12/20 + 5/20 = 17/20$

$1 - 17/20 = 20/20 - 17/20 = 3/20$

OR other valid response

Answer $3/20$

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because he added the two fractions incorrectly. He is supposed to find a common denominator for 5 and 4 which is 20. Then he has to multiply the numerator 3 by 4 and 1 by 5. Then he adds. His answer should be $\frac{17}{20}$.

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{3}{5} + \frac{1}{4} = D$

$\frac{12}{20} + \frac{5}{20} = \frac{17}{20}$

$\frac{20}{20} - \frac{17}{20} = \frac{3}{20}$

Answer $\frac{3}{20}$ ✓

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The explanation correctly identifies Andy's error and the fraction of the DVD collection that is not "Action" or "Comedy" is correctly calculated.

GUIDE PAPER 2

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

$\frac{12}{20}$ $\frac{5}{20}$

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect. He is incorrect because instead of finding a common denominator, he added the denominator 9, with the denominator 4, to get 9. And added the numerator 3, to the numerator 1, to get $\frac{4}{9}$

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{12+5}{20} \frac{17}{20}$

$\frac{20}{20} - \frac{17}{20}$

Answer $\frac{3}{20}$

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The explanation correctly identifies Andy's error and the fraction of the DVD collection that is not "Action" or "Comedy" is correctly calculated.

GUIDE PAPER 3

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

$\frac{12}{20} \quad \frac{5}{20} = \frac{17}{20}$

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because $\frac{3}{5} + \frac{1}{4} = \frac{17}{20}$

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$$\begin{array}{r} 20 \\ -\ 17 \\ \hline 3 \end{array}$$

$\frac{3}{20}$

Answer $\frac{3}{20}$

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The explanation correctly identifies Andy's error and the fraction of the DVD collection that is not "Action" or "Comedy" is correctly calculated. Note that although some of the work shown is not in the designated "Show your work" area, as per Scoring Policy #1, it should still be scored.

GUIDE PAPER 4

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because $\frac{1}{4}$ plus $\frac{3}{5}$ doesn't equal $\frac{4}{9}$.

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{3}{5} = \frac{12}{20}$

$\frac{1}{4} = \frac{5}{20}$

$\frac{12}{20} + \frac{5}{20} = \frac{17}{20}$

ANSWER $\frac{3}{20}$

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The explanation correctly identifies that Andy made an error but does not sufficiently explain why it was incorrect. However, the fraction of the DVD collection that is not "Action" or "Comedy" is correctly calculated. The response correctly addresses most, but not all, aspects of the task.

GUIDE PAPER 5

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because he is sapposed to find a common multiple of 4, 5

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{5}{20}$ $\frac{12}{20}$

Answer $\frac{3}{20}$

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The explanation correctly identifies Andy's error and the fraction of the DVD collection that is not "Action" or "Comedy" is correctly calculated. However, the required work is limited: $^3/_5$ and $^1/_4$ are correctly given a common denominator, but their summation is not shown.

GUIDE PAPER 6

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because Andy added the denominators which never change. He needs to find the common denominator.

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

5: 5 10 15 20 $\frac{3}{5} \rightarrow \frac{12}{20}$

4: 4 8 12 16 20 $\frac{1}{4} \rightarrow \frac{5}{20}$ +

$\frac{17}{20}$

Answer $\frac{17}{20}$

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The explanation correctly identifies Andy's error; however, although $^{3}/_{5}$ and $^{1}/_{4}$ are correctly given a common denominator and calculated to $^{17}/_{20}$, no attempt is made to subtract this value from 1, resulting in an incorrect solution. The response correctly addresses most, but not all, aspects of the task.

GUIDE PAPER 7

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy's error is that the two denominators are both not the same. You have to do LCM to make it right.

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{3}{5} \times 4$ $\frac{1}{4} \times 5$

$\frac{4}{20} + \frac{5}{20}$ $\frac{9}{20}$

5: 5 10 15 (20)
4: 4 8 12 16 (20)

$\frac{9}{20}$

$\frac{4}{20} + \frac{5}{20} \cdot \frac{4}{20}$

Answer $\frac{9}{20}$

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The explanation correctly identifies Andy's error; however, although the response determines the correct common denominator of 20, the numerators are not correctly addressed and no attempt is made to subtract the sum of $^{9}/_{20}$ from 1. The response reflects a lack of essential understanding of the underlying concepts.

GUIDE PAPER 8

Additional

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because $\frac{4}{9}$ is not equivalent to $\frac{3}{5}$ or $\frac{1}{4}$ which are "Action" and "Comedy."

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{3\times4}{5\times4}=\frac{12}{20}$ $\frac{1}{4}=\frac{5}{20}$ $\frac{12}{20}+\frac{5}{20}=\frac{17}{20}$

Answer $\frac{17}{20}$

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The fraction of DVDs that are "Action" or "Comedy" is correctly calculated; however, no attempt is made to subtract that value from 1 to determine the fraction of DVDs not in those genres, and the explanation does not correctly identify Andy's error. The response correctly addresses only some elements of the task.

GUIDE PAPER 9

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because he just added the numerator and the denominator. But you have to find the comon denominator. then add.

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

?

Answer 7

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The explanation correctly identifies Andy's error; however, the second question of the problem is not addressed. The response correctly addresses only some elements of the task.

GUIDE PAPER 10

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

he is ~~correct~~ incorrect because $\frac{3}{5}$ are action and $\frac{1}{4}$ are Comedy and that added to gether is $\frac{4}{9}$

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{1}{4} \times \frac{3}{5} = \frac{31}{20} = \frac{3}{20}$

Answer $\frac{3}{2}$

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 explanation incorrectly asserts that Andy made no errors. Although the correct solution of $\frac{3}{20}$ is present in the work, it is obtained through an obviously incorrect multiplication procedure.

GUIDE PAPER 11

Additional

52

Andy has a collection of movie DVDs. In Andy's collection,

- $\frac{3}{5}$ of the DVDs are "Action" and
- $\frac{1}{4}$ of the DVDs are "Comedy."

Andy said that $\frac{4}{9}$ of his collection is "Action" or "Comedy." Cynthia said that Andy made an error. Explain whether Andy is correct or incorrect and why.

Andy is incorrect because he added $\frac{1}{4}$ which are comedy so if you add you get $\frac{4}{9}$. He he added wrong.

What fraction of the DVDs in Andy's collection is not "Action" or "Comedy"?

Show your work.

$\frac{4}{9} - \frac{3}{5} = \frac{1}{4}$

$\frac{1}{4}$

Answer $\frac{1}{4}$

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 explanation given does not sufficiently identify Andy's error, and the given values are inappropriately and incorrectly subtracted when determining the solution.

53 Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.

Answer $\_\_\_\_\_$

EXEMPLARY RESPONSE

53 Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.

12.5 ÷ 2.5 = 5 dog beds

$17.50 × 5 = $87.50 made

12.5 × $4.50 = $56.25 cost of fabric

$87.50 – $56.25 = $31.25 profit

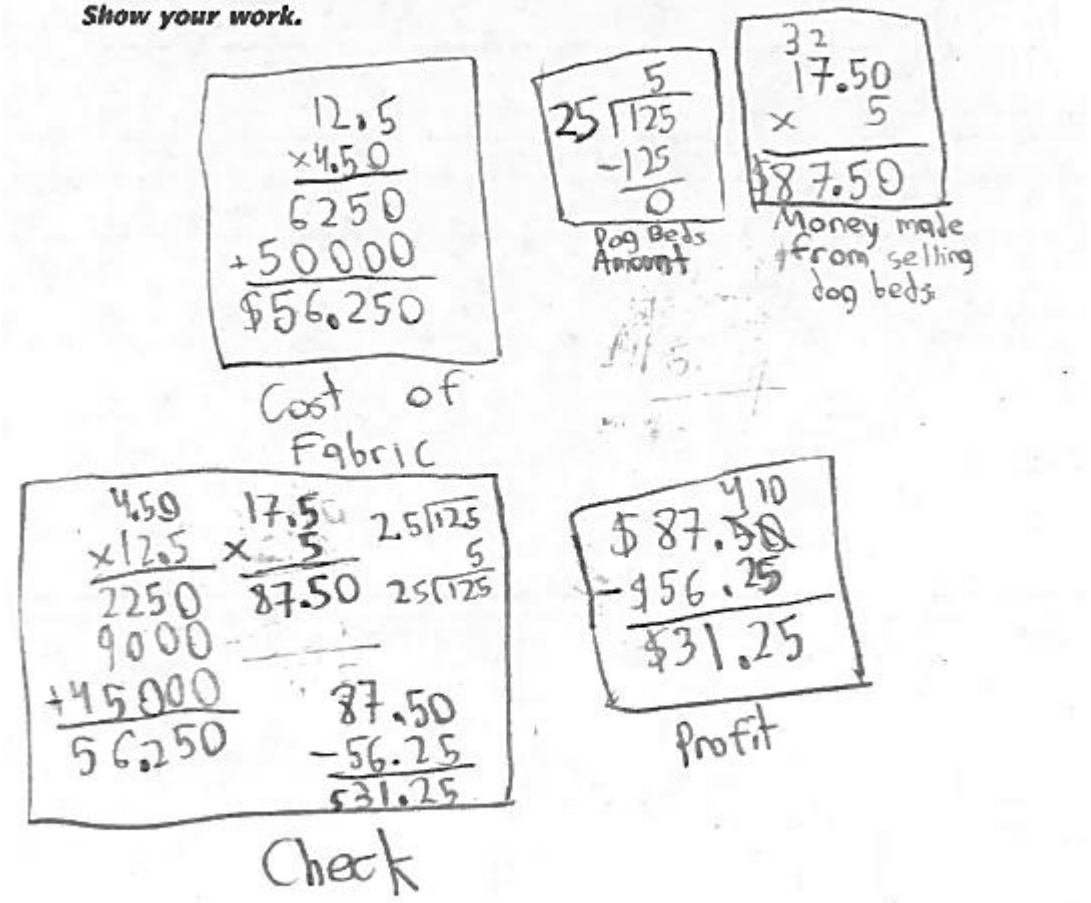
OR other valid response

Answer $ 31.25

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



Answer $ 31.25

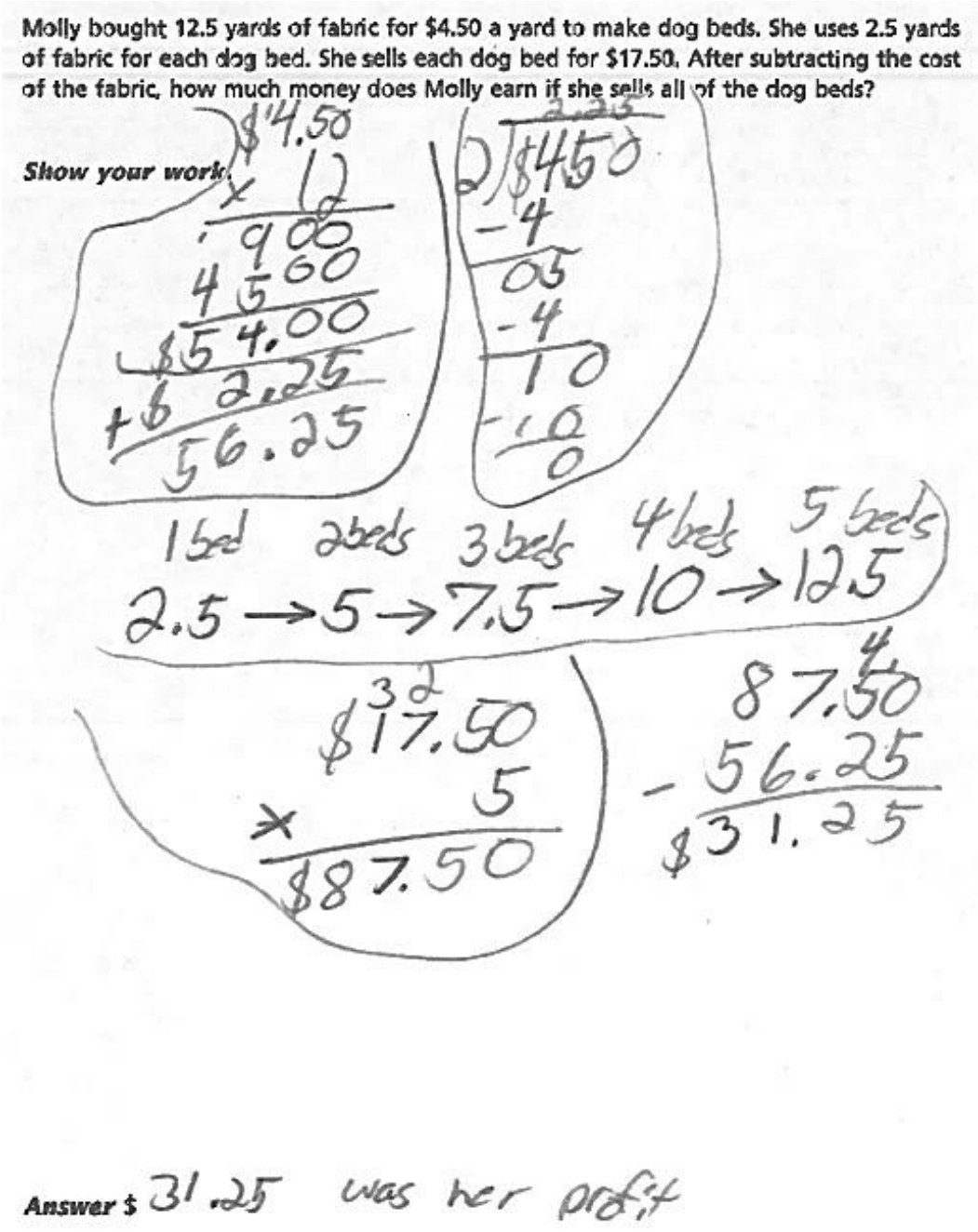
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total cost of fabric, number of beds to be made, and total sales revenue are all appropriately and correctly calculated and well-labeled and used to determine the net profit.

GUIDE PAPER 2

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?



Answer $ 31.25 was her profit

Score Point 3 (out of 3 points)

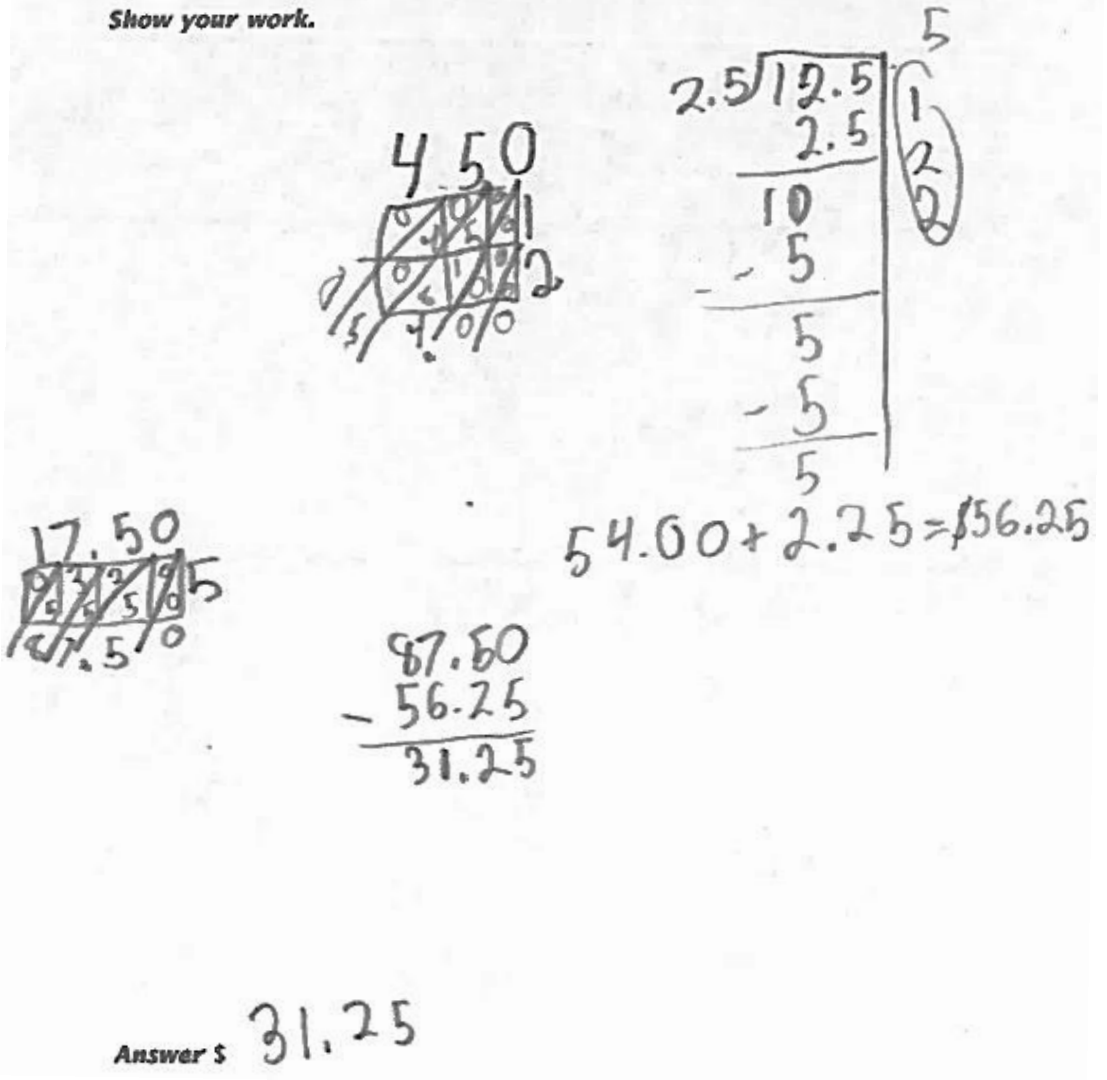
This response demonstrates a thorough understanding of the mathematical concepts in the task. The total cost of fabric, number of beds to be made, and total sales revenue are all appropriately and correctly calculated and used to determine the net profit.

GUIDE PAPER 3

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



Answer $ 31.25

Score Point 3 (out of 3 points)

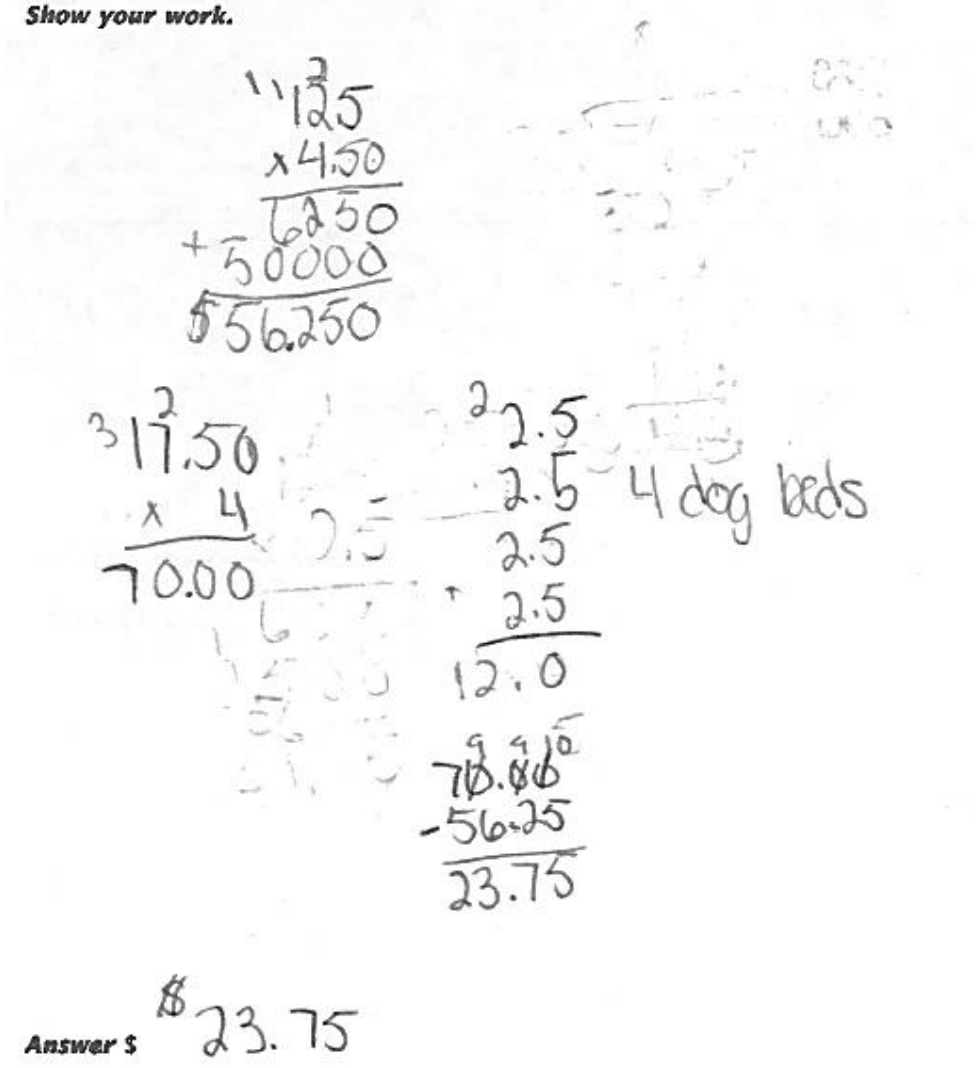
This response demonstrates a thorough understanding of the mathematical concepts in the task. The total cost of fabric, number of beds to be made, and total sales revenue are all appropriately and correctly calculated and used to determine the net profit.

GUIDE PAPER 4

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



Answer $ $23.75

Score Point 2 (out of 3 points)

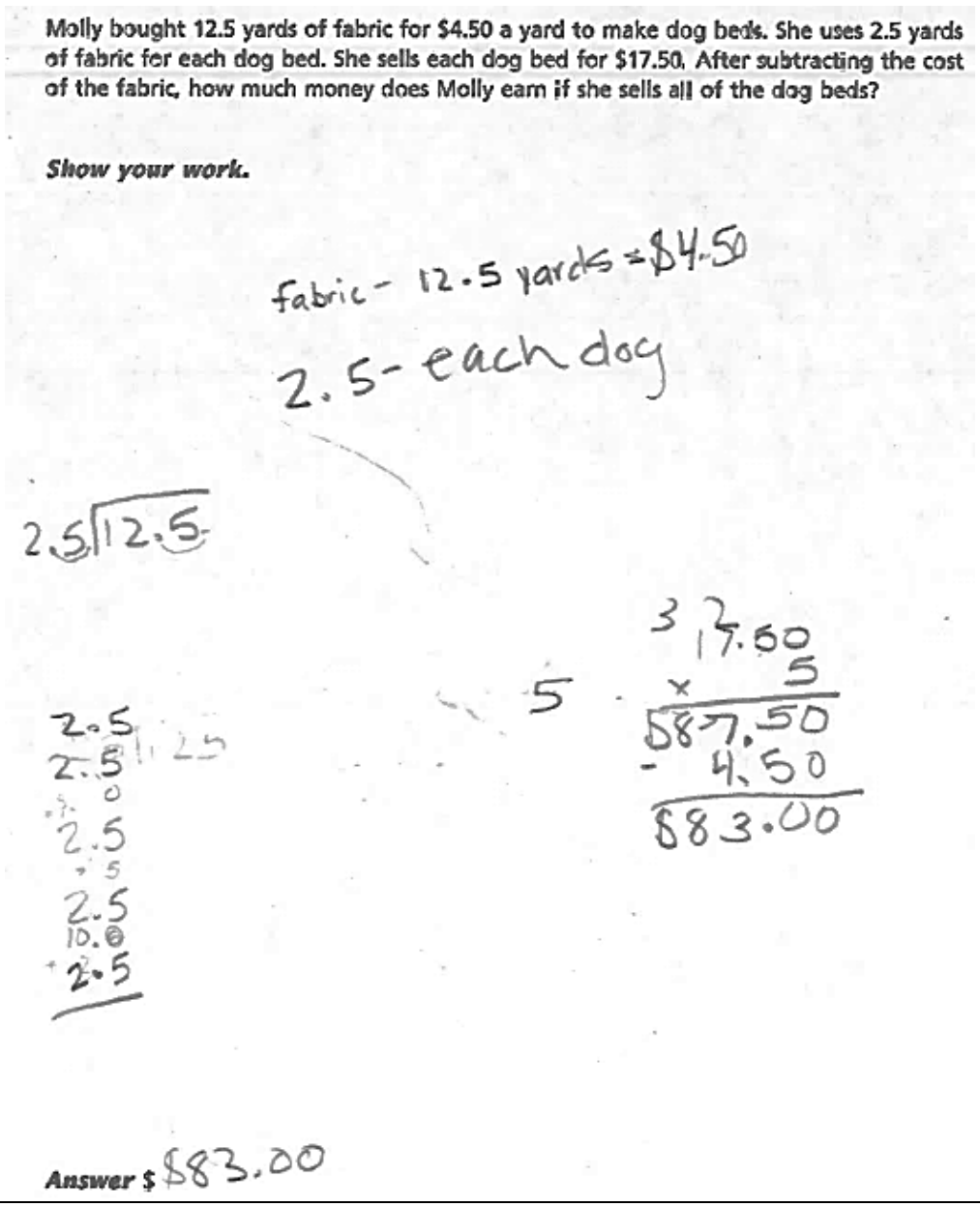
This response demonstrates a partial understanding of the mathematical concepts in the task. The total cost of fabric and total sales revenue are appropriately calculated and used to determine the net profit; however, a calculation error when solving for the number of beds to be made (2.5 + . . . = 12.0, *4 dog beds*) results in an incorrect solution. Although the solution is incorrect, appropriate procedures are applied.

GUIDE PAPER 5

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



Answer $ $83.00

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The number of beds to be made and the total sales revenue are appropriately and correctly calculated; however, the solution incorrectly subtracts only the cost of a single yard of fabric ($87.50 – 4.50 = $83.00). The response correctly addresses most, but not all, aspects of the task.

GUIDE PAPER 6

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.

12.50
×$4.50
0000
62500
500000
562500

5
2.5)12.5
125
0

32
$17.50
× 5
$87.50

Answer $ 87.50

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The total cost of fabric, number of beds to be made, and the total sales revenue are all appropriately and correctly calculated; however, no attempt is made to subtract the cost of the fabric from the revenue. The response addresses most, but not all, aspects of the task.

GUIDE PAPER 7

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.

$17.50 × 5 = 87.50

12.5 − 2.5 } 1

10.0 − 2.5 } 2

7.5 − 2.5 } 3

5.0 − 2.5 } 4

2.5 − 2.5 } 5

0.0

Answer $ 87.50

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The number of beds to be made and the total sales revenue are appropriately and correctly calculated; however, no attempt is made to calculate the total cost of fabric or to subtract any initial costs from the revenue to determine the net profit. The response addresses some elements of the task correctly, but is incomplete.

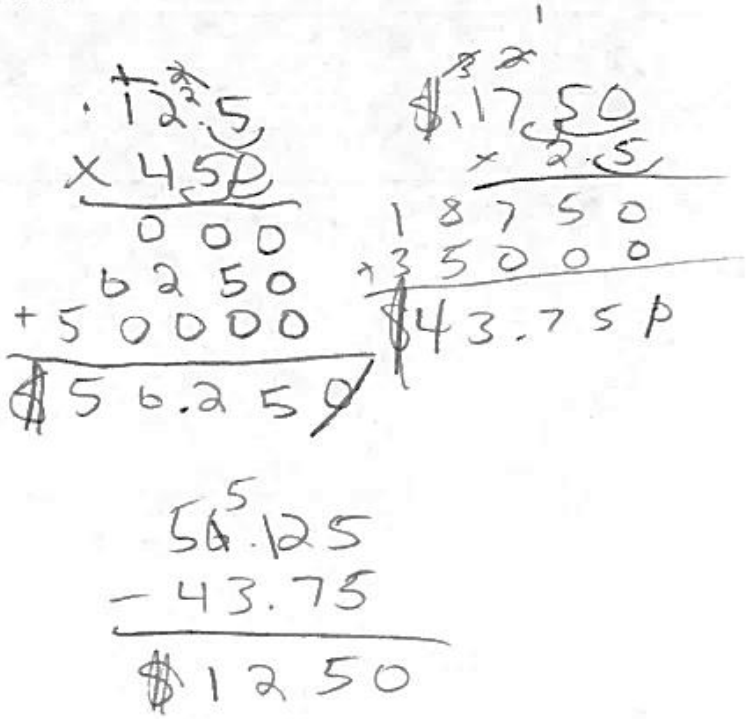
GUIDE PAPER 8

Additional

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



$12.50

Answer $

Score Point 1 (out of 3 points)

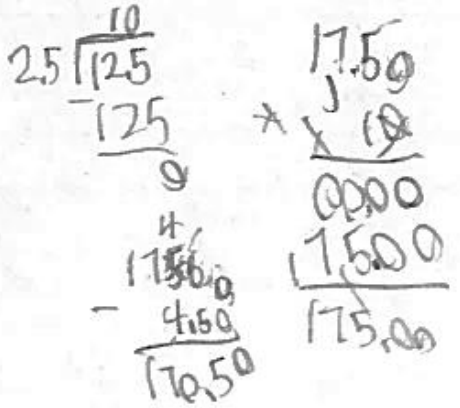
This response demonstrates only a limited understanding of the mathematical concepts in the task. The total cost of fabric is correctly calculated; however, the value of 2.5 is misinterpreted as the number of beds to be made and inappropriately multiplied by $17.50 resulting in an incorrect value for total sales revenue. Additionally, although the difference between revenue and the cost of fabric is found, the subtraction is performed in the incorrect order. The response exhibits multiple flaws related to misunderstanding of important aspects of the task.

GUIDE PAPER 9

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



Answer $ $170.50

Score Point 1 (out of 3 points)

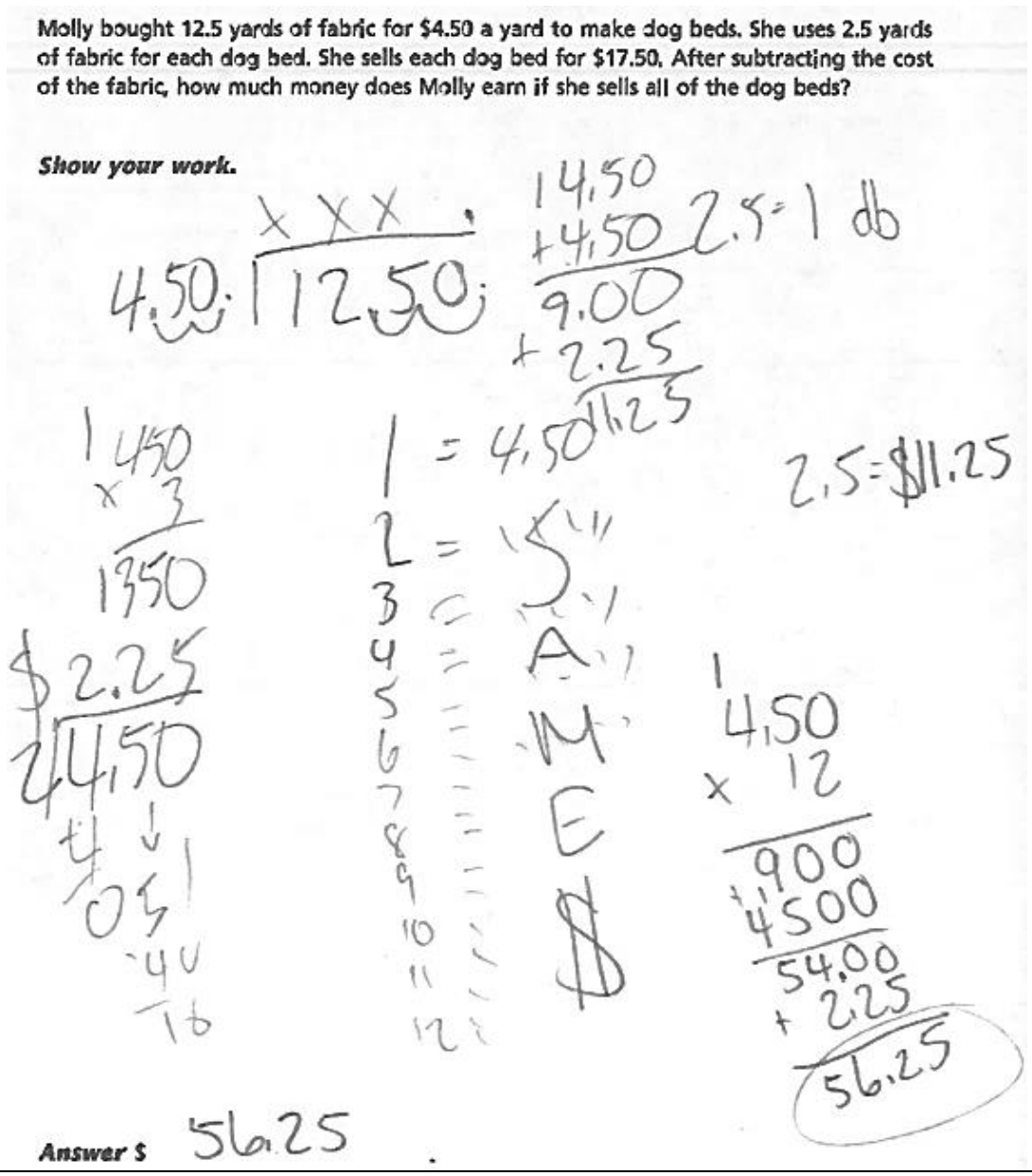
This response demonstrates only a limited understanding of the mathematical concepts in the task. 12.5 is appropriately divided by 2.5 to solve for the number of beds to be made; however, a calculation error leads to an incorrect result. 10 is then correctly multiplied by 17.50 to determine the total sales revenue; however, only the cost of a single yard of fabric is subtracted from this value to determine the net profit. The response exhibits multiple flaws related to misunderstanding of important aspects of the task.

GUIDE PAPER 10

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



Answer $ 56.25

Score Point 0 (out of 3 points)

Although some elements contain correct procedures (2.5 = $11.25, which is the correct cost of a single dog bed using 2.5 yards of fabric), multiple other unrelated or inappropriate calculations are shown (450 × 3, 12.50 ÷ 4.50, etc.). Holistically, this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

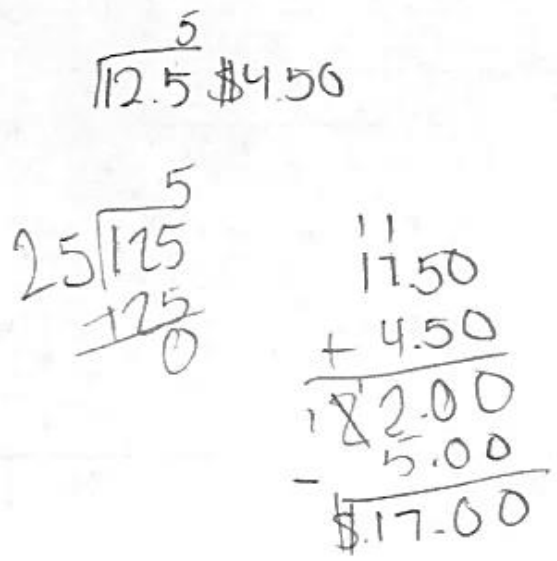
GUIDE PAPER 11

Additional

53

Molly bought 12.5 yards of fabric for $4.50 a yard to make dog beds. She uses 2.5 yards of fabric for each dog bed. She sells each dog bed for $17.50. After subtracting the cost of the fabric, how much money does Molly earn if she sells all of the dog beds?

Show your work.



Answer $ 17.00

Score Point 0 (out of 3 points)

Although some elements contain correct procedures ($125 \div 25 = 5$ as a proxy for $12.5 \div 2.5$), the cost of a single yard of fabric is inappropriately added to the sale price of a single dog bed. The value of 5 is then misinterpreted as a dollar amount and inappropriately subtracted from the previous sum. Holistically, this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

54 In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.

Answer _____ miles

EXEMPLARY RESPONSE

54 In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.

Cycling: $12\frac{1}{2}$ miles

Running: $12\frac{1}{2} \times \frac{1}{4} = 3\frac{1}{8}$ miles

Kayaking: $3\frac{1}{8} \times \frac{1}{2} = 1\frac{9}{16}$ miles

Total:

$12\frac{1}{2} + 3\frac{1}{8} + 1\frac{9}{16}$

$= 12\frac{8}{16} + 3\frac{2}{16} + 1\frac{9}{16}$

$= 16\frac{19}{16}$

$= 17\frac{3}{16}$

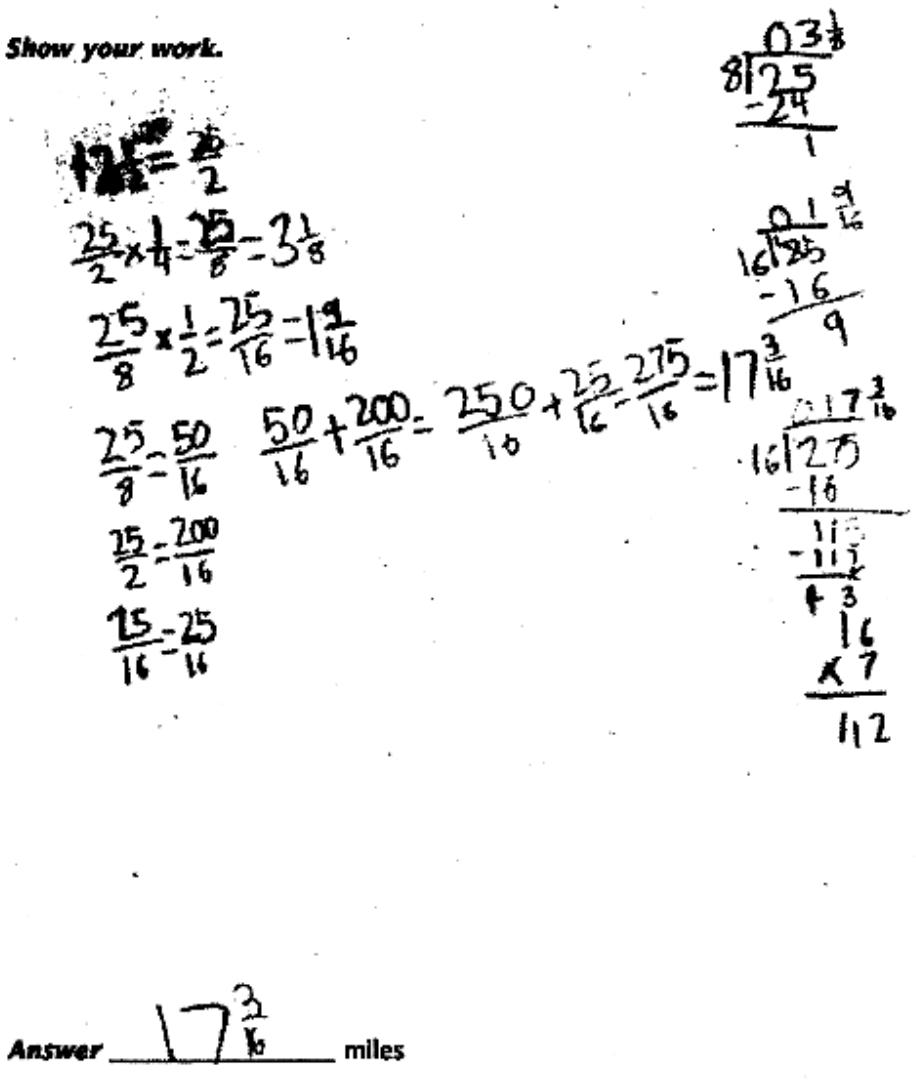
OR other valid response

Answer $17\frac{3}{16}$ miles

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Answer $17\frac{3}{16}$ miles

Score Point 3 (out of 3 points)

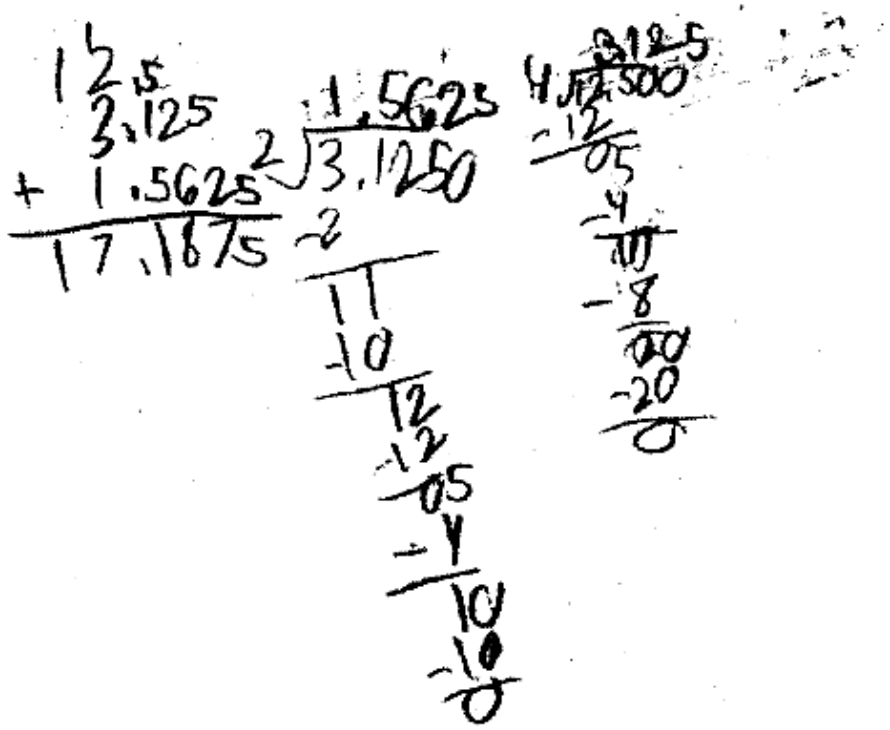
This response demonstrates a thorough understanding of the mathematical concepts in the task. Appropriate and correct multiplication of fractions is used to determine the distances of each part of the race, which are then correctly added to determine the total distance of the race.

GUIDE PAPER 2

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Answer 17.1875 miles

Score Point 3 (out of 3 points)

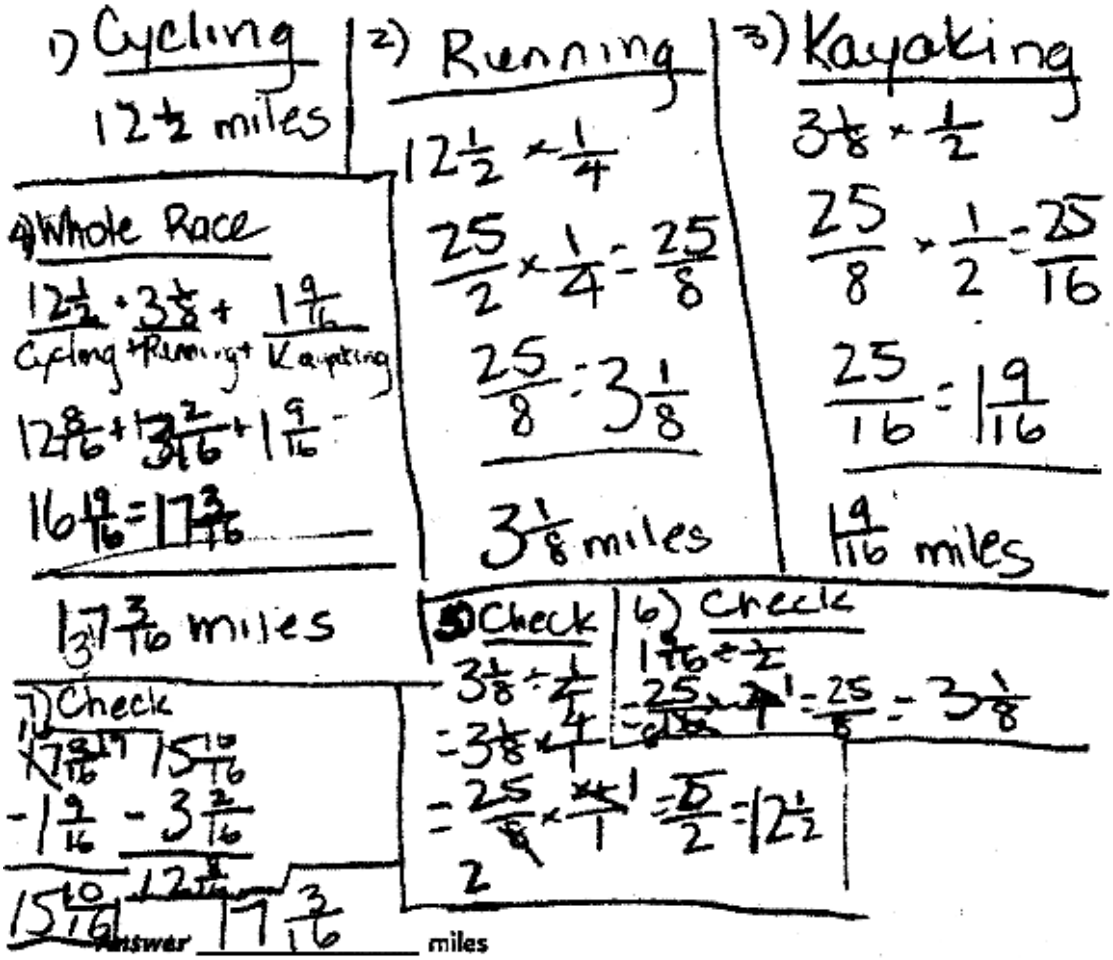
This response demonstrates a thorough understanding of the mathematical concepts in the task. The value $12\frac{1}{2}$ is correctly converted into a decimal format before dividing to determine the distances of each part of the race, which are then correctly added to determine the total distance of the race.

GUIDE PAPER 3

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Score Point 3 (out of 3 points)

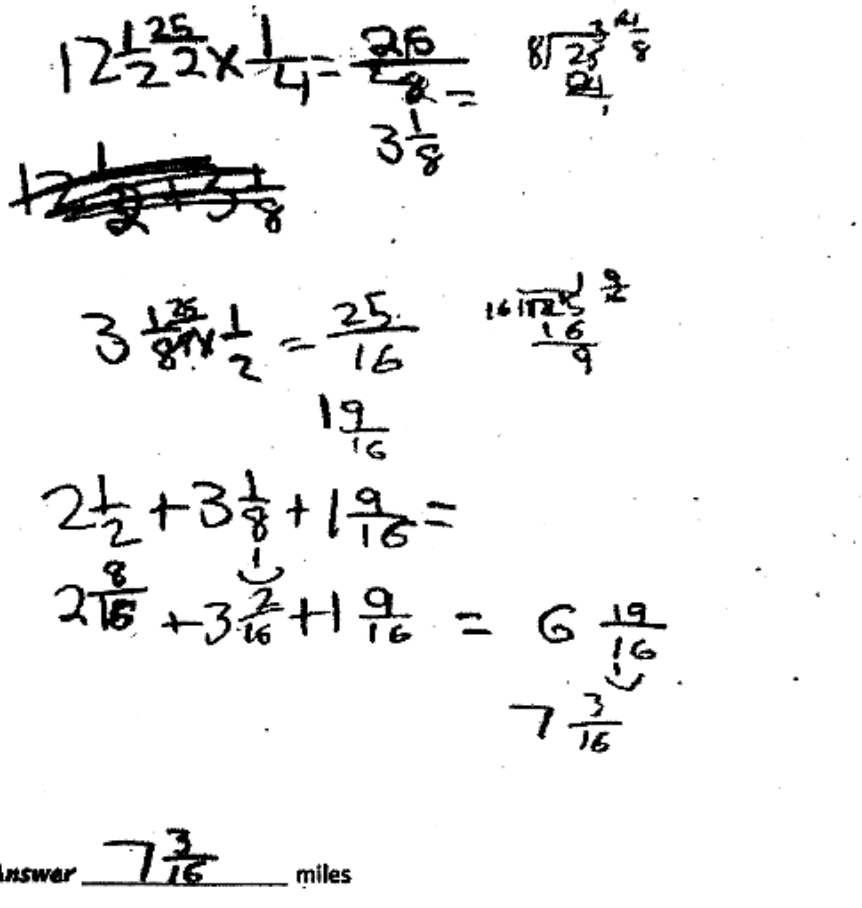
This response demonstrates a thorough understanding of the mathematical concepts in the task. Appropriate and correct multiplication of fractions is used to determine the distances of each part of the race, which are then correctly added to determine the total distance of the race.

GUIDE PAPER 4

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Score Point 2 (out of 3 points)

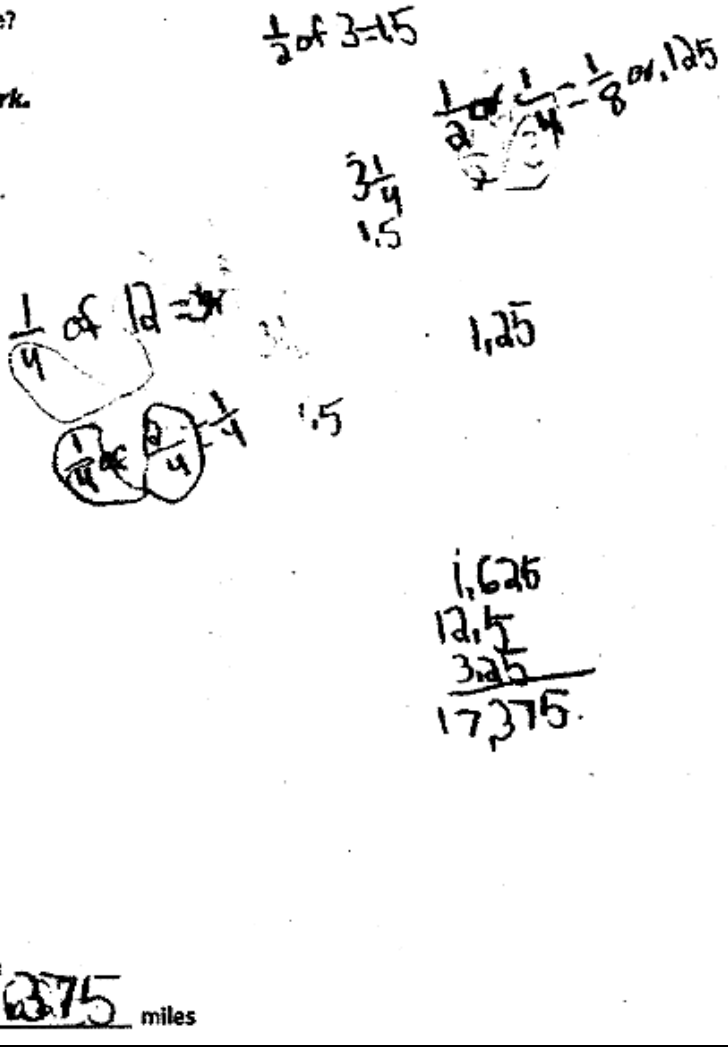
This response demonstrates a partial understanding of the mathematical concepts in the task. Appropriate and correct multiplication of fractions is used to determine the distances of each part of the race; however, when adding the distances to determine the total distance, $12\frac{1}{2}$ is incorrectly transcribed as $2\frac{1}{2}$, an error which is carried through the calculation resulting in an incorrect solution. Although the solution is incorrect, appropriate procedures are applied.

GUIDE PAPER 5

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Answer 17375 miles

Score Point 2 (out of 3 points)

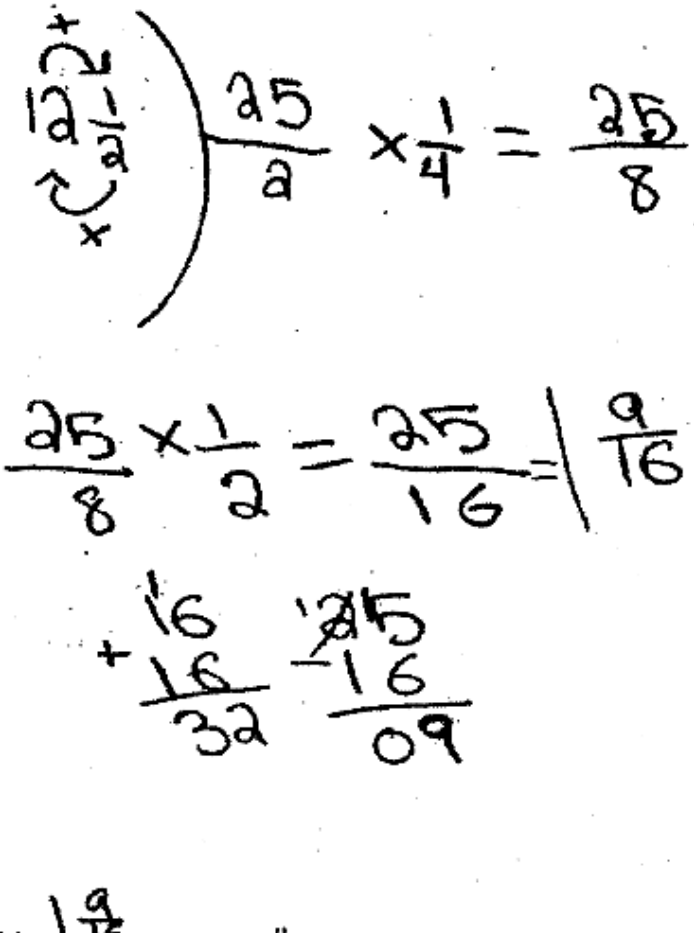
This response demonstrates a partial understanding of the mathematical concepts in the task. Appropriate multiplication of fractions is used to determine the distances of each part of the race, which are then correctly added to determine the total distance of the race; however a calculation error occurs when determining the fractional component of the running part of the race ($\frac{1}{4}$ of $\frac{2}{4} = \frac{1}{4}$), and this error is carried through the rest of the work with no further mistakes. The response correctly addresses most, but not all, aspects of the task.

GUIDE PAPER 6

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Answer $1\frac{9}{16}$ miles

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. Appropriate and correct multiplication of fractions is used to determine the distances of each part of the race; however, no attempt is made to add the parts together to solve for the entire distance. The response addresses most, but not all, aspects of the task.

GUIDE PAPER 7

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.

$3\frac{1}{8}$ = running

$1\frac{9}{16}$ = kayaking

Answer $17\frac{3}{16}$ miles

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. Although the solution is correct, the required work is limited. The correct distances of the running and kayaking portions of the race are listed, but no operations are shown to support how either they or the solution were obtained.

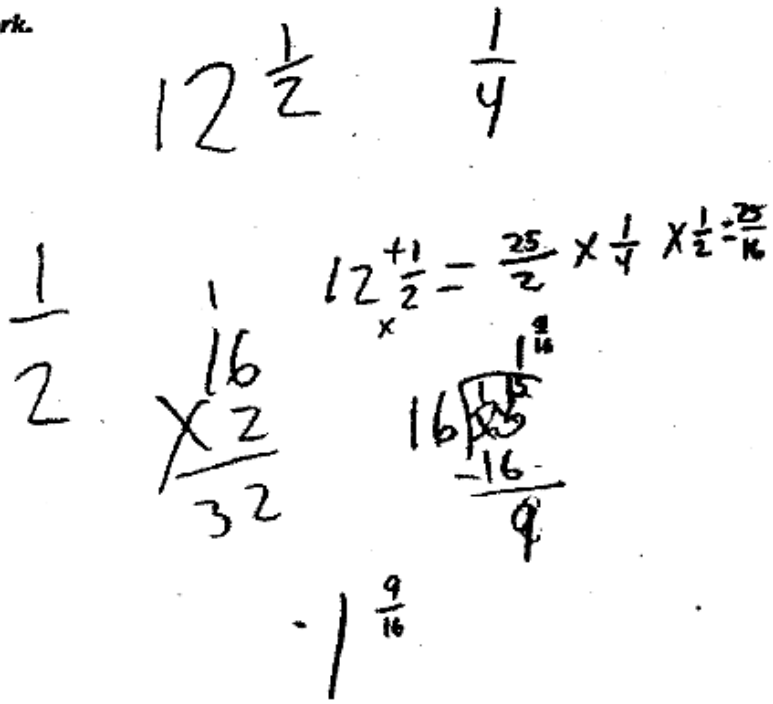
GUIDE PAPER 8

Additional

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Answer 1 9/16 miles

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. An appropriate and correct multiplication is shown to calculate the distance of the kayaking portion of the race; however, the running portion of the race is not addressed and no attempt is made to add the portions together to determine a total distance. The response addresses some elements of the task, but is incomplete.

GUIDE PAPER 9

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.

$12\frac{1}{2} \div \frac{1}{4} = 3$

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

$12\frac{1}{2}$

3

$+ \quad 1\frac{1}{2}$

17

Answer 17 miles

Score Point 1 (out of 3 points)

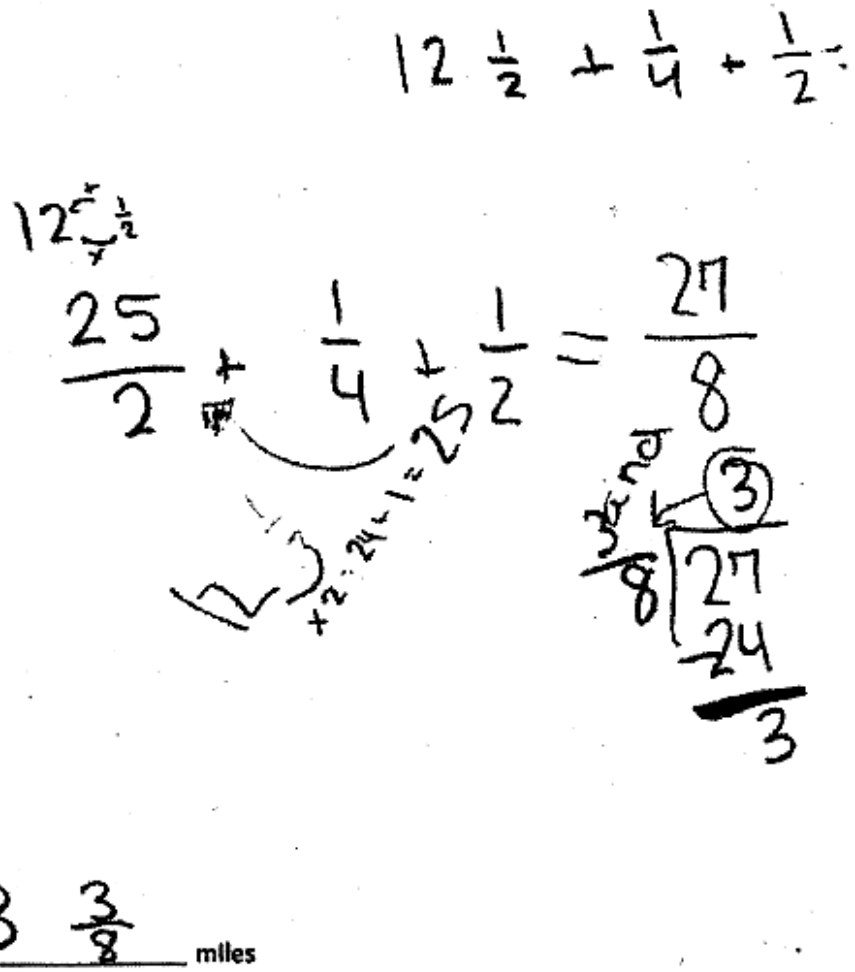
This response demonstrates only a limited understanding of the mathematical concepts in the task. Although the distances of each portion of the race are correctly calculated, the multiplication to solve for the individual portions is inappropriately written using a division symbol ($3 \div \frac{1}{2} = 1\frac{1}{2}$), and a calculation error occurs when solving the distance of the running portion ($12\frac{1}{2} \div \frac{1}{4} = 3$). The response exhibits multiple flaws related to misunderstanding of important aspects of the task and misuse of mathematical procedures.

GUIDE PAPER 10

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.



Answer 3 3/8 miles

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. ½ and ¼ are misinterpreted as distances rather than ratios, and the three given values are inappropriately and incorrectly calculated.

54

In a race that consisted of three parts, the cycling part was $12\frac{1}{2}$ miles long. The running part of the race was $\frac{1}{4}$ the distance of the cycling part. The kayaking part of the race was $\frac{1}{2}$ the distance of the running part. What was the entire distance, in miles, of the race?

Show your work.

$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$

$12\frac{1}{2} + \frac{1}{4} = 12\frac{3}{4}$

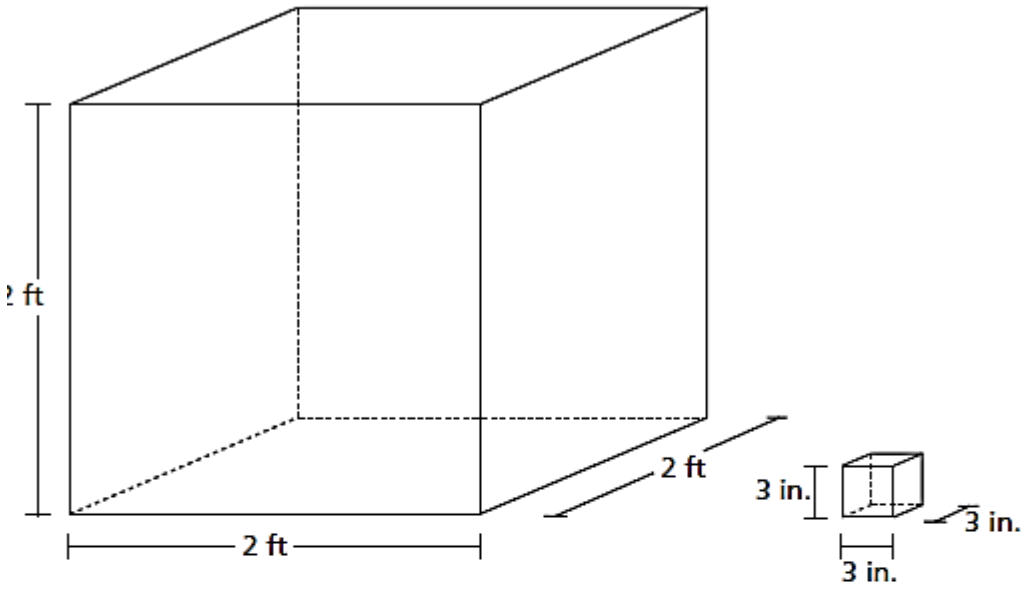
$12\frac{6}{8} + \frac{1}{8} = 12\frac{7}{8}$

Answer $12\frac{7}{8}$ miles

Score Point 0 (out of 3 points)

Although $\frac{1}{4}$ is appropriately multiplied by $\frac{1}{2}$ to solve for the distance of the kayaking portion of the race and the three distances are correctly calculated to determine a total, $\frac{1}{4}$ is misinterpreted as the distance of the running portion of the race, rather than a ratio comparing it to the cycling portion. Although some elements contain correct procedures, holistically this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

55 A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



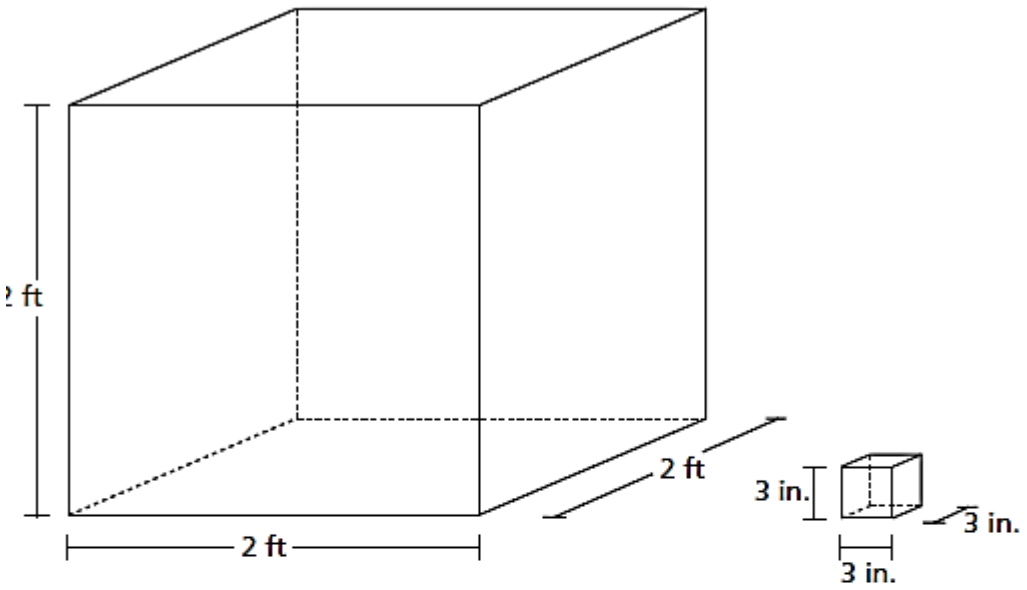
How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

Answer _____ boxes of lotion

EXEMPLARY RESPONSE

55 A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

2 feet = 24 inches

Volume of crate: $24^3 = 24 \times 24 \times 24 = 576 \times 24 = 13{,}824$

Volume of lotion box: $3^3 = 3 \times 3 \times 3 = 9 \times 3 = 27$

$$\begin{array}{r} 512 \text{ boxes} \\ 27 \overline{)\,13824} \\ -\,135 \\ \hline 32 \\ -\,27 \\ \hline 54 \\ -\,54 \\ \hline 0 \end{array}$$

$24 \div 3 = 8$ boxes per row

$8^3 = 8 \times 8 \times 8 = 64 \times 8 = 512$

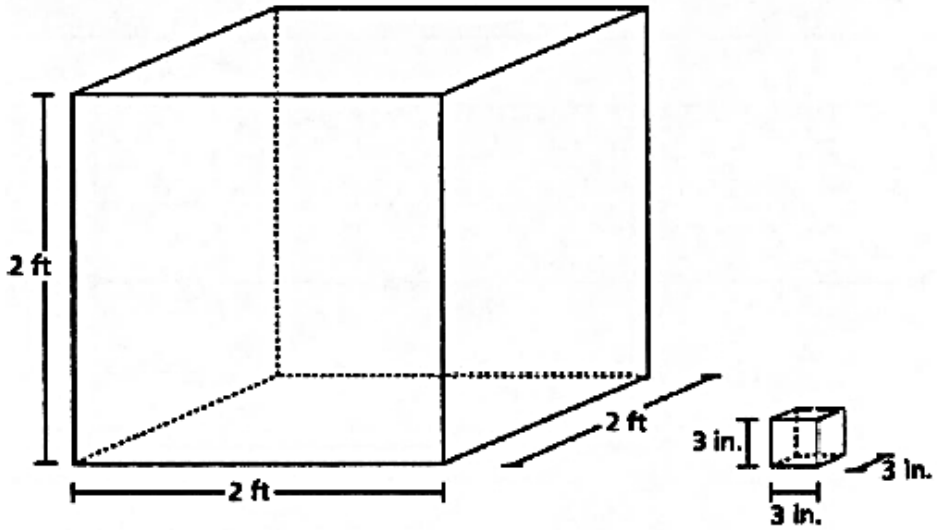
OR

OR other valid process

Answer 512 boxes of lotion

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

2ft = 24

1
24
×24
96
+480
576

×24
2304
+11520
13824

3×3×3
9×3
27

512
27 | 13824
-135↓
32↓
-27
54
-54
0

2
27
54
108
+27
135

Answer 512 boxes of lotion

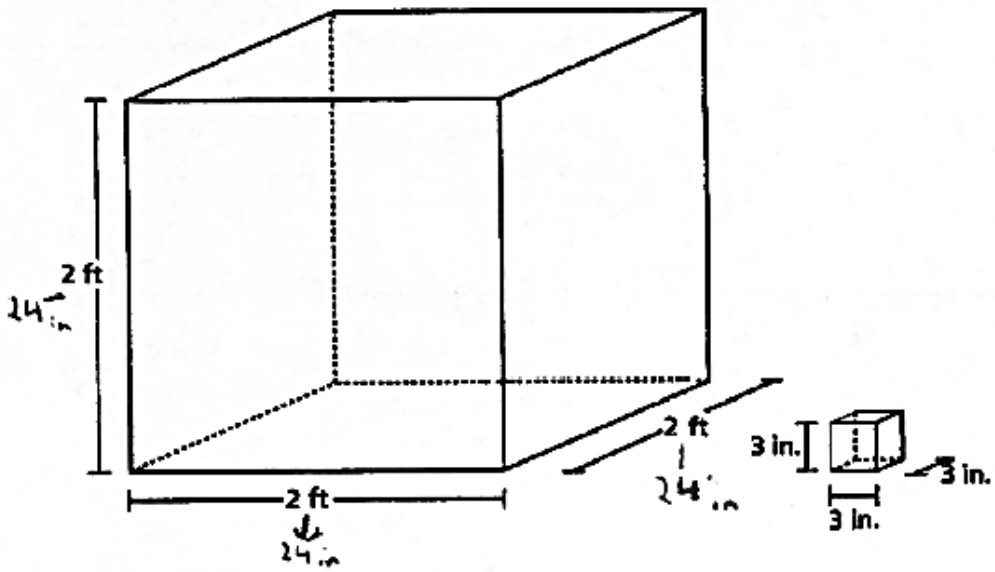
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Feet are correctly converted into inches, the volumes of the shipping crate and lotion boxes are correctly calculated, and those volumes are correctly divided to arrive at the correct solution.

GUIDE PAPER 2

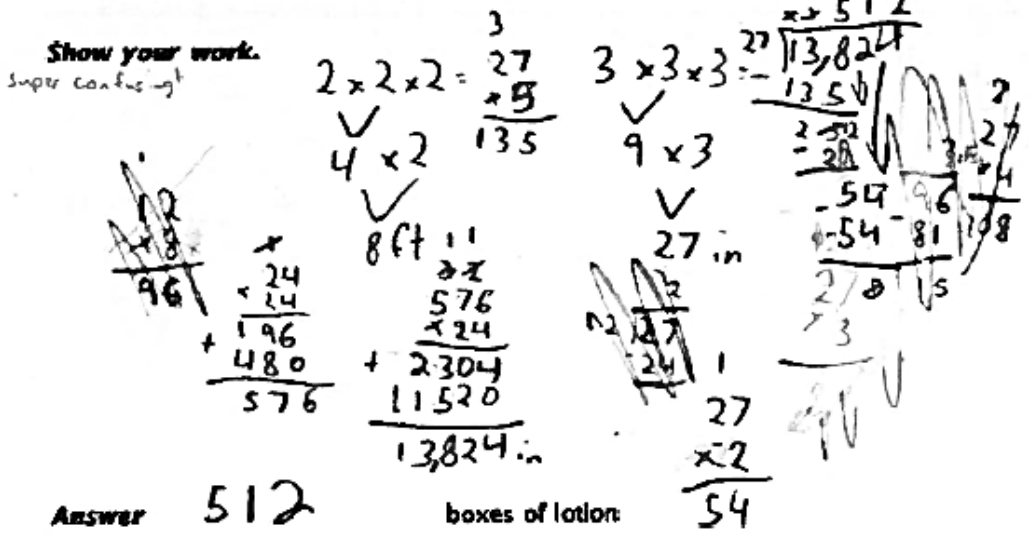
55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.



Answer 512 boxes of lotion

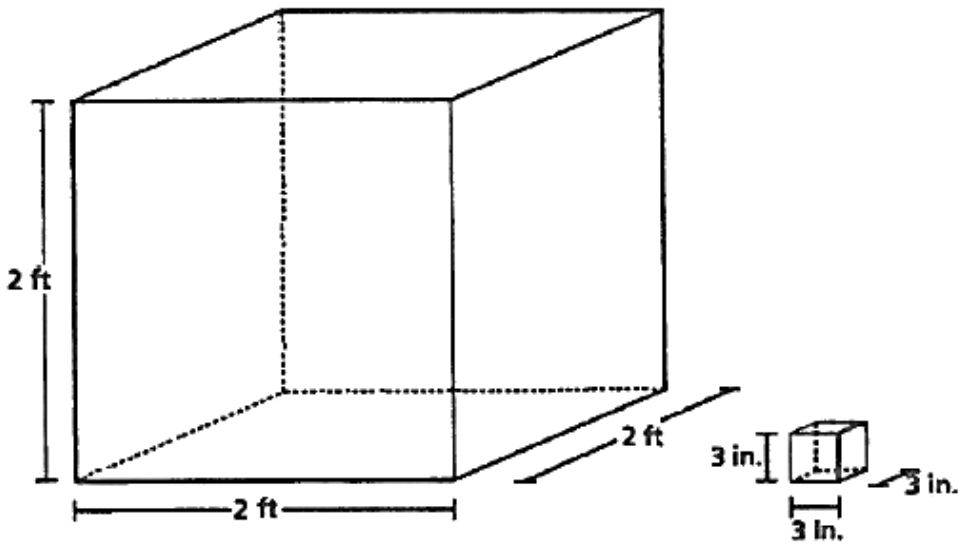
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Feet are correctly converted into inches, the volumes of the shipping crate and lotion boxes are correctly calculated, and those volumes are correctly divided to arrive at the correct solution.

GUIDE PAPER 3

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

8 in
3 in | 24 in
-24
0

8
x 8
64
x 8
512

Answer 512 **boxes of lotion**

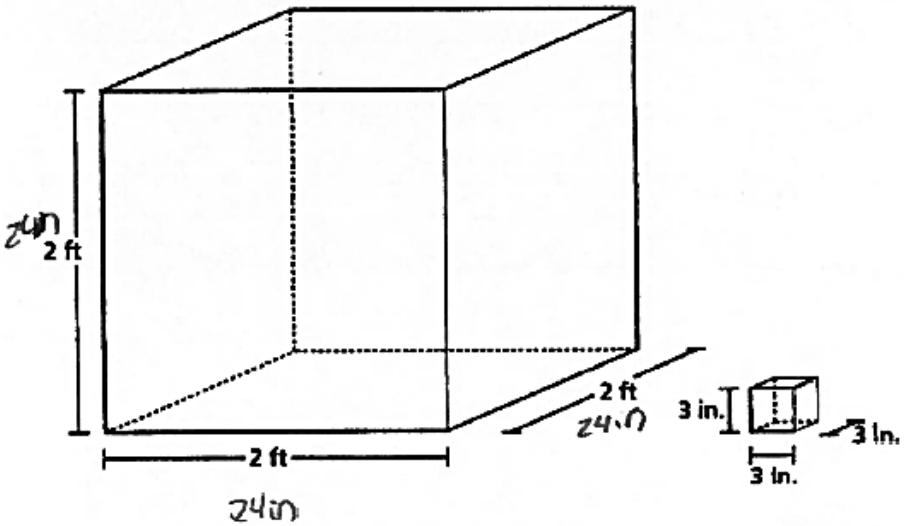
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The number of lotion boxes that will fit in a single row inside of the shipping crate is correctly calculated, and then appropriately and correctly cubed to fill the entire volume of the crate.

GUIDE PAPER 4

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

Answer 473 boxes of lotion

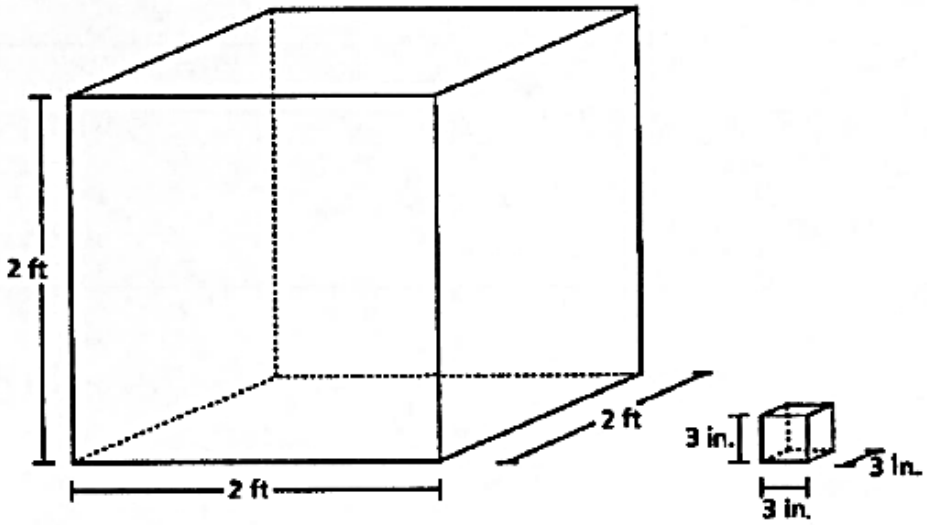
Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. Feet are correctly converted into inches, the volumes of the shipping crate and lotion boxes are appropriately calculated, and those volumes are correctly divided; however, a calculation error occurs when determining the volume of the crate ($24 \times 24 = 476$), resulting in an incorrect solution. Although the solution is incorrect, appropriate procedures are applied.

GUIDE PAPER 5

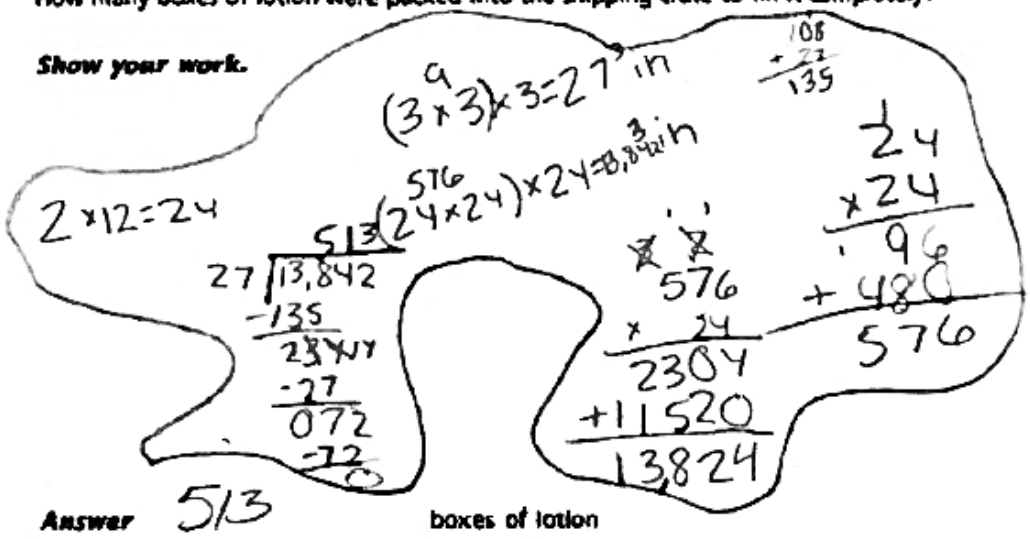
55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.



Answer 513 boxes of lotion

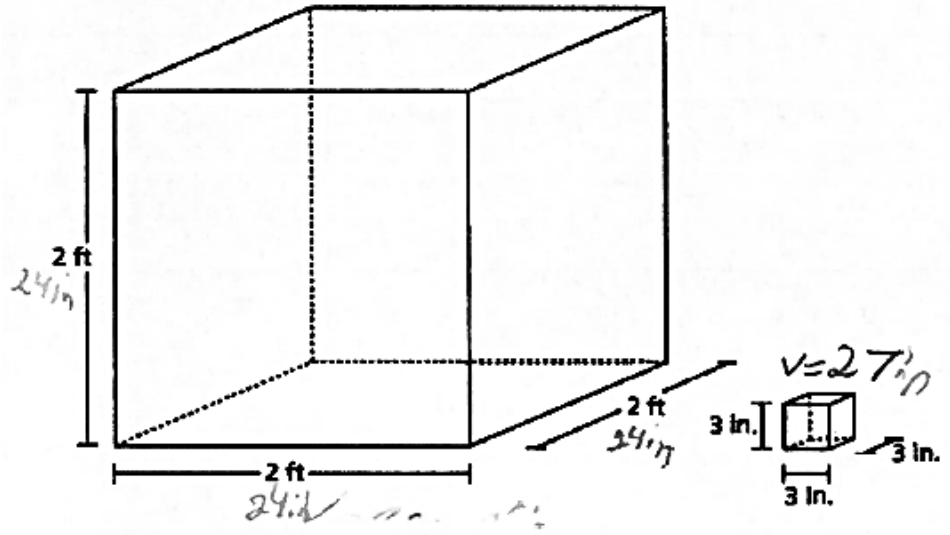
Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. Feet are correctly converted into inches, the volumes of the shipping crate and lotion boxes are appropriately calculated, and those volumes are divided; however, a calculation error occurs in the division ($13{,}842 \div 27 = 513$), resulting in an incorrect solution. Although the solution is incorrect, appropriate procedures are applied.

GUIDE PAPER 6

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

24
x2 24
196
+196
480
576

27 | 576 (21)
54
36
27
9

Answer 213 boxes of lotion

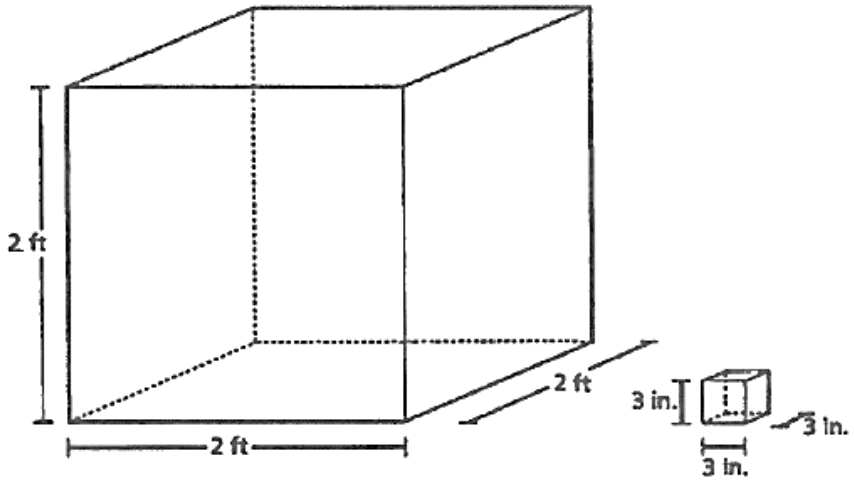
Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. Feet are correctly converted into inches, and the volume of a lotion box is appropriately calculated and then the volume of the shipping crate is divided by the volume of a lotion box. However, 24 is only squared instead of cubed when determining the volume of the crate, resulting in an incorrect solution. The response correctly addresses most, but not all, aspects of the task.

GUIDE PAPER 7

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

2 × 2 = 4, 4 × 2 = 8 ft

3 × 3 = 9, 9 × 3 = 27

24 in.) 8 ft

24 in.) 96 in

81/16

12 in = 1 ft

1 × 12 = 12, 12 × 8 = 96

2 × 54 = 108

27 × 3 = 81

Answer 3 boxes of lotion

Score Point 1 (out of 3 points)

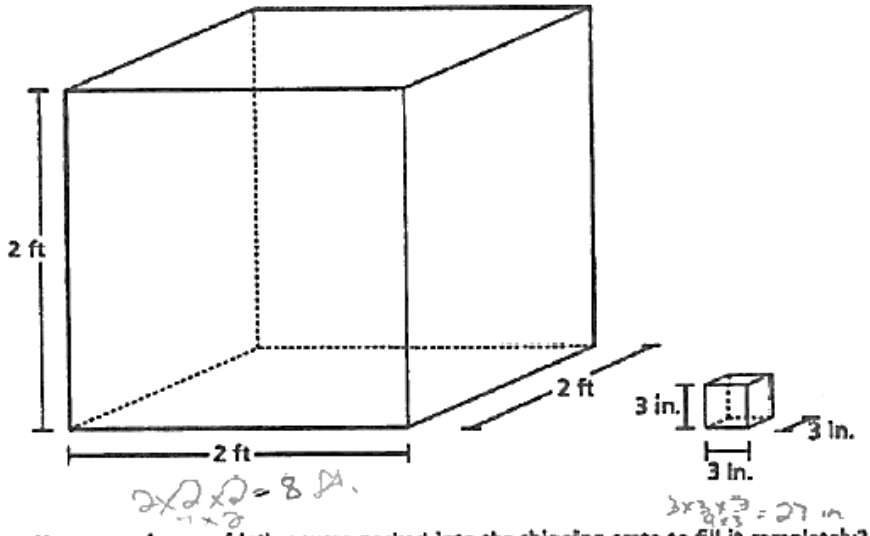
This response demonstrates only a limited understanding of the mathematical concepts in the task. The volume of a lotion box is appropriately and correctly calculated and then the volume of the shipping crate is divided by the volume of a lotion box; however, the volume of the crate is incorrectly calculated by attempting to convert feet to inches after already cubing the value of 2 feet. (Although it is possible to convert afterwards, the conversion factor changes to 1728 in^3/ft^3 and the use of 12 in/ft becomes inappropriate.) The response addresses some elements of the task correctly, but reaches an inadequate solution based on faulty reasoning.

GUIDE PAPER 8

Additional

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

8 ft. $27 \div 12 = 1\frac{3}{12} = 1\frac{1}{4}$

27 in = $1\frac{1}{4}$ ft.

$1\frac{1}{4} \times \_\_\_ = 8$ ft. $1\frac{1}{4} \times 6$

$1\frac{1}{4} \times 6 = 7\frac{1}{2}$ $\frac{5}{4} \times \frac{6}{1} = \frac{30}{4} = 7\frac{2}{4}$

$7\frac{1}{2}$

Answer boxes of lotion

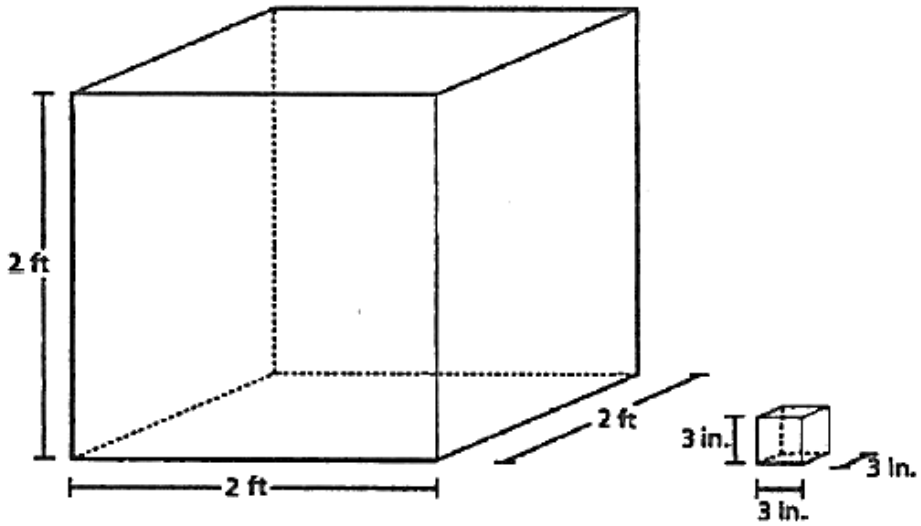
Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The sides of the lotion box and shipping crate are appropriately cubed to solve the volumes of each; however, similar to Guide Paper 7, an attempt to convert inches to feet is inappropriately and incorrectly applied after this step ($27 \div 12 = 1\frac{1}{4}$). Finally, an attempt to divide the volumes is made via trial-and-error multiplication, but arrives at an incorrect solution. The response addresses only some elements of the task correctly, and reflects a lack of essential understanding of the underlying concepts.

GUIDE PAPER 9

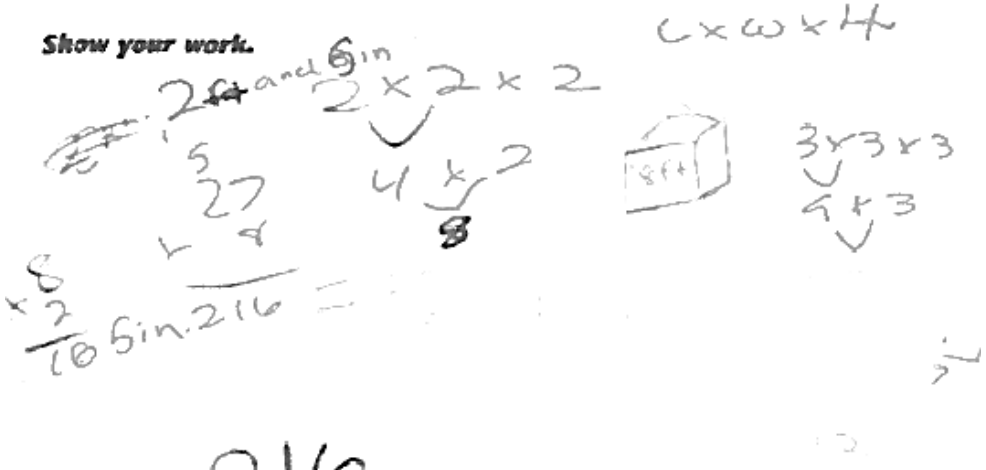
55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.



Answer 216 boxes of lotion

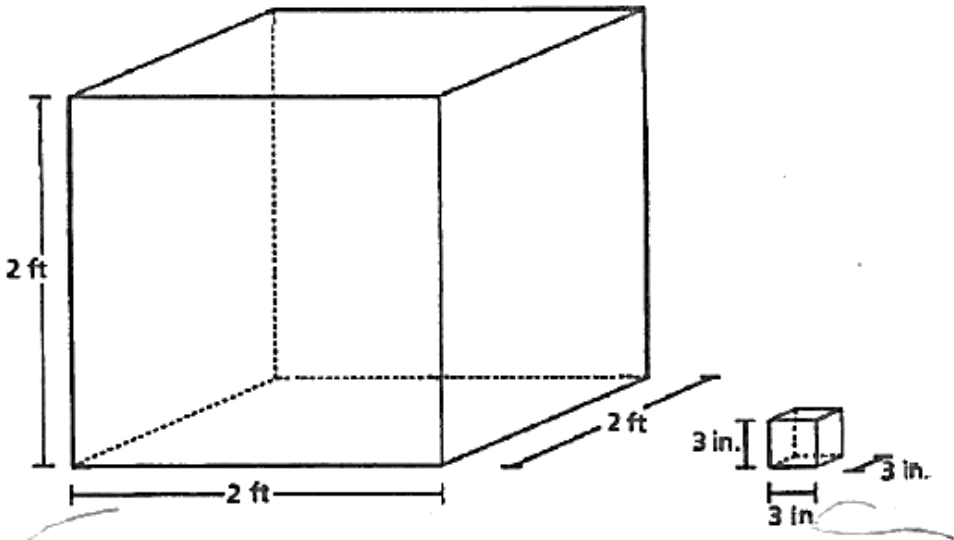
Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The volumes of the shipping crate and lotion box are correctly calculated; however, no attempt is made to convert units, and the volumes are inappropriately multiplied together instead of divided. The response correctly addresses only some elements of the task.

GUIDE PAPER 10

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

8ft.

12
x 8
96 inches = 8ft.

9in

16
9 | 96
-9
06
-54
6

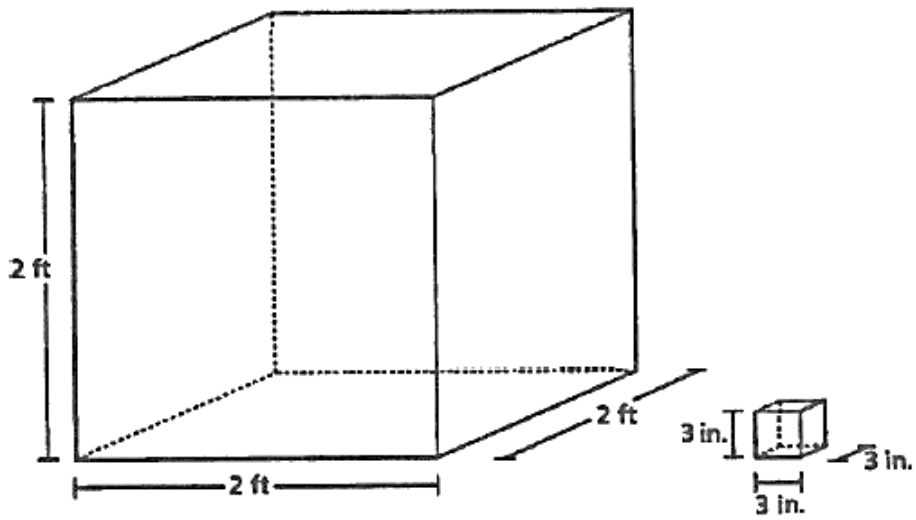
Answer 96 boxes of lotion

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. Feet are inappropriately converted to inches after already cubing the value of 2 feet, and the volume of a lotion box is inappropriately found, either via addition or by squaring instead of cubing.

55

A company puts bottles of lotion into boxes that are three-inch cubes. The boxes were then packed into a shipping crate, shown below.



How many boxes of lotion were packed into the shipping crate to fill it completely?

Show your work.

Volume of Shipping crate
$2 \times 2 \times 2 = 6$

Volume of boxes
$3 \times 3 \times 3 = 9$

$9 + 6 = 15$

Answer 15 **boxes of lotion**

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. Although an appropriate attempt is made to calculate the volumes of the crate and lotion box via cubing, neither calculation is correct ($2 \times \ldots = 6$ and $3 \times \ldots = 9$). Additionally, no attempt is made to convert units, and the incorrect volumes are inappropriately added together rather than divided.