New York State Testing Program

2019

Mathematics Test

Grade 6

Scoring Leader Materials

Training Set

Grade 6 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5,280 feet	1 pound = 0.454 kilogram	1 quart = 2 pints
1 mile = 1,760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2,000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallon
		1 liter = 1,000 cubic centimeters

FORMULAS

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

2-Point Holistic Rubric

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

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

3-Point Holistic Rubric

|	
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).

2019 2- and 3-Point Mathematics Scoring Policies

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

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

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

3. If students are directed to show work or provide an explanation, a correct answer with **no** work shown or **no** explanation provided, receives **no** credit.

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

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

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

7. If the student provides more than one response, but does not indicate which response is to be considered the correct response and none has been crossed out, the student shall not receive full credit.

8. If the student makes a conceptual error (that is an error in understanding rather than an arithmetic or computational error), that student shall not receive more than 50% credit.

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

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

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

12. When measuring angles with a protractor, there is a +/- 5 degrees deviation allowed of the true measure.

13. 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.

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

14 in.

5 in.

—11 in.—

3 in.

14 in.
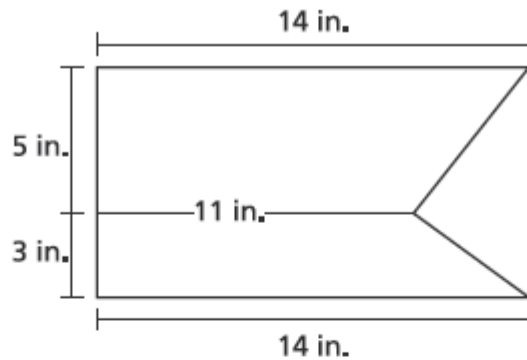
What is the area, in square inches, of the banner?

Show your work.

Answer _____ square inches

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

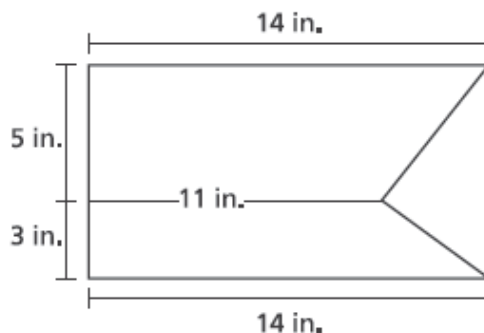What is the area, in square inches, of the banner?

Show your work.

Finding the area by subtracting the removed triangular piece:

Area of a rectangle = $l \times w$ = $14 \times (5 + 3)$ = 14×8 = 112 in^2

Area of a triangle = $\frac{1}{2} \times h \times b$ = $\frac{1}{2} \times (14 - 11) \times (5 + 3)$ = $\frac{1}{2} \times 3 \times 8$ = 12 in^2

Total area = $112 - 12$ = 100 in^2

    OR

Finding the area by adding smaller parts:

Area of a rectangle = $l \times w$ = $11 \times (5 + 3)$ = 11×8 = 88 in^2

Area of triangle 1 = $\frac{1}{2} \times h \times b$ = $\frac{1}{2} \times (14 - 11) \times 5$ = $\frac{1}{2} \times 3 \times 5$ = 7.5 in^2

Area of triangle 2 = $\frac{1}{2} \times h \times b$ = $\frac{1}{2} \times (14 - 11) \times 3$ = $\frac{1}{2} \times 3 \times 3$ = 4.5 in^2

Total area = $88 + 7.5 + 4.5$ = $88 + 12$ = 100 in^2

    OR

Finding the area of two trapezoids:

Area of trapezoid 1 = $\frac{1}{2}(b_1 + b_2) \times h$ = $\frac{1}{2} \times (14 + 11) \times 5$ = $\frac{1}{2} \times 25 \times 5$ = 62.5 in^2
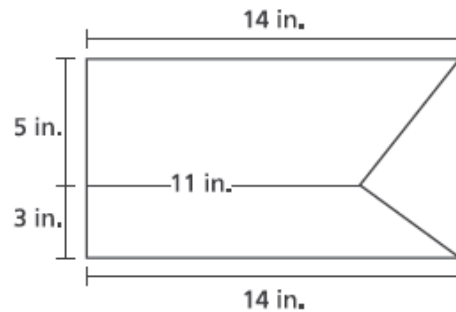
Area of trapezoid 2 = $\frac{1}{2}(b_1 + b_2) \times h$ = $\frac{1}{2} \times (14 + 11) \times 3$ = $\frac{1}{2} \times 25 \times 3$ = 37.5 in^2

Total area = $62.5 + 37.5$ = 100 in^2

    OR other valid process

Answer   ___100___ square inches

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

What is the area, in square inches, of the banner?

Show your work.

$a = 1 \times w$

$a = 14 \times 8$

$a = 112 \ in^2$

$a = \frac{1}{2} \ b \times h = \frac{1}{2} 8 \times 3 = 4 \times 3 = 12in^2$

$$\begin{array}{r} 112 \\ -\ \ 12 \\ \hline 100 \end{array}$$

Answer $\boxed{100 \ in^2}$ square inches

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The areas of the original rectangle and the removed triangular piece are correctly calculated and subtraction is appropriately applied to determine the area of the banner.

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.
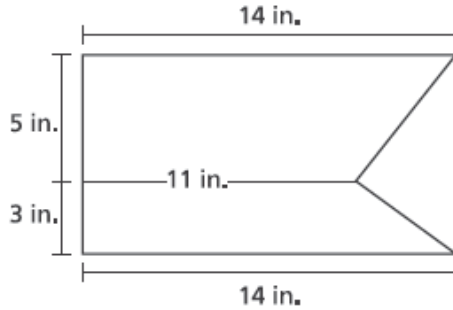
What is the area, in square inches, of the banner?

Show your work.

Triangle 1	Triangle 2	
$A = \frac{1}{2}\ bh$	$A = \frac{1}{2}\ bh$	$7.5 + 4.5 + 55 + 33 = 100$
$A = \frac{1}{2}\ 5 \times 3$	$A = \frac{1}{2}\ 3 \times 3$	
$A = 7.5$	$A = 4.5$	
Rectangle 1	Rectangle 2	
$A = bh$	$A = bh$	
$A = 5 \times 11$	$A = 3 \times 11$	
$A = 55$	$A = 33$	

Answer | 100 | square inches

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The area of the banner is split in four parts. The areas of two rectangles and two triangles are correctly calculated and results are appropriately added to determine the total area.

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

What is the area, in square inches, of the banner?

Show your work.

$A = \ell w$
$A = 8 \cdot 11$
$A = 88$

$\begin{array}{r} 14 \\ -11 \\ \hline 3 \end{array}$

$A = \frac{1}{2} \ell w$
$A = \frac{1}{2} \cdot 3 \cdot 3$
$A = 4.5$

$A = \frac{1}{2} \ell w$
$A = \frac{1}{2} \cdot 5 \cdot 3$
$A = 7.5$

$\begin{array}{r} 7.5 \\ 4.5 \\ + 88.0 \\ \hline \end{array}$
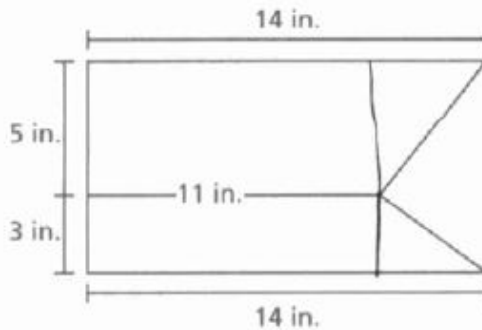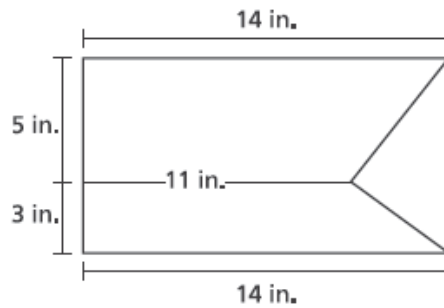
Answer __100__ square inches

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The area of the banner is split in three parts. The areas of a rectangle and two triangles are correctly calculated and results are appropriately added to determine the total area.

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

What is the area, in square inches, of the banner?

Show your work.

$14 - 11 = 3$	$11 \times 5 = 55$	$3 \times 11 = 33$

$$9 + 55 + 33 + 7.5 = 104.5$$

$$3 \times 3 = 9$$

A=BH
A of triangle=bh $\div$ 2
$3 \times 5 = 15$
$15 \div 2 = 7.5$

Answer | 104.5 | square inches

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The areas of two rectangles and one triangle are correctly calculated; however, the step of dividing by 2 is omitted when calculating the area of the second triangle. The results are appropriately added to determine the total area. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

14 in.

5 in.   55   7.5

—11 in.—

3 in.   33

14 in.

14-11=3

T=b·h

What is the area, in square inches, of the banner?

Show your work.

$2\sqrt{15}$ ... etc (handwritten computations)
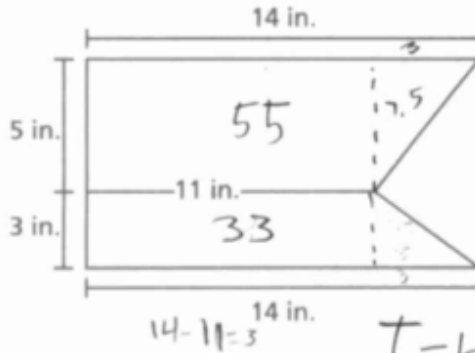
Answer **110** square inches

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The areas of four parts of the banner are correctly calculated; however, a calculation error is made when adding them together ($12 + 55 \neq 77$). The response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 6

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

What is the area, in square inches, of the banner?

Show your work.

$$\begin{array}{r} 14 \\ \times\ \ 5 \\ \hline 70 \end{array}$$

$$\begin{array}{r} 14 \\ \times\ \ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 70 \\ +\ 42 \\ \hline 112\ sq\ in \end{array}$$
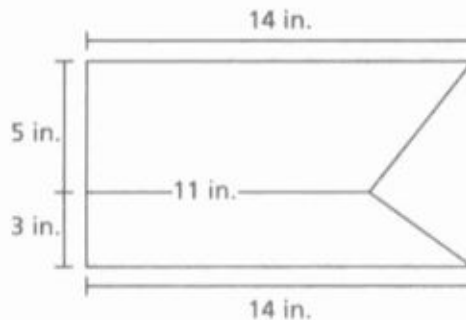
Answer ___112___ square inches

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The total area of the original rectangle is correctly calculated and inappropriately provided as the solution. The area of the removed triangular piece is not addressed. The response correctly addresses only some elements of the task.

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.
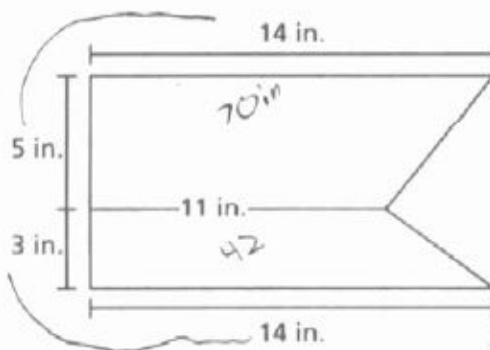
What is the area, in square inches, of the banner?

Show your work.

$$A = \frac{1}{2} b \times h$$

$$A = \frac{1}{2} (5) \times (14) = 35$$

$$A = \frac{1}{2} b \times h$$

$$A = \frac{1}{2} (3) \times (14) = 21$$

```
  35
+ 21
  55
```

Answer ___55___ square inches

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. Although the response contains correct answers for the two areas of the original rectangle, an incorrect procedure is used to determine the areas of trapezoids.

39

David made a class banner out of a large rectangular piece of paper. He cut a triangular piece out of one side, as pictured below.

14 in.

5 in.

11 in.

3 in.

14 in.
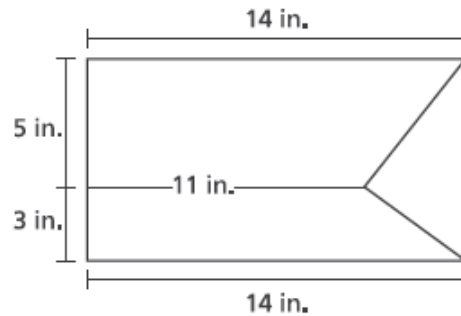
What is the area, in square inches, of the banner?

Show your work.

14 x 14 x 11 x 5 x 3 = 32340 ÷ 2= 16170

16170

Answer [ ] square inches

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect procedure is used to obtain an incorrect solution.

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

Answer _____ seconds

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

The multiples of Train A are: 12, 24, 36, 48, …

The multiples of Train B are: 9, 18, 27, 36, 45, …

The least common multiple (LCM) is 36.

> *OR*

The prime factors of 12 are: 3, 2, 2

The prime factors of 9 are: 3, 3

3 is the greatest common factor of 12 and 9.

The LCM is a product of the common factor 3 and other prime factors 2, 2 and 3

The LCM is $3 \times 2 \times 2 \times 3 = 3 \times 4 \times 3 = 36$

> *OR*

The LCM is $(12 \times 9) \div$ the greatest common factor $= (12 \times 9) \div 3 = 108 \div 3 = 36$

> *OR other valid process*

Answer _____36_____ seconds

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

Train A 12, 24, 36
Train B 9, 18, 27, 36

Answer | 36 | seconds

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The two lists of multiples are correct and the least common multiple (LCM) is correctly determined.

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

$$3$$

$$\begin{array}{cc} 12 & 9 \\ 4 & 3 \end{array}$$

$$X \qquad 4 \times 3 \qquad = 36$$

Answer __36__ *seconds*

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The common factor is correctly identified and then multiplied with the product of uncommon factors to correctly determine the LCM.

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

$$\frac{\text{Train A}}{\text{Train B}} = \frac{12}{9} = \frac{24}{18} = \frac{36}{27} = \frac{48}{36}$$
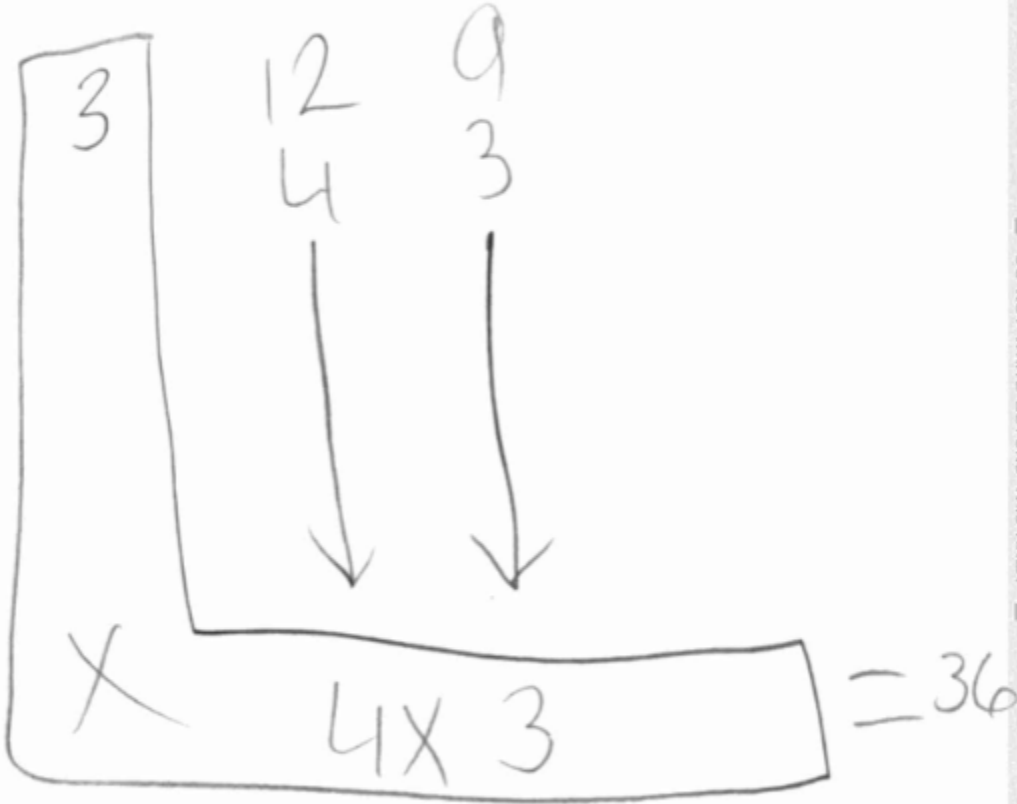
Answer ___36___ seconds

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct procedure of listing multiples in four-thirds ratios is used and the LCM is correctly identified.

GUIDE PAPER 4

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

Answer [3] seconds

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The common and uncommon factors are correctly identified; however, the LCM is not calculated and the greatest common factor is inappropriately provided as the solution. The response correctly addresses only some elements of the task.

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

12,9
4,3

Answer [36] seconds

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The LCM is correctly determined; however, the notation of common and uncommon factors is incomplete: the common factor is not identified. It is not clear how the solution is obtained. The work contains the correct solution, but the required work is incomplete.

GUIDE PAPER 6

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every (12) seconds. Train B returns to its starting point every (9) seconds. If the trains continue traveling, what is the (least) amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

Trian A
loops   Seconds
  1   12
  2   24
  3   36
  4   48
  5   60
  6   72
           84
  7
  8   96
  9   108
  10   120
  11   132
  12   144
  13
  14

Train B
loops   Seconds
  1   9
  2   18
  3   27
  4   36
  5   45
  6   54
  7   63
  8   72
  9   81
  10   90
  11   99
  12   108
  13   177
  14   128
  15   135
  16   144

Answer ___144___ seconds

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The correct procedure of listing multiples is used; however, the LCM is incorrectly determined. The response contains an incorrect solution but applies a mathematically appropriate process.

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

$A = 12 sec$ $12 \times 9 = 108$

$B = 9 sec$

They will arive at the same time in 108 seconds.

Answer ___108___ seconds

Score Point 0 (out of 2 points)

Although the response contains some elements of correct mathematical procedure, holistically the work is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The factors are not identified and the product is not divided by the greatest common factor.

40

Abdi has two electric train sets: A and B. Each train is on its own circular track. He starts both trains at the same time. Train A returns to its starting point every 12 seconds. Train B returns to its starting point every 9 seconds. If the trains continue traveling, what is the **least** amount of time, in seconds, that both trains will arrive at the starting points at the same time?

Show your work.

the least common factor is going to be 36 seconds thats when the trains come at the same time.

Answer   36   seconds

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 correct solution is provided with no work to support it. Per Scoring Policy #3, this response receives no credit.

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

Answer _____ hot dogs

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$140 ÷ 56 = $2.50 per hotdog

$175 ÷ $2.50 = 70 hotdogs

70 − 56 = 14 additional hotdogs

OR

$140 ÷ 56 = $2.50 per hotdog

$175 − $140 = $35 additional dollars

$35 ÷ $2.50 = 14 additional hotdogs

OR other valid process

Answer ____14____ hot dogs

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$$R = \frac{d}{t}$$

$$R = \frac{140}{56}$$

$$R = \$2.50$$

$$H = 175.00 \div 2.50 - 56$$

$$H = 70 - 56$$

$$H = 14$$

He will need to sell 14 more hot dogs to earn $175.00

Answer [   ] hot dogs

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The total number of hot dogs and the additional amount that needs to be sold are correctly determined using sound procedures.

GUIDE PAPER 2

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$$\times 70$$

$$2.5 \quad \frac{140}{56} \quad \frac{175}{70}$$

$$\nearrow 70$$

$$\frac{140.00}{56} \quad \frac{175.00}{70}$$

$$\downarrow$$

$$\begin{array}{r} 70 \\ -56 \\ \hline 14 \end{array}$$

Answer _____ **14** _____ hot dogs

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A proportion is set up correctly to determine the total number of hot dogs and subtraction is appropriately applied to calculate the additional amount that needs to be sold.

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

140/56=2.5
175/2.5=70
70-56=14

Answer 14 hot dogs

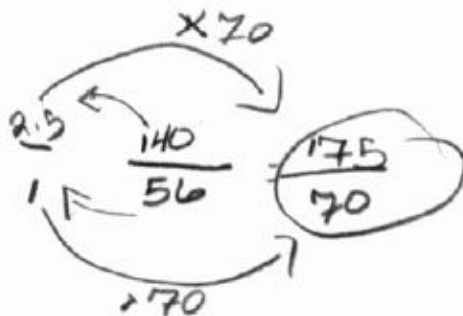## Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The total number of hot dogs and the additional amount that needs to be sold are correctly determined using sound procedures.

GUIDE PAPER 4

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$2.50
x 56
1.40

$$2.5$$
$$56\overline{)140.0}$$
$$\underline{112}\downarrow$$
$$280$$
$$\underline{268}$$
$$0$$

$2.50
x   70
$175

56
+14
70

Answer ____70____ hot dogs

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The total number of hot dogs to be sold is correctly determined using sound procedures. Although the work contains the correct solution, an incorrect solution is chosen and provided as the answer. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$$\frac{\$}{hd}$$

$$\frac{140.00 \div 56}{56 \div 56} = \frac{2.50 \times 50}{1 \times 50} = \frac{125.00}{50}$$

$$\frac{250 \times 60}{1 \times 60} = \frac{150.00}{60}$$

✓ $$\frac{250 \times 70}{1 \times 70} = \boxed{\frac{175.00}{70}}$$

$$\underline{70}$$

Answer _____**70**_____ hot dogs

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The total number of hot dogs to be sold is correctly determined using sound procedures; however, the additional amount of hot dogs is not calculated. The response correctly addresses only some elements of the task.

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$$140.00 \div 56 = 2.5$$

$$56 \times 2.5 = 140$$

Answer | 140 | hot dogs

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The unit rate is correctly calculated; however, no other work is provided. The response correctly addresses only some elements of the task.

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$$144.00 \div 56 = 2.57 \times 175 =$$

42

Answer _____ hot dogs

Score Point 0 (out of 2 points)

Although some elements may contain correct procedures, holistically the work is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect dollar amount is used to find the unit rate, and additional multiplication work shows no understanding.

41

Winston earns $140.00 by selling 56 hot dogs at a concession stand at school. Using the same rate for the cost of one hot dog, how many more hot dogs would Winston need to sell to earn a total of $175.00?

Show your work.

$$140.00$$
$$\times \quad 56$$
$$\overline{7840}$$

$$7840 \div 175.00 = 44.8$$

Answer 44.8 hot dogs

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 work is irrelevant and shows no understanding.

42

At the end of a baseball game, the players were given the choice of having a bottle of

water or a box of juice. Of all of the players, 12 chose a bottle of water, which was

$\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p,

the total number of players at the baseball game.

Show your work.

Answer _____ players

42

At the end of a baseball game, the players were given the choice of having a bottle of water or a box of juice. Of all of the players, 12 chose a bottle of water, which was $\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p, the total number of players at the baseball game.

Show your work.

$$\frac{12}{p} = \frac{3}{4}$$

$$\frac{3}{4} \times p = 12$$

$$p = 12 \div \frac{3}{4} = 12 \times \frac{4}{3}$$

$$p = \frac{48}{3} = 16$$

OR other valid process

Answer _____16_____ players

42

At the end of a baseball game, the players were given the choice of having a bottle of water or a box of juice. Of all of the players, 12 chose a bottle of water, which was $\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p, the total number of players at the baseball game.

Show your work.

$$12 \div \frac{3}{4} = P$$

$$12 \div \frac{3}{4} = P$$

KCF

$$12 \times \frac{4}{3} = \frac{48}{3} = 16$$

$$P = 16$$

Answer __16__ players

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct equation is written and it is correctly solved to determine the total number of players.

42

At the end of a baseball game, the players were given the choice of having a bottle of

water or a box of juice. Of all of the players, 12 chose a bottle of water, which was

$\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p,

the total number of players at the baseball game.

Show your work.

$w \times \frac{3}{4} = 12$

$\frac{3w}{4} = 12 \qquad 4 \times 12 = 48$

$\frac{3w}{3} = \frac{48}{3}$

$w = 16$

Answer | 16 | players

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct equation is written and it is correctly solved to determine the total number of players. A different variable is used in the equation to represent the total number of players, which is acceptable.

GUIDE PAPER 3

42

At the end of a baseball game, the players were given the choice of having a bottle of water or a box of juice. Of all of the players, 12 chose a bottle of water, which was $\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p, the total number of players at the baseball game.

Show your work.

$\frac{4}{4} = 16$

$\frac{3}{4} = 12 = \frac{3}{4}$

$\frac{1}{4} - \frac{1}{4} = 4$

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

x = players who wanted juice

p = total number of players

$p = x + 12$
$p = 4 + 12$
$p = 16$

Answer _____16_____ players

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The number of players who like juice is correctly determined and the result is correctly used to write and solve an equation to determine the total number of players. The work is sufficient to show thorough understanding.

42

At the end of a baseball game, the players were given the choice of having a bottle of

water or a box of juice. Of all of the players, 12 chose a bottle of water, which was

$\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p,

the total number of players at the baseball game.

Show your work.

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

$$\frac{12}{1} \times \frac{4}{3} = \frac{48}{3}$$

Answer the total number of people at tghe game was 16. players

---

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The total number of players is correctly determined using sound procedures; however, an equation in terms of p is not written. The response correctly addresses only some elements of the task.

42

At the end of a baseball game, the players were given the choice of having a bottle of

water or a box of juice. Of all of the players, 12 chose a bottle of water, which was

$\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p,

the total number of players at the baseball game.

Show your work.

p=(4 × 4)
p=16

there was a
total of 16
players at the
game.

Answer _____ players

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct equation solving for the total number of players is written; however, the work is incomplete: it is not clear how the ¼ of the total number of players is determined. The response correctly addresses only some elements of the task.

42

At the end of a baseball game, the players were given the choice of having a bottle of water or a box of juice. Of all of the players, 12 chose a bottle of water, which was $\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p, the total number of players at the baseball game.

Show your work.

$$12 \div \frac{3}{4} = p$$

$$4\frac{\cancel{12}}{1} \times \frac{4}{\cancel{3}_1} = \frac{16}{1}$$

$$\begin{array}{r} 16 \\ +12 \\ \hline 28 \end{array}$$

Answer _____28_____ players

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct equation is written; however, a conceptual error of adding 12 players is made when determining the total number of players. The response correctly addresses only some elements of the task.

42

At the end of a baseball game, the players were given the choice of having a bottle of

water or a box of juice. Of all of the players, 12 chose a bottle of water, which was

$\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p,

the total number of players at the baseball game.

Show your work.

$\frac{3}{4} \times p$

$12 \div 4 =$

Answer ⎢ 16 ⎢ players

Score Point 0 (out of 2 points)

Although this response contains some elements of correct procedures, holistically the work is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An expression instead of an equation is written and an incorrect procedure is shown. The correct solution is not supported by the work.

42

At the end of a baseball game, the players were given the choice of having a bottle of water or a box of juice. Of all of the players, 12 chose a bottle of water, which was $\frac{3}{4}$ of the total number of players. Write and solve an equation to determine p, the total number of players at the baseball game.

Show your work.

$$12 + P \leq$$

$$\frac{1}{4} \times \frac{12}{1} = \frac{12}{4} = \frac{3}{4}$$

$$\frac{3}{4} \times \frac{12}{1} = \frac{36}{4} = 9$$

$$\frac{1}{4} \times \frac{1}{12} = \frac{1}{48} = \frac{1}{4}$$

$$12 + P =$$

Answer ____9____ players

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect procedure is used to obtain an incorrect solution.

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.

- Pattern A follows the rule "add 3".

- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B? As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

_____

_____

_____

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.

- Pattern A follows the rule "add 3".

- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B?
As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

Pattern A: 1, 4, 7, 10, 13 …

Pattern B: 1, 5, 9, 13, 17 …

B – A: 0, 1, 2, 3, 4 …

The difference between the corresponding terms in Patterns A and B increases by 1.

OR other valid explanation

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.
- Pattern A follows the rule "add 3".
- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B? As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

They compare because you have to add going down the list so the four you have to add one to get five seven you ha to add two to get nine and on and on.

A 1, 4, 7, 10, 13

1+0 ⟨ 4+1 ⟨ 7+2 ⟨ 10+3 ⟨ 13+4 ⟨

B 1, 5, 9, 13, 17

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Patterns A and B are correctly listed and the correct pattern of differences between corresponding terms is provided.

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.

- Pattern A follows the rule "add 3".

- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B ?
As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

A = 1, 4, 7, 10, 13
B = 1, 5, 9, 13, 17

Pattern A goes up by 3 pattern B goes up by 4 so they start at 1 then A goes to 4 and B goes to 5 with a difference of 1 the A goes to 7 and B goes to 9 with a difference of 2 then A goes to 10 and B goes to 13 with a differece of 3 and then A goes to 13 and B goes to 17 with a difference of 4.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Patterns A and B are correctly listed and a correct comparison of the first five terms is provided.

GUIDE PAPER 3

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.

- Pattern A follows the rule "add 3".

- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B ?
As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

A 1,4,7,10,13
B 1,5,9,13,17
The patterns compare because every term the difference between them
goes up one.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Patterns A and B are correctly listed and the correct pattern of differences between corresponding terms is provided.

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.
- Pattern A follows the rule "add 3".
- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B? As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

every time pattern a and be get
farther away bye 1,

A, 1, 4, 7, 10 13, 16,

b, 1, 5, 9, 13, 17 20

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Pattern A is correct; however, pattern B has an incorrect last term which detracts from understanding of patterns. The explanation includes the correct pattern of differences between corresponding terms. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.
- Pattern A follows the rule "add 3".
- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B ?
As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

1,4,7,10,13
1,5,9,13,17
they both have the number 13 in them

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Patterns A and B are correctly listed; however, the comparison of terms in the patterns is not sufficient: only one term is compared. The response correctly addresses only some elements of the task.

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.
- Pattern A follows the rule "add 3".
- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B? As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

Pattern B is 1 more adding to each number

Pattern A: 1, 4, 7, 10, 13
Pattern B: 1, 5, 9, 13, 17

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Patterns A and B are correctly listed; however, the comparison of corresponding terms is vague. The response correctly addresses only some elements of the task.

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.

- Pattern A follows the rule "add 3".

- Pattern B follows the rule "add 4".

How do each of the first 5 terms in Pattern A compare to the first 5 terms in Pattern B ?
As part of your answer, list the first 5 terms of each pattern.

Explain your answer.

> Pattern B will allways have one number greater than pattern A. Pattern B
> is 1,5,9,14,19. Pattern A is 1,4,7,10,13.

Score Point 0 (out of 2 points)

Although this response contains some correct elements, holistically the explanation is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Only one correct pattern is listed with Pattern B inappropriately adding 5 to get the fourth and fifth terms. The comparison is insufficient to show understanding of patterns.

43

Tristan is comparing two number patterns based on the information below.

- Both patterns start with the number 1.
- Pattern A follows the rule "add 3".
- Pattern B follows the rule "add 4".

How do each of the first ⑤ terms in Pattern A compare to the first ⑤ terms in Pattern B? As part of your answer, list the first ⑤ terms of each pattern.

Explain your answer.

Well if 5 term are compared to Pattern A it would be +3 5+3=8 and compared to Patt B +4 5+4=9 and that would be the lis

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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 patterns are not listed and the comparison is irrelevant.

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression _____

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

Answer $ _____

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering n lunches?

Expression $\underline{\quad 6.25n + 3.5 \quad}$ *OR other valid expression*

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

$n = 5$

$\$6.25 \times 5 = \$31.25$

$\$31.25 + \$3.5 = \$34.75$

OR other valid process

Answer $\$\underline{\quad 34.75 \quad}$

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

$$n \times 6.25 + 3.50$$

Expression

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

$$n = 5$$
$$6.25 \times 5 = 31.25$$
$$31.25 + 3.50 = 34.75$$

34.75

Answer $

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct expression is written and it is correctly evaluated for the total cost using sound procedures.

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression ____$6.25n + $3.50____

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

$$\$6.25 \times 5 + \$3.50 = \$34.75$$

$$
\begin{array}{r}
1\ 2 \\
6.25 \\
6.25 \\
6.25 \\
6.25 \\
6.25 \\
3.50 \\
\hline
\$34.75
\end{array}
$$

Answer $ __34.75__

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct expression is written and it is correctly evaluated using a sound procedure.

GUIDE PAPER 3

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression

$$(6.25 \times X) + 3.50$$

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

$$\times \begin{array}{r} 6.25 \\ 5 \\ \hline 31.25 \end{array} \qquad + \begin{array}{r} 31.25 \\ 3.50 \\ \hline 34.75 \end{array}$$

Answer $ 34.75

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct expression is written and it is correctly evaluated to determine the solution. A different variable is used in the expression to represent the number of coworkers, which is acceptable.

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression _____ $n = \$6.25 \times 5 + \$3.50$ _____

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

$$
\begin{array}{r}
6.\overset{2}{2}5 \\
\times \quad 5 \\
\hline
31.25 \\
+ \quad 3.50 \\
\hline
34.75
\end{array}
$$

Answer $ _34.75_

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. An equation instead of an expression is written with variable *n* inappropriately used to represent the total cost and value 5 already substituted. A sound procedure is used to determine the solution. The response correctly addresses only some elements of the task.

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression $(6.25 + 3.50) \times n$

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

$(6.25 + 3.50) \times 5 =$
$9.75 \times 5 = 48.75$

Answer $ 48.75

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A conceptual error is made when writing an expression for the total cost: the one-time fee is inappropriately multiplied by the total number of coworkers. A correct process is used to evaluate the written expression. The response correctly addresses only some elements of the task.

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression ___6.25n + 3.50___

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

$$
\begin{array}{r}
6.25 \\
6.25 \\
6.25 \\
6.25 \\
+\ 3.50 \\
\hline
27.55
\end{array}
$$

Answer $ ___27.55___

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The expression is correct; however, it is incorrectly evaluated. The cost is calculated for 4 coworkers and there is a calculation error when adding. The response correctly addresses only some elements of the task.

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression _____ 6.25 × 3.50 ÷ n _____

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

6.25
6.25
6.25
6.25
6.25
31.25

3.50 × 5 = 17.5

31.25
+ 17.05
48.30

Answer $ 48.30

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect equation is written with the cost of each lunch inappropriately multiplied by the one-time fee and variable *n* incorrectly used. Additionally, a conceptual error is made when calculating the total cost: the one-time fee is inappropriately multiplied by the number of coworkers.

44

Mr. Jackson orders lunches to be delivered to his workplace for himself and some coworkers. The cost of each lunch is $6.25. There is also a one-time delivery fee of $3.50 to deliver the lunches. What expression could Mr. Jackson use to find the cost of ordering *n* lunches?

Expression

$$6.25 + 3.50 = 9.75 \times n =$$

Use your expression to find the total cost of delivering 5 lunches.

Show your work.

Answer $

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 equation is incorrect and no work is provided.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

Answer _____ servings

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

1 gallon = 16 cups

$$\frac{1.25}{10} = \frac{16}{x}$$

$$x = \frac{10 \times 16}{1.25}$$

$x = 128$ servings

   OR

$10 \div \frac{5}{4} = 10 \times \frac{4}{5} = \frac{40}{5} = 8$ servings per cup

$16 \times 8 = 128$ servings

   OR

$16 \div \frac{5}{4} = 16 \times \frac{4}{5} = \frac{64}{5} = 12\frac{4}{5} = 12.8$ recipes that can be made with 16 cups

$12.8 \times 10 = 128$ servings

   OR other valid process

Answer   128   servings

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for

each serving, how many servings can be made using 1 gallon of milk?

Show your work.

$1\frac{1}{4} \div 10 = \frac{1}{8}$

SO

It takes $\frac{1}{8}$ cup of milk to make 1 serving

There are 16 cups in 1 gallon
SO

$16 \times 8 = 128$ SO there are 128 one-eighth cup servings in one gallon

CHECK

$16 \text{ cups} \div 1\frac{1}{4} \text{ cups} = 12.8$

$12.8 \times 10 \text{ servings} = 128 \text{ servings}$

Answer | 128 | servings

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The number of servings made using 1 gallon of milk is correctly determined using two different procedures.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

$$1.25\overline{)10} \begin{array}{c} 8 \\ \hline \end{array}$$
$$\underline{-10}$$
$$0$$

$$\begin{array}{r} 16 \\ \times 8 \\ \hline 128 \end{array}$$

Answer ___128___ servings

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The number of servings per cup is correctly calculated and multiplied by the total number of cups to determine the solution.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

$1\frac{1}{4} \div 10 = \frac{1}{8} \times 16 = \boxed{2 \text{ cups} = 1 \text{ pint} \times 2 = 2 \text{ pints} = 1 \text{ quart} \times 4 = 4 \text{ quarts}}$

$= 1 \text{ gallon}$

↑ Equation

$16 \times 2 = 32 \times 4 = 128$

$\boxed{128}$

Answer ___128___ servings

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The amount of milk in 1 serving is correctly calculated and the number of servings made using 1 gallon is correctly determined.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

$1\frac{1}{4}$ =10 servings

$\frac{5}{4}$ =10 servings

?=1 serving

$\frac{5}{4}$ ÷ 10=1/8

1/8= 1 serving
15 cups=1 gallon
1/8 × 120=15 cups

Answer | 120 | servings

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The amount of milk in 1 serving is correctly calculated; however, an incorrect number of cups is used to determine the total number of servings. The response contains an incorrect solution but applies a mathematically appropriate process.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for

each serving, how many servings can be made using 1 gallon of milk?

Show your work.

16 cups = 1 gallon

$12\frac{4}{5}$ × 10 = 128

128

Answer [ ] servings

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The number of servings made using 1 gallon is correctly calculated; however, the work does not show how $12\frac{4}{5}$ (the number of times the recipe can be made using 1 gallon) is obtained. The response contains the correct solution but the required work is incomplete.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

$$
\begin{array}{r}
2 \\
125 \\
\times8 \\
\hline
1000
\end{array}
$$

$$
\begin{array}{r}
12.8 \\
125\,\overline{\smash{)}\,16000} \\
-125 \\
\hline
350 \\
250 \\
\hline
1000 \\
1000 \\
\hline
0
\end{array}
$$

Answer __12.8__ servings

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The number of times the recipe can be made using 1 gallon is correctly determined; however, it is inappropriately provided as the solution. The total number of servings is not addressed. The response correctly addresses only some elements of the task.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

1 gallon = 4 quarts
1 quart = 2 pints
1 pint = 2 cups
4 quarts = 8 pints
8 pints = 16 cups

128

Answer [ ] servings

Score Point 0 (out of 2 points)

Although this response contains some correct elements, holistically the work is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The number of cups in 1 gallon is correctly determined; however, this is not sufficient to support the correct solution.

45

A recipe uses $1\frac{1}{4}$ cups of milk to make 10 servings. If the same amount of milk is used for each serving, how many servings can be made using 1 gallon of milk?

Show your work.

$1\frac{1}{4}$ milk

$\frac{5}{4} \times \frac{10}{1} = \frac{50}{4}$

$2\frac{1}{2} = 2$ cups of milk = 1 pint

$5 = 4$ cups = 2 pint

2 cups = 1 pint
4 cups = 2 pint

$10 = 4$ pint = 2 quart

1 quart = 2 pints
2 quart = 4 pints

$13 = 6$ pint = 3 quarts

3 quart = 6 pints

$16 = 8$ pint = 4 quarts

4 quarts = 8 pints

1 gallon = 4 quarts

Answer __16__ *servings*

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 work contains an incorrect procedure and provides an incorrect solution.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks

- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A _____

Package B _____

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

Answer _____ glue sticks

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks

- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A $\underline{\quad g = 18p \qquad\qquad OR\ other\ valid\ equation \quad}$

Package B $\underline{\quad g = 12p \qquad\qquad OR\ other\ valid\ equation \quad}$

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

Mr. Davis: $p = 5$

$g = 18 \times 5 = 90$ glue sticks

Mr. Wilson: $p = 8$

$g = 12 \times 8 = 96$ glue sticks

$96 - 90 = 6$ glue sticks

OR other valid process

Answer $\underline{\qquad 6 \qquad}$ glue sticks

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks

- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A

$18p = g$

Package B

$12p = g$

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

$18p = g$
$18 \times 5 = g$
$90 = g$

$12p = g$
$12 \times 8 = g$
$96 = g$

$$\begin{array}{r} 96 \\ -\ 90 \\ \hline 6 \end{array}$$

Answer ___6___ glue sticks

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Two correct equations are written and they are used correctly to calculate the number of glue sticks that each person purchased. The difference is correctly determined.

GUIDE PAPER 2

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks
- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A _____ $18 \times P = g$ _____

Package B _____ $12 \times P = g$ _____

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

Mr. Davis

$18 \times 5 = g$

$18 \times 5 = 90$ glue sticks

Ms. Wilson

$12 \times 8 = g$

$12 \times 8 = 96$ glue sticks

$$\begin{array}{r} 96 \\ -\ 90 \\ \hline 6 \end{array}$$ glue sticks

Answer _____ 6 _____ glue sticks

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Two correct equations are written and they are used correctly to calculate the number of glue sticks that each person purchased. The difference is correctly determined.

GUIDE PAPER 3

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks
- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A _____ $A \cdot 18 = g$ _____

Package B _____ $b \cdot 12 \ g$ _____ /

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

$$\begin{array}{r} 4_18 \\ \cdot\ 5 \\ \hline 90 \end{array} \qquad \begin{array}{r} 1\overset{2}{2} \\ \cdot\ 8 \\ \hline 96 \end{array}$$

Answer _____ 6 _____ glue sticks

Score Point 3 (out of 3 points)

This response contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and procedures in the task. Two correct equations are written. Variables *A* and *b* are used in the equations to represent the number of packages, which is acceptable. The number of glue sticks that each person purchased is correctly determined and the correct solution is provided. The value 4 is part of the work for multiplying 18 and 5. Using mental math to subtract 90 from 96 is acceptable.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks
- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, g, in p packages.

Package A $\quad P \cdot 18 = g$

Package B $\quad P \cdot 12 = g$

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

$$P \cdot 12 = g$$
$$8 \cdot 12 = g$$
$$8 \cdot 12 = 96$$

$$5$$
$$P \cdot 18 = g$$
$$5 \cdot 18 = g$$
$$5 \cdot 18 = 90$$

Answer $\underline{90 \text{ and } 96}$ glue sticks

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. Two correct equations are written and they are used correctly to calculate the number of glue sticks that each person purchased; however, the difference is not determined. The response appropriately addresses most but not all aspects of the task using mathematically sound procedures.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks

- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A | 1p=18g |

Package B | 1p=12g |

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

5 × 18=90

8 × 12=96

Answer | the difference is 6 | glue sticks

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. Two incorrect equations are written with the variables *p* and *g* transposed. A correct process is used to determine the number of glue sticks that each person purchased and the correct solution is provided. The response appropriately addresses most but not all aspects of the task using mathematically sound procedures.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks

- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A | package A has 6 more glue sticks than pacage B.

Package B | pacage B has 6 less glue sticks than pacakge A.

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

Mr.D = 5 × 18 = 90 glue sticks
Ms.W = 8 × 12 = 96 glue sticks

Answer | 6 | glue sticks

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. The equations containing the variables *p* and *g* are not written. The number of glue sticks that each person purchased is correctly determined and the correct solution is provided. The response appropriately addresses most but not all aspects of the task using mathematically sound procedures.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks
- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, g, in p packages.

Package A _____ 90   18×5 _____

Package B _____ 96   12×8 _____

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

$$A = 18 = 5$$
$$\underline{+\ 5}$$
$$90$$

$$B = 12 = 8$$
$$\underline{+\ 8}$$
$$96$$

Answer _____ 90 > 96 _____ glue sticks

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The equations containing the variables p and g are not written. The number of glue sticks that each person purchased is correctly determined; however, the difference is not calculated and an incorrect comparison is provided as the solution. The response exhibits multiple flaws related to misunderstanding of important aspects of the task and faulty mathematical reasoning.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks
- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, g, in p packages.

Package A $18 \times 2 = 36$

Package B $12 \times 2 = 24$

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

$18 \times 5 = 90$

$12 \times 8 = 96$

91   1
92   2
93   3
94   4
95   5

Answer   5   glue sticks

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The equations containing the variables *p* and *g* are not written. The number of glue sticks that each person purchased is correctly determined; however, an incorrect difference is provided as the solution. The response exhibits multiple flaws related to misunderstanding of important aspects of the task and faulty mathematical reasoning.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks

- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A | P=g18

Package B | p=g12

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

Mr davis:90 package A
Ms.Wilson:96 Pacakg b

Ms.wilson bought 6 more gluesticks by buying 4 more packages then mr.davis using package b

Answer _____ glue sticks

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. Two incorrect equations are written with the variables *p* and *g* transposed. The number of glue sticks that each person purchased is calculated and the correct solution is provided; however, the work is limited. This response addresses some elements of the task correctly but provides reasoning that is faulty and incomplete.

GUIDE PAPER 10

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks
- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A $\quad 12 \times p = g$

Package B $\quad 18 \times p = g$

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

$5 \times 12 + 18 \times 8 = 624$

Answer $\quad 624 \quad$ glue sticks

Score Point 0 (out of 3 points)

Although this response contains some correct elements, holistically the work is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The equations are written in an incorrect order with the first equation correct for Package B and the second for Package A; however, since the equations are not labeled this creates confusion. The work is incorrect and contains both calculation and procedural errors.

46

A store sells two different packages of glue sticks as described below.

- Package A: 18 glue sticks
- Package B: 12 glue sticks

Write an equation for Package A and an equation for Package B that represent the total number of glue sticks, *g*, in *p* packages.

Package A ___ $18+gp$ ___

Package B ___ $12+gp$ ___

Mr. Davis buys 5 packages of the Package A glue sticks. Ms. Wilson buys 8 packages of the Package B glue sticks. Use your equations to find the difference in the total number of glue sticks that each person purchased.

Show your work.

$18 + 5 \times 8$
$18 \quad / \ 40$
58

40
$+18$
58

$12 + 5 \times 8$
$12 \ '+ 40$
52

58
-52
6

Answer ___ 6 ___ glue sticks

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. Incorrect expressions are written. Although the solution is correct, it is obtained using an obviously incorrect procedure.