

New York NYSTP 2019 Grade 6 Math

Reference Materials
Page 2

Exam Materials
Pages 3 - 26

Answer Key Materials
Pages 27 - 28

Rubric Materials
Pages 29 - 106

Grade 6 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters

1 meter = 39.37 inches

1 mile = 5,280 feet

1 mile = 1,760 yards

1 mile = 1.609 kilometers

1 kilometer = 0.62 mile

1 pound = 16 ounces

1 pound = 0.454 kilogram

1 kilogram = 2.2 pounds

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 3.785 liters

1 liter = 0.264 gallon

1 liter = 1,000 cubic centimeters

FORMULAS

Triangle

$$A = \frac{1}{2}bh$$

Right Rectangular Prism

$$V = Bh \text{ or } V = lwh$$

Name: _____



New York State Testing Program

2019 Mathematics Test Session 1

Grade **6**

May 1–3, 2019

RELEASED QUESTIONS

Session 1



TIPS FOR TAKING THE TEST

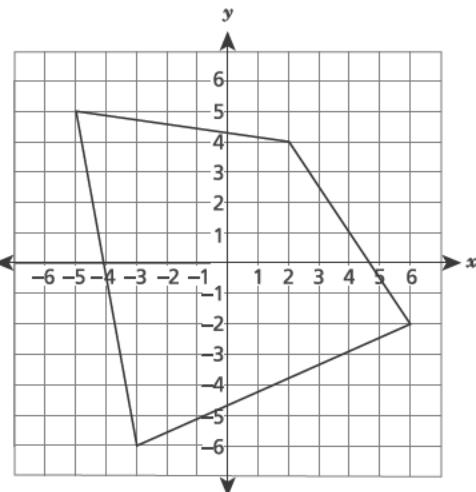
Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice.
- You have been provided with mathematics tools (a ruler and a protractor) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.

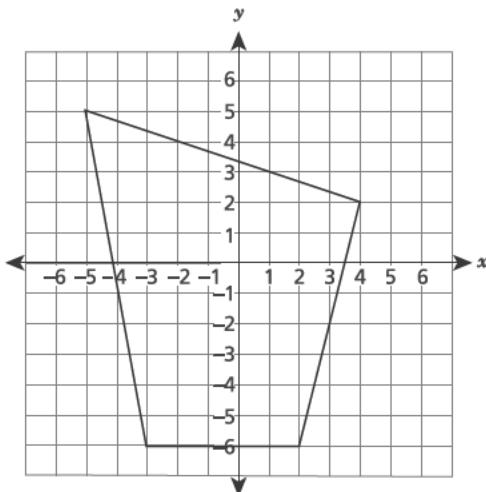
1

Which coordinate plane shows a polygon with four vertices graphed at $(-5, 5)$, $(2, 4)$, $(6, -2)$, and $(-3, -6)$?

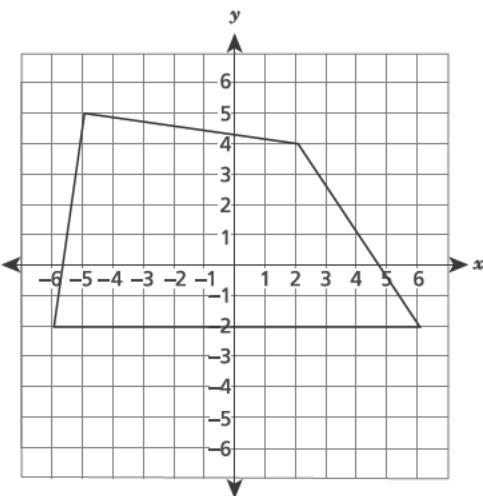
A



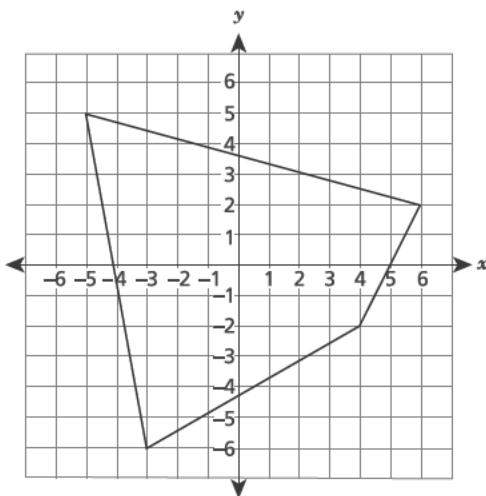
C



B



D

**GO ON**

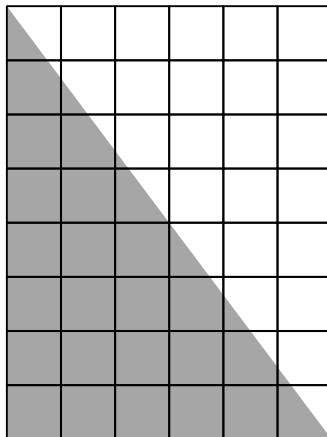
2

What is the value of the expression $\frac{3^2 \cdot (2^3 + 4)}{2^2}$?

- A 10
- B 15
- C 19
- D 27

3

The grid shown below is in the shape of a rectangle.



What is the area, in square units, of the shaded part of the rectangle?

- A 14
- B 24
- C 28
- D 48

GO ON

4

Debnil has 6 teaspoons of salt. The ratio of teaspoons to tablespoons is 3 : 1. How many tablespoons of salt does Debnil have?

A $\frac{1}{18}$

B $\frac{1}{2}$

C 2

D 18

GO ON

7

Which expression is equivalent to the phrase shown below?

the quotient of the sum of $2t$ and 2, and twice the cube of s

A $2t + \frac{2}{3s^2}$

B $2t + \frac{2}{2s^3}$

C $\frac{2t + 2}{3s^2}$

D $\frac{2t + 2}{2s^3}$

GO ON

10

A custodian plans to repaint some classroom bookcases. She has $5\frac{1}{4}$ gallons of paint. All of the bookcases are the same size and each requires $\frac{3}{4}$ gallon of paint. How many bookcases will the custodian be able to repaint with that amount of paint?

- A** 3
- B** 4
- C** 7
- D** 15

GO ON

13

Carly purchased $9\frac{1}{2}$ pints of ice cream for a party. If each guest will be served exactly $\frac{3}{5}$ pint of ice cream, what is the greatest number of guests that Carly can serve?

- A 5
- B 9
- C 15
- D 16

GO ON

16

At a bus station, buses begin their routes at 6:00 a.m. The schedule for two of the buses is based on the time intervals listed below.

- Bus A has a long route and leaves the station every 75 minutes.
- Bus B has a short route and leaves the station every 15 minutes.

What is the next time Bus A and Bus B will leave the bus station at the same time?

A 7:00 a.m.

B 7:15 a.m.

C 7:30 a.m.

D 8:30 a.m.

17

Which number has an absolute value greater than 5?

A -6

B -5

C 0

D 5

GO ON

26

A bakery made 9 cakes using 3 bags of flour. The bakery uses the same relationship between cakes made and the amount of flour used to make all of their cakes. Which table of values shows the relationship between the number of cakes the bakery makes to the number of bags of flour the bakery uses?

CAKES BAKED**A**

Cakes	1	2	3	4	5
Bags of Flour	3	6	9	12	15

C

Cakes	7	8	9	10	11
Bags of Flour	1	2	3	4	5

CAKES BAKED**B**

Cakes	3	6	9	12	15
Bags of Flour	1	2	3	4	5

D

Cakes	1	2	3	4	5
Bags of Flour	7	8	9	10	11

27

The volume, V , of any cube with a side length, s , can be determined using the formula $V = s^3$. What is the volume, in cubic centimeters, of a cube with a side length of 2.3 centimeters?

- A** 5.29
- B** 6.9
- C** 8.027
- D** 12.167

GO ON

- 28** Mr. Tola has a piece of wood that is $8\frac{1}{4}$ feet in length. He wants to cut it into pieces that are each $\frac{3}{4}$ foot in length. How many $\frac{3}{4}$ -foot pieces of wood can Mr. Tola make?

- A 7
- B 8
- C 9
- D 11

- 29** A zoo has 15 toucans and 60 parrots. What is the ratio of the number of toucans to the number of parrots at the zoo?

- A 1 : 4
- B 1 : 5
- C 4 : 1
- D 4 : 5

- 30** A restaurant used 231 eggs last week. Of these, 46 were brown in color. The remaining eggs were white in color. Which equation can be used to solve for w , the number of white eggs used last week?

- A $231 + 46w = 0$
- B $46 + w = 231$
- C $w = 231 + 46$
- D $231 = 46w$

31

Which expression is equivalent to $9(9m + 3t)$?

- A $18m + 3t$
- B $81m + 3t$
- C $18m + 12t$
- D $81m + 27t$

STOP

Session 2



TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice or writing your response.
- You have been provided with mathematics tools (a ruler, a protractor, and a calculator) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.
- Be sure to show your work when asked.

32

Which set of values makes the inequality $n \geq -5$ true?

- A $\{-5, -5.5, -6\}$
- B $\{-5, -4.5, -3\}$
- C $\{-6, 0, 5\}$
- D $\{-6, -7, -8\}$

33

An ice cream shop sold 48 vanilla milkshakes in a day, which was 40% of the total number of milkshakes sold that day. What was the total number of milkshakes that the ice cream shop sold that day?

- A 60
- B 72
- C 100
- D 120

34

Which expression represents the phrase below?

3 fewer than a number, p

- A $3 - p$
- B $p \div 3$
- C $3 \div p$
- D $p - 3$

GO ON

35

What number is **not** part of the solution set to the inequality below?

$$w - 10 \leq 16$$

- A 11
- B 15
- C 26
- D 27

36

The coordinates of the vertices of triangle ABC are A(1, –1), B(1, 4), and C(8, 4). What is the length, in units, of the line segment that connects vertex A and vertex B?

- A 1
- B 4
- C 5
- D 7

37

Ken and Tami are making necklaces. Ken makes 25 necklaces. Tami makes m more necklaces than Ken. Which expression represents the total number of necklaces Ken and Tami made?

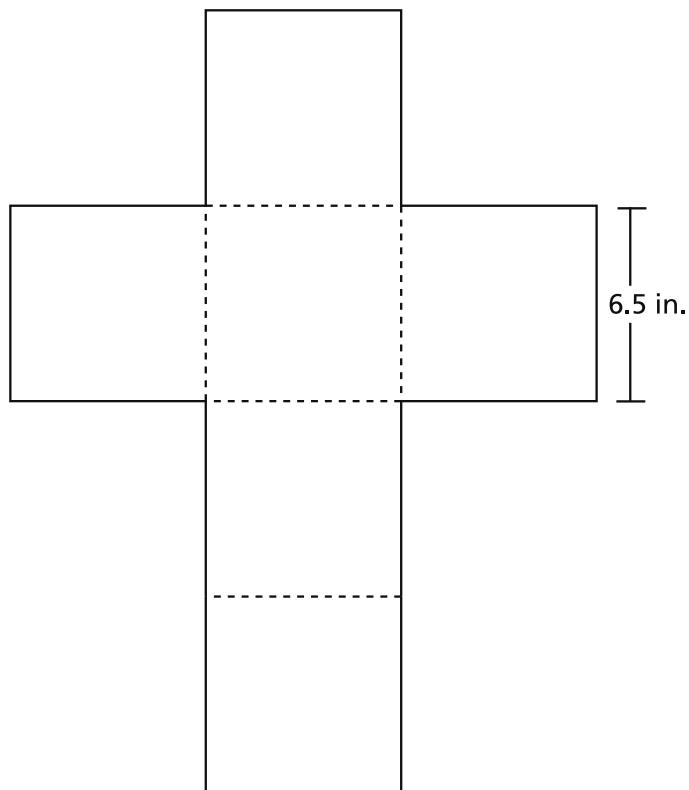
- A $25 + (25 + m)$
- B $25 + 25m$
- C $25 + m$
- D $25m$

GO ON

38

Kira decorates the exterior faces of a gift box in the shape of a cube. The figure below shows the net of the gift box.

NET OF KIRA'S GIFT BOX



What is the surface area, in square inches, of the gift box that Kira decorates?

A 91.0

C 253.5

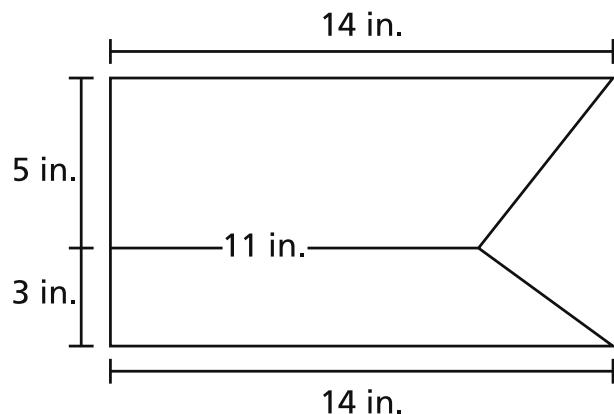
B 169.0

D 274.6

GO ON

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.

Answer _____ square inches

GO ON

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

GO ON

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

GO ON

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

GO ON

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.

GO ON

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 \$ _____

GO ON

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

GO ON

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

STOP

THE STATE EDUCATION DEPARTMENT
THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234
2019 Mathematics Tests Map to the Standards
Grade 6 Released Questions on EngageNY

Question	Type	Key	Points	Standard	Cluster	Multiple Choice Questions:	Constructed Response Questions:	
						Percentage of Students Who Answered Correctly (P-Value)	Average Points Earned	P-Value (Average Points Earned ÷ Total Possible Points)
Session 1								
1	Multiple Choice	A	1	CCSS.Math.Content.6.G.A.3	Geometry	0.76		
2	Multiple Choice	D	1	CCSS.Math.Content.6.EE.A.1	Expressions and Equations	0.71		
3	Multiple Choice	B	1	CCSS.Math.Content.6.G.A.1	Geometry	0.62		
4	Multiple Choice	C	1	CCSS.Math.Content.6.RP.A.3d	Ratios and Proportional Relationships	0.64		
7	Multiple Choice	D	1	CCSS.Math.Content.6.EE.A.2a	Expressions and Equations	0.53		
10	Multiple Choice	C	1	CCSS.Math.Content.6.NS.A.1	The Number System	0.72		
13	Multiple Choice	C	1	CCSS.Math.Content.6.NS.A.1	The Number System	0.56		
16	Multiple Choice	B	1	CCSS.Math.Content.6.NS.B.4	The Number System	0.61		
17	Multiple Choice	A	1	CCSS.Math.Content.6.NS.C.7d	The Number System	0.6		
26	Multiple Choice	B	1	CCSS.Math.Content.6.RP.A.3a	Ratios and Proportional Relationships	0.7		
27	Multiple Choice	D	1	CCSS.Math.Content.6.EE.A.2c	Expressions and Equations	0.42		
28	Multiple Choice	D	1	CCSS.Math.Content.6.NS.A.1	The Number System	0.65		
29	Multiple Choice	A	1	CCSS.Math.Content.6.RP.A.1	Ratios and Proportional Relationships	0.62		
30	Multiple Choice	B	1	CCSS.Math.Content.6.EE.B.7	Expressions and Equations	0.7		
31	Multiple Choice	D	1	CCSS.Math.Content.6.EE.A.3	Expressions and Equations	0.61		
Session 2								
32	Multiple Choice	B	1	CCSS.Math.Content.6.EE.B.5	Expressions and Equations	0.57		
33	Multiple Choice	D	1	CCSS.Math.Content.6.RP.A.3c	Ratios and Proportional Relationships	0.72		
34	Multiple Choice	D	1	CCSS.Math.Content.6.EE.A.2a	Expressions and Equations	0.63		
35	Multiple Choice	D	1	CCSS.Math.Content.6.EE.B.5	Expressions and Equations	0.61		
36	Multiple Choice	C	1	CCSS.Math.Content.6.G.A.3	Geometry	0.6		
37	Multiple Choice	A	1	CCSS.Math.Content.6.EE.B.6	Expressions and Equations	0.36		
38	Multiple Choice	C	1	CCSS.Math.Content.6.G.A.4	Geometry	0.51		
39	Constructed Response		2	CCSS.Math.Content.6.G.A.1	Geometry		0.68	0.34
40	Constructed Response		2	CCSS.Math.Content.6.NS.B.4	The Number System		1.27	0.63

41	Constructed Response		2	CCSS.Math.Content.6.RP.A.2	Ratios and Proportional Relationships		0.93	0.46
42	Constructed Response		2	CCSS.Math.Content.6.EE.B.7	Expressions and Equations		0.82	0.41
43	Constructed Response		2	CCSS.Math.Content.5.OA.B.3	Expressions and Equations		0.7	0.35
44	Constructed Response		2	CCSS.Math.Content.6.EE.A.2a	Expressions and Equations		0.99	0.49
45	Constructed Response		2	CCSS.Math.Content.6.RP.A.3d	Ratios and Proportional Relationships		0.41	0.21
46	Constructed Response		3	CCSS.Math.Content.6.EE.C.9	Expressions and Equations		1.62	0.54

*This item map is intended to identify the primary analytic skills necessary to successfully answer each question. However, some questions measure proficiencies described in multiple standards, including a balanced combination of procedural and conceptual understanding.

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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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

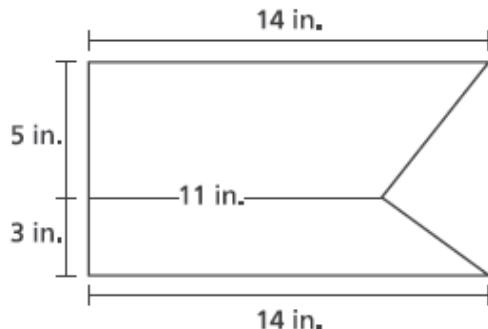
Below are the policies to be followed while scoring the mathematics tests for all grades:

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.

EXEMPLARY RESPONSE

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:

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

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

$$\text{Total area} = 112 - 12 = 100 \text{ in}^2$$

OR

Finding the area by adding smaller parts:

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

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

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

$$\text{Total area} = 88 + 7.5 + 4.5 = 88 + 12 = 100 \text{ in}^2$$

OR

Finding the area of two trapezoids:

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

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

$$\text{Total area} = 62.5 + 37.5 = 100 \text{ in}^2$$

OR other valid process

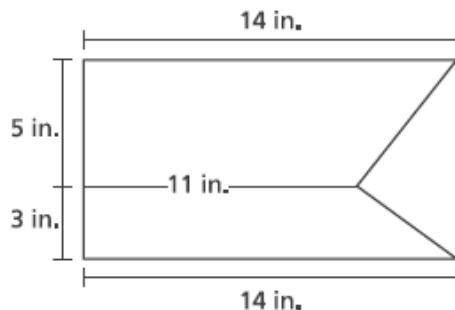
Answer 100 square inches

GUIDE PAPER 1

Additional

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.

$$a = l \times w$$

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

$$a = 14 \times 8$$

$$a = 112 \text{ in}^2$$

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

100 in^2

Answer

square inches

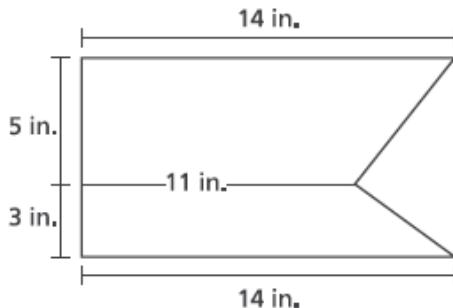
Score Point 2 (out of 2 points)

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.

GUIDE PAPER 2

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

$$A = \frac{1}{2} bh$$

$$A = \frac{1}{2} 5 \times 3$$

$$A = 7.5$$

Rectangle 1

$$A = bh$$

$$A = 5 \times 11$$

$$A = 55$$

Triangle 2

$$A = \frac{1}{2} bh$$

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

$$A = 4.5$$

Rectangle 2

$$A = bh$$

$$A = 3 \times 11$$

$$A = 33$$

$$7.5 + 4.5 + 55 + 33 = 100$$

Answer

100

square inches

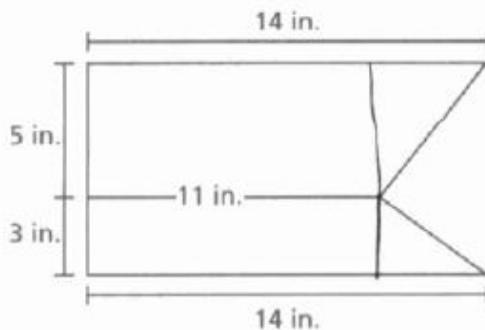
Score Point 2 (out of 2 points)

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.

GUIDE PAPER 3

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.

$$\begin{aligned}A &= l \cdot w \\A &= 8 \cdot 11 \\A &= 88\end{aligned}$$

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

$$\begin{aligned}A &= \frac{1}{2} l \cdot w \\A &= \frac{1}{2} \cdot 3 \cdot 3 \\A &= 4.5 \\A &= \frac{1}{2} l \cdot w \\A &= \frac{1}{2} \cdot 5 \cdot 3 \\A &= 7.5\end{aligned}$$

$$\begin{array}{r} 7.5 \\ 4.5 \\ + 88.0 \\ \hline \end{array}$$

Answer 100 square inches

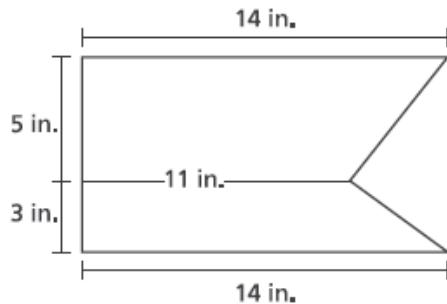
Score Point 2 (out of 2 points)

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.

GUIDE PAPER 4

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.

$$14 - 11 = 3$$

$$11 \times 5 = 55$$

$$3 \times 11 = 33$$

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

$$3 \times 3 = 9$$

$$A = BH$$

$$A \text{ of triangle} = bh \div 2$$

$$3 \times 5 = 15$$

$$15 \div 2 = 7.5$$

104.5

Answer

square inches

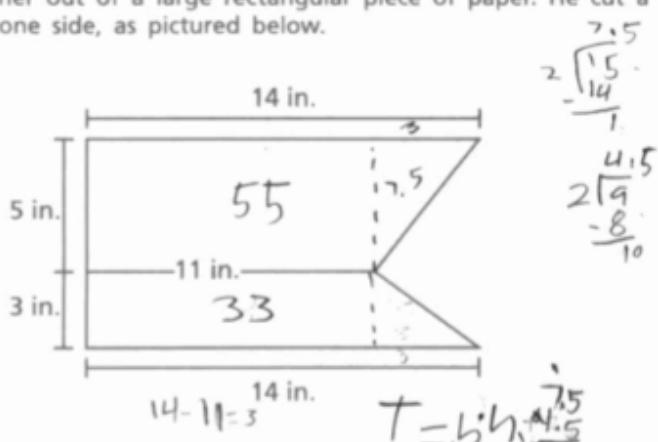
Score Point 1 (out of 2 points)

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.



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

Show your work.

Answer 110 square inches

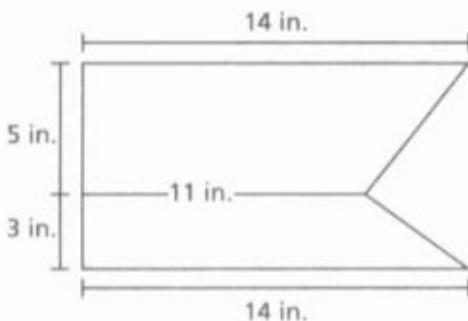
Score Point 1 (out of 2 points)

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.

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

$$\begin{array}{r} 14 \\ \times 3 \\ \hline 42 \end{array}$$

$$\begin{array}{r} 70 \\ + 42 \\ \hline 112 \text{ sq in} \end{array}$$

Answer 112 square inches

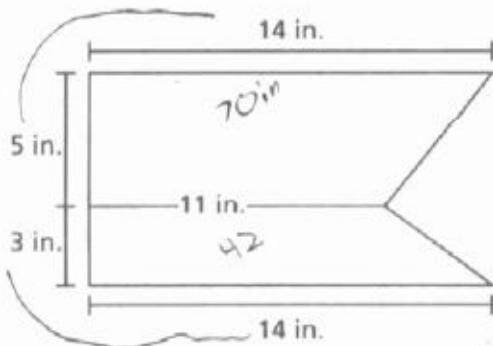
Score Point 1 (out of 2 points)

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.

GUIDE PAPER 7

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.

$$\begin{array}{r} 35 \\ + 21 \\ \hline 55 \end{array}$$

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

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

Answer 55 square inches

Score Point 0 (out of 2 points)

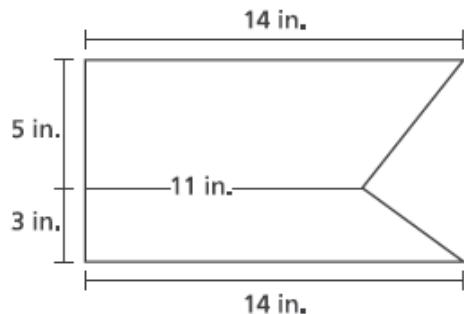
This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the response contains correct answers for the two areas of the original rectangle, an incorrect procedure is used to determine the areas of trapezoids.

GUIDE PAPER 8

Additional

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.

$$14 \times 14 \times 11 \times 5 \times 3 = 32340 \div 2 = 16170$$

Answer

16170

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.

EXEMPLARY RESPONSE

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

GUIDE PAPER 1

Additional

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.

GUIDE PAPER 2

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 student has drawn a diagram to find the Least Common Multiple (LCM) of 12 and 9. On the left, there is a vertical rectangle with the number 3 written vertically inside it. To its right, the number 12 is written above the number 4, with a vertical line connecting them. Further to the right, the number 9 is written above the number 3, also with a vertical line connecting them. Two arrows point downwards from the numbers 12 and 9 towards a horizontal line. This horizontal line contains the multiplication symbol 'x' followed by the numbers 4 and 3, enclosed in a rectangular box. To the right of this box is the equals sign '=' followed by the number 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.

GUIDE PAPER 3

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.

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

Answer 36 seconds

Score Point 2 (out of 2 points)

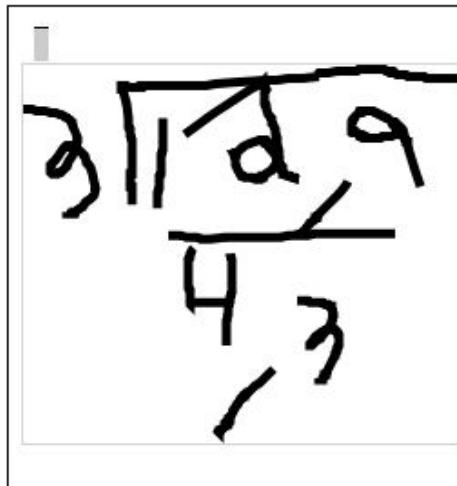
This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct procedure of listing multiples in four-thirds ratios is used and the LCM is correctly identified.

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.

GUIDE PAPER 5

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.

Train A loops Seconds	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	117
14	126
Answer	144

GUIDE PAPER 7

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.

$$A = 12 \text{ sec}$$

$$12 \times 9 = 108$$

$$B = 9 \text{ sec}$$

They will arrive 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.

GUIDE PAPER 8

Additional

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 that's 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.

EXEMPLARY RESPONSE

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.

$$\$140 \div 56 = \$2.50 \text{ per hotdog}$$

$$\$175 \div \$2.50 = 70 \text{ hotdogs}$$

$$70 - 56 = 14 \text{ additional hotdogs}$$

OR

$$\$140 \div 56 = \$2.50 \text{ per hotdog}$$

$$\$175 - \$140 = \$35 \text{ additional dollars}$$

$$\$35 \div \$2.50 = 14 \text{ additional hotdogs}$$

OR other valid process

Answer 14 hot dogs

GUIDE PAPER 1

Additional

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)

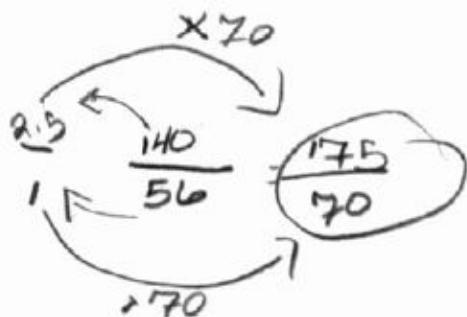
This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The total number of hot dogs and the additional amount that needs to be sold are correctly determined using sound procedures.

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.



$$\begin{array}{r} 140.00 & 175.00 \\ \hline 56 & 70 \\ \hline & \downarrow \\ & 70 \\ & - 54 \\ \hline & 14 \end{array}$$

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.

GUIDE PAPER 3

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.

$$\begin{aligned}140/56 &= 2.5 \\175/2.5 &= 70 \\70 - 56 &= 14\end{aligned}$$

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.

$$\begin{array}{r} \$2.50 \\ \times 56 \\ \hline 140 \end{array}$$

$$\begin{array}{r} 2.5 \\ 56 \longdiv{140.0} \\ \quad 12 \downarrow \\ \quad 20 \\ \quad 20 \cancel{8} \\ \hline \quad 0 \end{array}$$

$$\begin{array}{r} \$2.50 \\ \times 70 \\ \hline \$175 \end{array}$$

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

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.

\$
hd

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

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

$$\checkmark \frac{250}{1 \times 70} = \frac{175.00}{70}$$

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.

GUIDE PAPER 6

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.

GUIDE PAPER 7

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.

GUIDE PAPER 8

Additional

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.

$$\begin{array}{r} 140.00 \\ \times 56 \\ \hline 7840 \end{array}$$

$$7840 \div 175.00 = 44.8$$

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.

EXEMPLARY RESPONSE

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

GUIDE PAPER 1

Additional

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.

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

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

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

$$p = 16$$

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.

GUIDE PAPER 2

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.

$$\begin{aligned} w \times \frac{3}{4} &= 12 \\ \frac{3w}{4} &= 12 \quad 4 \times 12 = 48 \\ \frac{3w}{3} &= \frac{48}{3} \\ w &= 16 \end{aligned}$$

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.

Part Whole ?

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

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

$x = 16$

$P = X + 12$

$P = 4 + 12$

$P = 16$

$X = \text{players who wanted juice}$

$P = \text{total number of players}$

DO NOT WRITE BEYOND THIS AREA

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.

GUIDE PAPER 4

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.

$$\begin{array}{r} 12 \div 3 \\ \hline 1 \quad 4 \end{array}$$
$$\begin{array}{r} 12 \times \frac{1}{3} = \frac{48}{3} \\ \hline 1 \quad 3 \end{array}$$

Answer

the total
number of
people at the
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.

GUIDE PAPER 5

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.

$$\begin{aligned} p &= (4 \times 4) \\ p &= 16 \end{aligned}$$

Answer

there was a
total of 16
players at the
game.

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 $\frac{1}{4}$ of the total number of players is determined. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

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.

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

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

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

Answer 20 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.

GUIDE PAPER 7

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.

GUIDE PAPER 8

Additional

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.

$$12 + p =$$

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

$$\frac{3}{4} \times \frac{12}{1} = \frac{36}{4} = 4$$
$$\frac{1}{4} \times \frac{12}{1} = \frac{1}{48} = \frac{1}{4}$$

$$12 + p =$$

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.

EXEMPLARY RESPONSE

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

GUIDE PAPER 1

Additional

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 have to add two to get nine and on and on.

$$\begin{array}{l} \text{A } 1, 4, 7, 10, 13 \\ 1+3 < 4+3 < 7+3 < 10+3 < 13+3 \\ \text{B } 1, 5, 9, 13, 17 \end{array}$$

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.

GUIDE PAPER 2

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 difference 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.

GUIDE PAPER 4

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 by 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.

GUIDE PAPER 6

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.

GUIDE PAPER 7

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 always 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.

GUIDE PAPER 8

Additional

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 f
it would be +3 $5+3=8$ and compared to Patti
B +4 $5+4=9$ and that would be the lis*

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.

EXEMPLARY RESPONSE

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 $6.25n + 3.5$ *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 \$ 34.75

GUIDE PAPER 1

Additional

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.

$$\begin{aligned} n &= 5 \\ 6.25 \times 5 &= 31.25 \\ 31.25 + 3.50 &= 34.75 \end{aligned}$$

$$34.75$$

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.

GUIDE PAPER 2

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.

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

$$\begin{array}{r} 12 \\ \times 6.25 \\ \hline 6.25 \\ 6.25 \\ 6.25 \\ 6.25 \\ 6.25 \\ \hline 34.75 \end{array}$$

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.

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

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.

GUIDE PAPER 4

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 $1 = 6.25 \times 5 + \$3.50$

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

Show your work.

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

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.

GUIDE PAPER 5

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.

GUIDE PAPER 6

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.

$$\begin{array}{r} 6.25 \\ 6.25 \\ 6.25 \\ 6.25 \\ 6.25 \\ \hline + 3.50 \\ \hline 27.50 \end{array}$$

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.

GUIDE PAPER 7

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 $6.25 \times 3.50 = n$

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

Show your work.

$$\begin{array}{r} 6.25 \\ \times 5 \\ \hline 31.25 \end{array}$$

~~$\begin{array}{r} 6.25 \\ \times 5 \\ \hline 31.25 \end{array}$~~

$$\begin{array}{r} 31.25 \\ + 17.05 \\ \hline 48.30 \end{array}$$

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.

GUIDE PAPER 8

Additional

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.

EXEMPLARY RESPONSE

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.

$$1 \text{ gallon} = 16 \text{ cups}$$

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

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

$$x = 128 \text{ servings}$$

OR

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

$$16 \times 8 = 128 \text{ servings}$$

OR

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

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

OR other valid process

Answer 128 servings

GUIDE PAPER 1

Additional

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

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

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

128

Answer

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.

GUIDE PAPER 2

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.

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

$$\begin{array}{r} 416 \\ \times 8 \\ \hline 128 \end{array}$$

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.

GUIDE PAPER 3

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.

Handwritten work showing the conversion of 1 gallon to cups and then to servings:

$$1 \text{ gallon} = 16 \text{ cups} = 1 \text{ pint} \times 2 = 2 \text{ pints} = 1 \text{ quart} \times 4 = 4 \text{ quarts}$$

Upward arrow from the word "Equation" to the handwritten work.

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

(128)

DO NOT WRITE BEYOND THIS AREA

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.

GUIDE PAPER 4

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.

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

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

$$?=1 \text{ serving}$$

$$\frac{5}{4} \div 10 = 1/8$$

$$1/8 = 1 \text{ serving}$$

$$15 \text{ cups} = 1 \text{ gallon}$$

$$1/8 \times 120 = 15 \text{ cups}$$

120

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 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.

GUIDE PAPER 5

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.

$$16 \text{ cups} = 1 \text{ gallon}$$

$$12\frac{4}{5} \times 10 = 128$$

Answer

128

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.

GUIDE PAPER 6

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.

Handwritten work showing the division of 16000 by 125. The quotient is 128. To the left, there is a multiplication problem: 24 multiplied by 125 equals 1000.

125)16000
-125
350
-250
100
-100
= 0

24
125
X 8
—
1000

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.

GUIDE PAPER 7

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.

$$1 \text{ gallon} = 4 \text{ quarts}$$

$$1 \text{ quart} = 2 \text{ pints}$$

$$1 \text{ pint} = 2 \text{ cups}$$

$$4 \text{ quarts} = 8 \text{ pints}$$

$$8 \text{ pints} = 16 \text{ cups}$$

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.

GUIDE PAPER 8

Additional

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 pints 2 CUPS = 1 pint
4 CUPS = 2 pints

$10 = 4$ pints
2 quart 1 quart = 2 pints
2 quart = 4 pints

$13 = 6$ pints
= 3 quarts 3 quart = 6 pints
4 quarts = 8 pints
 $16 = 8$ pints
= 4 quarts 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.

EXEMPLARY RESPONSE

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 $\underline{g = 18p \quad OR \text{ other valid equation}}$

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

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: $p = 5$

$$g = 18 \times 5 = 90 \text{ glue sticks}$$

Mr. Wilson: $p = 8$

$$g = 12 \times 8 = 96 \text{ glue sticks}$$

$$96 - 90 = 6 \text{ glue sticks}$$

OR other valid process

Answer 6 glue sticks

GUIDE PAPER 1

Additional

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

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 $18 \times p = g$

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

$$18 \times 5 = g$$

$$18 \times 5 = 90 \text{ glue sticks}$$

Ms. Wilson

$$12 \times 8 = g$$

$$12 \times 8 = 96 \text{ glue sticks}$$

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

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

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

$$A \cdot 18 = g$$

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.

$$\begin{array}{r} 418 \\ \times 5 \\ \hline 90 \end{array}$$

$$\begin{array}{r} 12 \\ \times 8 \\ \hline 96 \end{array}$$

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.

GUIDE PAPER 4

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 $P \cdot 18 = g$

Package B $P \cdot 12 = g$

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.

$$\begin{array}{ll} P \cdot 18 = g & \\ \cancel{5} & 8 \cdot 12 = g \\ P \cdot 18 = g & 8 \cdot 12 = 96 \\ 5 \cdot 18 = g & \\ 5 \cdot 18 = 90 & \end{array}$$

Answer 90 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.

GUIDE PAPER 5

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.

$$5 \times 18 = 90$$

$$8 \times 12 = 96$$

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.

GUIDE PAPER 6

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 package B.

Package B

package B has 6 less glue sticks than package 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.

$$\text{Mr.D} = 5 \times 18 = 90 \text{ glue sticks}$$

$$\text{Ms.W} = 8 \times 12 = 96 \text{ glue sticks}$$

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.

GUIDE PAPER 7

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 $\underline{90 \quad 18 \times 5}$
Package B $\underline{96 \quad 12 \times 8}$

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.

$$A = 18 \times 5 \\ \underline{+ 5} \\ \underline{\underline{90}}$$
$$B = 12 \times 8 \\ \underline{+ 6} \\ \underline{\underline{96}}$$

Answer $\underline{90 > 96}$ 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.

GUIDE PAPER 8

Additional

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.

$$18 \times 5 = 90$$
$$12 \times 8 = 96$$

q_1 1
 q_2 2
 q_3 3
 q_4 4
 q_5 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.

GUIDE PAPER 9

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

$$P = g \cdot 18$$

Package B

$$p = g \cdot 12$$

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

Answer

Ms. Wilson bought 6 more gluesticks by buying 4 more packages than Mr. Davis using package b
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

$$12 \times p = g$$

Package B

$$18 \times p = g$$

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

624

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.

GUIDE PAPER 11

Additional

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.

$$\begin{array}{r} 18 + 5 \times 8 \\ 18 + 40 \\ \hline 58 \end{array}$$

$$\begin{array}{r} 40 \\ + 18 \\ \hline 58 \end{array}$$

$$\begin{array}{r} 12 + 5 \times 8 \\ 12 + 40 \\ \hline 52 \end{array}$$

$$\begin{array}{r} 58 \\ - 52 \\ \hline 6 \end{array}$$

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.