

Name: \_\_\_\_\_



# New York State *Testing Program*

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## 2023 Mathematics Test Session 1

Grade **4**

May 2–4, 2023

**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) to use during the test. It is up to you to decide when each tool will be helpful. You should use mathematics tools whenever you think they will help you to answer the question.

**1** Which value is equivalent to  $700,000 + 5,000 + 200 + 10 + 9$ ?

- A 705,209
- B 705,219
- C 750,209
- D 750,219

**2** Jen runs 8 laps around a track. Carol runs 2 times as many laps as Jen. Which equation can be used to determine the number of laps Carol runs?

- A  $8 \div 2 = \underline{\hspace{2cm}}$
- B  $8 - 2 = \underline{\hspace{2cm}}$
- C  $8 + 2 = \underline{\hspace{2cm}}$
- D  $8 \times 2 = \underline{\hspace{2cm}}$

**GO ON**

**5** What is the product of 432 and 6?

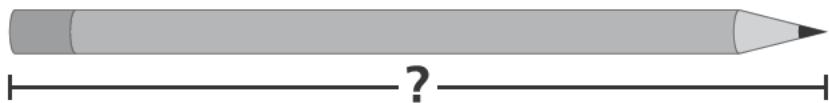
- A 2,482
- B 2,492
- C 2,582
- D 2,592

**6** Which statement about an acute triangle is true?

- A It has one angle that is exactly 90 degrees.
- B It has one angle that is greater than 90 degrees.
- C It has angles that are each less than 90 degrees.
- D It has angles that are each greater than 90 degrees.

**9**

A pencil is shown below.



What is the length, in inches, of the pencil?

A  $4\frac{1}{4}$

B  $4\frac{1}{2}$

C  $5\frac{1}{4}$

D  $5\frac{1}{2}$

**10**

Which mixed number is equivalent to  $\frac{13}{3}$ ?

A  $3\frac{1}{3}$

B  $3\frac{2}{3}$

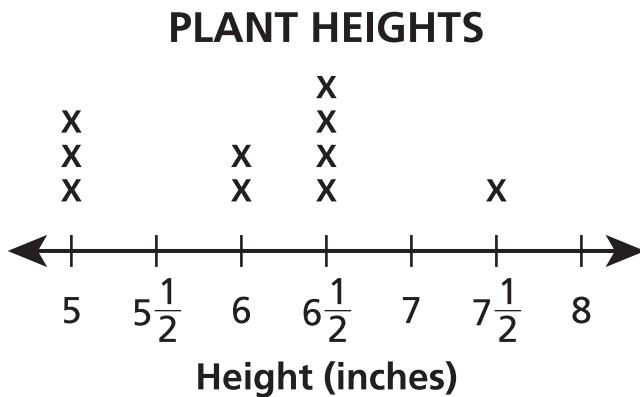
C  $4\frac{1}{3}$

D  $4\frac{2}{3}$

**GO ON**

**13**

The line plot shown below represents the heights of ten different plants.



What is the difference in height, in inches, between the tallest plant and one of the shortest plants?

- A**  $2\frac{1}{2}$
- B** 3
- C** 4
- D**  $6\frac{1}{2}$

**GO ON**

**17**

What is the rule for the number pattern shown below?

64, 32, 16, 8, . . .

- A subtract 8
- B divide by 2
- C divide by 8
- D multiply by 2

**19**

What is the missing value in the equation shown below?

$$\underline{?} \times \frac{3}{6} = 15 \times \frac{1}{6}$$

- A 3
- B 5
- C 12
- D 18

**GO ON**

**20**

Tiffany has 5 times as many red apples as she has green apples. If she has 20 red apples, how many green apples does she have?

- A 4
- B 15
- C 25
- D 100

**GO ON**

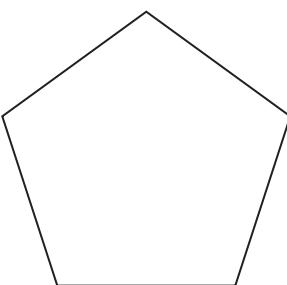
**23**

Which figure appears to have exactly two lines of symmetry?

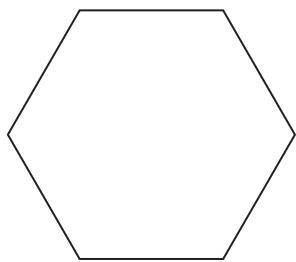
**A**



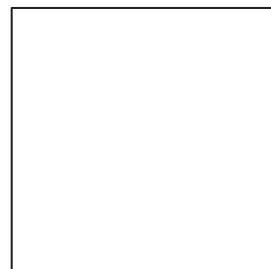
**C**



**B**



**D**



**GO ON**

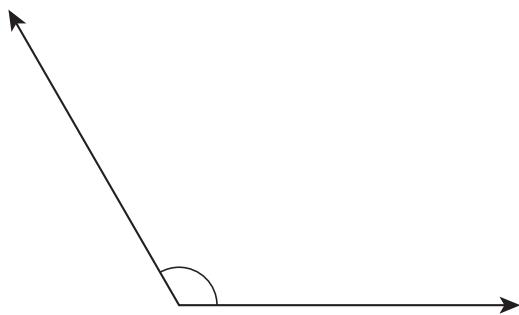
**25**

Which angle has a measure of  $60^\circ$ ?

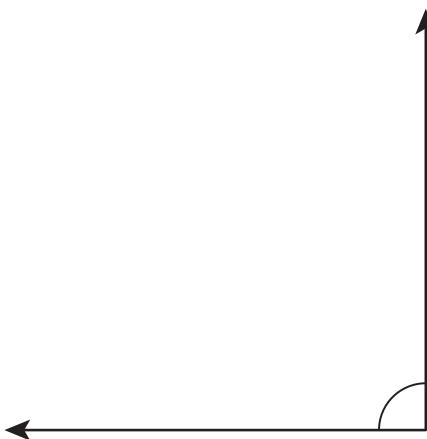
**A**



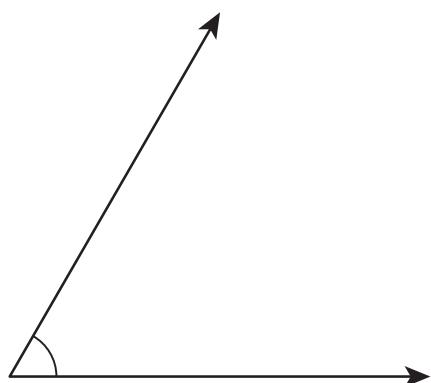
**C**



**B**



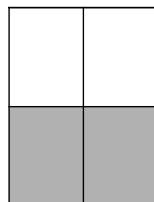
**D**



**GO ON**

**29**

The shaded part in the model shown below represents a fraction of the whole model.



Which fraction is equivalent to the value represented by the shaded part in the model?

- A  $\frac{4}{2}$
- B  $\frac{2}{1}$
- C  $\frac{1}{2}$
- D  $\frac{1}{4}$

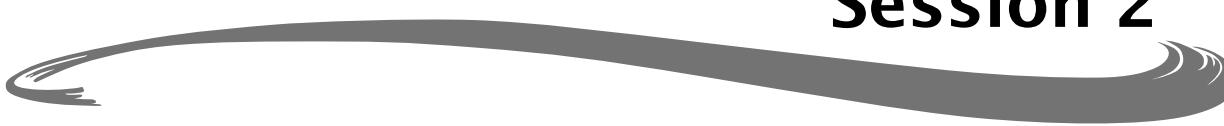
**30**

What is the value of  $7,225 \div 6$ ?

- A 1,204
- B 1,204 r1
- C 1,205
- D 1,205 r1

**STOP**

# Session 2



## TIPS FOR TAKING THE TEST

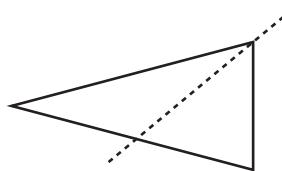
Here are some suggestions to help you do your best:

- 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 and a protractor) to use during the test. It is up to you to decide when each tool will be helpful. You should use mathematics tools whenever you think they will help you to answer the question.
- Be sure to show your work when asked.

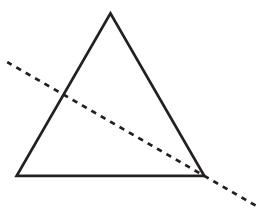
**31**

In which triangle does the dotted line appear to be a line of symmetry?

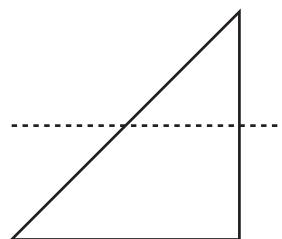
**A**



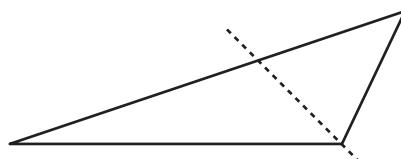
**B**



**C**



**D**



**32**

Which comparison is true?

**A**  $\frac{1}{4} < \frac{2}{8}$

**B**  $\frac{1}{3} > \frac{3}{6}$

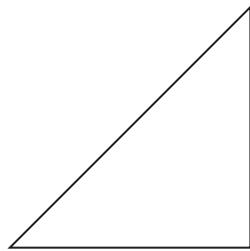
**C**  $\frac{3}{6} = \frac{5}{8}$

**D**  $\frac{2}{3} = \frac{4}{6}$

**GO ON**

**33**

Which statement about the figure shown below is true?



- A** It appears to have all acute angles.
- B** It appears to have all obtuse angles.
- C** It appears to have two parallel sides.
- D** It appears to have two perpendicular sides.

**34**

Tim has 3 packs of markers. Each pack has 12 markers. Which equation can be used to find the total number of markers,  $n$ , that Tim has?

- A**  $12 \times n = 3$
- B**  $3 \times 12 = n$
- C**  $3 \div n = 12$
- D**  $12 \div 3 = n$

**35**

What is the value of  $24 \times 11$ ?

- A** 35
- B** 48
- C** 264
- D** 364

**GO ON**

**36**

**This question is worth 1 credit.**

Rosie combined  $1\frac{3}{4}$  gallons of cranberry juice and  $\frac{3}{4}$  gallon of apple juice to make fruit juice. How many gallons of fruit juice did Rosie make with the cranberry juice and apple juice?

*Answer* \_\_\_\_\_ gallons

**GO ON**

**37**

**This question is worth 1 credit.**

What is the number 88,678 rounded to the nearest thousand?

**Answer** \_\_\_\_\_

**GO ON**

**38**

**This question is worth 1 credit.**

How many one-degree angles are in a complete circle?

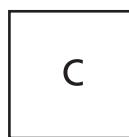
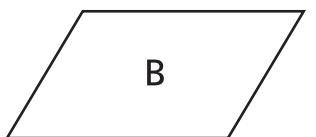
**Answer** \_\_\_\_\_ one-degree angles

**GO ON**

**39**

This question is worth 2 credits.

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer.



*Explain how you know your answer is correct.*

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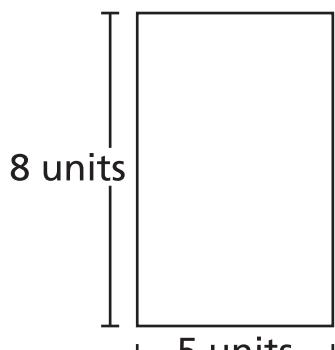
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**GO ON**

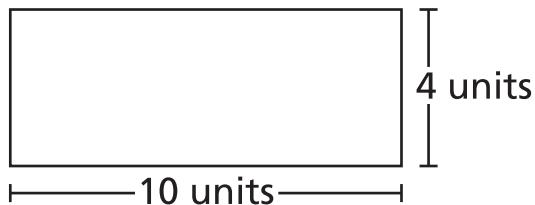
**40**

This question is worth 2 credits.

A student draws the two rectangles shown below.



**Rectangle A**



**Rectangle B**

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer.

*Explain your answer.*

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**GO ON**

**41**

**This question is worth 2 credits.**

What fraction can be added to the expression shown below to have a total value of one whole?

$$\frac{2}{12} + \frac{7}{12}$$

**Show your work.**

**Answer** \_\_\_\_\_

**GO ON**

**42**

**This question is worth 2 credits.**

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

***Explain how you know your answer is correct.***

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**GO ON**

**43**

**This question is worth 2 credits.**

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has?

**Show your work.**

**Answer** \_\_\_\_\_ bottles

**GO ON**

**44**

**This question is worth 3 credits.**

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

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**STOP**

**THE STATE EDUCATION DEPARTMENT**  
 THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234  
 2023 Mathematics Tests Map to the Standards

Grade 4 Released Questions

Question	Type	Key	Points	Standard	Cluster	Secondary Standard(s)	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)
<b>Session 1</b>									
1	Multiple Choice	B	1	NGLS.Math.Content.NY-4.NBT.2a	Number and Operations in Base Ten		0.8446		
2	Multiple Choice	D	1	NGLS.Math.Content.NY-4.OA.1	Operations and Algebraic Thinking	NGLS.Math.Content.NY-4.OA.2	0.8901		
5	Multiple Choice	D	1	NGLS.Math.Content.NY-4.NBT.5	Number and Operations in Base Ten		0.5227		
6	Multiple Choice	C	1	NGLS.Math.Content.NY-4.G.2a	Geometry		0.7673		
9	Multiple Choice	A	1	NGLS.Math.Content.NY-3.MD.4	Measurement and Data		0.4896		
10	Multiple Choice	C	1	NGLS.Math.Content.NY-4.NF.3c	Number and Operations - Fractions	NGLS.Math.Content.NY-4.NF.3b	0.5912		
13	Multiple Choice	A	1	NGLS.Math.Content.NY-4.MD.4	Measurement and Data		0.5230		
17	Multiple Choice	B	1	NGLS.Math.Content.NY-4.OA.5	Operations and Algebraic Thinking		0.4852		
19	Multiple Choice	B	1	NGLS.Math.Content.NY-4.NF.4b	Number and Operations - Fractions		0.7625		
20	Multiple Choice	A	1	NGLS.Math.Content.NY-4.OA.2	Operations and Algebraic Thinking		0.4757		
23	Multiple Choice	A	1	NGLS.Math.Content.NY-4.G.3	Geometry		0.4949		
25	Multiple Choice	D	1	NGLS.Math.Content.NY-4.MD.6	Measurement and Data		0.7627		
29	Multiple Choice	C	1	NGLS.Math.Content.NY-4.NF.1	Number and Operations - Fractions		0.6225		
30	Multiple Choice	B	1	NGLS.Math.Content.NY-4.NBT.6	Number and Operations in Base Ten		0.6966		
<b>Session 2</b>									
31	Multiple Choice	B	1	NGLS.Math.Content.NY-4.G.3	Geometry		0.7753		
32	Multiple Choice	D	1	NGLS.Math.Content.NY-4.NF.2	Number and Operations - Fractions		0.6466		
33	Multiple Choice	D	1	NGLS.Math.Content.NY-4.G.1	Geometry		0.3905		
34	Multiple Choice	B	1	NGLS.Math.Content.NY-4.OA.3a	Operations and Algebraic Thinking		0.8271		
35	Multiple Choice	C	1	NGLS.Math.Content.NY-4.NBT.5	Number and Operations in Base Ten		0.8158		
36	Constructed Response		1	NGLS.Math.Content.NY-4.NF.3d	Number and Operations - Fractions			0.7396	0.7396
37	Constructed Response		1	NGLS.Math.Content.NY-4.NBT.3	Number and Operations in Base Ten			0.6004	0.6004
38	Constructed Response		1	NGLS.Math.Content.NY-4.MD.5a	Measurement and Data			0.6389	0.6389
39	Constructed Response		2	NGLS.Math.Content.NY-4.G.2c	Geometry			0.2392	0.1196
40	Constructed Response		2	NGLS.Math.Content.NY-3.MD.8b	Measurement and Data			0.4233	0.2117
41	Constructed Response		2	NGLS.Math.Content.NY-4.NF.3b	Number and Operations - Fractions			0.6407	0.3204
42	Constructed Response		2	NGLS.Math.Content.NY-4.OA.2	Operations and Algebraic Thinking			0.6132	0.3066
43	Constructed Response		2	NGLS.Math.Content.NY-4.NBT.6	Number and Operations in Base Ten			0.5910	0.2955
44	Constructed Response		3	NGLS.Math.Content.NY-4.NF.4c	Number and Operations - Fractions			0.2975	0.0992

\*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.

**1-Credit Constructed-Response Rubric**

<b>1 Credit</b>	A 1-credit response is a <b>correct answer</b> to the question which indicates a thorough understanding of mathematical concepts and/or procedures.
<b>0 Credits*</b>	A 0-credit response is incorrect, irrelevant, or incoherent.

\* 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).

**2-Credit Constructed-Response Holistic Rubric**

<b>2 Credits</b>	A 2-credit 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"><li>• indicates that the student has completed the task correctly, using mathematically sound procedures</li><li>• contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures</li><li>• may contain inconsequential errors that do not detract from the correct solution and the demonstration of a thorough understanding</li></ul>
<b>1 Credit</b>	A 1-credit response demonstrates only a partial understanding of the mathematical concepts and/or procedures in the task.  This response <ul style="list-style-type: none"><li>• correctly addresses only some elements of the task</li><li>• may contain an incorrect solution but applies a mathematically appropriate process</li><li>• may contain the correct solution but required work is incomplete</li></ul>
<b>0 Credits*</b>	A 0-credit 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-Credit Constructed-Response Holistic Rubric

<b>3 Credits</b>	<p>A 3-credit response includes the correct solution(s) to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none"> <li>• indicates that the student has completed the task correctly, using mathematically sound procedures</li> <li>• contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures</li> <li>• may contain inconsequential errors that do not detract from the correct solution(s) and the demonstration of a thorough understanding</li> </ul>
<b>2 Credits</b>	<p>A 2-credit response demonstrates a partial understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none"> <li>• appropriately addresses most but not all aspects of the task using mathematically sound procedures</li> <li>• may contain an incorrect solution but provides sound procedures, reasoning, and/or explanations</li> <li>• may reflect some minor misunderstanding of the underlying mathematical concepts and/or procedures</li> </ul>
<b>1 Credit</b>	<p>A 1-credit response demonstrates only a limited understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none"> <li>• may address some elements of the task correctly but reaches an inadequate solution and/or provides reasoning that is faulty or incomplete</li> <li>• exhibits multiple flaws related to misunderstanding of important aspects of the task, misuse of mathematical procedures, or faulty mathematical reasoning</li> <li>• reflects a lack of essential understanding of the underlying mathematical concepts</li> <li>• may contain the correct solution(s) but required work is limited</li> </ul>
<b>0 Credits*</b>	<p>A 0-credit 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.</p>

\* 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).

Rosie combined  $1\frac{3}{4}$  gallons of cranberry juice and  $\frac{3}{4}$  gallon of apple juice to make fruit juice. How many gallons of fruit juice did Rosie make with the cranberry juice and apple juice?

*Answer* \_\_\_\_\_ gallons

## EXEMPLARY RESPONSE

36

Rosie combined  $1\frac{3}{4}$  gallons of cranberry juice and  $\frac{3}{4}$  gallon of apple juice to make fruit juice. How many gallons of fruit juice did Rosie make with the cranberry juice and apple juice?

$2\frac{1}{2}$  or  $2\frac{2}{4}$  or  $1\frac{6}{4}$

Answer or equivalent answer gallons

## GUIDE PAPER 1

36

Rosie combined  $1\frac{3}{4}$  gallons of cranberry juice and  $\frac{3}{4}$  gallon of apple juice to make fruit juice. How many gallons of fruit juice did Rosie make with the cranberry juice and apple juice?

*Answer*

$2\frac{2}{4}$  or  $2\frac{1}{2}$   
gallons      gallons

**Score Point 1 (out of 1 credit)**

A correct answer is provided.

## GUIDE PAPER 2

36

Rosie combined  $1\frac{3}{4}$  gallons of cranberry juice and  $\frac{3}{4}$  gallon of apple juice to make fruit juice. How many gallons of fruit juice did Rosie make with the cranberry juice and apple juice? [1]

$$\text{Cranberry} + \text{Apple juice} = 2\frac{2}{4}$$
$$2\frac{2}{4}$$

Answer  $2\frac{2}{4}$  gallons

**Score Point 1 (out of 1 credit)**

A correct answer is provided.

## GUIDE PAPER 3

36

Rosie combined  $1\frac{3}{4}$  gallons of cranberry juice and  $\frac{3}{4}$  gallon of apple juice to make fruit juice. How many gallons of fruit juice did Rosie make with the cranberry juice and apple juice? [1]

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

Answer 4 $\frac{1}{4}$  gallons

**Score Point 0 (out of 1 credit)**

An incorrect answer is provided.

**37**

What is the number 88,678 rounded to the nearest thousand?

*Answer* \_\_\_\_\_

## EXEMPLARY RESPONSE

37

What is the number 88,678 rounded to the nearest thousand?

89,000 or 89000

**Answer** or equivalent answer

# GUIDE PAPER 1

37

What is the number 88,678 rounded to the nearest thousand? [1]

$$\begin{array}{r} 88,678 \\ \equiv \\ 89,000 \end{array}$$

Answer 89,000

**Score Point 1 (out of 1 credit)**

A correct answer is provided.

## GUIDE PAPER 2

37

What is the number 88,678 rounded to the nearest thousand?

*Answer*

88,678 -->

89,000

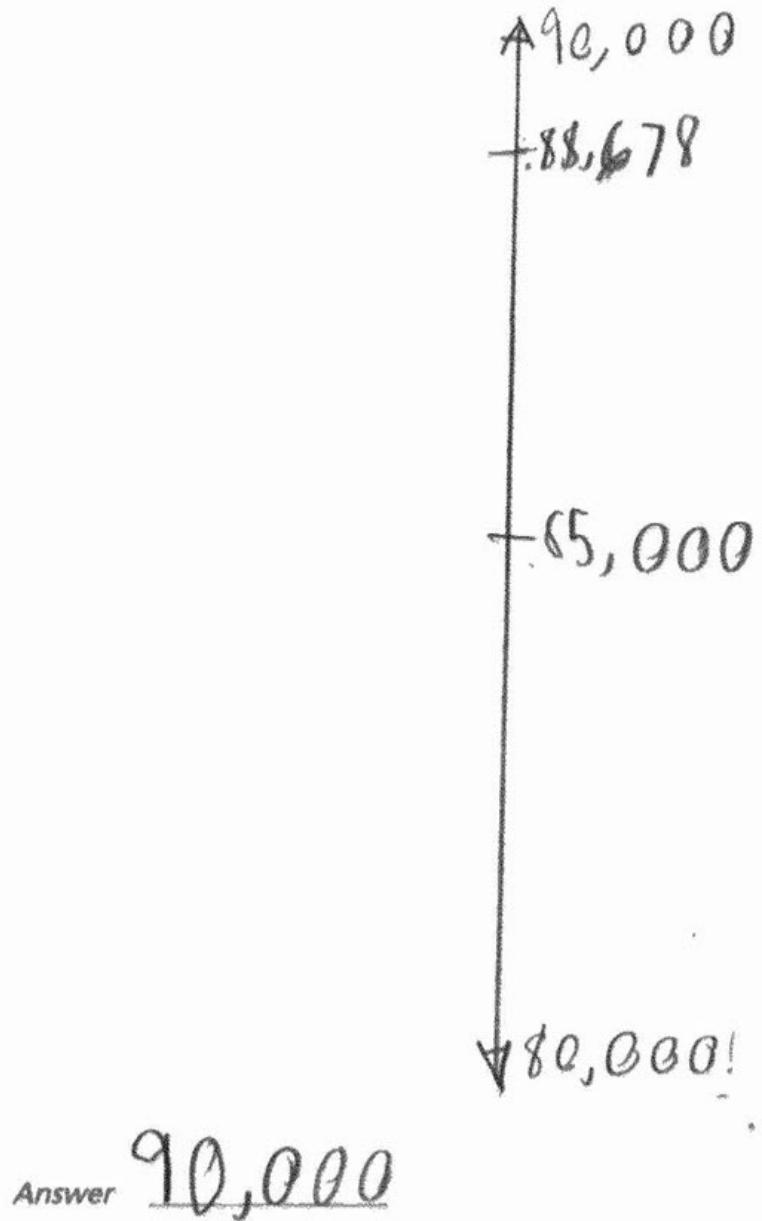
**Score Point 1 (out of 1 credit)**

A correct answer is provided.

## GUIDE PAPER 3

37

What is the number 88,678 rounded to the nearest thousand? [1]



**Score Point 0 (out of 1 credit)**

An incorrect answer is provided.

How many one-degree angles are in a complete circle?

*Answer* \_\_\_\_\_ one-degree angles

## EXEMPLARY RESPONSE

38

How many one-degree angles are in a complete circle?

360

**Answer**

*or equivalent answer*

one-degree angles

# GUIDE PAPER 1

38

How many one-degree angles are in a complete circle?

*Answer*    360    one-degree angles

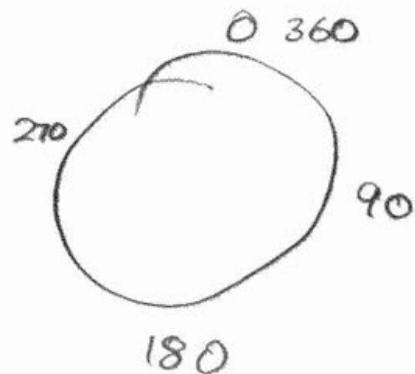
**Score Point 1 (out of 1 credit)**

A correct answer is provided.

## GUIDE PAPER 2

38

How many one-degree angles are in a complete circle? [1]



Answer 360 one-degree angles

**Score Point 1 (out of 1 credit)**

A correct answer is provided.

## GUIDE PAPER 3

38

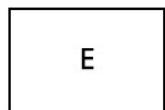
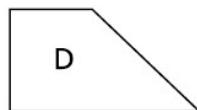
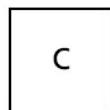
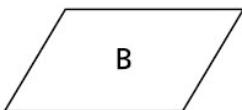
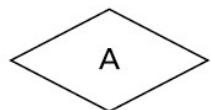
How many one-degree angles are in a complete circle? [1]

*360*  
Answer \_\_\_\_\_ one-degree angles

**Score Point 0 (out of 1 credit)**

An incorrect answer is provided.

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer.



*Explain how you know your answer is correct.*

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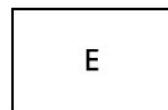
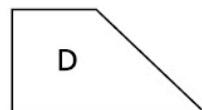
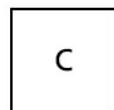
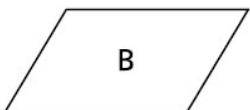
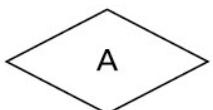
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## EXEMPLARY RESPONSE

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer.



*Explain how you know your answer is correct.*

C and E are both rectangles because they have 4 right angles.

*or*

C and E are both rectangles because they have 4 angles of 90 degrees.

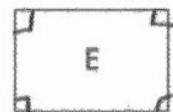
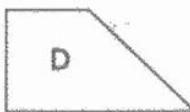
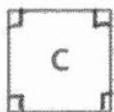
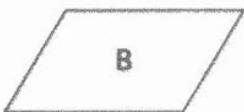
*or other valid explanation*

# GUIDE PAPER 1

Additional

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer. [2]



*Explain how you know your answer is correct.*

*C, E because C and E have 4 right angles  
The shapes both have 2 pairs of parallel lines.*

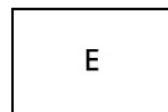
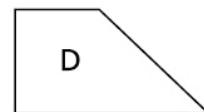
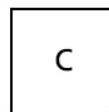
## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct quadrilaterals are chosen, and a valid explanation is provided. This response is complete and correct.

## GUIDE PAPER 2

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer.



*Explain how you know your answer is correct.*

C,E I know this because rectangles must have 4 sides, 4 right angles, 2 pairs of parallel sides, and 2 pairs of = sides.

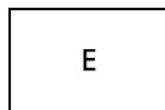
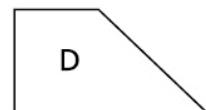
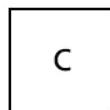
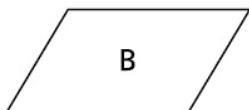
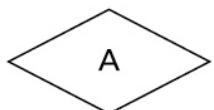
### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct quadrilaterals are chosen, and a valid explanation is provided. This response is complete and correct.

## GUIDE PAPER 3

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer.



*Explain how you know your answer is correct.*

C and E because it has four right angles.

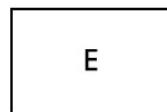
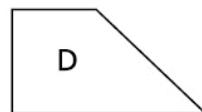
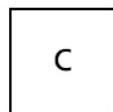
### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct quadrilaterals are chosen, and a valid explanation is provided. The explanation is sufficient to show a thorough understanding.

## GUIDE PAPER 4

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer.



*Explain how you know your answer is correct.*

Quadrilateral E is a rectangle. I know this because rectangles have four right angles. Rectangles also have two sets of parallel sides, and two short sides and two long sides. Quadrilateral has all of these things. That is how I know my answer is correct.

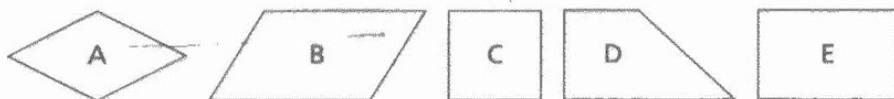
### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. One correct quadrilateral is chosen, and a valid explanation is provided for E. This response correctly addresses only some elements of the task.

# GUIDE PAPER 5

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer. [2]



Explain how you know your answer is correct.

A, B, C & E because, A rectangle has 2 pairs of parallel sides, 4 right angles & 2 pairs of equal sides. A has 2 pairs of parallel sides, B has 2 pairs of parallel sides, C has 4 right angles & 2 pairs of parallel sides, E has 4 right angles, 2 pairs of parallel sides and 2 pairs of sides with equal length.

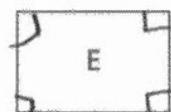
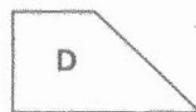
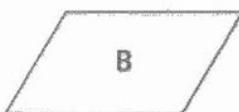
## Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Two correct quadrilaterals and two incorrect quadrilaterals are chosen, and an explanation identifying 4 right angles is provided for C and E. This response correctly addresses only some elements of the task.

## GUIDE PAPER 6

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer. [2]



Explain how you know your answer is correct.

E and c are rectangles  
they hav 4 right angles  
and 4 equile sides

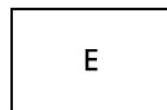
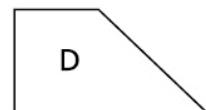
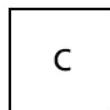
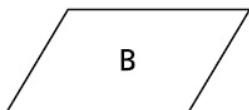
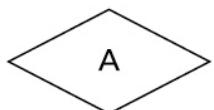
### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Although the correct quadrilaterals are chosen and right angles are identified, the phrase “4 equile sides” is incorrect. This response correctly addresses only some elements of the task.

## GUIDE PAPER 7

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer.



*Explain how you know your answer is correct.*

Quadrilaterals C and E. I know this because E has two sets of parellel sides and C has two sets of parellel sides too.

### Score Point 0 (out of 2 credits)

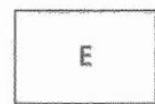
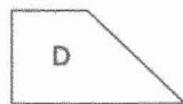
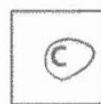
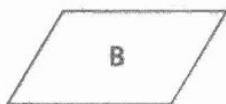
This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the correct quadrilaterals are chosen, right angles are not addressed. The phrase “2 sets of parellel sides” is insufficient because quadrilaterals A and B also have two sets of parallel sides. Holistically, this response shows no overall understanding.

# GUIDE PAPER 8

Additional

39

Which quadrilaterals shown below appear to be rectangles? Be sure to include what you know about angles and sides in your answer. [2]



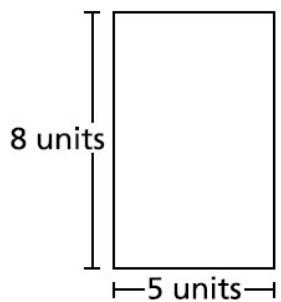
*Explain how you know your answer is correct.*

I know my answer is correct +  
because c is a square.

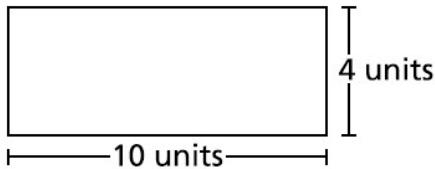
## Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although a correct quadrilateral is chosen, right angles are not addressed. Holistically, the explanation is insufficient to show any understanding.

A student draws the two rectangles shown below.



**Rectangle A**



**Rectangle B**

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer.

*Explain your answer.*

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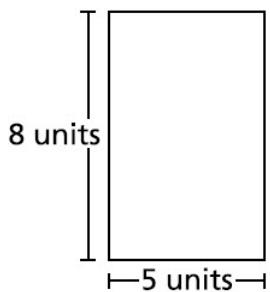
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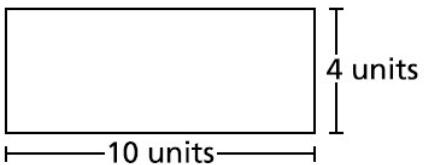
## EXEMPLARY RESPONSE

40

A student draws the two rectangles shown below.



Rectangle A



Rectangle B

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer.

*Explain your answer.*

Yes, the student is correct. The area for Rectangle A is  $8 \times 5 = 40$  and the area for Rectangle B is  $10 \times 4 = 40$ . The rectangles have the same area. The perimeter for Rectangle A is  $8 + 5 + 8 + 5 = 26$  and the perimeter for Rectangle B is  $10 + 4 + 10 + 4 = 28$ . The rectangles have different perimeters.

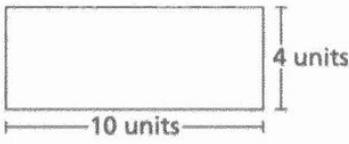
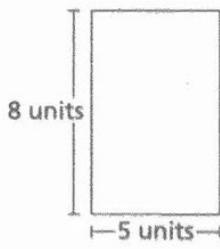
*or other valid explanation*

# GUIDE PAPER 1

Additional

40

A student draws the two rectangles shown below.



The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer. [2]

*Explain your answer.*

*yes the student is correct*

$$\begin{aligned}P_1 &= A + B + B + A \\P_1 &= 8 + 5 + 5 + 8 \\P_1 &= 2 \times (8+5) \\P_1 &= 26 \text{ units}\end{aligned}$$

$\cancel{A_1 = A \times B}$   
 $\cancel{A_1 = 8 \times 5}$   
 $\cancel{A_1 = 40 \text{ units}}$   
 $\cancel{A_1 = }$

$$\begin{aligned}P_2 &= B + A + A + B \\P_2 &= 10 + 4 + 4 + 10 \\P_2 &= 2 \times (10+4) \\P_2 &= 28 \text{ units}\end{aligned}$$

$\cancel{A_2 = A \times B}$   
 $\cancel{A_2 = 4 \times 10}$   
 $\cancel{A_2 = 40 \text{ units}}$

compare units  
26  $\neq$  28  
 $28 - 26 = 2$

compare Area  
40  $\neq$  40  
 $40 - 40 = 0$

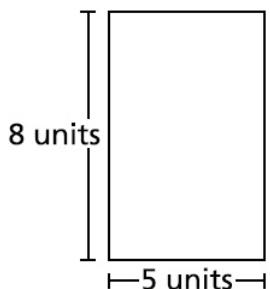
## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct claim is chosen, and the areas and perimeters of both rectangles are provided. This response is complete and correct.

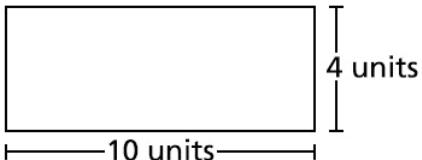
## GUIDE PAPER 2

40

A student draws the two rectangles shown below.



Rectangle A



Rectangle B

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer.

*Explain your answer.*

He is correct. The area of Rectangle A,  $(8 \times 5)$  is 40 and the area of Rectangle B,  $(10 \times 4)$  is also 40. The Perimeter of Rectangle A is,  $(8+5+8+5)$  26 and the Perimeter of Rectangle B is  $(10+4+10+4)$  28.

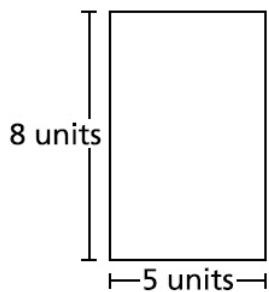
### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct claim is chosen, and the areas and perimeters of both rectangles are provided. The explanation is sufficient to show a thorough understanding.

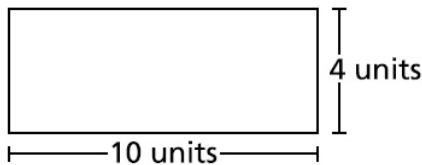
# GUIDE PAPER 3

40

A student draws the two rectangles shown below.



Rectangle A



Rectangle B

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer.

*Explain your answer.*

$$8 \times 5 = 40$$

$$10 \times 4 = 40$$

$$20 + 8 = 28$$

$$16 + 10 = 26$$

He is because both of the areas are 40 and the perimeters are 28 and 26.

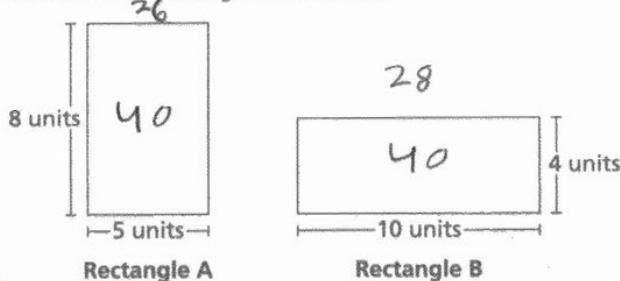
## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The correct claim is chosen, and the areas and perimeters of both rectangles are provided. This response is complete and correct.

## GUIDE PAPER 4

40

A student draws the two rectangles shown below.



The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer. [2]

Explain your answer.

The student is correct because for Rectangle A the area is 40 and for Rectangle B the area is 40 which means they have the same area and the perimeter for Rectangle A is 26 and for Rectangle B the perimeter is 28 so they have different perimeters. GO ON

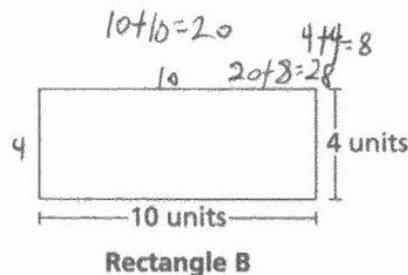
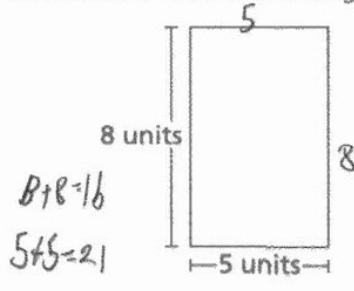
### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Although the correct claim is chosen, and the areas and perimeters of both rectangles are provided, the explanation is incomplete because it is unclear how the solutions are obtained. This response correctly addresses only some elements of the task.

## GUIDE PAPER 5

40

A student draws the two rectangles shown below.



The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer. [2]

*Explain your answer.*

*Yes he is correct because for the area i multiplied 4 and 10 and 8x5 and got 40 for both so the area is the same and for Perimeter add 21 and 28 are different*

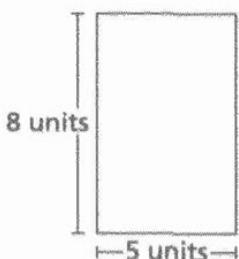
### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The correct claim is chosen; however, a calculation error occurs when computing the perimeter of Rectangle A resulting in an incorrect solution of 21. The rest of the explanation is correct. Per Scoring Policy #1 for 2- and 3-credit responses, the work shown in other than a designated “Explain” area should still be scored. This response correctly addresses only some elements of the task.

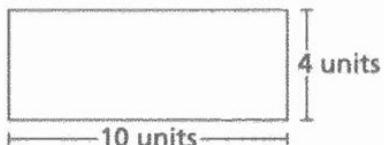
# GUIDE PAPER 6

40

A student draws the two rectangles shown below.



Rectangle A



Rectangle B

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer. [2]

*Explain your answer.*

YES, THE STUDENT IS CORRECT  
BECAUSE IF I MULTIPLY BOTH  
NUMBERS IN EACH RECTANGLE I WILL  
GET THE SAME AREA WHICH IS EQUAL  
TO 40 BECAUSE  $8 \times 5 = 40$  AND  $10 \times 4 = 40$ .

rectangle A	rectangle B
$8 \times 5 = 40$	$10 \times 4 = 40$
answer: <input type="text" value="40"/>	answer: <input type="text" value="40"/>

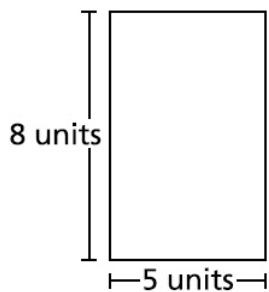
## Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Although the correct claim is chosen, and the areas of both rectangles are provided, the explanation does not address the perimeters of the rectangles. This response correctly addresses only some elements of the task.

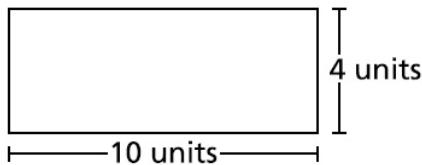
# GUIDE PAPER 7

40

A student draws the two rectangles shown below.



Rectangle A



Rectangle B

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer.

*Explain your answer.*

No the student is not correct they have the same perimeter 10

$$\times 4 = 40$$

and  $8 \times 5 = 40$

## Score Point 0 (out of 2 credits)

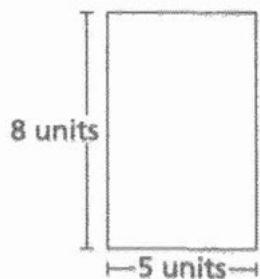
This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the areas of both rectangles are correctly calculated, the response identifies them as the perimeters of the rectangles, and an incorrect claim is chosen. Holistically, the explanation is insufficient to show any understanding.

# GUIDE PAPER 8

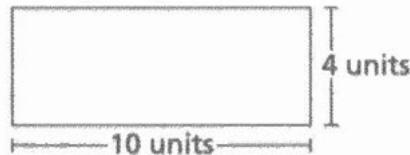
Additional

40

A student draws the two rectangles shown below.



Rectangle A



Rectangle B

The student thinks the two rectangles have the same area but different perimeters. Is the student correct? Be sure to include the areas and perimeters of both figures in your answer. [2]

*Explain your answer.*

The student is not correct because the rectangle aren't the same or should have the same area and perimeters, if the rectangles are different the it shouldn't have different area and perimeters.

## Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect claim is chosen, and the areas and perimeters of the rectangles are not provided. The explanation shows no understanding.

**41**

What fraction can be added to the expression shown below to have a total value of one whole?

$$\frac{2}{12} + \frac{7}{12}$$

*Show your work.*

*Answer* \_\_\_\_\_

## EXEMPLARY RESPONSE

41

What fraction can be added to the expression shown below to have a total value of one whole?

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

$$\frac{2}{12} + \frac{7}{12} = \frac{9}{12}$$

$$\frac{9}{12} + \frac{3}{12} = \frac{12}{12}$$

or

$$\frac{2}{12} + \frac{7}{12} + \frac{3}{12} = \frac{12}{12}$$

or other valid process

Answer  $\frac{3}{12}$  or  $\frac{1}{4}$  or equivalent

# GUIDE PAPER 1

Additional

41

What fraction can be added to the expression shown below to have a total value of one whole? [2]

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

$$\begin{array}{r} 2+7=9 \\ \hline 12\ 12\ 12 \end{array}$$

$$\frac{9}{12} + ? = 1 \quad ? = 3$$

$$\frac{9}{12} + \frac{3}{12} = \frac{12}{12} \text{ or } 1$$

$$\frac{3}{12}$$

Answer

## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The solution is calculated correctly using a sound procedure. This response is complete and correct.

## GUIDE PAPER 2

41

What fraction can be added to the expression shown below to have a total value of one whole?

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

$$\frac{9}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} = \frac{12}{12}$$

Answer

$$\frac{3}{12}$$

### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The solution is calculated correctly using a sound procedure. This response is complete and correct.

## GUIDE PAPER 3

41

What fraction can be added to the expression shown below to have a total value of one whole?

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

$$\frac{2}{12} + \frac{7}{12} + \frac{3}{12} = 1 \text{ (or)} \frac{12}{12}$$

Answer

$$\frac{3}{12}$$

### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The solution is calculated correctly using a sound procedure. This response contains sufficient work to show a thorough understanding.

## GUIDE PAPER 4

41

What fraction can be added to the expression shown below to have a total value of one whole?

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

2/12 +7/12 =9/12

Answer

my answer  
is 9/12  
because it  
says add  
2/12 + 7/12  
and got 9/12

### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The expression is correctly evaluated but the result is inappropriately provided as the solution. This response correctly addresses only some elements of the task.

# GUIDE PAPER 5

41

What fraction can be added to the expression shown below to have a total value of one whole? [2]

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

$$\frac{2}{12} + \frac{7}{12} = \frac{9}{12}$$

$$\begin{array}{r} 9 \\ - 12 \\ \hline 12 \\ \hline 3 \\ 12 \end{array}$$

Answer  $\frac{3}{12}$

## Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The expression is evaluated correctly, and a correct solution is provided; however, the subtraction equation is written in an incorrect order. This response correctly addresses only some elements of the task.

## GUIDE PAPER 6

41

What fraction can be added to the expression shown below to have a total value of one whole? [2]

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

$$\frac{2}{12} + \frac{7}{12} = \frac{9}{12} + \frac{3}{12} =$$

$$\frac{12}{12} = 1$$

Answer

1

### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The expression is evaluated correctly and  $\frac{3}{12}$  is determined in the work; however, 1 is inappropriately provided as the solution. This response correctly addresses only some elements of the task.

## GUIDE PAPER 7

41

What fraction can be added to the expression shown below to have a total value of one whole?

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

$$\frac{2}{12} + \frac{7}{12} = 9$$

Answer

$$\begin{array}{r} \frac{2}{12} + \\ \frac{7}{12} = 9 \end{array}$$

### Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The expression is incorrectly evaluated and inappropriately provided as the solution. Holistically, this response shows no overall understanding.

# GUIDE PAPER 8

Additional

41

What fraction can be added to the expression shown below to have a total value of one whole? [2]

$$\frac{2}{12} + \frac{7}{12}$$

Show your work.

Answer

$$\frac{3}{12}$$

## Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The answer is provided with no work or explanation. Per Scoring Policy #3 for 2- and 3-credit responses, this response receives no credit.

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

*Explain how you know your answer is correct.*

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## EXEMPLARY RESPONSE

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

*Explain how you know your answer is correct.*

Stacey scored 9 points in the first game because  $36 \div 4 = 9$ .

*or*

Stacey scored 9 points in the first game because  $4 \times 9 = 36$ .

*or other valid explanation*

# GUIDE PAPER 1

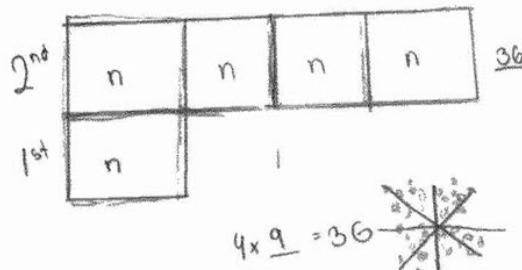
Additional

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game? [2]

*Explain how you know your answer is correct.*

*Stacey scored 9 points in the first game. First I drew a model than I had to find a number that will get ~~the~~ u to 36.*



*She scored 9 points in the first game.*

## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The explanation describes a correct process of determining how many points are scored in the first game and the correct solution is provided. The explanation is complete and correct.

## GUIDE PAPER 2

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

*Explain how you know your answer is correct.*

$$36 \div 4 = 9$$

4,8,12,16,20,24,28,32,36

1, 2, 3, 4, 5, 6, 7, 8, 9

I know that the answer is correct because I skip counted from 4 all the way to 36 and then I counted how many times 4 skip counts all the way to 36 and I got 9 so  $36 \div 4 = 9$

### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The explanation describes a correct process of determining how many points are scored in the first game and the correct solution is provided. The explanation is complete and correct.

## GUIDE PAPER 3

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

*Explain how you know your answer is correct.*

$$36 \div 4 = 9$$

### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The explanation describes a correct process of determining how many points are scored in the first game and the correct solution is provided. The explanation is sufficient to show a thorough understanding.

# GUIDE PAPER 4

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game? [2]

Explain how you know your answer is correct.

I know my answer is correct because I multiplied 4 and 36 which gave me the answer 144 as my answer.

$$\begin{array}{r} \times 36 \\ \hline 4 \\ \hline 12 \\ \begin{array}{l} 12 = 6+6 \\ +36 \\ \hline 42 \end{array} \\ \begin{array}{l} +36 \\ +36 \\ \hline 144 \end{array} \end{array}$$
$$\begin{array}{r} 36 \\ +36 \\ \hline 72 \\ \begin{array}{l} 72 \\ +72 \\ \hline 144 \end{array} \end{array}$$
$$\begin{array}{r} 36 \\ \times 4 \\ \hline 144 \end{array}$$
$$\begin{array}{r} 24 \\ +12 \\ \hline 36 \\ \begin{array}{l} 36 \\ +36 \\ \hline 72 \end{array} \\ \begin{array}{l} 72 \\ +72 \\ \hline 144 \end{array} \end{array}$$

## Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The explanation uses a correct process of multiplication; however, the student misunderstands the number of points in the first game to be 4 times the number of points scored in the second game. This response contains an incorrect solution but applies a mathematically appropriate process.

## GUIDE PAPER 5

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game? [2]

*Explain how you know your answer is correct.*

Stacey Played the same game  
two t

$$4 \times 36 = 9$$

### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The number of points scored, in the first game, is correctly determined; however, the division equation is written in an incorrect order. This response correctly addresses only some elements of the task.

## GUIDE PAPER 6

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

*Explain how you know your answer is correct.*

if  $8 \times 4 = 36$  then se scored 8 points

8points

### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The explanation describes a correct process of multiplication to determine how many points are scored in the first game; however, the description contains a calculation error. This response contains an incorrect solution but applies a mathematically appropriate process.

## GUIDE PAPER 7

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

*Explain how you know your answer is correct.*

A handwritten division problem. The divisor is 2, the dividend is 36, and the quotient is 18. The calculation is set up as follows:

$$\begin{array}{r} 18 \\ \hline 2 \overline{)36} \\ -2 \quad \downarrow \\ \hline 16 \\ -16 \\ \hline 0 \end{array}$$

Stacy scored 18 points in the first round of soccer she played.

**Score Point 0 (out of 2 credits)**

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although division is used to determine the number of points in the first game, dividing by 2 shows no overall understanding of the relationship between the points scored for the two games.

# GUIDE PAPER 8

Additional

42

Stacey played the same game two times. She scored 36 points in the second game, which is 4 times as many points as she scored in the first game. How many points did Stacey score in the first game?

*Explain how you know your answer is correct.*

9

## Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The answer is provided with no work or explanation. Per Scoring Policy #3 for 2- and 3-credit responses, this response receives no credit.

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has?

*Show your work.*

*Answer* \_\_\_\_\_ bottles

## EXEMPLARY RESPONSE

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has?

*Show your work.*

$$110 \div 9 = 12 \text{ r}2$$

*or*

$$9 \times 12 = 108$$

$$9 \times 13 = 117$$

*or*

9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99, 108, 117

*or other valid process*

*Answer* 12 bottles

# GUIDE PAPER 1

Additional

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has? [2]

Show your work.

$$\begin{array}{r} \text{2R2} \\ 9\cancel{1}\cancel{1}0 \\ -9\cancel{1} \\ \hline 20 \\ -18 \\ \hline 2 \\ \times 12 \\ \hline 108 \\ + 2 \\ \hline 110 \end{array}$$

Answer 12 bottles

## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The number of bottles is calculated correctly by using sound procedures. This response is complete and correct.

## GUIDE PAPER 2

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has? [2] ↗

Show your work.

$$\begin{array}{r} 110 - 9 = 101 \\ 101 - 9 = 92 \\ 92 - 9 = 83 \\ 83 - 9 = 74 \\ 74 - 9 = 65 \\ 65 - 9 = 56 \\ 56 - 9 = 47 \\ 47 - 9 = 38 \\ 38 - 9 = 29 \\ 29 - 9 = 20 \\ 20 - 9 = 11 \\ 11 - 9 = 2 \end{array}$$

Answer 12 bottles

### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The number of bottles is calculated correctly by using repeated subtraction. This response is complete and correct.

## GUIDE PAPER 3

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has?

*Show your work.*

$$110 \div 9 = 12 \text{ r}2$$

**Answer**

12

bottles

### Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The number of bottles is calculated correctly by using division. This response is complete and correct.

## GUIDE PAPER 4

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has?

Show your work.

$$110 \div 9 = 12$$

Answer

12 bottles

bottles

### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Although the correct solution is determined,  $110 \div 9 \neq 12$ . The work does not address the remainder of  $110 \div 9$ . This response contains the correct solution, but the required work is incomplete.

# GUIDE PAPER 5

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has? [2]

Show your work.

$$\begin{array}{r} 110 \\ - 9 \\ \hline 12 \end{array}$$

Check  $\begin{array}{r} 12 \\ \times 9 \\ \hline 108 \end{array}$

\$94.15

$$\begin{array}{r} 09 \\ 18 \\ 27 \\ 36 \\ 45 \\ 54 \\ 63 \\ 72 \\ 81 \\ 90 \\ \hline 99 \\ 108 \end{array}$$

Answer 12 bottles

## Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Sound procedures are used to determine the solution; however, the remainder of the quotient is inappropriately included in the solution. This response correctly addresses only some elements of the task.

## GUIDE PAPER 6

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has? [2]

Show your work.

$$\begin{array}{r} \overset{1}{3} = 13 \\ 9 \overline{)110} \\ -90 \\ \hline 20 \\ -18 \\ \hline 2 \\ -2 \\ \hline 0 \end{array}$$

Ms. Leonard can buy 13 bottles  
Answer and have a remainder of \$3

### Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A calculation error occurs when computing  $110 - 90$  because  $110 - 90 \neq 30$ . The rest of the work is performed correctly. This response contains an incorrect solution but applies a mathematically appropriate process.

## GUIDE PAPER 7

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has?

Show your work.

$$9 \div 110 =$$

Answer  bottles

### Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The equation is written in an incorrect order and an incorrect solution is determined. Holistically, this response shows no overall understanding.

# GUIDE PAPER 8

Additional

43

Ms. Leonard has \$110 to buy bottles of craft paint at the store. Each bottle is \$9. What is the greatest number of bottles of craft paint Ms. Leonard can buy with the amount of money she has? [2]

Show your work.

$$\begin{array}{r} 110 \\ \times 9 \\ \hline 990 \end{array}$$

Answer 990 bottles

**Score Point 0 (out of 2 credits)**

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect solution is obtained by using an incorrect procedure. Holistically, this response shows no overall understanding.

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

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## EXEMPLARY RESPONSE

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

$9 \times \frac{1}{4} = 2\frac{1}{4}$  and  $4 - 2\frac{1}{4} = 1\frac{3}{4}$ . Mr. Benson has  $1\frac{3}{4}$  pounds of meat left over.

*or*

$\frac{16}{4} - \frac{9}{4} = \frac{7}{4}$ . Mr. Benson has  $\frac{7}{4}$  pounds of meat left over.

*or other valid explanation*

# GUIDE PAPER 1

Additional

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

$$9 \times \frac{1}{4} = \frac{9}{4} = 2\frac{1}{4}$$

$$4 - 2\frac{1}{4} = 1\frac{3}{4} \text{ pounds of meat}$$

He makes 9 burgers with  $\frac{1}{4}$  pounds of meat in each burger so

$9 \times \frac{1}{4} = 2\frac{1}{4}$ . If he has 4 pounds of meat then you would do

$4 - 2\frac{1}{4}$  which equals  $1\frac{3}{4}$  pounds of meat.

## Score Point 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The amount of meat used to make the burgers and the amount of meat left over are correctly identified in a valid explanation. This explanation is complete and correct.

## GUIDE PAPER 2

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

$$\frac{1}{4} \times 9 = 2\frac{1}{4} \quad 4 - 2\frac{1}{4} = 1\frac{3}{4}$$

### Score Point 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The amount of meat used to make the burgers and the amount of meat left over are correctly identified in a valid explanation. The explanation is sufficient to show a thorough understanding.

# GUIDE PAPER 3

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

Mr. Benson has  $\frac{7}{4}$  pounds of meat left.

$$\begin{array}{r} 16 \\ - 9 \\ \hline 7 \end{array}$$

pounds of meat left.

## Score Point 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The amount of meat used to make the burgers and the amount of meat left over are correctly identified in a valid explanation. This explanation is complete and correct.

## GUIDE PAPER 4

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers? [3]

*Explain how you determined your answer.*

Mr. Benson has  $1\frac{3}{4}$  pounds  
of meat left over.

$$\begin{array}{r} \cancel{4} \times \frac{1}{4} = \frac{\cancel{4}}{4} = 1 \\ \cancel{4} \cancel{4} \cancel{4} \\ \hline 1 \frac{3}{4} \end{array}$$

### Score Point 2 (out of 3 credits)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. The amount of meat used to make the burgers is correctly identified; however, the subtraction of the amount of meat used from the total amount of meat is in an incorrect order. This explanation reflects some minor misunderstanding of the underlying mathematical concepts and procedures.

# GUIDE PAPER 5

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers? [3]

*Explain how you determined your answer.*

Mr. Benson has  $1\frac{3}{4}$  pounds of meat left over because  $4 \times 4 = 16$  and  $16 - 9 = 7$  and  $7 = 1\frac{3}{4}$ .

$$\begin{array}{r} 4 \times 4 = 16 \\ - 9 \\ \hline 7 = 1\frac{3}{4} \end{array}$$

## Score Point 2 (out of 3 credits)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. Although the amount of meat left over is correctly determined, the process to obtain the solution addresses only the numerators and does not address the denominators of the fractions. This explanation appropriately addresses most, but not all, aspects of the task.

## GUIDE PAPER 6

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

$$\frac{1}{4} \times 9 = \frac{9}{4} = 2\frac{1}{4} \quad 4 - 2\frac{1}{4} = 2\frac{3}{4}$$

Mr. Benson has  $2\frac{3}{4}$  pounds of meat left over

### Score Point 2 (out of 3 credits)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. The amount of meat used to make the burgers is correctly determined but a calculation error occurs when determining the amount of meat left over. This explanation contains an incorrect solution but applies a mathematically appropriate process.

# GUIDE PAPER 7

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

$$\frac{9}{4} = 2\frac{1}{4} \quad 2\frac{1}{4} - 4 = 2\frac{1}{4} \quad \text{he uses } 2\frac{1}{4} \text{ pounds}$$

of meat

## Score Point 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The amount of meat used to make the burgers is correctly determined. However, the subtraction equation is in an incorrect order with a calculation error, and the amount of meat used is inappropriately provided as the solution. This explanation exhibits multiple flaws related to misunderstanding of important aspects of the task.

# GUIDE PAPER 8

Additional

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

$$4 - 2\frac{1}{4} = 1\frac{3}{4}$$

## Score Point 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The amount of meat left over is correctly determined, but it is unclear how the amount of meat used is obtained. This response contains the correct solution, but the explanation is insufficient.

# GUIDE PAPER 9

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers? [3]

*Explain how you determined your answer.*

*$1 \times 9 = 9 = \frac{9}{4} = 2\frac{1}{4}$ , so Mr. Benson use  
2 $\frac{1}{4}$  pound of meat.*

## Score Point 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The amount of meat used to make the burgers is correctly determined; however, an incorrect statement of equality ( $9 \neq \frac{9}{4}$ ) is used to demonstrate the steps taken to determine  $2\frac{1}{4}$  and the amount of meat left over is not addressed. This response addresses some elements of the task correctly, but the explanation is incomplete.

# GUIDE PAPER 10

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers?

*Explain how you determined your answer.*

$1\frac{3}{4}$

## Score Point 0 (out of 3 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The answer is provided with no work or explanation. Per Scoring Policy #3 for 2- and 3-credit responses, this response receives no credit.

# GUIDE PAPER 11

Additional

44

Mr. Benson is making burgers based on the information below.

- He has 4 pounds of meat.
- He uses  $\frac{1}{4}$  pound of meat for each burger.
- He makes 9 burgers.

How many pounds of meat does Mr. Benson have left over after making all the burgers? [3]

*Explain how you determined your answer.*

he will have  $\frac{1}{4}$  left i know  
that by turning the denominator  
in to 25.

4 pounds meat

$$\begin{array}{c} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \\ - \frac{1}{4} \leftarrow \frac{9}{2} \end{array}$$

## Score Point 0 (out of 3 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The explanation is incoherent and shows no overall understanding.