

# New York NYSTP 2023

## Grade 7 Math

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## Grade 7 Mathematics Reference Sheet

### CONVERSIONS

1 yard = 3 feet  
1 mile = 5,280 feet

1 cup = 8 fluid ounces  
1 pint = 2 cups  
1 quart = 2 pints  
1 gallon = 4 quarts

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

### CONVERSIONS ACROSS MEASUREMENT SYSTEMS

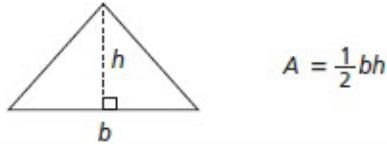
1 inch = 2.54 centimeters  
1 meter = 39.37 inches  
1 mile = 1.609 kilometers  
1 kilometer = 0.6214 mile

1 gallon = 3.785 liters  
1 liter = 0.2642 gallon

1 pound = 0.454 kilogram  
1 kilogram = 2.2 pounds

### FORMULAS AND FIGURES

#### Triangle



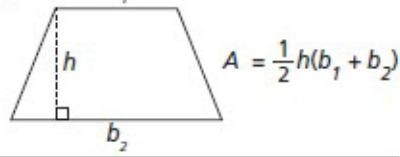
$$A = \frac{1}{2}bh$$

#### Parallelogram



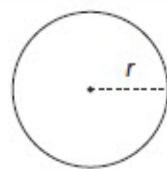
$$A = bh$$

#### Trapezoid



$$A = \frac{1}{2}h(b_1 + b_2)$$

#### Circle



$$\begin{aligned}C &= 2\pi r \\ C &= \pi d \\ A &= \pi r^2\end{aligned}$$

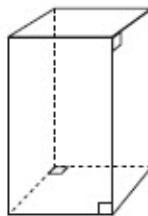
#### Simple Interest

$I = prt$  where  $I$  is interest,  
 $p$  is principal,  
 $r$  is rate, and  
 $t$  is time

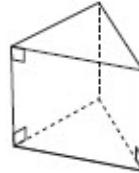
#### General Prism

$$V = Bh$$

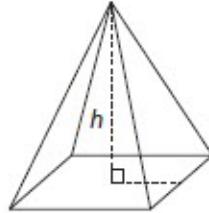
#### Right Rectangular Prism



#### Right Triangular Prism



#### Right Rectangular Pyramid



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



# New York State Testing Program

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## 2023 Mathematics Test Session 1

Grade 7

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, 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.

**1** What is the value of the expression  $\left(-\frac{1}{3}\right) \div \left(\frac{2}{5}\right)$ ?

A  $-\frac{6}{5}$

B  $-\frac{5}{6}$

C  $\frac{5}{6}$

D  $\frac{6}{5}$

**2** Maria and two friends are at a movie theater. They have \$52.00 and spend \$34.50 of it on movie tickets. They also buy 3 drinks that each cost the same amount. After buying the movie tickets and drinks, they have \$4.00 remaining. How much did each drink cost?

A \$2.50

B \$3.83

C \$4.00

D \$4.50

**GO ON**

**4**

Megan reads the same number of pages in a book each day. The table below represents the total number of pages read at the end of the given number of days.

### NUMBER OF PAGES READ

Number of Days	Total Number of Pages
2	32
4	64
5	80
7	112

How many pages does Megan read in 1 day?

- A 16
- B 18
- C 28
- D 32

**5**

Which expression is equivalent to the one shown below?

$$-1.5 + \frac{2}{5} + (-7) + 2.6$$

- A  $(-5.5 + 2.6) + \frac{2}{5}$
- B  $(-8.5 + 2.6) + \frac{2}{5}$
- C  $\left(-\frac{1}{5} + \frac{2}{5}\right) + (-4.4)$
- D  $\left(-\frac{1}{5} + \frac{2}{5}\right) + (-9.6)$

**GO ON**

**8**

Joel has three buckets which contain different amounts of liquid. The amount of liquid in each bucket is listed below.

- $7\frac{1}{2}$  liters
- $5\frac{3}{4}$  liters
- $6\frac{3}{4}$  liters

Joel mixes all the liquid together. Then he pours all the liquid equally into 5 containers. How many liters of liquid does Joel pour into each container?

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

**9**

A student's science scores are shown below.

76, 82, 65, 82, 93, 63, 45, 82, 90, 74

What is the mode and how does it compare to the median?

- A The mode is 79 and it is lower than the median.
- B The mode is 79 and it is higher than the median.
- C The mode is 82 and it is lower than the median.
- D The mode is 82 and it is higher than the median.

**GO ON**

**13**

The table below shows the amount of money, in dollars, that Kathy earns babysitting for a given number of hours worked.

### BABYSITTING EARNINGS

Number of Hours, $h$	Earnings, $d$ (dollars)
4	\$50.00
5	\$62.50
6	\$75.00
9	\$112.50

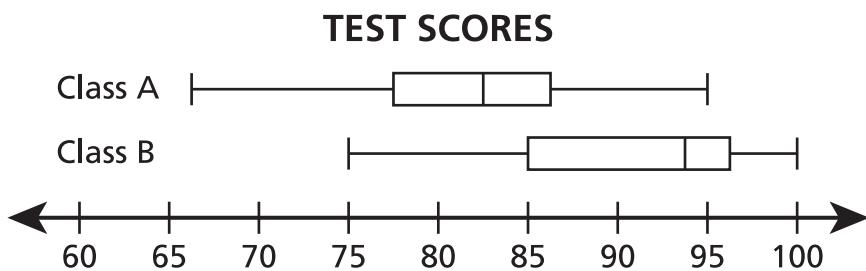
Based on the table, which statement is true about the relationship between the number of hours,  $h$ , she works and the amount of money,  $d$ , she earns?

- A It is not proportional because when the value of  $h$  is 0, the value of  $d$  is 0.
- B It is proportional because the ratios between the values of  $d$  and  $h$  are the same for each pair.
- C It is not proportional because the difference between  $d$  and  $h$  is different for each pair of values.
- D It is proportional because the values of  $h$  increase by the same amount from one pair of values to the next.

**GO ON**

**16**

The math test scores for Class A and Class B are represented in the box plots shown below.



Which statement about the relationship between the scores of the two classes is true?

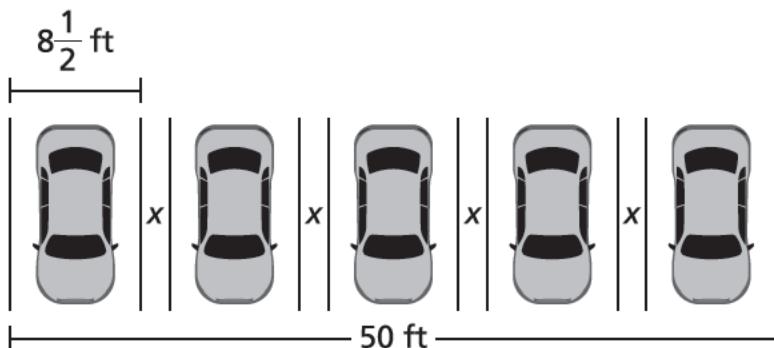
- A** The median score for Class A is greater than the median score for Class B.
- B** The range of the scores for Class A is less than the range of the scores for Class B.
- C** The interquartile range for Class B is greater than the interquartile range for Class A.
- D** The second quartile value for Class B is less than the second quartile value for Class A.

**GO ON**

17

The design of an office parking lot is shown below. The distance between each parking space is  $x$  feet.

**DIAGRAM OF PARKING LOT**



What is the distance,  $x$ , between each parking space in the parking lot?

- A  $\frac{17}{20}$  foot
- B  $1\frac{1}{2}$  feet
- C  $1\frac{7}{8}$  feet
- D  $1\frac{7}{10}$  feet

18

A student has a bus pass with a balance of \$30.00. Each time the student rides the bus, the balance on the bus pass decreases by \$2.25. What is the greatest number of bus rides the student can take using the bus pass?

- A 10
- B 13
- C 14
- D 15

**GO ON**

**21**

A store sells blue hats and green hats. Each hat is priced at \$8.00. The expression  $8b + 8g$  can be used to determine the total price when a customer buys any number of blue hats,  $b$ , and any number of green hats,  $g$ . Which equivalent expression could also be used to determine the total price, in dollars, of the hats?

- A**  $8bg$
- B**  $16bg$
- C**  $8(b + g)$
- D**  $16(b + g)$

**GO ON**

**23**

A store manager collects information about the number of people who visit his store each week. The information, collected over a 3-week period, is listed below.

- The number of people that visited the store in week 1 was 3,200.
- The number of people that visited the store in week 2 was 10% more than week 1.
- The number of people that visited the store in week 3 was 15% more than week 2.

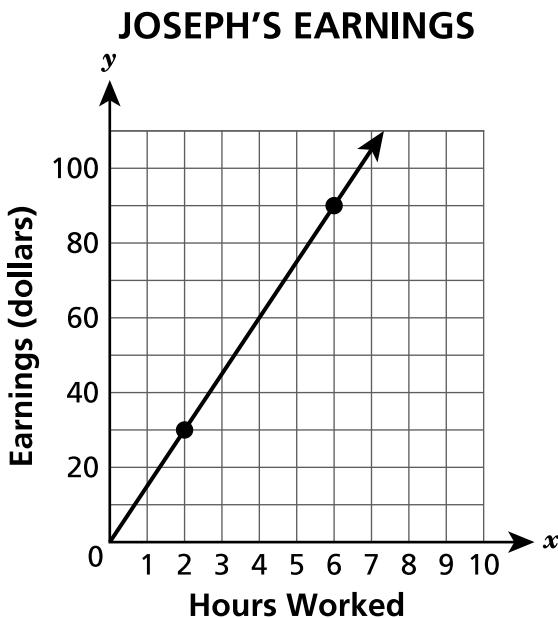
How many people visited the store in week 3 ?

- A 3,520  
B 3,680  
C 4,000  
D 4,048

**GO ON**

**25**

Joseph has a part-time job. The graph below represents the amount Joseph earns, in dollars, for the number of hours he works.



Based on the graph, which equation can be used to determine the earnings, in dollars, for every hour he works?

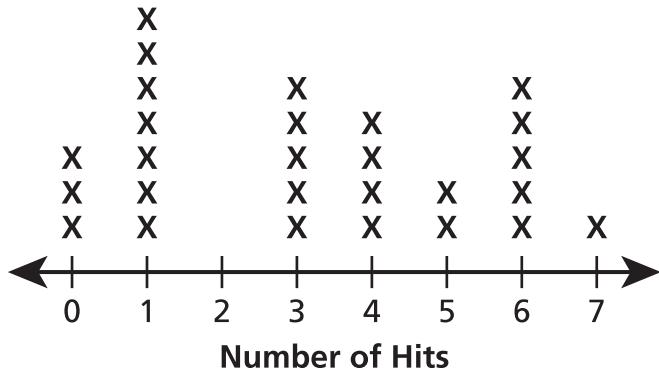
- A  $y = 1.5x$
- B  $y = 15x$
- C  $x = 1.5y$
- D  $x = 15y$

**GO ON**

**31**

The line plot shown below represents the number of hits by some players at a baseball tournament.

**HITS AT BASEBALL TOURNAMENT**



How many players are represented by the data on the line plot?

- A 3
- B 7
- C 27
- D 85

**32**

The bill for a dinner at a restaurant is \$58.20, before sales tax and tip. Sales tax is 5% of the dinner bill. Tip is 20% of the dinner bill. How much is the total bill including tax and tip?

- A \$83.20
- B \$72.75
- C \$62.27
- D \$58.45

**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.

- 33** A bicyclist travels  $6\frac{1}{2}$  miles in  $\frac{2}{3}$  hour. What is the average speed, in miles per hour, of the bicyclist?

- A  $6\frac{1}{2}$
- B  $6\frac{5}{6}$
- C  $7\frac{1}{6}$
- D  $9\frac{3}{4}$

- 34** At a deli, customers buying a sandwich can choose one type of bread, one type of meat, and one type of cheese. The options for each sandwich are listed below.

- bread: white or wheat
- meat: turkey or beef
- cheese: American, Swiss, or cheddar

Assuming each choice is equally likely, what is the probability a customer will choose a sandwich with white bread, turkey, and Swiss cheese?

- A  $\frac{1}{12}$
- B  $\frac{1}{7}$
- C  $\frac{1}{4}$
- D  $\frac{1}{3}$

**GO ON**

**35**

Frank is riding in a taxi to get to work. The cost of riding in a taxi includes a one-time fee of \$2.75, and \$2.60 per mile. If Frank rides in a taxi for 4 miles and pays a \$2.00 tip, how much money will he have left over if he pays with a \$20.00 bill?

- A \$4.85
- B \$6.85
- C \$7.35
- D \$7.60

**36**

The sum of two numbers is zero. If one of the numbers is 5, what is the other number?

- A -10
- B -5
- C 0
- D 5

**37**

Ms. Jacobs has \$15.00 to spend on coffee and donuts. She buys 1 coffee for \$2.59. The cost of each donut is \$1.09. Which inequality could be used to determine the greatest number of donuts,  $d$ , that Ms. Jacobs can buy?

- A  $1.09d + 2.59 \leq 15$
- B  $1.09d + 2.59 \geq 15$
- C  $1.09 + 2.59d \leq 15$
- D  $1.09 + 2.59d \geq 15$

**GO ON**

**38**

Maggie owns a dog grooming business. The prices for two services are listed below.

- \$31.50 for a dog wash
- \$17.00 for a nail trim

A customer receives an 18% discount when paying for both a dog wash and a nail trim. What is the total price the customer will pay for a dog wash and a nail trim with the discount?

- A**    \$18.00
- B**    \$39.77
- C**    \$42.83
- D**    \$48.50

**GO ON**

**39**

This question is worth 1 credit.

The table below shows a proportional relationship between the cups of flour,  $x$ , and the number of cookies,  $y$ , for a given recipe.

**AMOUNT OF FLOUR  
FOR COOKIES**

Cups of Flour ( $x$ )	Number of Cookies ( $y$ )
$1\frac{1}{2}$	24
3	48
$4\frac{1}{2}$	72
6	96
$7\frac{1}{2}$	120

Based on this relationship, how many cookies can be made per cup of flour?

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

**GO ON**

**40**

This question is worth 1 credit.

Kasey and Andrew each went for a walk, once a day, for 4 days.

- Kasey walked  $\frac{3}{4}$  mile each day.
- Andrew walked  $\frac{3}{5}$  mile each day.

At the end of 4 days, how much farther, in miles, had Kasey walked than Andrew?

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

**GO ON**

**41**

This question is worth 1 credit.

Write the expression  $\frac{1}{2}(18y - 2y + 10)$  as the sum of two unlike terms.

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

**GO ON**

**42**

This question is worth 2 credits.

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

### DISTANCE ROBOT TRAVELED

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet?

*Show your work.*

Answer \_\_\_\_\_ seconds

**GO ON**

**43**

This question is worth 2 credits.

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

*Show your work.*

Answer \_\_\_\_\_ guests

**GO ON**

**44**

**This question is worth 2 credits.**

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer.

***Explain your answer.***

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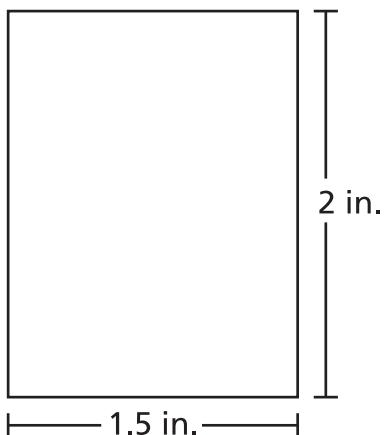
**GO ON**

**45**

This question is worth 2 credits.

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

**DIAGRAM OF  
CLASSROOM FLOOR**



What is the area, in square feet, of the actual classroom?

*Show your work.*

**Answer** \_\_\_\_\_ square feet

**GO ON**

**46**

**This question is worth 2 credits.**

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface?

***Explain how you determined your answer.***

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**GO ON**

**47**

**This question is worth 2 credits.**

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for?

**Show your work.**

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

**GO ON**

**48**

This question is worth 3 credits.

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*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 7 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-7.NS.2c	The Number System		0.8487		
2	Multiple Choice	D	1	NGLS.Math.Content.NY-7.EE.3	Expressions and Equations		0.7725		
4	Multiple Choice	A	1	NGLS.Math.Content.NY-7.RP.2b	Ratios and Proportional Relationships		0.8573		
5	Multiple Choice	B	1	NGLS.Math.Content.NY-7.NS.1d	The Number System		0.6314		
8	Multiple Choice	B	1	NGLS.Math.Content.NY-7.NS.3	The Number System		0.6152		
9	Multiple Choice	D	1	NGLS.Math.Content.NY-6.SP.5c	Statistics and Probability		0.4920		
13	Multiple Choice	B	1	NGLS.Math.Content.NY-7.RP.2a	Ratios and Proportional Relationships		0.4687		
16	Multiple Choice	C	1	NGLS.Math.Content.NY-7.SP.4	Statistics and Probability		0.4835		
17	Multiple Choice	C	1	NGLS.Math.Content.NY-7.EE.4a	Expressions and Equations		0.4064		
18	Multiple Choice	B	1	NGLS.Math.Content.NY-7.NS.3	The Number System		0.8399		
21	Multiple Choice	C	1	NGLS.Math.Content.NY-7.EE.2	Expressions and Equations		0.6178		
23	Multiple Choice	D	1	NGLS.Math.Content.NY-7.RP.3	Ratios and Proportional Relationships		0.6179		
25	Multiple Choice	B	1	NGLS.Math.Content.NY-7.RP.2c	Ratios and Proportional Relationships		0.4988		
31	Multiple Choice	C	1	NGLS.Math.Content.NY-6.SP.5a	Statistics and Probability		0.7564		
32	Multiple Choice	B	1	NGLS.Math.Content.NY-7.RP.3	Ratios and Proportional Relationships		0.6396		
<b>Session 2</b>									
33	Multiple Choice	D	1	NGLS.Math.Content.NY-7.RP.1	Ratios and Proportional Relationships		0.5740		
34	Multiple Choice	A	1	NGLS.Math.Content.NY-7.SP.8a	Statistics and Probability		0.4131		
35	Multiple Choice	A	1	NGLS.Math.Content.NY-7.EE.3	Expressions and Equations		0.6779		
36	Multiple Choice	B	1	NGLS.Math.Content.NY-7.NS.1b	The Number System		0.8058		
37	Multiple Choice	A	1	NGLS.Math.Content.NY-7.EE.4b	Expressions and Equations		0.5916		
38	Multiple Choice	B	1	NGLS.Math.Content.NY-7.RP.3	Ratios and Proportional Relationships		0.6899		
39	Constructed Response		1	NGLS.Math.Content.NY-7.RP.2b	Ratios and Proportional Relationships			0.6587	0.6587
40	Constructed Response		1	NGLS.Math.Content.NY-7.NS.3	The Number System	NGLS.Math.Content.NY-7.EE.3		0.3899	0.3899
41	Constructed Response		1	NGLS.Math.Content.NY-7.EE.1	Expressions and Equations			0.3393	0.3393
42	Constructed Response		2	NGLS.Math.Content.NY-7.RP.2c	Ratios and Proportional Relationships	NGLS.Math.Content.NY-7.RP.3		0.4112	0.2056
43	Constructed Response		2	NGLS.Math.Content.NY-7.EE.4b	Expressions and Equations			0.4688	0.2344
44	Constructed Response		2	NGLS.Math.Content.NY-7.SP.8b	Statistics and Probability			0.3824	0.1912
45	Constructed Response		2	NGLS.Math.Content.NY-7.G.1	Geometry			0.4432	0.2216
46	Constructed Response		2	NGLS.Math.Content.NY-7.NS.1b	The Number System	NGLS.Math.Content.NY-7.NS.1d		0.6757	0.3379
47	Constructed Response		2	NGLS.Math.Content.NY-7.EE.3	Expressions and Equations			0.6414	0.3207
48	Constructed Response		3	NGLS.Math.Content.NY-7.RP.3	Ratios and Proportional Relationships	NGLS.Math.Content.NY-7.NS.3		0.4282	0.1427

\*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>	<p>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.</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 and the demonstration of a thorough understanding</li></ul>
<b>1 Credit</b>	<p>A 1-credit response demonstrates only 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>• 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>	<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).

### 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><b>This response</b></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><b>This response</b></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><b>This response</b></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).

39

The table below shows a proportional relationship between the cups of flour,  $x$ , and the number of cookies,  $y$ , for a given recipe.

**AMOUNT OF FLOUR  
FOR COOKIES**

Cups of Flour (x)	Number of Cookies (y)
$1\frac{1}{2}$	24
3	48
$4\frac{1}{2}$	72
6	96
$7\frac{1}{2}$	120

Based on this relationship, how many cookies can be made per cup of flour?

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

## EXEMPLARY RESPONSE

39

The table below shows a proportional relationship between the cups of flour,  $x$ , and the number of cookies,  $y$ , for a given recipe.

**AMOUNT OF FLOUR  
FOR COOKIES**

Cups of Flour (x)	Number of Cookies (y)
$1\frac{1}{2}$	24
3	48
$4\frac{1}{2}$	72
6	96
$7\frac{1}{2}$	120

Based on this relationship, how many cookies can be made per cup of flour?

Answer

*16 or equivalent answer*  
\_\_\_\_\_ cookies

# GUIDE PAPER 1

39

The table below shows a proportional relationship between the cups of flour,  $x$ , and the number of cookies,  $y$ , for a given recipe.

AMOUNT OF FLOUR  
FOR COOKIES

Cups of Flour ( $x$ )	Number of Cookies ( $y$ )
$1\frac{1}{2}$	24
3	48
$4\frac{1}{2}$	72
6	96
$7\frac{1}{2}$	120

Based on this relationship, how many cookies can be made per cup of flour?

$$\begin{aligned} 24 \div 3/2 &= \\ 16 \quad 1 \times 16 &= 16 \quad 16 \\ \text{cookies per} & \\ \text{cup} & \end{aligned}$$

Answer

of  
flour.

cookies

## Score Point 1 (out of 1 credit)

A correct answer is provided.

## GUIDE PAPER 2

39

The table below shows a proportional relationship between the cups of flour,  $x$ , and the number of cookies,  $y$ , for a given recipe.

AMOUNT OF FLOUR  
FOR COOKIES

Cups of Flour ( $x$ )	Number of Cookies ( $y$ )
$1\frac{1}{2}$	24
3	48
$4\frac{1}{2}$	72
6	96
$7\frac{1}{2}$	120

Based on this relationship, how many cookies can be made per cup of flour? [1]

$$16 \quad 96 \div 6 = 16 \\ 48 \div 3 = 16$$

Answer 16 cookies

Score Point 1 (out of 1 credit)

A correct answer is provided.

# GUIDE PAPER 3

39

The table below shows a proportional relationship between the cups of flour,  $x$ , and the number of cookies,  $y$ , for a given recipe.

AMOUNT OF FLOUR  
FOR COOKIES

Cups of Flour ( $x$ )	Number of Cookies ( $y$ )
$\frac{1}{2}$	24
3	48
$\frac{4}{2}$	72
6	96
$\frac{7}{2}$	120

Based on this relationship, how many cookies can be made per cup of flour? [1]

$$\begin{array}{r} 1 \\ 48 \sqrt{3.00} \\ \hline \end{array}$$

Answer  $\frac{1}{16}$  cookies

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

An incorrect answer is provided.

40

Kasey and Andrew each went for a walk, once a day, for 4 days.

- Kasey walked  $\frac{3}{4}$  mile each day.
- Andrew walked  $\frac{3}{5}$  mile each day.

At the end of 4 days, how much farther, in miles, had Kasey walked than Andrew?

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

## EXEMPLARY RESPONSE

40

Kasey and Andrew each went for a walk, once a day, for 4 days.

- Kasey walked  $\frac{3}{4}$  mile each day.
- Andrew walked  $\frac{3}{5}$  mile each day.

At the end of 4 days, how much farther, in miles, had Kasey walked than Andrew?

*Answer*  $\frac{3}{5}$  or 0.6 or equivalent answer miles

# GUIDE PAPER 1

40

Kasey and Andrew each went for a walk, once a day, for 4 days.

- Kasey walked  $\frac{3}{4}$  mile each day.
- Andrew walked  $\frac{3}{5}$  mile each day.

At the end of 4 days, how much farther, in miles, had Kasey walked than Andrew? [1]

$$\frac{3}{4} \rightarrow .75 \times 4 = 3$$

$$\frac{3}{5} \rightarrow .60 \times 4 = 2.4$$

$$\begin{array}{r} 3 \\ - 2.4 \\ \hline .6 \end{array}$$

Answer .6 miles

## Score Point 1 (out of 1 credit)

A correct answer is provided.

## GUIDE PAPER 2

40

Kasey and Andrew each went for a walk, once a day, for 4 days.

- Kasey walked  $\frac{3}{4}$  mile each day.
- Andrew walked  $\frac{3}{5}$  mile each day.

At the end of 4 days, how much farther, in miles, had Kasey walked than Andrew?

$$\begin{aligned} \frac{3}{4} \times 4 &= \\ 3 & \\ 3-2 & \\ \frac{2}{5} &= \frac{3}{5} \\ \frac{3}{5} \times 4 &= \\ 2 \frac{2}{5} & \end{aligned}$$

*Answer*

$\frac{3}{5}$  miles

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

A correct answer is provided.

## GUIDE PAPER 3

40

Kasey and Andrew each went for a walk, once a day, for 4 days.

- Kasey walked  $\frac{3}{4}$  mile each day.
- Andrew walked  $\frac{3}{5}$  mile each day.

At the end of 4 days, how much farther, in miles, had Kasey walked than Andrew? [1]

$$\text{Kasey} - \frac{3}{4} > 0.75 \times 4 = 3 \text{ miles}$$

$$\text{Andrew} - \frac{3}{5} > 0.6 \times 4 = 2.4 \text{ miles}$$

Kasey walked 3 more miles than Andrew

Andrew only walked 2.4 miles

Answer 3 miles

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

An incorrect answer is provided.

**41**

Write the expression  $\frac{1}{2}(18y - 2y + 10)$  as the sum of two unlike terms.

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

## EXEMPLARY RESPONSE

41

Write the expression  $\frac{1}{2}(18y - 2y + 10)$  as the sum of two unlike terms.

*Answer*  $8y + 5$  or  $5 + 8y$  or equivalent answer

# GUIDE PAPER 1

41

Write the expression  $\frac{1}{2}(18y - 2y + 10)$  as the sum of two unlike terms. [1]

$$\cancel{18y - 2y} \cancel{(18y - 2y + 10)}$$
$$\frac{1}{2} (18y - 2y + 10) \cancel{\phantom{1}}$$

$$9y - 1y + 5$$
$$\boxed{8y + 5}$$

Answer 8y + 5

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

A correct answer is provided.

## GUIDE PAPER 2

41

Write the expression  $\frac{1}{2}(18y - 2y + 10)$  as the sum of two unlike terms.

$$\frac{1}{2} (18y - 2y + 10)$$

$$\frac{1}{2} (16y + 10)$$

$$8y + 5$$

*Answer*

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

A correct answer is provided.

## GUIDE PAPER 3

41

Write the expression  $\frac{1}{2}(18y - 2y + 10)$  as the sum of two unlike terms.

*Answer*

7y+5

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

An incorrect answer is provided.

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

**DISTANCE ROBOT TRAVELED**

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet?

*Show your work.*

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

## EXEMPLARY RESPONSE

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

DISTANCE ROBOT TRAVELED

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet?

Show your work.

$$d = \frac{1}{2}t$$

$$2d = t$$

$$t = 2(11)$$

$$t = 22 \text{ seconds}$$

or other valid process

Answer 22 or equivalent answer seconds

# GUIDE PAPER 1

Additional

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

**DISTANCE ROBOT TRAVELED**

Time, $t$ (seconds) $X$	Distance, $d$ (feet) $y$
2	1
4	2
10	5
16	8

$$y = kx$$

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet? [2]

Show your work.

$$\frac{1}{2}$$

$$y(\text{distance}) = \frac{1}{2} \times (\text{seconds})$$

$$11 = \left(\frac{1}{2}\right)(2.2)$$

$$\begin{array}{r} 11 = \frac{1}{2} x \\ \hline 22 = x \end{array}$$

CK

$$\frac{1d}{2t} \times 11 \quad \frac{11}{22}$$

Answer 22 seconds

## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct equation is written to represent the distance the robot travels over time, and it is used correctly to calculate the time it takes for the robot to travel 11 feet. It is acceptable to redefine the variables representing time and distance. This response is complete and correct.

## GUIDE PAPER 2

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

**DISTANCE ROBOT TRAVELED**

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet?

*Show your work.*

$$\begin{aligned} t &= d/2 \\ t &= 11 \times 2 \\ t &= 22 \text{ seconds} \end{aligned}$$

Answer 22 seconds

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct equation is written to represent the distance the robot travels over time, and it is used correctly to calculate the time it takes for the robot to travel 11 feet. This response is complete and correct.

# GUIDE PAPER 3

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

DISTANCE ROBOT TRAVELED

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet? [2]

Show your work.

$$2 \text{ seconds} = 1 \text{ ft}$$

$$2|1 \text{ every } 2 \text{ sec} = \text{one foot}$$

$$4|2 \text{ Constant} = 2$$

$$10|5$$

$$16|8 \quad d(2) = ?$$

$$11(2) = 22$$

Answer 22 seconds

## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct equation is written to represent the distance the robot travels over time, and it is used correctly to calculate the time it takes for the robot to travel 11 feet. This response is complete and correct.

## GUIDE PAPER 4

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

DISTANCE ROBOT TRAVELED

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet? [2]

Show your work.

$$\begin{aligned}d &= +\frac{1}{2} \\ \downarrow \\ 11 &= (22) \div \frac{1}{2} \\ &\quad \swarrow \\ 22 &\end{aligned}$$

Answer                  seconds

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct equation is written. Although the time in seconds it takes for the robot to travel 11 feet is correct, the work shows an incorrect process of division instead of multiplication. This response correctly addresses only some elements of the task.

# GUIDE PAPER 5

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

**DISTANCE ROBOT TRAVELED**

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet?

*Show your work.*

$$d=0.5t$$

1 divided by 2=0.5  
2x0.5=1              11x0.5=5.50  
4x0.5=2  
10x0.5=5  
16x0.5=8

Answer      11x0.5=5.50

$$>$$

seconds

## Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct equation is written to represent the distance the robot travels over time; however, the time it takes for the robot to travel 11 feet is incorrectly calculated. This response correctly addresses only some elements of the task.

# GUIDE PAPER 6

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

DISTANCE ROBOT TRAVELED

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet? [2]

Show your work.

$$t = d \div 2$$

$$t = 11 \div 2$$

$$t = 5.5$$

Answer 5.5 seconds

## Score Point 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. An incorrect equation is written to represent the distance the robot travels over time as the variables  $t$  and  $d$  are transposed; however, the time it takes for the robot to travel 11 feet is correctly calculated for this incorrect equation. This response correctly addresses only some elements of the task.

# GUIDE PAPER 7

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

**DISTANCE ROBOT TRAVELED**

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet?

*Show your work.*

$$\frac{11}{2} = 5.5t$$

**Answer**

in 5.5  
seconds it  
will travel  
11 feet  
seconds

## Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. An incorrect equation is written to represent the distance the robot travels over time, and an incorrect solution is provided. Holistically, this response shows no overall understanding.

# GUIDE PAPER 8

Additional

42

A student programs a robot to travel at a constant speed across the classroom floor. The table below represents the relationship between the distance, in feet, the robot travels over a period of time, in seconds.

**DISTANCE ROBOT TRAVELED**

Time, $t$ (seconds)	Distance, $d$ (feet)
2	1
4	2
10	5
16	8

Write an equation to represent the distance,  $d$ , in feet, the robot travels in  $t$  seconds. Using the equation, how many seconds will it take for the robot to travel 11 feet?

*Show your work.*

it would take 22 second for the robot to travel 11 feet

Answer 22 seconds seconds

## Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. A correct equation to represent the distance the robot travels in time is not addressed. The process of calculating the time it takes for the robot to travel 11 feet is not shown and it is unclear how the solution is obtained. Holistically, this response shows no overall understanding.

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

*Show your work.*

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

## EXEMPLARY RESPONSE

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

*Show your work.*

$$8g + 55 < 100$$

$$8g < 45$$

$$g < 5.625$$

Since the variable  $g$  represents people,  
Diane can invite a maximum of 5 guests.

*or other valid process*

Answer 5 guests

# GUIDE PAPER 1

Additional

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

$$\begin{aligned} 55.00 + 8.00x &< 100.00 \\ -55.00 &\quad -55.00 \\ 8.00x &< 45 \\ \div 8.00 &\quad \div 8.00 \\ x &< 5.625 \end{aligned}$$

Answer  guests

## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct inequality is written. Although the variable  $x$  is not defined in the work, the inequality is correctly solved and used to determine the maximum number of guests Diane can invite to her party. This response is complete and correct.

## GUIDE PAPER 2

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

$$55.00 + 8.00g < \$100.00$$

$$\begin{aligned} 55.00 + 8.00g &< \$100.00 \\ \underline{-55.00} &\quad \underline{-55.00} \\ 8.00g &< 45 \\ \underline{8} &\quad \underline{\frac{8}{5.625}} \\ g &< \end{aligned}$$

Answer 5 guests

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct inequality is written, and it is correctly solved to determine the maximum number of guests Diane can invite to her party. The incorrect placement of the division bar is considered inconsequential. This response is complete and correct.

## GUIDE PAPER 3

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

$$55 + 8g < 100$$

$$55 + 8 \cdot 5 < 100$$

$$55 + 8 \cdot 6 > 100$$

$$\textcircled{55 + 40 = \$95}$$

$$55 + 48 = \$103$$

Less than \$100

Answer

5

guests

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct inequality is written, and a valid trial-and-error method is used to determine the maximum number of guests Diane can invite to her party. This response is complete and correct.

## GUIDE PAPER 4

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

let  $g$  = maximum amount of guests  
\$55 = cost of park  
\$8 = amount per person  
\$100 = total

$$\begin{aligned} 8x + 55 &\geq 100 \\ - 55 &\quad - 55 \\ \hline \frac{8x}{8} &\quad \frac{45}{8} \quad x \geq 5.625 \\ &\quad x \geq 5 \end{aligned}$$

Answer

guests

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The maximum number of guests Diane can invite to her party is correctly calculated; however, the written inequality has an incorrect inequality sign. Although the variable  $x$  is not defined in the work, it does not detract from the demonstration of understanding. This response correctly addresses only some elements of the task.

## GUIDE PAPER 5

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

$$8 \times 5 = 40$$

$$55 + 8x = 100.00$$

$$55 + 40 = 95$$

Answer \_\_\_\_\_ guests

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The maximum number of guests Diane can invite to her party is correctly calculated; however, an equation is written instead of an inequality. This response correctly addresses only some elements of the task.

## GUIDE PAPER 6

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

$$\begin{aligned}55 + 8 &= 63 \\8 \times 4 &= 32 \\55 + 32 &= 87 \\5 \times 8 &= 40 \\55 + 40 &= 95\end{aligned}$$

**Answer**  $55 + 40 = 95$   
 $40 \div 8 = 5$   
she can bring 5 people . guests

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The maximum number of guests Diane can invite to her party is correctly solved by a valid trial-and-error method showing several attempts; however, the inequality is not written. This response contains the correct solution, but the required work is incomplete.

## GUIDE PAPER 7

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

$$55.00 + 8.00 = 63.00$$

$$8.00 \times 4.00 = 32.00$$

$$63.00 + 32.00 = 95.00$$

Answer  guests

### 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 there is some correct work, the number of guests that can be invited is miscounted and an inequality is not written. Holistically, the work is insufficient to show any understanding.

# GUIDE PAPER 8

Additional

43

Diane is planning a party at a trampoline park. It will cost \$55.00 to rent the park, plus an additional \$8.00 per guest. She wants to spend less than \$100.00 on the party. Write and solve an inequality to determine the maximum number of guests,  $g$ , that can be invited when spending less than a total of \$100.00.

Show your work.

$$\begin{array}{r} P = 55.00 \quad g \geq 0.00 \quad - 100 \quad \text{To spend} = \$45 \\ \hline & & 55 \\ \times & 8.00 & + 55.00 & \hline & 40 & 40.00 & \hline & & 95.00 \end{array}$$

$$\# \text{ of } G = 40$$

Answer 40 guests

## 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 there is some correct work, the total amount of money spent for the guest's tickets is inappropriately given as the solution and an inequality is not written. Holistically, the work is insufficient to show any understanding.

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer.

*Explain your answer.*

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## EXEMPLARY RESPONSE

44

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer.

The sample space is:

{H1, H2, H3, H4, H5, H6,  
T1, T2, T3, T4, T5, T6}

*or*

A correct tree diagram.

There are 12 possible outcomes.

*or other valid explanation*

# GUIDE PAPER 1

Additional

44

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer. [2]

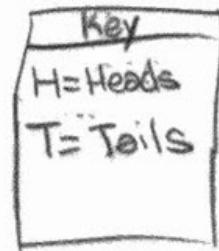
*Explain your answer.*

There are 12 different outcomes as listed below.

SS



H1	T1
H2	T2
H3	T3
H4	T4
H5	T5
H6	T6



## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The total number of outcomes is correctly calculated, and all possible combinations are correctly explained using a tree diagram and a listing of combinations. The explanation is complete and correct.

## GUIDE PAPER 2

44

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer.

There are 2 possible outcomes for the coin and 6 possible outcomes for the cube.  $2 \times 6 = 12$

Possible combinations: H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The total number of outcomes is correctly calculated, and all possible combinations are correctly explained using a listing of combinations. The explanation is complete and correct.

## GUIDE PAPER 3

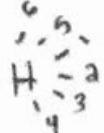
44

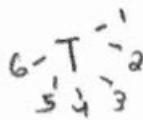
A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer. [2]

*Explain your answer.*

12 different outcomes are possible. You can have Heads with any number. And tails with any number from

1-6.

  
H  
1 2 3 4 5 6  
T  
1 2 3

  
H  
1 2 3 4 5 6  
T  
1 2 3

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The total number of outcomes is correctly calculated, and all possible combinations are correctly explained using a tree diagram. The explanation is complete and correct.

## GUIDE PAPER 4

44

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer. [2]

*Explain your answer.*

$2 \cdot 6 = 12$  possible combinations

H 1	T 1
H 2	T 2
H 3	T 3
H 4	T 4
H 5	T 5
H 6	T 6

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. All possible combinations are correctly explained using a listing of combinations; however, the total number of outcomes is incorrect because of a calculation error. This response contains an incorrect solution but applies a mathematically appropriate process.

## GUIDE PAPER 5

44

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer.

there are 12 possible outcomes because  $6 \times 2 = 12$ .

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The total number of outcomes is correctly explained; however, the sample space showing all possible combinations is not addressed. This response correctly addresses only some elements of the task.

## GUIDE PAPER 6

44

H

T

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer. [2]

Explain your answer.

All possible outcomes could be for Heads and cube  
H1, H2, H3, H4, H5, H6

For tails with cube:

T1, T2, T3, T4, T5, T6

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The possible combinations are correctly explained using a listing of combinations; however, the total number of outcomes is not stated. This response correctly addresses only some elements of the task.

## GUIDE PAPER 7

44

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer. [2]

*Explain your answer.*

*6x2 cause 2 = the two sides of the coin.*

### 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 there is some correct work to determine the total number of outcomes, it is not calculated. The sample space is also not provided. Holistically, the explanation is insufficient to show any understanding.

44

A student tosses a fair coin with heads (H) on one side and tails (T) on the other, and rolls a fair number cube with faces numbered 1 through 6. How many different outcomes are possible? Be sure to provide the sample space for all possible combinations to support your answer.

Coin Toss:

Heads = 50%

Tails = 50%

There are 2 possible outcomes.

Number Cube:

Numbers one through six

$1/6 = 0.17$

You would have a possible chance to roll on what ever side

17%

There are six possible outcomes.

In total there would be 8 possible outcomes.

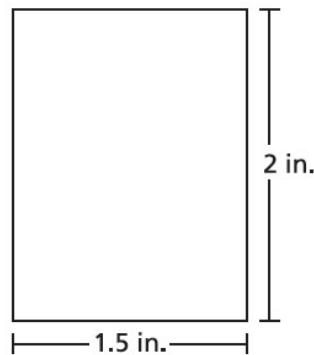
**Score Point 0 (out of 2 credits)**

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. The total number of outcomes is incorrectly explained, and the sample space is not provided. The explanation shows no understanding.

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

**DIAGRAM OF  
CLASSROOM FLOOR**



What is the area, in square feet, of the actual classroom?

*Show your work.*

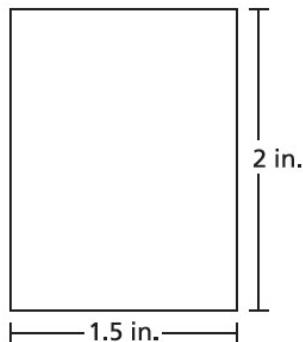
*Answer* \_\_\_\_\_ square feet

## EXEMPLARY RESPONSE

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

**DIAGRAM OF  
CLASSROOM FLOOR**



What is the area, in square feet, of the actual classroom?

*Show your work.*

$$1.5 \times 14 = 21 \text{ ft.}$$

$$2 \times 14 = 28 \text{ ft.}$$

$$21 \times 28 = 588 \text{ sq. ft.}$$

*or*

$$1.5 \times 2 = 3 \text{ sq. in.}$$

$$3 \times 14 \times 14 = 588 \text{ sq. ft.}$$

*or other valid process*

*Answer* 588 square feet

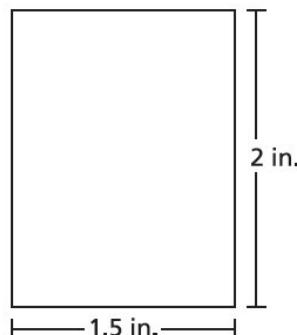
# GUIDE PAPER 1

Additional

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

DIAGRAM OF  
CLASSROOM FLOOR



What is the area, in square feet, of the actual classroom?

Show your work.

$\frac{1 \text{ in}}{14 \text{ ft}} = \frac{2 \text{ in}}{x \text{ ft}}$ $x = 14 \cdot 2$ $x = 28 \text{ ft}$ <p style="text-align: center;">length</p>	$\frac{1 \text{ in}}{14 \text{ ft}} = \frac{1.5 \text{ in}}{x \text{ ft}}$ $x = 14 \cdot 1.5$ $x = 21 \text{ ft}$ <p style="text-align: center;">width</p>	<p style="text-align: center;">Area</p> $28 \cdot 21$ <p style="text-align: center;">588 \text{ ft}^2</p>
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Answer 588 square feet

## Score Point 2 (out of 2 credits)

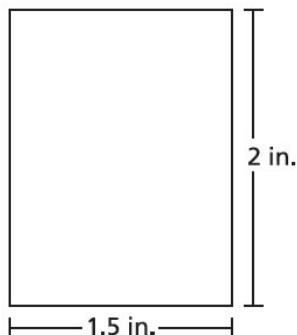
This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The length and width of the classroom drawing are correctly converted to feet using proportions and the area of the actual classroom is correctly calculated. This response is complete and correct.

## GUIDE PAPER 2

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

**DIAGRAM OF  
CLASSROOM FLOOR**



What is the area, in square feet, of the actual classroom?

*Show your work.*

$$1.5 \times 14 = 21$$

$$2 \times 14 = 28$$

$$21 \times 28 = 588$$

*Answer*

588

: square feet

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

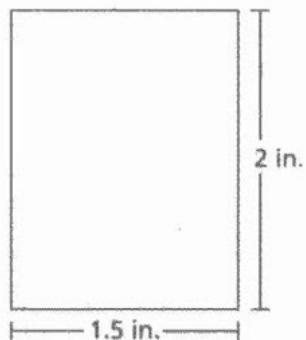
This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The length and width of the classroom drawing are correctly converted to feet and the area of the actual classroom is correctly calculated. This response is complete and correct.

# GUIDE PAPER 3

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

DIAGRAM OF  
CLASSROOM FLOOR



What is the area, in square feet, of the actual classroom? [2]

Show your work.

$$\begin{array}{ll} 1.5 \times 14 = 21 & 28 \times 21 = 588 \\ 2 \times 14 = 28 & \\ 1.5 \times 2 = 3 & 3 \times 14 \end{array}$$

Answer 588 square feet

## Score Point 2 (out of 2 credits)

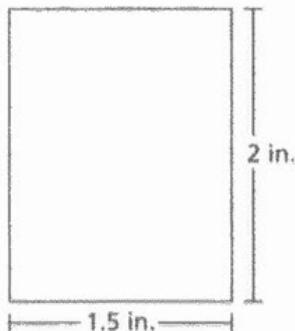
This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The length and width of the classroom drawing are correctly converted to feet and the area of the actual classroom is correctly calculated. This response is complete and correct.

## GUIDE PAPER 4

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

DIAGRAM OF  
CLASSROOM FLOOR



What is the area, in square feet, of the actual classroom? [2]

Show your work.

$$2 \times 15 = 30 \text{ in}^2$$

$$3 \times 14 = 42 \text{ ft}^2$$

Answer 42 square feet

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

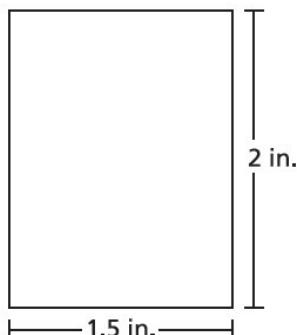
This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The area of the classroom drawing is correctly calculated in square inches. Although 15 was used instead of 1.5 in the written equation, the area of the classroom drawing is correctly calculated in square inches. The conversion of this area to the actual classroom area, in square feet, is incomplete. This response correctly addresses only some elements of the task.

# GUIDE PAPER 5

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

**DIAGRAM OF  
CLASSROOM FLOOR**



What is the area, in square feet, of the actual classroom?

*Show your work.*

$$2 \times 14 = 28 \text{ is the length}$$
$$1.5 \times 14 = 21 \text{ is the width}$$

the area of  
the  
classroom is  
98

*Answer*

square feet

## Score Point 1 (out of 2 credits)

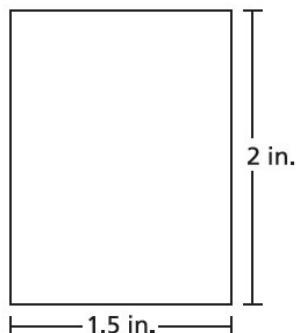
This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The length and width of the classroom drawing are correctly converted to feet. It is unclear how the incorrect area of the actual classroom is obtained. This response correctly addresses only some elements of the task.

## GUIDE PAPER 6

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

**DIAGRAM OF  
CLASSROOM FLOOR**



What is the area, in square feet, of the actual classroom?

*Show your work.*

$$2 \times 1.5 = 3$$

Answer 3 square feet

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

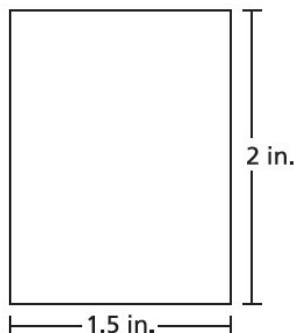
This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The area of the classroom drawing is correctly calculated in square inches. The conversion of this area to the actual classroom area, in square feet, is not addressed. This response correctly addresses only some elements of the task.

## GUIDE PAPER 7

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

**DIAGRAM OF  
CLASSROOM FLOOR**



What is the area, in square feet, of the actual classroom?

*Show your work.*

$$3 \times 14 = 42$$

$$4 \times 14 = 56$$

$$56 + 42 = 98$$

Answer

98

: square feet

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

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. Incorrect values are used when converting the length and width of the classroom drawing, and an incorrect process is used to determine the incorrect actual area of the classroom. The work shows no understanding.

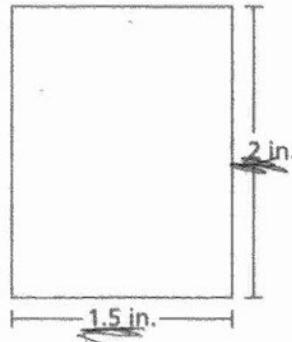
# GUIDE PAPER 8

Additional

45

A scale drawing of the floor of a rectangular-shaped classroom is shown in the diagram below. The drawing has a scale of 1 inch to 14 feet.

DIAGRAM OF  
CLASSROOM FLOOR



What is the area, in square feet, of the actual classroom? [2]

Show your work.

$$\begin{array}{r} 2 \times 1.5 = 3 \\ \text{or} \\ 1 \times 14 = 14 \end{array}$$

Answer \_\_\_\_\_ square feet

## Score Point 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. Although the area of the classroom drawing is correctly calculated, another incorrect process is shown, and two solutions are circled in the work. The area of the actual classroom, in square feet, is not addressed. Holistically, this response shows no overall understanding.

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface?

*Explain how you determined your answer.*

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## EXEMPLARY RESPONSE

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface?

*Explain how you determined your answer.*

$$-24 + 10 + (-18) = -32$$

Since  $-32$  is 32 feet below the water's surface, the diver would need to rise upward 32 feet to reach the surface.

*or*

$$24 - 10 + 18 = 32$$

The diver would need to rise upward 32 feet to reach the surface.

*or other valid explanation*

# GUIDE PAPER 1

Additional

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface? [2]

Explain how you determined your answer.

of 32 feet

I determined my answer by simplifying the equation  $|(-24 + 10 - 18)|$ . The diver is below the surface meaning the scuba diver is at a negative depth on the vertical number line, which is  $-24$ . The diver rises 10 feet and goes down 18 feet, meaning  $10 - 18$ . The absolute value is for distance, and distance is never negative, reaching my answer 32.

$$SD = (-24) + 10 - 18$$

$$\begin{aligned} & |(-24 + 10 - 18)| \\ & = |(-14 - 18)| = 32 \\ & = |-32| = 32 \end{aligned}$$

DO NOT WRITE BEYOND THIS AREA

## Score Point 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The depth below the water's surface is correctly determined and this solution of  $-32$  is correctly interpreted as a positive distance of 32 feet the diver needs to rise to reach the water's surface. The explanation is complete and correct.

## GUIDE PAPER 2

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface?

*Explain how you determined your answer.*

0-24+10-18=(-32) The diver needs to rise 32 more feet.

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The distance the diver needs to rise upward is correctly determined. The solution of  $-32$  is correctly interpreted as a positive distance of 32 feet the diver needs to rise to reach the water's surface. The explanation is complete and correct.

## GUIDE PAPER 3

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface?

*Explain how you determined your answer.*

$$24 - 10 + 18 = 32 \text{ ft}$$

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The distance the diver needs to rise upward to reach the water's surface is correctly determined. The explanation is sufficient to show a thorough understanding.

## GUIDE PAPER 4

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface?

*Explain how you determined your answer.*

$$-24 + 10 - 18 = -32$$

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct process is used to determine the depth below the water's surface; however, the solution is incorrectly explained as it is left as a negative distance. This response correctly addresses only some elements of the task.

## GUIDE PAPER 5

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface? [2]

*Explain how you determined your answer.*

I minus 10 from 24 and then  
from that added 18. and that's  
how far they are to get to the water's  
surface

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct process is correctly explained to determine the distance the diver needs to rise upward to reach the water's surface; however, the solution is not calculated. This response correctly addresses only some elements of the task.

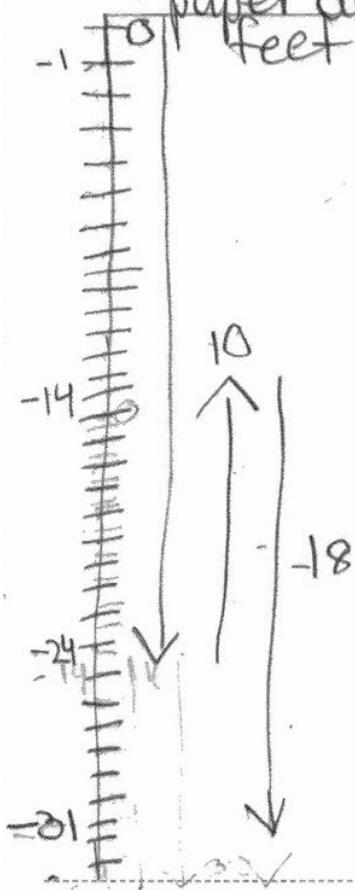
## GUIDE PAPER 6

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface? [2]

*Explain how you determined your answer.*

*The diver will have to swim 31 feet up because I did all the steps on paper and they ended up being 31 feet below the surface.*



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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct process is used to determine the distance the diver needs to rise upward to reach the water's surface; however, a calculation error results in an incorrect distance to rise upward. This response contains an incorrect solution but applies a mathematically appropriate process.

## GUIDE PAPER 7

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface? [2]

*Explain how you determined your answer.*

*I determined my answer by adding 10 to the negative 24 and I added 18 which gave me a positive number, which was 4.*

$$-24 + 10 = -14 + 18 = 4$$

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

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. An incorrect process is used to determine an incorrect solution. Holistically, the explanation is insufficient to show any understanding.

# GUIDE PAPER 8

Additional

46

A scuba diver dives 24 feet below the water's surface. The diver then rises 10 feet, stops, and then dives downward another 18 feet. How far, in feet, does the diver need to rise upward to reach the water's surface?

*Explain how you determined your answer.*

$$24 + 10 - 18 = 16$$

## 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 process is used to determine an incorrect solution. Holistically, the explanation is insufficient to show any understanding.

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for?

*Show your work.*

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

## EXEMPLARY RESPONSE

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for?

*Show your work.*

$$11(2) + 5(2) = 22 + 10 = 32$$

$$52 - 32 = 20$$

$$20 \div 1.25 = 16$$

*or*

$x$  is the number of rides

$$52 = 1.25x + 11(2) + 5(2)$$

$$20 = 1.25x$$

$$x = 20 \div 1.25$$

$$x = 16$$

*or other valid process*

Answer 16 rides

# GUIDE PAPER 1

Additional

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for? [2]

Show your work.

$$\begin{array}{r} \times 11 \\ \times 5 \\ \hline 55 \end{array}$$

$$\begin{array}{r} 32 + 1.25x = 52 \\ -32 \\ \hline 1.25x = 20 \\ \hline 1.25 \\ x = 16 \end{array}$$

Answer 16 rides

## 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 rides the family paid for is correctly calculated using sound mathematical procedures. This response is complete and correct.

## GUIDE PAPER 2

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for? [2]

Show your work.

$$\begin{array}{r} 1) 11.00 \times 2 = 22 \\ 5 \times 2 = 10 \\ \hline 32 \end{array}$$

$$\begin{array}{r} 2) 22 \\ + 10 \\ \hline 32 \end{array}$$

20 dollars for the Rides

$$\begin{array}{l} 4) \cancel{1.25} \times 9 = 23.75 \\ \cancel{1.25} \times 15 = 18.75 \\ 1.25 \times 16 = 20 \checkmark \end{array} \left. \begin{array}{l} \\ \\ \end{array} \right\} \text{Process of elimination}$$

Answer 16 rides

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A valid trial-and-error method is used showing several attempts to determine the number of rides the family purchased with the money left for rides. This response is complete and correct.

## GUIDE PAPER 3

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for?

*Show your work.*

$$52 - 32 = 20 \quad 20 \div 1.25$$

Answer 16 rides

### 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 rides the family paid for is correctly calculated using sound mathematical procedures. Although the step of calculating the admission cost is not shown, this response contains sufficient work to show a thorough understanding.

## GUIDE PAPER 4

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for? [2]

Show your work.

$$\begin{array}{r} 1.25 \times 16 = 20 \\ 11 \times 2 = 22 \quad 32 \\ 5 \times 2 = 10 \quad + 20 \\ \hline 52 \end{array}$$

Answer 52 rides

### 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 number of rides the family paid for is correctly calculated, the work is insufficient to show how 16 is obtained, and the total amount of money spent on admissions and rides is inappropriately supplied as the solution. This response contains an incorrect solution but applies a mathematically appropriate process.

## GUIDE PAPER 5

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for?

*Show your work.*

2 adults = 22.00   2 kids = 10.00 add up to 32

$32 + 1.25 \times 16$

Answer

16

rides

### 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 number of rides the family paid for is correctly calculated, the work is insufficient to show how 16 is obtained. This response contains the correct solution, but the required work is incomplete.

## GUIDE PAPER 6

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for? [2]

Show your work.

$$11 + 11 + 5 + 5 = 32$$
$$\begin{array}{r} 52,00 \\ - 32,00 \\ \hline 20,00 \end{array}$$

Answer 20 rides

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

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The amount of money available for rides is correctly calculated; however, this amount is inappropriately provided as the solution. The number of rides the family paid for is not calculated. This response correctly addresses only some elements of the task.

## GUIDE PAPER 7

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for? [2]

Show your work.

$$11.00 + 11.00 + 5.00 + 5.00 + 1.25 + 1.25 + 1.25 + 1.25 = 52$$

Answer 37 rides

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

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. Although the cost of admissions and four rides is correctly calculated, the amount of money left for rides is not calculated and the addition equation does not equal 52. Holistically, the work is insufficient to show any understanding.

# GUIDE PAPER 8

Additional

47

A family of 2 adults and 2 children went to a fair. The costs of admission and rides are listed below.

- \$11.00 for admission for each adult
- \$5.00 for admission for each child
- \$1.25 per ride

The family spent a total of \$52.00 on admission and rides. How many rides did the family pay for?

*Show your work.*

16 rides

The family  
can ride 16  
times

Answer

rides

## 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 correct answer is provided with no work. Per Scoring Policy #3 for 2- and 3-credit responses, if students are directed to show work, a correct answer with no work shown receives no credit.

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

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## EXEMPLARY RESPONSE

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Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

Airline A:

$$150 \times 0.75 = 112.50$$

*or*

$$150 - 0.25(150) = 150 - 37.50 = 112.50$$

Discounted price is \$112.50

Airline B:

$$180 \times \frac{2}{3} = 120$$

*or*

$$180 - \frac{1}{3}(180) = 180 - 60 = 120$$

Discounted price is \$120.00

So, Airline A offers the least expensive ticket.

*or other valid explanation*

# GUIDE PAPER 1

Additional

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Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

Airline A:

$$150 \times .25 = 37.5$$

$$150 - 37.5 = 112.50$$

B:

$$\frac{1}{3} = \frac{x}{180}$$

$$x = 60$$

$$180 - 60 = 120$$

Airline A is less expensive

## Score Point 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The discounted ticket prices are correctly determined using sound procedures, and Airline A is correctly identified as offering the least expensive ticket. This explanation is complete and correct.

## GUIDE PAPER 2

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Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
$$\begin{array}{r} 150 \\ \times 25 \\ \hline 375 \\ - 150 \\ \hline 125 \end{array}$$
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180
$$\begin{array}{r} 180 \\ \times \frac{1}{3} \\ \hline 60 \end{array}$$
$$180 - 60 = 120$$

Which airline offers the least expensive ticket? Be sure to include the discounted ticket price for each airline in your answer. [3]

*Explain how you determined your answer.*

*Airline A, because \$12.50 is less than \$120.*

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The discounted ticket prices are correctly determined using sound procedures, and Airline A is correctly identified as offering the least expensive ticket. 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 explanation is complete and correct.

## GUIDE PAPER 3

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

$$\begin{array}{ll} \text{A) } 75\% \text{ of } 150 & \text{B) } \frac{2}{3} \text{ of } 180 \\ (.75 \cdot 150) & \frac{2}{3} \cdot 180 \\ \$112.50 & \$120 \end{array}$$

Airline A has the least expensive ticket. Airline A has a discount of 25% off 150 which is 75% of 150, which is \$112.50. Airline B has a discount of  $1/3$  off 180 which is  $2/3$  of 180, which is \$120. \$112.50 is less than \$120.

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

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The discounted ticket prices are correctly determined using sound procedures, and Airline A is correctly identified as offering the least expensive ticket. This explanation is complete and correct.

## GUIDE PAPER 4

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

$$\text{Airline A: } 150 \times 0.25 = 37.50$$

$$150 - 37.50 = 112.50$$

$$\text{Airline B: } 180 \times 0.33 = 59.40$$

$$180 - 59.40 = 120.60$$

I determined my answer by taking off the discounts of each ticket, and then seeing which ticket has the cheapest price. I multiplied both numbers by the discount, and then subtracted them, which got me their discounted price. Airline A has the cheapest price, which is \$112.50. Airline B however, has a more expensive price of \$120.60.

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

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. A correct process is used to determine the discounted ticket prices and the discounted ticket price for Airline A is correctly calculated; however, the truncated value of 0.33 is inappropriately used for  $\frac{1}{3}$ , which results in an incorrect Airline B discounted ticket price. The calculated prices are correctly compared to identify Airline A as offering the least expensive ticket. This response contains an incorrect solution but provides sound explanations.

# GUIDE PAPER 5

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer. [3]

*Explain how you determined your answer.*

Airline A does

Airline A offers the least expensive ticket because, 25%  
which  
off of \$150, is \$37.5, \$150 - 37.5 = \$112.5, while Airline B does  
a  $\frac{1}{3}$  off 180 which is  $0.5$ , \$180 - 0.5 = \$179.5.

Airline A

$$\frac{x}{150} \times \frac{25}{100}$$

$$\frac{100x}{100} = \frac{3750}{100} \quad x = 37.5$$

$$150 - 37.5 = 112.5$$

Airline B

$$180 - 0.5 = 179.5$$

$$\frac{x}{150} \times \frac{1}{3} \quad \frac{100x}{100} = \frac{50}{100} \quad 0.5$$

## Score Point 2 (out of 3 credits)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. The discounted ticket price for Airline A is correctly calculated using a correct process. The discounted ticket price for Airline B is incorrectly calculated using an incorrect process. The calculated prices are correctly compared to identify Airline A as offering the least expensive ticket. This response appropriately addresses most, but not all, aspects of the task.

## GUIDE PAPER 6

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the least expensive ticket? Be sure to include the discounted ticket price for each airline in your answer. [3]

*Explain how you determined your answer.*

Airline A offers the least expensive ticket because  $150 \div 4 = \$37.5$  but  $180 \div 3 = \$60$  therefore Airline A offers the least expensive ticket. Airline A  $150 \div 4 = \$37.5$   
Airline B  $180 \div 3 = \$60$

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

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. A correct process is shown to determine the correct amounts of the discounts; however, the discounted ticket prices are not determined. The calculated discount prices are correctly compared to identify Airline A as offering the least discount amount. This response appropriately addresses most, but not all, aspects of the task.

## GUIDE PAPER 7

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

A.  $150 \times 0.25 = 37.5$

$37.5 + 150 = 187.50$

B.  $180 \times \frac{1}{3} = 60$

$60 + 180 = 240$

### Score Point 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. A correct process is shown to determine the correct amounts of the discounts; however, the discounts are inappropriately added to the original ticket prices. The airline offering the least expensive ticket is not identified. This response addresses some elements of the task correctly but provides reasoning that is faulty/incomplete.

# GUIDE PAPER 8

Additional

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer. [3]

*Explain how you determined your answer.*

Airline A because if you do proportions you will get airline A ticket for \$37.5.

$$\frac{x}{150} = \frac{25}{100}$$

$$\frac{100x}{100} = \frac{3750}{100}$$

$$x = 37.5$$

## Score Point 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. A correct process is shown to determine the correct amount of the discount for Airline A, but the discounted ticket price for Airline A is not calculated. Although Airline A is correctly identified as offering the least expensive ticket, the choice is not supported with any comparison. The discount for Airline B and the discounted ticket price for Airline B are not addressed. This response addresses some elements of the task correctly but provides reasoning that is incomplete.

## GUIDE PAPER 9

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

The least expensive ticket is airline A because with the discount it will be \$112.50 and with airline B it will be \$156.60.

### Score Point 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The discounted ticket price for Airline A is correct, but not for Airline B. The processes to determine the discounted ticket prices are not explained. The two calculated prices are correctly compared to identify Airline A as offering the least expensive ticket. This response addresses some elements of the task correctly but provides reasoning that is faulty/incomplete.

## GUIDE PAPER 10

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

Because airline A if you do \$150 with the discount which is (25% 150-25 is 120) and (180-1/3 is more money so airline one is the least expensive ticket.

### Score Point 0 (out of 3 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. The discounted ticket price for Airline A is incorrectly calculated by an incorrect process. The process to determine the discounted ticket price for Airline B is incorrect, and the ticket price is not calculated. The comparison is invalid as the Airline B price is not calculated. Holistically, this response shows no overall understanding.

# GUIDE PAPER 11

Additional

48

Airline A and Airline B offer travel discounts to the same destination. The original ticket prices and discounts are described below.

- Airline A: a discount of 25% off the original ticket price of \$150
- Airline B: a discount of  $\frac{1}{3}$  off the original ticket price of \$180

Which airline offers the **least** expensive ticket? Be sure to include the discounted ticket price for each airline in your answer.

*Explain how you determined your answer.*

airline A

## 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 correct answer is provided with no explanation. Per Scoring Policy #3 for 2- and 3-credit responses, if students are directed to provide an explanation, a correct answer with no explanation provided, receives no credit.