New York State Testing Program

2017 Common Core

Mathematics Test

Grade 7

Scoring Leader Materials

Training Set

Grade 7 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters

1 meter = 39.37 inches

1 mile = 5,280 feet

1 mile = 1,760 yards

1 mile = 1.609 kilometers

1 kilometer = 0.62 mile

1 pound = 16 ounces

1 pound = 0.454 kilogram

1 kilogram = 2.2 pounds

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 3.785 liters

1 liter = 0.264 gallon

1 liter = 1,000 cubic centimeters

FORMULAS

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$

2-Point Holistic Rubric

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

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

3-Point Holistic Rubric

3 Point	A three-point response includes the correct solution(s) to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task. This response • indicates that the student has completed the task correctly, using mathematically sound procedures • contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures • may contain inconsequential errors that do not detract from the correct solution(s) and the demonstration of a thorough understanding
2 Point	A two-point response demonstrates a partial understanding of the mathematical concepts and/or procedures in the task. This response • appropriately addresses most, but not all aspects of the task using mathematically sound procedures • may contain an incorrect solution but provides sound procedures, reasoning, and/or explanations • may reflect some minor misunderstanding of the underlying mathematical concepts and/or procedures
1 Point	A one-point response demonstrates only a limited understanding of the mathematical concepts and/or procedures in the task. This response • may address some elements of the task correctly but reaches an inadequate solution and/or provides reasoning that is faulty or incomplete • exhibits multiple flaws related to misunderstanding of important aspects of the task, misuse of mathematical procedures, or faulty mathematical reasoning • reflects a lack of essential understanding of the underlying mathematical concepts • may contain the correct solution(s) but required work is limited
0 Point*	A zero-point response is incorrect, irrelevant, incoherent, or contains a correct solution obtained using an obviously incorrect procedure. Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

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

2017 2- and 3-Point Mathematics Scoring Policies

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

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

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

3. If students are directed to show work, a correct answer with **no** work shown receives **no** credit.

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

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

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

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

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

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

10. Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted). This is not to be confused with a score of zero wherein the student does respond to part or all of the question but that work results in a score of zero.

52 Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

Answer _____

52   Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

$$\frac{5}{8} + \frac{0.4(18)}{-0.2}$$

$$\frac{5}{8} + \frac{7.2}{-0.2} \quad \text{or} \quad \frac{5}{8} + (-2)(18)$$

$$\frac{5}{8} + (-36)$$

$$-35\frac{3}{8} = -35.375$$

Or other valid process

Answer $\underset{\rule{0pt}{0pt}}{-35\dfrac{3}{8}}$ _____

52

Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4\ (7+11)}{-0.2}$$

$$\frac{5}{(-1.5+9.5)} + \frac{2.8+4.4}{-0.2}$$

$$\frac{5}{8} + \frac{7.2}{-0.2}$$

$$.62\frac{5}{8} + -36$$

$$-36\frac{3}{8}$$

Answer $-36\frac{3}{8}$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The expression is evaluated correctly using mathematically sound procedures.

52

Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

$$\frac{5}{(-1.5+9.5)} \quad + \quad \frac{.4(7+11)}{-.2}$$

$$8$$

$$\frac{5}{8} \quad + \quad \frac{2.8 + 4.4}{-.2}$$

$$\frac{5}{8} + \frac{7.2}{-2}$$

$$\frac{5}{8} + {}^-36$$

$$.625 + {}^-36 = {}^-35.375$$

Answer ${}^-35.375$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The expression is evaluated correctly using mathematically sound procedures.

52 Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

$$\frac{5}{(-1.5+9.5)}$$
$$\frac{5}{8}$$

$$\frac{0.4(7+11)}{-0.2}$$
$$\frac{7.2}{-0.2}$$

$$0.625 + \quad -36$$

$$-35.375$$

Answer -35.375

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The expression is evaluated correctly using mathematically sound procedures.

52

Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

$$\frac{5}{8} \qquad \frac{72}{-.2}$$

Show your work.

Answer -35.375

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The expression is evaluated correctly; however, the work only simplifies individual terms and does not demonstrate how to add the terms to arrive at the solution.

52

Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2} \quad \frac{5}{} + \frac{7.2}{-0.2}$$

Show your work.

$$\frac{5}{8} + \frac{7.2}{-0.2}$$

$$.63 + -36$$

$$-35.37$$

Answer ___-35.37___

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. All processes applied are correct; however, the value ⅝ is inappropriately rounded to the nearest hundredths place (0.63), resulting in an incorrect solution. The response correctly addresses only some elements of the task.

52 Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

$$\frac{5}{8} + \frac{0.4(18)}{-0.2}$$

$$\frac{5}{8} + \frac{7.2}{-0.2} = \frac{12.2}{7.8}$$

$$\frac{5}{8} + 12.?$$

Answer $\frac{12.2}{7.8}$

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. Individual numerators and denominators are evaluated correctly; however, the fractions are added incorrectly without determining a common denominator or converting to decimal form. The response correctly addresses only some elements of the task.

52

Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

$$\frac{5}{(-1.5+9.5)}$$

$$5\overline{\smash{\big)}8.0}$$

1.6

$$0.4(18.4)$$

$$\frac{0.4(18.4)}{-0.2}$$

92

$$\begin{array}{r} 92 \\ + 1.6 \\ \hline 93.6 \end{array}$$

Answer ___93.6___

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The work and solution provided are incorrect.

52

Find the value of the expression.

$$\frac{5}{(-1.5+9.5)} + \frac{0.4(7+11)}{-0.2}$$

Show your work.

$$\frac{\overset{5}{\underset{5}{}}}{(-15+9,5)} \;+\; \frac{0.4(7+11)}{-0.2} = \frac{12.2}{7.8}$$

Answer _____7.8_____

Score Point 0 (out of 2 points)

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. Compared to Guide Paper 6, less work is shown and the denominator rather than the whole fraction is inappropriately taken as the solution.

53 A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

Answer $_____

53 A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

$350 + 350 \times 0.2 = 350 + 70 = 420$

$350 + 420 = 770$

$770 \times \$17.50 = \$13,475$

Or other valid process

Answer $\$\underline{13,475}$

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

First Hour ↓

17.50
x 350
$6125

Second Hour ↓

350
x 1.20
420 people

17.50
x 420
$7350

Total ↓

7350
+ 61 25
$13,475

Answer $ 13,475 paid for all tickets.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total ticket revenue is calculated correctly using mathematically sound procedures.

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

$$350 + (350 \cdot 1.2)$$
✓
$$350 + 420 = 770$$

$$770 \cdot 17.5 = \$13,475$$

Answer $ 13,475

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total ticket revenue is calculated correctly using mathematically sound procedures.

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

$$350 \times 17.50 = 6{,}125$$

$$350 \div 10 = 35$$

$$35 + 35 = 70$$

$$350 + 70 = 420$$

$$420 \times 17.50 = 7{,}350$$

$$7{,}350 + 6{,}125 = 13{,}475$$

Answer $ 13,475

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total ticket revenue is calculated correctly using mathematically sound procedures.

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

step 1
first hour =
350 pple
$17.50
$6125

step 2
350 pple
× .20
70 pple

350
+ 70
420 pple

step 3
second hour =
420 pple
$17.50
$7350

step 4
$6125 — first hour
+ $7350 — second hour
$13470 — two hours

Answer $ 13470

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The response applies a mathematically appropriate process; however, a calculation error occurs when adding the ticket revenue from each hour to determine the total revenue ($6125 + $7350 = $13470), resulting in an incorrect solution.

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

$$x \begin{array}{r} 350 \\ .20 \\ \hline 70 \end{array}$$

$$\begin{array}{r} 1 \\ 350 \\ + 70 \\ \hline 4\ 20 \end{array}$$

$$\begin{array}{r} 420 \\ +350 \\ \hline 770 \end{array}$$

$$\begin{array}{r} 770 \\ x\ 17.50 \\ \hline \end{array}$$

Answer $ 134.75

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total number of tickets sold is calculated correctly; however, the decimal point is placed incorrectly in the solution for the total revenue. The response correctly addresses only some elements of the task.

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

open = 8.00am (350 people)

20% of 350 = 350 · .20 = 70

Total people = 350 + 70 = 420

Total price = 17.50 · 420 = 7,350

Answer $ 7,350.00

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The number of tickets sold and the ticket revenue for the second hour are calculated correctly; however, this is misinterpreted as the total without including the ticket sales from the first hour. The response correctly addresses only some elements of the task.

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

$$
\begin{array}{r}
\overset{2}{}\;\overset{1}{} \\
\overset{3}{}\overset{2}{} \\
\$7.50 \\
\times\; 350 \\
\hline
6000 \\
+\;87500 \\
\hline
525000 \\
6125.00
\end{array}
$$

$6125

Answer $ 6125

Score Point 0 (out of 2 points)

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. Only the ticket revenue from the first hour is calculated: the ticket sales during the second hour are not addressed.

53

A museum opened at 8:00 a.m. In the first hour, 350 people purchased admission tickets. In the second hour, 20% more people purchased admission tickets than in the first hour. Each admission ticket costs $17.50.

What was the total amount of money paid for all the tickets purchased in the first two hours?

Show your work.

$$\frac{20}{350}$$

$$\begin{array}{r} 17.50 \\ \times\ 350 \\ \hline \$61.25 \end{array}$$

$$\begin{array}{r} 350 \\ +\ 175 \\ \hline 525 \end{array}$$

$$\begin{array}{r} 17.50 \\ \times\ 525 \\ \hline 9187.5 \end{array}$$

$$\begin{array}{r} 9187.50 \\ +\ 61.25 \\ \hline 9{,}248.75 \end{array}$$

Answer $ 9,248.75

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task. The work and solution are incorrect.

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

Answer $_____

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$\frac{\$2.94}{\$42.00} = 0.07 = 7\%$$
$$0.07 \times \$58 = \$4.06$$

Or other valid process

Answer $ ___4.06___

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$\frac{2.94}{42} = \frac{X}{58}$$

$58 \times 2.94 = 170.52$

$170.52 \div 42 = 4.06$

Answer $ __4.06__

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The tax paid on the $58 item is calculated correctly using a proportion.

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$2.94\overline{)42} = 14.29 \qquad 14.29\overline{)58} = 4.058$$

$$4.058 = 4.06$$

Answer $ 4.06

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The response correctly calculates the reciprocal of the tax rate and uses that result to determine the tax to be paid on the $58 item.

54 Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$42 \cdot 5\% = 2.1$$
$$42 \cdot 6\% = 2.52$$
$$42 \cdot \underline{7}\% = 2.94$$

$$58 \cdot 7\% = 4.06$$

Answer $ __4.06__

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. A trial-and-error method is used to determine the 7% tax rate which is then applied correctly to calculate the amount of sales tax on the $58 item.

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$\frac{2.94}{42} = \frac{x}{58}$$

$$\frac{\cancel{42}x}{\cancel{42}} = \frac{170.52}{42}$$

$$x = 4.06$$

$$\begin{array}{r} 58 \\ + \ 4.06 \\ \hline 62.06 \end{array}$$

Answer $__62.06__

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. A proportion is used to correctly determine the amount of sales tax on the $58 item; however, the total cost of the item including tax is chosen as the solution rather than the tax alone. The response contains an incorrect solution but applies a mathematically appropriate process.

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$2.94 \div 42.00 = 0.0735$$

$$0.0735$$
$$\times \quad 58$$
$$05880$$
$$03675$$
$$4.263$$

312

Answer $ 4.26

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The sales tax is appropriately divided by the cost of the item to determine the tax rate; however, a calculation error results in an incorrect tax rate. The incorrect rate is then used to correctly calculate the tax paid on the $58 item. The response contains an incorrect solution but applies an appropriate process.

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$\frac{2.94}{42.00} = \frac{7}{100}$$

7% tax

$$\begin{array}{r} 58 \\ \times\ .7 \\ \hline 4.06 \end{array}$$

Answer $ 4.06

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. A proportion is used to correctly determine the tax rate; however, although the solution for the amount of sales tax for the $58 item is correct, the tax rate is represented as a decimal incorrectly in the calculation. This response correctly addresses only some elements of the task.

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

$$42.00$$
$$-\ 2.94$$
$$\overline{39.06}$$

Answer $ 39.06

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The tax paid is inappropriately subtracted from the pre-tax price of the item and no attempt is made to address the tax rate or the $58 item.

54

Mick paid $2.94 in sales tax on an item that cost $42.00 before tax. At that rate, how much would he pay in sales tax for an item that costs $58 before tax?

Show your work.

2.94 + 42.00 =

2.94
+42.00
44.94

3.06
-58.00
54.94

Answer $ 54.94

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The total cost of the item including tax is calculated correctly; however this operation, as well as the other calculation shown, is irrelevant to the task.

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

Answer _____ customers on Saturday

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

$$\frac{90}{500} = 0.18 = 18\%$$

$$0.18 \times 700 = 126$$

Or other valid process

Answer ___126___ customers on Saturday

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

$$\frac{90}{500} = \frac{x}{700}$$

$$\frac{500x}{500} = \frac{63000}{500}$$

$$x = 126$$

Answer __126__ customers on Saturday

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. An appropriate proportion is written and solved correctly to determine the number of customers selected on Saturday.

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

500 Customers
90 selected

$\dfrac{90}{500} = .18$

18 • 5 = 90

700 Customers
X selected

$\dfrac{x}{700} = .18$

18 • 7 = 126

126 selected

Answer ___126___ customers on Saturday

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The probability of being selected for the survey and the number of customers selected on Saturday are calculated correctly using mathematically sound procedures.

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

$$500 \cdot (.18) = 90$$

$$700 \cdot (.18) = 126$$

Answer __126__ customers on Saturday

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The probability of being selected for the survey and the number of customers selected on Saturday are calculated correctly using mathematically sound procedures.

55 At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

Days	customers	survcyd
FRIDAY	500	90
Saturday	700	

$$90 \% \ 500 = 0.18$$

$$700 \% \ 500 = 1.4$$

Answer __252__ customers on Saturday

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The probability of being selected for the survey is calculated correctly; however, the solution for the number of customers selected on Saturday is incorrect. The response correctly addresses only some elements of the task.

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

$$\begin{array}{r} 6 \\ 90\overline{)500} \end{array} \qquad \begin{array}{r} 116 \\ 6\overline{)700} \end{array}$$

Answer ___116___ customers on Saturday

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The proportion of customers selected for the survey is calculated using an appropriate operation, but with an incorrect result due to a calculation error $(500 \div 90 = 6)$. This incorrect proportion is correctly applied to the 700 customers in the store on Saturday (the actual value $116\frac{2}{3}$ is truncated, reflecting that there cannot be a fractional number of customers). The response contains an incorrect solution but applies an appropriate process.

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

$500 \div 5.5 = 90$

$700 \div 5.5 = 127$

Answer _____127_____ customers on Saturday

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The proportion of customers selected for the survey is calculated using an appropriate operation but is incorrect due to a truncation error ($5\frac{5}{9}$ is truncated to 5.5); however, this incorrect proportion is correctly applied to the 700 customers in the store on Saturday (the actual value $127\frac{27}{100}$ is truncated, reflecting that there cannot be a fractional number of customers). The response contains an incorrect solution but applies an appropriate process.

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

700 +500+90 = 1290

700
500
90
1290

1290 Customers On Saturday

Answer ___1290___ customers on Saturday

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Adding all values from the prompt is irrelevant and incorrect.

55

At a store, customers are randomly selected to participate in a survey. On Friday, there were 500 customers at the store. Of those, 90 were selected to participate in the survey. On Saturday, the store manager expects 700 customers in the store. If the probability of being selected to participate in the survey on Saturday is the same as it was on Friday, how many customers will be selected to participate in the survey on Saturday?

Show your work.

700   2 hundreds 110

500 =   90   700 = 110

Answer ___110___ customers on Saturday

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The work and solution are incoherent and incorrect.

56

A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

Answer _____ additional feet of rope

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

$$16 \text{ yd} \times 3 \frac{\text{ft}}{\text{yd}} = 48 \text{ ft} \qquad 12.5 \text{ yd} \times 3 \frac{\text{ft}}{\text{yd}} = 37.5 \text{ ft}$$

$$48 \frac{\text{ft}}{\text{rope}} \times 2 \text{ ropes} = 96 \text{ ft}$$

$$96 + 37.5 + 123.25 = 256.75$$

$$300 - 256.75 = 43.25$$

Or other valid process

Answer ___43.25___ additional feet of rope

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

16x3=48 48x2=96 12.5x3=37.5   123.25
                                       96+37.5+123.25=256.75
              300-256.75=43.25

Answer [43.25] additional feet of rope

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The length of additional rope required is calculated correctly using mathematically sound procedures.

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

1 yard=3 feet   96+37.5+123.25=256.75

3 x 16=48 x 2=96

12.5 x 3=37.5   300-256.75=43.25

123.25

Answer ⟨43.25⟩ additional feet of rope

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The length of additional rope required is calculated correctly using mathematically sound procedures.

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

300-(48+48+37.5+123.25)=43.25   16x3=48
                                       12.5x3=37.5

Answer 43.25 additional feet of rope

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The length of additional rope required is calculated correctly using mathematically sound procedures.

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

32+12.5+123.25=167.75

300-167.75= 132.25

Answer [132.3] additional feet of rope

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total length of existing rope is appropriately subtracted from 300 feet to determine the additional rope required; however, values given in yards are not converted into feet. The response correctly addresses only some elements of the task.

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

```
16x3=48                               300-208.75=91.25
12.5x3=37.5        16+12.5+123.25=151.75
300-151.75=148.25
123.25+37.5+48=208.75
```

Answer [91.25] additional feet of rope

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total length of existing rope is appropriately subtracted from 300 feet to determine the additional rope required; however, the existing length is calculated incorrectly. Only one 16 yard piece is included in the calculation. The response correctly addresses only some elements of the task.

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

16+12.5+123.25=151.75

300-151.75=148.25

Answer 148.3 additional feet of rope

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total length of existing rope is appropriately subtracted from 300 feet to determine the additional rope required; however, values given in yards are not converted into feet and only one 16 yard piece is included in the calculation. The response correctly addresses only some elements of the task.

56 A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

2x16=32

32+12.5=44.5

123.25=124

124+44.5+32=200.5

300.0-200.5=99.5

Answer ⟨ 99.5 ⟩ additional feet of rope

Score Point 0 (out of 2 points)

Although some elements may contain correct procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task. The total length of existing rope is subtracted from 300 feet to determine the additional rope required; however, the length of existing rope is calculated incorrectly. Values given in yards are not converted into feet and four 16 yard pieces of rope are included in the calculation rather than two.

56

A school club needs 300 feet of rope for a project. They have the amounts of rope listed below.

- 2 pieces of rope that are each 16 yards in length
- 1 piece of rope that is 12.5 yards in length
- 1 piece of rope that is 123.25 feet in length

How much additional rope, in feet, does the school club need in order to have enough rope for their project?

Show your work.

[16(2)] /3 + 12.5 /3 + 123.25 =

Answer 130.9 additional feet of rope

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Values given in yards are incorrectly converted into feet by dividing rather than multiplying by 3 and the total length of rope is never subtracted from 300 feet to determine the amount of additional rope required.

57 The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

Answer _____ grams

57

The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

$$\frac{34.932}{4.1} = 8.52$$

$$8.52 \times 15.3 = 130.356$$

$$\approx 130.4$$

Or other valid process

Answer _____130.4_____ grams

57

The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932 ÷ 4.1 = 8.52	4.1
47.712 ÷ 5.6 = 8.52	5.6
61.344 ÷ 7.2 = 8.52	7.2
99.684 ÷ 11.7 = 8.52	11.7
m	15.3

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

$$34.932 \div 4.1 = 8.52$$
$$47.712 \div 5.6 = 8.52$$
$$61.344 \div 7.2 = 8.52$$
$$99.684 \div 11.7 = 8.52$$
$$15.3 \times 8.52 = m$$

m = 130.356 round to nearest tenth = 130.4

Answer __130.4__ grams

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The unit rate is correctly calculated and applied to the 15.3 cubic centimeter piece of metal and the solution is rounded to the nearest tenth of a gram.

57

The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

.11737089

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

4.1 ÷ 34.932 = .11737089 × 10

15.3 ÷ 11737089 = 130.356 = 130.4

Answer ___130.4___ grams

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The unit rate is correctly calculated and applied to the 15.3 cubic centimeter piece of metal and the solution is rounded to the nearest tenth of a gram.

57 The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

$$\frac{v}{m} \quad \frac{4.1}{34.932} = \frac{15.3}{x}$$

$$\frac{534.4596}{4.1} = \frac{4.1x}{4.1}$$

$$130.356 = x \quad \approx \quad 130.4$$

$$\frac{7.2}{61.344} = \frac{15.3}{x}$$

$$\frac{938.5632}{7.2} = \frac{7.2x}{7.2}$$

$$130.356 = x$$

about

Answer ____130.4____ grams

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Appropriate proportional equations are solved correctly and the solution is rounded to the nearest tenth of a gram.

57

The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

unit rate - 8.52 gram/cubic centimeters

Mass (grams)   Volume (cubic centimeters)

34.932 ÷ 4.1 = 8.52
47.712 ÷ 5.6 = 8.52
61.344 ÷ 7.2 = 8.52
99.684 ÷ 11.7 = 8.52
(?) = 15.3 × 8.52
130.536

Answer 130.356 grams

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The unit rate is correctly calculated and applied to the 15.3 cubic centimeter piece of metal; however, the solution is not rounded to the nearest tenth of a gram as required.

57

The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

8.52
7

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

$$34.932 \div 4.1 = 8.52$$

$$\begin{array}{r} 15.3 \times \\ \times\ 8.52 \\ \hline 130.56 \to 130.6 \end{array}$$

Answer ___130.6___ grams

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The unit rate is calculated correctly and applied to the 15.3 cubic centimeter piece of metal; however, a calculation error results in an incorrect solution. The solution is appropriately rounded to the nearest tenth of a gram. The response contains an incorrect solution but provides sound procedures.

57 The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

$34.932 \div 4.1 = 8.52$

$47.712 \div 5.6 = 8.52$

$61.344 \div 7.2 = 8.52$

$99.684 \div 11.7 = 8.52$

$8.52 = 8.50$

Answer ___8.50___ grams

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The unit rate is calculated correctly; however, it is taken as the solution rather than applying it to the 15.3 cubic centimeter piece of metal. The response correctly addresses only some elements of the task.

57

The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

8.52
8.52

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

Answer ___130.4___ grams

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the solution is correct and the unit rate is identified next to the table in the prompt, there is no work to support how these values were obtained. Per Scoring Policy #3, a correct answer with no work shown receives no credit.

57

The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

PIECES OF METAL

Mass (grams)	Volume (cubic centimeters)
31.932	41
41.712	56
61.344	72
91.684	117

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

Show your work.

$$11.7 - 7.2 = 4.5$$
$$7.2 - 5.6 = 1.6$$
$$5.6 - 4.1 = 1.5$$

Answer _____130_____ grams

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The work shown is irrelevant and only calculates the differences between adjacent rows in the table with no indication of how the value 130 is obtained from this process.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	− 3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

_____

_____

_____

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

Answer _____ price per gram of gold

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

The total change is all the weekly changes added together,

$1.25 - 3.125 + 0.625 + 1.5 = +0.25$

It is a positive number so that means it was an increase of $0.25

   or other valid response

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

$39.28 - 0.25 = 39.03$

   or other valid process

Answer ___39.03___ price per gram of gold

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

x dollars
x+ 1.25 - 3.125 + 0.625 + 1.5 = $0.25 more than the original price from week 1 to the end of week 4
As a result, the price increases by $0.25 from the beginning of week 1 to the end of week 4

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

end of week four = $39.28
$39.28- $0.25 = $39.03

Answer   39.03   price per gram of gold

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The explanation correctly describes how to determine the net change in price and identifies the change as an increase. The initial price is calculated correctly.

58 The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

It increased by 0.25, I added all of them up and got 0.25.

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

$$39.28 - .25 = 39.03$$

Answer **39.03** price per gram of gold

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The explanation correctly describes how to determine the net change in price and the initial price is calculated correctly.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

The price of one gram of gold changed from the beginning of week 1 to the end of week 4 by +0.25. The price increased because if the beginning price was 0, the end price would be, if calculated, +0.25, which is an increase

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

+0.25 ← change between price from beginning of week 1 to the end of week 4

39.28 − 0.25 = 39.03

Answer $39.03 price per gram of gold

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The explanation correctly describes how to determine the net change in price and the initial price is calculated correctly.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

(handwritten work at left:)
1.250
1.625
+1.50
3.275
−3.125
$ 0.050

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

The price increased by $0.05. I found my answer by adding weeks 1, 3, and 4 together then subtracting week 2 from that.

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

39.28
−0.05
39.23

Answer $39.23 price per gram of gold

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. A correct process is described to determine the net change in price; however, calculation errors result in an incorrect value. While the statement "*subtracting week 2 from that*" is technically incorrect, it is interpreted as understanding that the addition of a negative number is equivalent to subtraction of the absolute value of the number. The initial price is determined correctly based on the previous calculation errors. The response contains an incorrect solution but applies sound procedures and reasoning.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

I added all of the weekly change together and got $0.25

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

39.28-0.25= 39.03

Answer 39.03 price per gram of gold

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The explanation correctly describes how to determine the net change in price and the initial price is calculated correctly; however, the explanation does not state whether the change is an increase or a decrease as required. The response appropriately addresses most, but not all aspects of the task.

58 The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

The price increased by 25¢. I took away 3.125 from 1.25 then added 0.625 and 1.5 and 1.5 and got 0.25.

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

Answer 39.03 price per gram of gold

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The explanation correctly describes how to determine the net change in price and the initial price is calculated correctly; however, no work is shown to calculate the initial price. The response appropriately addresses most, but not all aspects of the task.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

the pice decreased. i added up all of the positive numbers and subracted it by the negitve number.

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

1.25 +0.625+ 1.5-3.125=0.25

Answer .25 price per gram of gold

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The explanation and work correctly describe how to determine the net change in price; however, the change is misinterpreted as a decrease and no attempt is made to solve for the initial price. The response addresses some elements of the task correctly but reaches an inadequate solution based on faulty and incomplete reasoning.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

The price decreased because by doing
1.25 − 3.125 + 0.625 + 1.5 = 0.25, and
0.25 < 1.25.

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

$39.28 − 1.5 − 0.625 + 3.125 − 1.25$
$=)$

41.53

Answer 41.53 price per gram of gold

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The explanation correctly describes how to determine the net change in price; however, the change is misinterpreted as a decrease by comparing it to the change from week 1 and the initial price is calculated incorrectly. The response addresses some elements of the task correctly but reaches an inadequate solution based on reasoning that is faulty.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

I added 1.25 + -3.125 + 0.625 + 1.5 and i got 0.25 grams of gold.

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

$$39.28 + 4$$
$$\overline{39.33}$$

Answer 44.28 price per gram of gold

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. A correct process is described to determine the net change in price; however, the explanation does not state whether the change is an increase or a decrease and the change is incorrectly reported as grams rather than dollars. The calculation of the initial price is incorrect.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

> The price increased. 1.25 is less than 1.5. This is because you can add a zero at the end of any decimal. So, 1.5 is really 1.50.
> Now that both numbers have two digits after the decimal, we can decide whether 25 or 50 is the greater number. (since the number BEFORE the decimal is the same for both numbers) 50 is the greater number (in fact, two times greater...) so, 1.5 is greater than 1.25.
> This means that the price of one gram of gold has increased :)
> (.25)

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

(NO STUDENT RESPONSE GIVEN)

Answer 29.46 price per gram of gold

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the explanation contains the correct net change in price, it is obtained using an incorrect procedure: the difference between the weekly changes for week 1 and week 4 is calculated rather than the sum of all four weekly changes. In addition, the initial price is calculated incorrectly with no work shown.

58

The table below shows the weekly change in the price of one gram of gold for four weeks.

ONE GRAM OF GOLD

Week	Weekly Change in the Price (dollars)
1	+1.25
2	−3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

Explain how you found your answer.

first It started at +1.25 for the week 1 then dropped to −3.125 by week 2 and increest by 0.625 and 1.5 on Week 3 and 4

At the end of week 4, the price per gram of gold was $39.28. What was the price per gram of gold at the beginning of week 1?

Show your work.

$$39.28 + 1.25 = 52.28$$

Answer __52.28__ price per gram of gold

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The explanation only repeats the information in the table in verbal form, misinterprets the information for week 2, and the initial price is calculated incorrectly.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

Answer $_____

59 Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$$\frac{750}{500} = 1.5 \qquad 1.5 \times 0.9 = 1.35 \qquad 1.35 \times 700 = 945$$

Or other valid process

Answer $ \underline{\qquad 945 \qquad}

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

① Hallum Hardware

sq. feet → $\frac{500 - 700}{}$

cost → 750 - X

$\frac{500x}{500} = \frac{525000}{500}$

X = $1,050 for 700 square feet

② Guillen Floors - 100% - 10% = 90% = 0.9

1050 × .9 $945

Answer $ __945__

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The cost of 700 square feet of carpet at Guillen Floors is calculated correctly.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

(handwritten left of table: 300, 500, 500)
(handwritten right of table: 750, 750, 750)

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

750 ÷ 500 = $1.50
$1.50 × .10 = 0.15
$1.50 − 0.15 = 1.35
$1.35 × 700 = $945

Answer $ _945_

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The cost of 700 square feet of carpet at Guillen Floors is calculated correctly.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

$$\frac{c}{a} = 1.5$$

$$\begin{array}{r} 1.5 \\ x.9 \\ \hline 1.35 \end{array}$$

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$$\begin{array}{r} 1.35 \\ \times 700 \\ \hline 945 \end{array}$$

Answer $ _945_

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The cost of 700 square feet of carpet at Guillen Floors is calculated correctly. Although specific values are not used to calculate the price per square foot for Hallum Hardware, the procedure is shown as an appropriate formula, $c/a = 1.5$.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$1.50 + 0.15

$1.50 × .10 = .15

$1.35
× 700

1.50
- .15
1.35

1.35
+ 700
945

945

Answer $ ___945___

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The cost of 700 square feet of carpet at Guillen Floors is calculated correctly; however, the calculations do not show how the cost per square foot at Hallum Hardware was obtained. The response appropriately addresses most, but not all aspects of the task.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$750 \div 500 = 1.5$

$700 \times 1.5 = 1050$

$1050(0.10)$
$= 105$

$1050 + 105$
$= 1155$

Answer $ 1155

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The cost of 700 square feet of carpet at Hallum Hardware is calculated correctly; however, the 10% discount is added to the price rather than subtracted to determine the cost of the carpet at Guillen Floors. The response appropriately addresses most, but not all aspects of the task.

GUIDE PAPER 6

59 Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

$= 1.5$

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$P = \% \cdot w$
$X = .9 \cdot 1.5$
$X = 1.35$

$700 \cdot 1.35 = 945$

Answer $ \underline{945}$

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The cost of 700 square feet of carpet at Guillen Floors is calculated correctly; however, the calculations do not show how the cost per square foot at Hallum Hardware was obtained. The response appropriately addresses most, but not all aspects of the task.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$$\frac{110}{1.5} = \frac{110}{100}$$

1.35

0.15

Answer $ 945

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The 10% discount is correctly applied to the cost per square foot of Hallum Hardware's prices to obtain the cost per square foot at Guillen Floors; however, the work does not show how the unit rate at Hallum Hardware was calculated or how the unit rate was applied to the amount of carpet purchased. The response contains the correct solution but the required work is limited.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$$750 \div 500 = 1.5$$

$$1,500 \div 1000 = 1.5$$

$$1000 - 300 = 700$$

$$300 \times 1.5$$
$$\boxed{450}$$

Answer $ \underline{\quad 450 \quad}$

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The cost per square foot at Hallum Hardware is calculated correctly. An attempt is then made to calculate the cost of 700 square feet of carpet using the 300 square foot difference from the 1,000 square foot entry in the table; however, it only calculates the cost of 300 square feet without subtracting that result from the $1,500 cost of 1,000 square feet. Also, the 10% discount is never applied to determine the prices at Guillen Floors. The response addresses some elements of the task correctly but reaches an inadequate solution based on incomplete reasoning.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

$$\frac{750}{500} = 1.5 \qquad 10\% - 1.5$$

Answer $ _____

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The cost per square foot at Hallum Hardware is calculated correctly; however, it is not used to calculate any costs at Guillen Floors. The response addresses some elements of the task correctly but reaches an inadequate solution based on incomplete reasoning.

59

Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.   1050

Answer $_____945_____

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the correct cost is provided for 700 square feet of carpet at both stores, no work is shown to support how these values were obtained. Per Scoring Policy #3, if students are directed to show work, a correct answer with no work shown receives no credit.

59 Hallum Hardware created flyers to advertise a sale on a certain type of carpet. A portion of the flyer is shown below.

HALLUM HARDWARE
CARPET SALE

Area (square feet)	Cost (dollars)
500	750
1,000	1,500
1,500	2,250
2,000	3,000

(handwritten annotations: +500, +500, +500, +500 on left; +750, +750, +750 on right)

Guillen Floors advertises the same type of carpet at a cost of 10% less per square foot than Hallum Hardware. Determine the cost of 700 square feet of the carpet if it is bought from Guillen Floors.

Show your work.

(handwritten table)

Area	cost
2,500	3,750
3,000	4,500
3,500	5250
4,000	6000
4,500	6750
5,000	7500
5,500	8250
6,000	9000
6,500	9750
7,000	10500

Answer $ 10500

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The cost of 7,000 square feet of carpet at Hallum Hardware is calculated correctly; however, this operation is irrelevant to the task and no attempt is made to calculate the reduced price at Guillen Floors.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

Ben's estimate _____ grams

Exact amount _____ grams

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

Ben's Estimate:

$0.2 \times 35 = 7$

Exact Amount:

$1 - 0.52 - 0.26 = 0.22$

$0.22 \times 35 = 7.7$

Or other valid process

Ben's estimate ____7____ grams

Exact amount ____7.7____ grams

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

0.52 + 0.26 = 0.78
1.00 - 0.78 = 0.22
0.22 * 35 = 7.7
0.2 * 35 = 7

Ben's estimate ⬚ 7 ⬚ grams

Exact amount ⬚ 7.7 ⬚ grams

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Ben's estimate and the exact amount of nickel are both calculated correctly using mathematically sound procedures.

GUIDE PAPER 2

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

$$
\begin{array}{r}
.52 \\
+ .26 \\
\hline
.78
\end{array}
$$

$$
\begin{array}{r}
1.00 \\
- .78 \\
\hline
.22
\end{array}
$$

.20

$$
\begin{array}{r}
35 \\
\times .20 \\
\hline
00 \\
+ 100 \\
\hline
7.00
\end{array}
$$

Ben's Estimate
.20 × 35 = 7

Exact Amount
.22 × 35 = 7.7

$$
\begin{array}{r}
35 \\
\times .22 \\
\hline
70 \\
+ 100 \\
\hline
7.70
\end{array}
$$

Ben's estimate ___7___ grams

Exact amount ___7.7___ grams

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Ben's estimate and the exact amount of nickel are both calculated correctly using mathematically sound procedures.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

1/0.2=35/x 1x=7 0.52+0.26=0.78 1.00-0.78=0.22 1/0.22=35/x 1x=7.7

Ben's estimate [7] grams

Exact amount [7.7] grams

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Ben's estimate and the exact amount of nickel are both calculated correctly using proportionality equations.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

bens strategy: 1-0.52-0.26=0.18=about 0.20   35(0.2)=7
35(0.18)=6.3 grams

Ben's estimate [7] grams

Exact amount [6.3] grams

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. Ben's estimate is calculated correctly; however, a calculation error results in using an incorrect proportion of nickel (18% rather than 22%) to determine the exact amount. The response contains an incorrect solution but provides sound procedures.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

> Ben subtracted .52 grams and .26 grams from 1 gram. The answer is .22 grams. Then you would have to multiply .2 by 35. The anser is 7.

Ben's estimate [7] grams

Exact amount [7.7] grams

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. Ben's estimate and the exact amount of nickel are both calculated correctly; however, the work does not show the multiplication step to determine the solution for the exact amount. The response appropriately addresses most, but not all aspects of the task.

60 A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

$$0.52$$
$$+ 0.26$$
$$0.78$$

$$5 = 1.$$
$$7 \cdot 5 = 15$$

$$\begin{array}{r} 0.9^{10} \\ 1.07 \\ - 0.78 \\ \hline 0.22 \end{array}$$

$$\begin{array}{r} {}^{1}0 \\ \times\ 2.2 \\ \hline 2.2 \end{array}$$

$$\begin{array}{r} 2.2 \\ 2.2 \\ 2.2 \\ + 1.1 \\ \hline 7.7 \end{array}$$

Ben's estimate _____7_____ grams

Exact amount _____7.7_____ grams

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The exact amount of nickel is determined correctly by calculating 2.2×3.5 via addition, an equivalent operation to 0.22×35; however, the work is unclear about how the correct solution for Ben's estimate was obtained. An incorrectly placed decimal point of 0.22 in the multiplication $10 \times 2.2 = 2.2$ is an inconsequential error that does not detract from the response. The response appropriately addresses most, but not all aspects of the task.

60 A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

Ben's Strategy
35 g of substance
35 ÷ 2 = 17.5

Exact
0.52 copper
+ 0.26 zinc
0.78

1.00
- 0.78
0.22

35
x .22
70
+700
7.70

Ben's estimate ___17.5___ grams

Exact amount ___7.7___ grams

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The exact amount of nickel is calculated correctly; however, Ben's estimate is determined incorrectly by dividing the total mass in two. The response reflects a lack of essential understanding of the underlying concepts.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

> Ben's stratigy was wrong because he got .2g of nickel but the actual amount is .22g of nickel because .22g and .52g and .26g adds up to 1g

Ben's estimate | .2 | grams

Exact amount | .26 | grams

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The exact amount of nickel in 1 gram of the substance is calculated correctly; however, the amount of nickel in 35 grams of the substance is not addressed. The response addresses some elements of the task correctly but reaches an inadequate solution based on reasoning that is incomplete.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

0.2 x 35 = 7

Ben's estimate [7] grams

Exact amount [7] grams

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. Ben's estimate is calculated correctly; however, the exact amount of nickel is not addressed. The response addresses some elements of the task correctly but reaches an inadequate solution based on reasoning that is incomplete.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

$$
\begin{array}{r}
7.7 \\
2)\,7.7 \\
\hline
3\,5.4
\end{array}
$$

$.48 \cdot 33 =$

$$
\begin{array}{r}
.52 \\
+\ .26 \\
\hline
.78
\end{array}
$$

$$
\begin{array}{r}
27.7 \\
+\ \ 7 \\
\hline
4 \cdot 7
\end{array}
$$

Ben's estimate ___7___ grams

Exact amount ___7.7___ grams

Score Point 0 (out of 3 points)

Holistically, this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although correct solutions are provided for both Ben's estimate and the exact amount of nickel, the work shown does not support this solution.

60

A single gram of a certain metallic substance has 0.52 gram of copper and 0.26 gram of zinc. The remaining portion of the substance is nickel. Ben estimated that 0.2 gram of nickel is in 1 gram of the substance. He used this to estimate the amount of nickel in 35 grams of the substance. Find the result of Ben's estimation strategy. Then, find the exact amount of nickel in 35 grams of the substance.

Show your work.

.2/.52=.38
35/.26=134

Ben's estimate   .38   grams

Exact amount   134   grams

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The work and solutions are incorrect.

61

Last year, a property manager bought five identical snow shovels and six identical bags of salt. The total cost of the snow shovels was $172.50, before tax, and each bag of salt cost $6.20, before tax.

This year, the property manager bought two identical snow shovels and four identical bags of salt. The total cost of the snow shovels was $70.38, before tax, and the total cost of the bags of salt was $26.04, before tax.

Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Answer _____ and _____ %

61

Last year, a property manager bought five identical snow shovels and six identical bags of salt. The total cost of the snow shovels was $172.50, before tax, and each bag of salt cost $6.20, before tax.

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Last year:

$$\frac{172.50}{5} = \$34.50 \text{ shovels} \qquad \$6.20 \text{ salt}$$

This year:

$$\frac{70.38}{2} = \$35.19 \text{ shovels} \qquad \frac{26.04}{4} = \$6.51 \text{ salt}$$

Or other valid process

Percent Change:

$$\% \text{ change} = \frac{new - original}{original} \times 100$$

$$\frac{35.19 - 34.50}{34.50} \times 100 = \frac{0.69}{34.50} \times 100 = 2\% \text{ shovels}$$

$$\frac{6.51 - 6.20}{6.20} \times 100 = \frac{0.31}{6.20} \times 100 = 5\% \text{ salt}$$

Answer ____Salt____ and ____5____ %

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Show your work.

Shovels	bags of salt
Year 1: $172.5 ÷ 5 = $34.5 per	Yr 1: $6.20 per
Year 2: $70.38 ÷ 2 = $35.19 per	Yr 2: $26.04 ÷ 4 = $6.51 per

Percent increase:

$35.19 − 34.5 = .69

×2.898...

$.69 = 1%
———
34.5   100%

×2.898550725...

27. ▷5 %

Percent increase:

6.51 − 6.2 = .31

×16.12903226...

$.31 = 5%
———
$6.2   100%

×16.12903226...

Answer _bags of salt_ and ___5___ %

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The percent increase in the cost of each item is calculated correctly and the bags of salt are chosen as having the greatest percent increase. An incorrect statement in the work (2% > 5%) is considered an inconsequential error that does not detract from the correct solution and the demonstration of a thorough understanding.

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Snow shovels:

$$\frac{35.19 - 34.50}{34.50} = 0.02$$

2%

$$\frac{6.51 - 6.20}{6.20} = 0.05$$

5%

Bag of salt

Answer ___Bag of Salt___ and _____5_____ %

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The percent increase in the cost of each item is calculated correctly and bags of salt are chosen as having the greatest percent increase.

GUIDE PAPER 3

61

Last year, a property manager bought five identical snow shovels and six identical bags of salt. The total cost of the snow shovels was $172.50, before tax, and each bag of salt cost $6.20, before tax.

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

F: greatest percent increase.

$\text{S}_{\text{h}}\ \frac{.69}{34.5} \cdot 100$
increase 2%

$\text{S}_{\text{a}}\ \frac{.31}{6.20} \cdot 100$
5% increase

G. 5 snowshovel
6 bags of salt

Last year

before tax < shovels $172.50 ÷14
34.5 each
Salt - $37.20

$6.20 per bag

This year

2 snow shovels
before tax < $70.38 35.19 each
4 bags of salt
$26.04
6.51 per bag

Answer bags of salt and _____5_____ %

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The percent increase in the cost of each item is calculated correctly and the bags of salt are chosen as having the greatest percent increase.

61

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Last year

Shovels: $\frac{.69}{34.50} \times 100$ 8%   salt: $\frac{.31}{6.20} \times 100$ 5%

$\frac{172.50}{5} = \frac{\$34.50}{1}$ per snow shovel

$\frac{37.20}{6} = \frac{\$6.20}{1}$ per bag of salt

This year

$\frac{70.38}{2} = \frac{\$35.19}{1}$ per snow shovel

$\frac{26.04}{4} = \frac{\$6.51}{1}$ per bag of salt

Answer ___Shovels___ and ___8___ %

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The percent increase in the price of a bag of salt is calculated correctly; however, a calculation error occurs when determining the percent increase in the price of a snow shovel ($^{.69}/_{34.50} \times 100 = 8\%$), resulting in an incorrect solution. The response contains an incorrect solution but provides mathematically sound procedures.

61

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Old

S.S. 172.50 = 34.5

B.S. = 6.20

$$\frac{Original - new}{original}$$

New S.S. = 35.19

B.S. = 6.51

S.S = 2%

B.S = 5%

Answer Bags of Salt and 5 %

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The percent increase in the cost of each item is calculated correctly and the bags of salt are chosen as having the greatest percentage increase; however, although a formula is provided, the actual calculations are not shown. The response appropriately addresses most, but not all aspects of the task.

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Last years | this year

$34.50/shovel | $35.19

snow shovel 5)172.50 | 2)70.38

bag salt $6.20 | 6.51
| 4)26.04

snow shovel

P=8(whole) 35.19
.69=x(34.50) -34.50
————— ———— .69
3450 34.50

.02 =x
28

bag salt

P=8(whole)
.31= x(6.20)
————— ————
6.20 6.20

.05 =x
58

28

5

Answer ___28___ and ___5___ %

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The percent increase in the cost of each item is calculated correctly; however, both increases are reported on the answer blanks and no choice is made for which item had the greatest percent increase. The response appropriately addresses most, but not all aspects of the task.

61
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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Last year
$172.50 + (6.20 \cdot 6)$
$172.50 + 37.2$
$\lor$
$209.70

This year
$70.38 + 26.04$
$96.42

$5 \div 172.50 \div 5$
$\lor$
$34.50
|
each

$70.38 \div 2$
35.19
·
each

.69

$37.2 \div 6$
$\lor$
$6.20
·
each

.31

$26.04 \div 4$
$6.51
·
each

$\frac{31}{100} \times \frac{x}{69}$

$69 \cdot 31 = 100 x$
$2139 = 21.39$

Answer <u>Snow shovels</u> and <u>   22   </u> %

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The absolute change in the price of each item is calculated correctly; however, an incorrect process is applied to determine the percent increase in the price. The response addresses some elements of the task correctly but reflects a lack of essential understanding.

61

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Snow Shovel - 172.50 - 70.38

Bags = 6.20 - 26.04

$$\frac{172.50 - 70.38}{172.50} = \frac{}{100} = 59.2\% \Rightarrow 59\%$$

$$\frac{26 \cdot 0.4 - 6.20}{6.20} = \frac{}{100} \quad 320\%$$

Answer _Bags of Salt_ and _320_ %

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The formula for percent increase is used correctly and results are rounded to the nearest percent; however, the calculations use values for total cost directly from the prompt without solving for the costs per individual items. The response addresses some elements of the task correctly but reaches an inadequate solution based on faulty and incomplete reasoning.
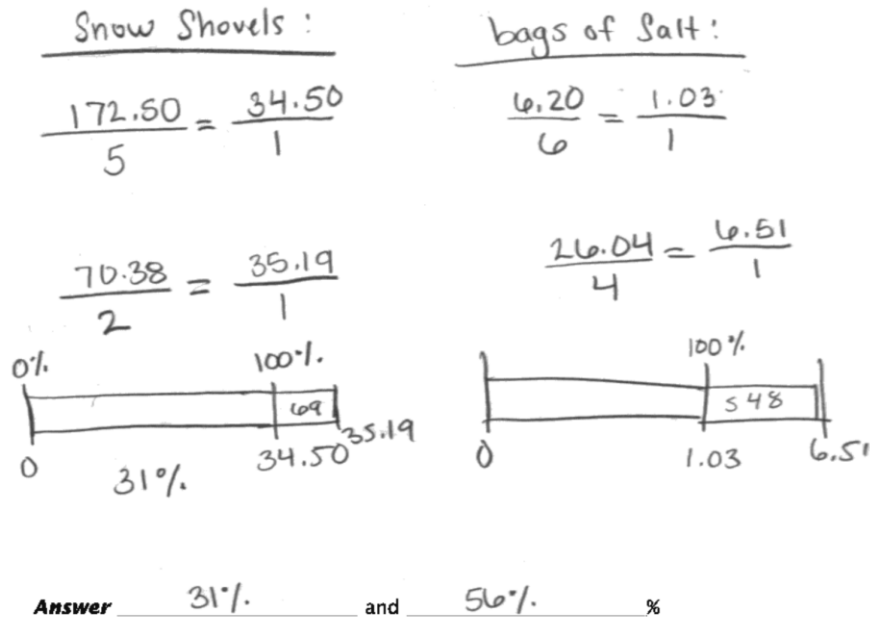
61

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

Snow Shovels :

$$\frac{172.50}{5} = \frac{34.50}{1}$$

$$\frac{70.38}{2} = \frac{35.19}{1}$$

bags of Salt :

$$\frac{6.20}{6} = \frac{1.03}{1}$$

$$\frac{26.04}{4} = \frac{6.51}{1}$$

Answer _____ 31% _____ and _____ 56% _____ %

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the mathematical concepts in the task. The cost of one snow shovel is calculated correctly for both years; however, the cost of one bag of salt from last year is inappropriately divided by 6. Although the absolute increases from year-to-year are calculated correctly, an incorrect process is applied to determine the percent increases and both increases are reported on the answer blanks with no choice made for which item had the greatest percent increase. The response addresses some elements of the task correctly but exhibits multiple flaws related to misunderstanding of important aspects of the task.

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

$$\begin{array}{c} 1\,2 \\ \times\ 6 \\ \hline 72 \end{array}$$

$$\begin{array}{c} 120 \\ \times\ 0 \\ \hline 720 \end{array}$$

$$\begin{array}{c} 2 \\ 6 \\ \times\ 4 \\ \hline 104 \end{array}$$

$$\begin{array}{c} 26 \\ \times\ 2 \\ \hline 52 \end{array} \qquad \begin{array}{c} 26 \\ \times\ 3 \\ \hline 68 \end{array}$$

P=6.20-before tax
%=X-tax
W=172.50 before tax

P=26.04-before tax
%=X-tax
W=70.38-before tax

$$\frac{6.20 = X \cdot 172.50}{172.50} \qquad \frac{}{172.50}$$

$$\frac{26.04 = X \cdot 70.38}{70.38} \qquad \frac{}{70.38}$$

X=12.30% last year

X=3.34% last year

Answer __12.30__ and __3.34__ %

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The numbers of each item purchased are not taken into account and ratios are taken that inappropriately mix values for shovels and for salt. The percentages obtained are incorrect and are not supported by the work.

61

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Determine the item with the greatest percent increase in the price from last year to this year. Be sure to include the percent increase of this item to the nearest percent.

Show your work.

$172.50-$70.38 ≟ $\frac{102.12}{172.50}$ = 0.60 = 60% (0.592)

$26.04-$6.20 = 19.84 = 3.2% (0.032)

0.032

0.592

Answer Snow shovels **and** 60 increase **%**

Score Point 0 (out of 3 points)

Holistically, this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Similar to Guide Paper 8, the calculations use values for total cost directly from the prompt without solving for the costs per individual items; however, multiple additional errors are made. The percent increase of the shovels is incorrectly rounded, the work for the percent increase of the bags of salt does not show the division by $6.20, and the decimal form of the increase for the bags of salt is misinterpreted as the percentage directly (3.2 → 3.2% rather than 320%).