

Grade 7 Mathematics Reference Sheet

CONVERSIONS

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

FORMULAS

Triangle	$A = \frac{1}{2}bh$
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).

2019 2- and 3-Point Mathematics Scoring Policies

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

1. If a student shows the work in other than a designated “Show your work” or “Explain” area, that work should still be scored.
2. If the question requires students to show their work, and the student shows appropriate work and clearly identifies a correct answer but fails to write that answer in the answer space, the student should still receive full credit.
3. If students are directed to show work or provide an explanation, a correct answer with **no** work shown or **no** explanation provided, receives **no** credit.
4. If students are **not** directed to show work, any work shown will **not** be scored. This applies to items that do **not** ask for any work and items that ask for work for one part and do **not** ask for work in another part.
5. If the student provides one legible response (and one response only), the rater should score the response, even if it has been crossed out.
6. If the student has written more than one response but has crossed some out, the rater should score only the response that has **not** been crossed out.
7. If the student provides more than one response, but does not indicate which response is to be considered the correct response and none has been crossed out, the student shall not receive full credit.
8. If the student makes a conceptual error (that is an error in understanding rather than an arithmetic or computational error), that student shall not receive more than 50% credit.
9. Trial-and-error responses are **not** subject to Scoring Policy #6 above, since crossing out is part of the trial-and-error process.
10. If a response shows repeated occurrences of the same conceptual error within a question, the conceptual error should **not** be considered more than once in gauging the demonstrated level of understanding.
11. In questions requiring number sentences, the number sentences must be written horizontally.
12. When measuring angles with a protractor, there is a ± 5 degrees deviation allowed of the true measure.
13. Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted). This is not to be confused with a score of zero wherein the student does respond to part or all of the question but that work results in a score of zero.

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

Answer \$ _____

EXEMPLARY RESPONSE

41

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

$$2 \times \$12.36 = \$24.72$$

$$\frac{1}{2} \times \$1.98 = \$0.99$$

$$\$24.72 + \$0.99 + \$3.49 = \$29.20$$

$$\$29.20 + \$0.80 = \$30.00$$

or other valid process

Answer \$ 30

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

Susan uses 30 dollars to pay for the items. I got this answer by first adding all the items together. The chicken, $24.72 +$ broccoli, $0.99 +$ the milk, $3.49 = 29.20$ dollars. Then, using then i added this to the amount of change she was given, so $+ 0.80$. Finally i came to the conclusion that she payed 30 dollars for the items.

$$2 \times 12.36 = 24.72$$

$$24.72 + 0.99 + 3.49 = 29.2$$

$$1.98 \div 2 = 0.99$$

$$29.2 + 0.80 = 30$$

$$\text{milk} = 3.49$$

Answer \$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The amount of money used to pay is calculated correctly using sound procedures.

GUIDE PAPER 2

41

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

$$(12.36)(2) = 24.72$$

$$\frac{1.98}{2} = 0.99$$

$$(3.49)(1) = 3.49$$

$$24.72 + 0.99 + 3.49 = 29.20$$

$$\underline{29.20 + 0.80 = 30.00}$$

Answer \$ 30.00

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The amount of money used to pay is calculated correctly using sound procedures.

GUIDE PAPER 3

41

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

$$12.36 \times 2 = 24.72$$

$$1.98 \div 2 = 0.99$$

$$3.49 \times 1 = 3.49$$

$$\begin{array}{r} 24.72 \\ + 0.99 \\ + 3.49 \\ \hline 29.2 \end{array}$$

$$\begin{array}{r} 30 \\ - 29.2 \\ \hline 0.8 \end{array}$$

$$\boxed{\$30}$$

Answer \$ 30

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The amount of money used to pay is calculated correctly using sound procedures.

GUIDE PAPER 4

41

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

$$\bullet 2 \times 12.36 = 24.72$$

$$\bullet \frac{1}{2} \times 1.98 = 0.99$$

$$\bullet 1 \times 3.49 = 3.49$$

$$\begin{array}{r} 24.72 \\ + 0.99 \\ 3.49 \\ \hline 29.20 \end{array}$$

$$\bullet 29.20 + 0.80 = 30$$

Answer \$ 29.20

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The amount of money used to pay is calculated correctly; however, only the total cost of the grocery items not including the change is written in the answer space. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 5

41

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

Handwritten calculations:

$$\begin{array}{r} 2 \times 12.36 = 24.72 \\ \frac{1}{2} \times 1.98 = + 00.99 \\ 1 \times 3.49 = 3.49 \\ \hline \$29.20 \end{array}$$

Answer \$

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The total cost of the grocery items is calculated correctly, but the change is not added to the total. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

41

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

1 package / \$12.36	
2 package / \$24.76	

1 pound / \$1.98	
$\frac{1}{2}$ pound / \$0.99	

1 gallon / \$3.49	
1 gallon / \$3.49	

24.76	
+ 0.99	
25.75	
+ 3.49	
29.24	

Answer \$ 28.44

$29.24 - 0.80 = 28.44$

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The cost of the chicken is miscalculated due to an arithmetic error, but the items are then correctly totaled. The change is inappropriately subtracted from this total rather than added to it. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

41

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

$$\begin{array}{r} 12.36 + \\ 1.98 + \\ 3.49 \\ \hline 17.83 \end{array}$$

$$\begin{array}{r} +17.83 \\ 0.80 \\ \hline 18.63 \end{array}$$

$$\begin{array}{r} \rightarrow \text{Check} \\ 18.63 \\ - 17.83 \\ \hline 0.8 \end{array}$$

amount of money $\rightarrow$
18.63

Answer \$ 18.63

Score Point 0 (out of 2 points)

Although the response does add unit costs and the \$0.80 in change correctly, holistically it is not sufficient to demonstrate even a limited understanding of the task. The total cost of the grocery items calculated does not account for the quantities bought.

Susan buys the items listed below at a grocery store.

- 2 packages of chicken priced at \$12.36 per package
- $\frac{1}{2}$ pound of broccoli priced at \$1.98 per pound
- 1 gallon of milk priced at \$3.49 per gallon

There is no sales tax on the food she buys. Susan pays for the items and receives \$0.80 in change. What amount of money does Susan use to pay for the items?

Show your work.

$$12.36 + 1.98 = 14.34 + 3.49 = 17.83 \div 0.80 = 22.28 (\text{■})$$

Answer \$

22.28

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The total cost of the grocery items calculated does not account for the quantities bought and the total is divided by 0.80 rather than added to 0.80.

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

Answer _____ %

EXEMPLARY RESPONSE

42

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$4,264 \times 1.25 = 5,330 \text{ calls in second month}$$

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

$$= \frac{6,396 - 5,330}{5,330} \times 100\%$$

$$= \frac{1,066}{5,330} \times 100\%$$

$$= \frac{1}{5} \times 100\%$$

$$= 20\%$$

or other valid process

Answer 20 %

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$\begin{array}{r}
 \text{1st} \\
 \hline
 4,264 \\
 \hline
 \text{2nd} \\
 4,264 \cdot 1.25 = 5330 \\
 \hline
 \text{3rd} \\
 6396 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 6396 \\
 -5330 \\
 \hline
 1066
 \end{array}$$

$$\frac{1066}{5330} = .2 = 20\%$$

check work:
 $5330 \cdot 1.2 = 6396$

Answer 20 %

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The percent increase from the second month to the third month is calculated correctly using sound procedures.

GUIDE PAPER 2

42

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$4,264 \div 10 = 426.4$$

$$426.4 = 10\% \text{ of } 4,264$$

$$426.4 \times 2.5 = 1066$$

$$4,264 + 1066 = 5330$$

$$\text{Month two} = 5330 \text{ calls}$$

$$\begin{array}{r} 6396 \\ - 5330 \\ \hline 1066 \end{array}$$

$$\begin{array}{r} 5330 \div 1066 \\ 5 \\ 100 \div 5 = 20 \end{array}$$

Answer 20 %

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The percent increase from the second month to the third month is calculated correctly using sound procedures.

GUIDE PAPER 3

42

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$\frac{x}{4264} = \frac{125}{100} \quad x = 5330 \quad 6396 -$$

$$\frac{1066}{5330} = \frac{x}{100} \quad x = 20$$

Answer %

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The percent increase from the second month to the third month is calculated correctly using sound procedures. Although the cross-multiplications to solve the proportions are not shown, the work is sufficiently developed to demonstrate thorough understanding.

GUIDE PAPER 4

42

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

Step 1:
 $(4,264)(1.25) = 5,330$

Step 2:
 $5,330 + 6,396 = 11,726$
 $11,726 \div 100 = 117.26\%$

Step 3:
 $117.26\% - 100\% = 17.26\%$

Answer 17.26 %

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The number of calls received in the second month is calculated correctly, but the percent increase is calculated using an incorrect procedure. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

42

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$4,264 \div 4 = \frac{+ 1,066}{4,264} \\ 5,330$$

$$\frac{1,066}{6,396} = \frac{x}{100}$$

$$\frac{6,396x}{6,396} = \frac{106600}{6,396}$$

16.66%

Answer

16.66%

%

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The number of calls received in the second month is calculated correctly, but the percent increase is calculated incorrectly as *change/new* rather than *change/original*. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

42

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$\begin{aligned} 4264 \times 25\% &= 1066 \\ 4264 + 1066 &= 5330 \leftarrow \text{second month} \\ 6396 - 5330 &= 1066 \end{aligned}$$

Answer 25 %

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The increase in calls from the second month to the third month is calculated correctly, but having the same increase from the first month to the second month is misinterpreted as also having the same percent increase. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

42

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$\begin{array}{l} \text{Month 1 : } 4,264 \\ \text{Month 2 : } \frac{25\% \text{ more}}{4,264 \cdot 25} \\ \text{Month 3 : } 6,396 \\ \begin{array}{r} 6,396 \\ - 4,264.25 \\ \hline 2,131.75 \end{array} \end{array}$$

Answer 20 %

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the concepts in the task. The correct solution is not supported by the work, which shows no understanding of percentages.

A company starts to track the number of phone calls received each month. Information about the number of phone calls the company received the first three months of tracking is listed below.

- During the first month, the company received 4,264 phone calls.
- During the second month, the company received 25% more phone calls than in the first month.
- During the third month, the company received 6,396 phone calls.

What was the percent increase in the number of phone calls from the second month to the third month?

Show your work.

$$\begin{array}{r} X = 25\% \\ \hline 4264 \quad 100 \\ X = 1066 \\ 1066 + 6396 = 7462 \end{array}$$

Answer

7462

%

Score Point 0 (out of 2 points)

Although the number of calls that is 25% of the calls received in the first month is calculated correctly, it is not used correctly in the rest of the work. Holistically, this response is not sufficient to demonstrate even a limited understanding of the concepts in the task.

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

Answer _____ miles per hour

EXEMPLARY RESPONSE

43

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$\begin{aligned} 30\frac{1}{5} \div \frac{2}{3} &= 30\frac{1}{5} \times \frac{3}{2} \\ &= \frac{151}{5} \times \frac{3}{2} \\ &= \frac{453}{10} \\ &= 45\frac{3}{10} \text{ miles per hour} \end{aligned}$$

OR

$$\begin{aligned} 30\frac{1}{5} \div 2 &= 15\frac{1}{10} \\ 30\frac{1}{5} + 15\frac{1}{10} &= 45\frac{3}{10} \text{ miles per hour} \end{aligned}$$

or other valid process

Answer $45\frac{3}{10}$ miles per hour

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$\begin{array}{l} \frac{30\frac{1}{5}}{\frac{2}{3}} = \frac{x}{1} \\ 30\frac{1}{5} \cdot 1 = \frac{2}{3} \cdot x \\ 30\frac{1}{5} = \frac{2}{3}x \\ \frac{2}{3} = \frac{2}{3} \\ 45\frac{3}{10} = x \end{array}$$

$$\begin{array}{l} \text{Work} \\ 30\frac{1}{5} \div \frac{2}{3} \\ \frac{151}{5} \div \frac{2}{3} \\ \frac{151}{5} \times \frac{3}{2} = \frac{453}{10} \\ \frac{453}{10} = 45\frac{3}{10} \end{array}$$

Answer $45\frac{3}{10}$ miles per hour

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. A proportion is correctly set up and solved to determine the average speed of the car.

GUIDE PAPER 2

43

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$30\frac{1}{5} \div \frac{2}{3} = 15\frac{1}{10}$$
$$15\frac{1}{10} \times 3 = 45\frac{3}{10}$$

Answer

$$45\frac{3}{10}$$

miles per hour

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The average speed of the car is correctly determined using sound procedures.

GUIDE PAPER 3

43

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$30\frac{1}{5} \div \frac{2}{3}$$

Answer

$$45\frac{3}{10}$$

miles per hour

Score Point 2 (out of 2 points)

This response contains sufficient work to demonstrate a thorough understanding of the concepts in the task. The average speed of the car is correctly determined using a sound procedure.

GUIDE PAPER 4

43

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$30\frac{1}{5} \div 2 = 15\frac{5}{5}$$

$$1 \cdot 30\frac{1}{5} + 15\frac{5}{5} = 45\frac{6}{5} = \frac{231}{5}$$

Answer $45\frac{6}{5}$ miles per hour

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. A correct process is used to calculate the distance traveled in $\frac{1}{3}$ of an hour; however, an arithmetic error results in an incorrect quotient. The two distances traveled in one hour are added to determine the average speed per hour. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 5

43

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$30\frac{1}{5} = \frac{151}{5} = 30.2$$

$$\frac{2}{3} = 0.\overline{6}$$

$$\frac{151}{5} \div \frac{2}{3}$$

$$\frac{151}{5} \times \frac{3}{2} = \frac{453}{10} = 45.3$$

↓
46

Answer 46 miles per hour

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The average speed of the car is correctly calculated; however, the answer is inappropriately rounded up. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

43

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$30.5 \times 1.5 = 45.75$$

Answer

45.75

miles per hour

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. An error in conversion to the decimal form (30.5 instead of 30.2) results in an incorrect average speed of the car. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 7

43

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$$30\frac{1}{5} \times \frac{2}{3}$$

Answer

$$20\frac{2}{15}$$

miles per hour

Score Point 0 (out of 2 points)

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

A car travels $30\frac{1}{5}$ miles in $\frac{2}{3}$ of an hour. What is the average speed, in miles per hour, of the car?

Show your work.

$30\frac{1}{5}$ miles

$\frac{2}{3}$ of an hour

$$30\frac{1}{5} - \frac{2}{3} = 29\frac{8}{15}$$

Answer $29\frac{8}{15}$ miles per hour

Score Point 0 (out of 2 points)

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

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

Answer _____ pictures

EXEMPLARY RESPONSE

44

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$85.75 - 3.25 = 82.50$$

$$82.50 \div 7.50 = 11$$

or other valid process

Answer 11 pictures

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$\begin{aligned}85.75 &= 7.50x + 3.25 \\85.75 - 3.25 &= 82.50 \\82.50 \div 7.50 &= 11\end{aligned}$$

Answer

11

pictures

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of pictures ordered is calculated correctly using sound procedures.

GUIDE PAPER 2

44

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$85.75 - 3.25 = 82.5 \div 7.50 = 11$$

Answer 11 pictures

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of pictures ordered is calculated correctly using sound procedures. The run-on equation in the work is inconsequential and does not detract from the demonstration of understanding.

GUIDE PAPER 3

44

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$\begin{array}{r} 5 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ 7.50 \\ \hline 82.50 \end{array} \quad \begin{array}{r} \text{With shipping fee} \\ 82.50 \\ + 3.25 \\ \hline 85.75 \end{array}$$

Answer 11 pictures

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of pictures ordered is calculated correctly using sound procedures.

GUIDE PAPER 4

44

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$85.75 - 3.25 = \frac{82.5}{7.5} = 10.9$$

Answer

10.9

pictures

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The total cost less the one-time fee is appropriately divided by the cost per picture, but an arithmetic error results in an incorrect quotient. The response contains an incorrect solution but applies an appropriate process. The run-on equation in the work is inconsequential and does not detract from the demonstration of understanding.

GUIDE PAPER 5

44

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$\begin{array}{r}
 85.75 \\
 - 3.25 \\
 \hline
 82.50 \\
 - 7.50 \quad 1 \\
 \hline
 75.00 \\
 - 7.50 \quad 2 \\
 \hline
 67.50 \\
 - 7.50 \quad 3 \\
 \hline
 60.00 \quad 4 \\
 - 7.50 \\
 \hline
 52.50 \\
 - 7.50 \quad 5 \\
 \hline
 45.00 \\
 - 7.50 \quad 6 \\
 \hline
 37.50 \\
 - 7.50 \quad 7 \\
 \hline
 30.00 \quad 8 \\
 - 7.50 \\
 \hline
 22.50 \quad 9 \\
 - 7.50 \\
 \hline
 15.00 \quad 10 \\
 - 7.50 \\
 \hline
 7.50 \quad 11 \\
 - 7.50 \\
 \hline
 0.00
 \end{array}$$

Answer 10 pictures

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. Repeated subtraction is used to count the number of pictures bought, but an arithmetic error occurs in the fifth subtraction (the difference of 37.80 should be 45.00) which results in not enough money to subtract the 11th photo. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

44

Todd orders pictures from a photographer. Each picture costs ~~\$7.50~~. A one-time shipping fee of ~~\$3.25~~ is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$\begin{array}{r} 85.75 \\ + 3.25 \\ \hline 89.00 \end{array}$$

$$\begin{array}{r} 11.87 = 11 \\ 7.50 \overline{) 89} \end{array}$$

Answer 11 pictures

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The question is misinterpreted and the one-time fee is added to the total rather than subtracted from it, but the result is then correctly divided by the cost per picture. The previous error causes the need to truncate the quotient 11.87 to a whole number. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

44

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

each picture costs \$7.50
one time shipping fee \$3.25
 $\$85.75 \div \$7.50 = 11$

Answer

Todd ordered
11 paintings

pictures

Score Point 0 (out of 2 points)

Holistically, this response is not sufficient to demonstrate even a limited understanding of the concepts in the task. Although the one-time fee is listed in the work, it is not actually used in any calculations. The correct solution is obtained using an incorrect procedure: 11 is not the quotient of the division shown.

Todd orders pictures from a photographer. Each picture costs \$7.50. A one-time shipping fee of \$3.25 is added to the cost of the order. The total cost of Todd's order before tax is \$85.75. How many pictures did Todd order?

Show your work.

$$\begin{array}{r} 4 \\ 7.50 \\ - 3.25 \\ \hline 4.25 \end{array} \quad 4.25 \overline{)85.75}$$

Answer 20 pictures

Score Point 0 (out of 2 points)

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

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

Answer _____ visitors

EXEMPLARY RESPONSE

45

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$\frac{266}{350} = 0.76 \text{ or } 76\%$$

$$0.76 \times 2,300 = 1,748$$

OR

2,300 is larger than the sample by $\frac{2,300}{350} = 6\frac{4}{7}$ times.
The number expected to stop at the gift shop will be proportional, so $6\frac{4}{7} \times 266 = 1,748$.

or other valid process

Answer 1,748 visitors

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$266 \div 350 = .76$$

$$.76 \times 2300 = 1748$$

Answer 1748 visitors

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of visitors expected to stop at the gift shop is calculated correctly using sound procedures.

GUIDE PAPER 2

45

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$\begin{array}{r} \times 6\frac{4}{7} \\ 266 \\ \hline 350 \end{array} = \frac{1748}{2300}$$

1748 people

Answer 1748 visitors

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of visitors expected to stop at the gift shop is calculated correctly using sound procedures.

GUIDE PAPER 3

45

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$\frac{266}{350} = \frac{X}{2300} \quad (266)(2300) = 350X$$

$$\frac{611800}{350} = \frac{350X}{350}$$

$$1748 = X$$

Answer

1748

visitors

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of visitors expected to stop at the gift shop is calculated correctly using sound procedures.

GUIDE PAPER 4

45

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$\begin{aligned} 266 \div 350 &= 76\% \\ 2300 \times .76 &= 1748 \\ 2300 - 1748 &= 552 \end{aligned}$$

Answer

552

visitors

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The number of visitors expected to stop at the gift shop is calculated correctly; however, the number of visitors expected to *not* stop at the gift shop is also calculated and given as the answer instead. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 5

45

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$350 \overline{) 2,300} \quad \text{answer} = 6$$

$$\begin{array}{r} 3 266 \\ \times 6 \\ \hline 1,596 \end{array}$$

Answer 1,596 visitors

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The process used is sound, but the quotient of $2,300 \div 350$ is truncated, resulting in an incorrect final answer. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

45

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$\frac{100}{350} = \frac{x}{266}$$

$$\frac{350x}{350} = \frac{26600}{350}$$

$$x = 76$$

$$\begin{array}{r} 350 \\ - 76 \\ \hline 274 \end{array}$$

$$\frac{100}{350} = \frac{76}{x}$$

$$\frac{100x}{100} = \frac{26600}{100}$$

$$x = 266$$

$$540$$

$$2300 - 540 = 1760$$

Answer 1760 visitors

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. A correct proportion is used to determine that 76% of visitors stop at the gift shop; however, the rest of the work is incorrect and appears to misinterpret 76 as a number of people rather than a percentage. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

45

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$2,300 - 350 = 1950 - 266 = 1684$$

1684

Answer

There were
1684 visitors
left.

visitors

Score Point 0 (out of 2 points)

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

A museum employee surveys a random sample of 350 visitors to the museum. Of those visitors, 266 stopped at the gift shop. Based on these results, about how many people out of 2,300 visitors to the museum would be expected to stop at the gift shop?

Show your work.

$$\textcircled{1} \text{ whole} = 2,300$$

$$\text{part} = 266$$

$$\textcircled{2} 2,300 \div 266 = \textcircled{8.64} =$$

$$\textcircled{3} 864 \text{ people}$$

Answer 864 visitors

Score Point 0 (out of 2 points)

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

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

Answer \$ _____

EXEMPLARY RESPONSE

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$1\frac{3}{4} \times \$9.28 = \$16.24$$

$$1\frac{3}{4} \times \$12.80 = \$22.40$$

$$\$22.40 - \$16.24 = \$6.16$$

OR

$$\$12.80 - \$9.28 = \$3.52$$

$$1\frac{3}{4} \times \$3.52 = \$6.16$$

or other valid process

Answer \$ 6.16

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28 6.96
Milk chocolate	\$12.80 9.60

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$\begin{array}{l}
 75\% \times \frac{9.28}{1} = \$6.96 \\
 75\% \times \frac{12.80}{1} = \$9.60 \\
 \begin{array}{r}
 123 \\
 122.40^{10} \\
 - 16.24 \\
 \hline
 \$6.16
 \end{array}
 \end{array}$$

Answer \$ 6.16

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The difference in the cost of the candies is calculated correctly using sound procedures.

GUIDE PAPER 2

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$1\frac{3}{4} \times 12.80 = 22.4 \quad 1\frac{3}{4} \times 9.28 = 16.24 \quad 22.4 - 16.24 = 6.16$$

The milk chocolate is \$6.16 more than the caramel.

Answer

\$ 6.16

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The difference in the cost of the candies is calculated correctly using sound procedures.

GUIDE PAPER 3

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$\begin{array}{l} \$12.80 \text{ per pound of chocolate} \\ 12.8 \div 4 = 3.2 \\ 3.2 \times 3 = 9.6 \\ 12.8 + 9.6 = 22.4 \\ \$9.28 \text{ per pound of caramel} \\ 9.28 \div 4 = 2.32 \\ 2.32 \times 3 = 6.96 \\ 9.28 + 6.96 = 16.24 \end{array} \qquad 22.4 - 16.24 = \$6.16$$

Answer \$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The difference in the cost of the candies is calculated correctly using sound procedures.

GUIDE PAPER 4

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$12.80 \times 1\frac{3}{4} = 22.40$$

$$9.28 \times 1\frac{3}{4} = 16.24$$

$$22.40 - 9.28 = 13.12$$

Answer \$ 13.12

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The costs for $1\frac{3}{4}$ pounds of each type of candy are calculated correctly, but the cost of only 1 pound of caramels is subtracted from the cost of the chocolate. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$\begin{array}{l}
 12.80 \times 1\frac{3}{4} = 22.4 \text{ Milk Chocolate} \\
 9.28 \times 1\frac{3}{4} = 16.24 \text{ caramels} \\
 \hline
 38.64
 \end{array}$$

Answer \$ 38.64

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The costs for $1\frac{3}{4}$ pounds of each type of candy are calculated correctly, but they are added rather than subtracted. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

Caramels

$$1\frac{3}{4} = 1.75$$

$$9.25 \times 1.75$$

$$\begin{array}{r} 9.25 \\ \times 1.75 \\ \hline \end{array}$$

$$\begin{array}{r} 14625 \\ 64750 \\ 92500 \\ \hline \end{array}$$

$$161875 \approx \$16.18$$

Milk chocolate

$$12.80 \times 1.75$$

$$\begin{array}{r} 12.80 \\ \times 1.75 \\ \hline \end{array}$$

$$\begin{array}{r} 22.40 \\ - 16.18 \\ \hline 6.22 \end{array}$$

Answer \$ 6.22

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The cost of each type of candy is correctly multiplied by $1\frac{3}{4}$ and the difference between them is taken, but the cost of 1 pound of caramels is transcribed incorrectly as \$9.25 instead of \$9.28, leading to a solution that is off by a few cents. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 7

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$9.28 \times 1\frac{3}{4}$$

Answer \$ 16.24

Score Point 0 (out of 2 points)

Although the cost of $1\frac{3}{4}$ pounds of caramels is calculated, the decimal point is missing from the result and there are no calculations for or comparisons to the chocolate. Holistically, calculating only the cost of one of the candies is not sufficient to demonstrate even a limited understanding of the task.

46

A candy store sells caramels and milk chocolate by the pound. The table below shows the total cost, in dollars, for a pound of each type of candy the store sells.

CANDY PRICES

Type of Candy	Price per Pound (dollars)
Caramels	\$9.28
Milk chocolate	\$12.80

How much more is the cost for $1\frac{3}{4}$ pounds of milk chocolate than the cost for $1\frac{3}{4}$ pounds of caramels?

Show your work.

$$12.80 \div 9.28 = 1.38$$

Answer \$ 1.38

Score Point 0 (out of 2 points)

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

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs.
Explain the process you used to determine the equation.

Equation _____

Explain your answer.

EXEMPLARY RESPONSE

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs. Explain the process you used to determine the equation.

Equation $p = 0.6w$ or $\frac{p}{w} = \frac{4.38}{7.3}$ or equivalent equation

Explain your answer.

I first found the unit price which is $\$4.38 \div 7.3 = \0.60 per pound. Since it's per pound, the unit price should multiply the weight to equal the cost.

OR

I set up a proportion with the prices as the numerators and the weights as the denominators.

or other valid explanation

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs.
Explain the process you used to determine the equation.

The image shows handwritten work. On the left, a proportion is set up: $\frac{4.38}{7.3} = \frac{x}{1}$. Below this, the same proportion is written as $\frac{4.38}{7.3} = \frac{p}{w}$. To the right of these, the equation $p = 0.60w$ is written and boxed. A bracket on the right side of the work is labeled "Equation".

Equation

Explain your answer.

The first thing I did was that I found how much the price of one watermelon cost. I did this by setting up a proportion. My unit price was \$0.60. Next, I identified my dependant and independant variable. My dependant variable was the price(p), and my independant variable was the watermelon(w). Next, I wrote my equation based on the model $y=kx$. Finally, I substituted. So my equation is $p=0.60w$.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The equation and explanation are complete and correct.

GUIDE PAPER 2

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs. Explain the process you used to determine the equation.

Equation $p = 0.6w$

Explain your answer.

I divided the cost of the watermelon by the weight to find a constant of proportionality. Any watermelon will cost $\frac{6}{10}$ of its weight.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The equation is correct and the explanation correctly describes how the unit rate is determined.

GUIDE PAPER 3

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs.
Explain the process you used to determine the equation.

Equation

$$.60w = p$$

Explain your answer.

The price for 1 pound of a watermelon is 60 cents. So I used an equation to represent the unit rate. For every 1 pound it is 60 cents.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The equation is correct and the explanation sufficiently describes using a unit rate to build an equation.

GUIDE PAPER 4

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs.
Explain the process you used to determine the equation.

Equation

$p \div w = \text{how much a ounce cost}$
 $4.38 \div 7.3 = 0.60 \text{ cents for each ounce}$

Explain your answer.

This is my answer because if you multiply 0.6 with 7.3 you get 4.38

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The unit price is calculated correctly; however, there is some confusion over units (*cents*, *ounces*) and there is no one unifying equation that brings the information together. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs. Explain the process you used to determine the equation.

Equation $0.60 \times w$

Explain your answer.

I divided $4.38 \div 7.3$ to see how much money one pound of watermelon is and got 0.60 \$.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The unit price is calculated correctly; however, there is some confusion over units (*cents*) and an incorrect expression is written rather than an equation. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs.

Explain the process you used to determine the equation.

Equation

$$1.66(w)=p$$

Explain your answer.

I found the unit rate by dividing 4.38 and 7.3. Then checked my work by multiplying the unit rate 1.66 by 4.83 to get 7.3

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The equation is incorrect, but the explanation does show some understanding of proportional relationships by describing the unit rate reciprocally as pounds per dollar rather than dollars per pound, as well as how the unit rate appears in an equation. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs. Explain the process you used to determine the equation.

Equation $7p + 4w = 4.38$

Explain your answer.

$$\begin{array}{r} 7p + 4w = 4.38 \\ \hline 7 \quad 4.38 \\ \hline 7 \quad 7 \\ \hline p = 0.62 \end{array}$$

Score Point 0 (out of 2 points)

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

47

At a grocery store, the price of a watermelon is determined by how many pounds the watermelon weighs. The price of a watermelon that weighs 7.3 pounds is \$4.38.

Write an equation that can be used to determine the price, p , in dollars, of any watermelon based on the number of pounds, w , the watermelon weighs.

Explain the process you used to determine the equation.

Equation

$$7.3w = 4.38$$

$$p = x$$

$$w = 7.3$$

$$\% = .0438$$

$$7.3 \times .0438 = .31 \quad x = .31$$

Explain your answer.

$$x = .31$$

.31cents each pound

Score Point 0 (out of 2 points)

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

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

Answer _____ paid \$ _____ less

EXEMPLARY RESPONSE

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

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- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

Omar:

$$1,000 - 80 = 920$$

$$920 - 920(0.15) = 920 - 138 = 782$$

$$(A \text{ discount of } 1,000 - 782 = 218)$$

Caleb:

$$1,000 - 1,000(0.15) = 1,000 - 150 = 850$$

$$850 - 80 = 770$$

$$(A \text{ discount of } 1,000 - 770 = 230)$$

$$782 - 770 = 12 \quad \text{or} \quad 150 - 138 = 12 \quad \text{or} \quad 230 - 218 = 12$$

OR

Omar's 15% off doesn't include the \$80 of the other coupon,
but Caleb's *does* include it so Caleb saves an extra $0.15 \times \$80 = \12 .

or other valid process

Answer Caleb paid \$ 12 less

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

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- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

$$\begin{array}{l}
 \text{caleb} \\
 \frac{150}{1000} = \frac{15}{100} \\
 1000 - 150 = 850 \\
 850 - 80 = 770 \\
 \hline
 \text{omar} \\
 1000 - 80 = 920 \\
 \frac{138}{920} = \frac{15}{100} \\
 920 - 138 = 782 \\
 \hline
 782 - 770 = 12
 \end{array}$$

Answer paid \$ less

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. The amount of money Caleb paid less than Omar is calculated correctly using sound procedures.

GUIDE PAPER 2

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

Omar:	Caleb:
$1,000 - 80 = 920$	$1,000 \times .15 = 150$
$920 \times .15 = 138$	$1,000 - 150 = 850$
$920 - 138 = 782$	$850 - 80 = 770$

Answer paid \$ less

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. The amount of money Caleb paid less than Omar is calculated correctly using sound procedures. It is inconsequential that the last subtraction step ($782 - 770 = 12$) is not shown, as it is easily completed as a mental calculation. The work is sufficiently developed to demonstrate understanding.

GUIDE PAPER 3

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

<u>Omar</u>	<u>Caleb</u>
$ \begin{array}{r} \$1000 \\ - 80 \\ \hline \$920 \end{array} $	$ \begin{array}{r} \$1000 - 15\%(\$150) = \$850 \\ - 80 \\ \hline \$770 \end{array} $
$ \begin{array}{r} \$920 - 15\%(\$138) = \$782 \end{array} $	
\$782	
$\$782 > \770	

Answer Caleb paid \$ 12 less

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. The amount of money Caleb paid less than Omar is calculated correctly using sound procedures.

GUIDE PAPER 4

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

Omar	Caleb
$1000 - 80 = 920$	$1000 \cdot 0.75 = 750$
$100\% - 15\% = 85\%$	$750 - 80 = 670$
$0.85 \cdot 920 = 782$	
	$782 - 670 = 112$

Answer Caleb paid \$ 112 less

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the concepts in the task. When finding the complement of 15%, a calculation error yields 75% rather than 85%. All other calculations in the work are correct based on this incorrect percentage. The response contains an incorrect solution but provides sound procedures and reasoning.

GUIDE PAPER 5

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

omar: $1000 \times 0.15 = 150$ $1000 - 150 = 850$ $850 - 80 = 770$ $150 + 80 = 230$
caleb: $1000 - 80 = 920$ $920 \times 0.15 = 138$ $920 - 138 = 782$

Answer paid \$ less

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the concepts in the task. The costs of both repairs are calculated correctly, but they are mislabeled with the incorrect names. \$770 is placed in the first answer space instead of a name, implying a choice of the person that paid \$770, while \$230 is placed in the second answer space as the total discount from the original \$1,000 instead of how much less was paid than the other person. The response reflects some minor misunderstanding of the task.

GUIDE PAPER 6

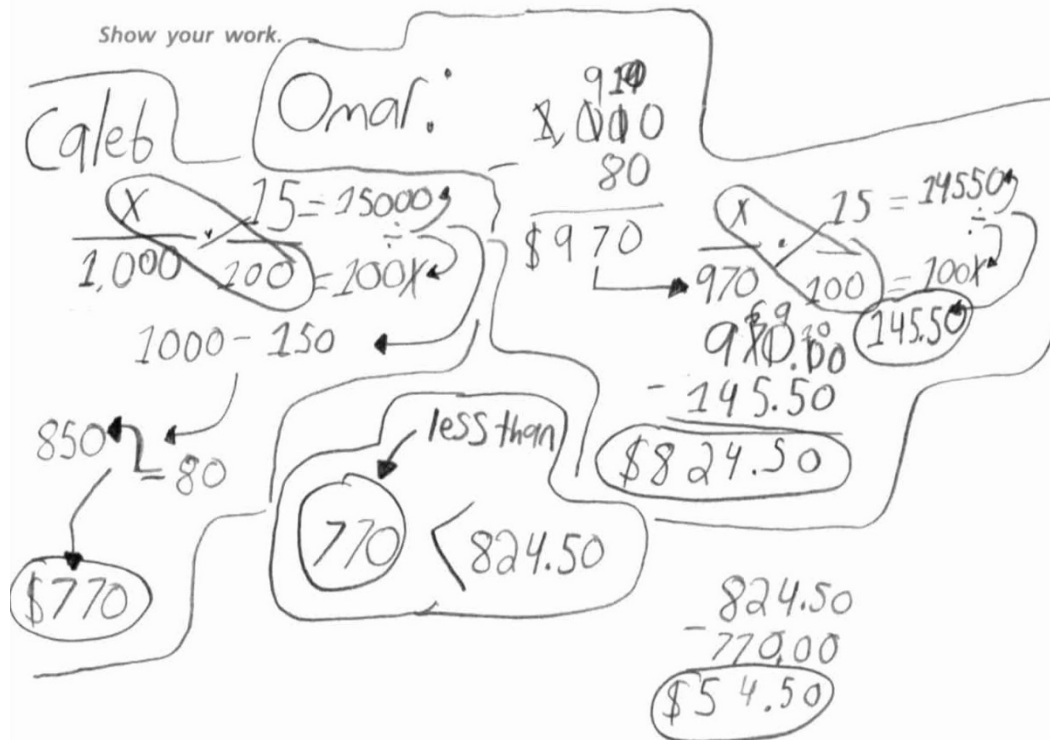
48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.



Answer Caleb paid \$ 54.50 less

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the concepts in the task. When deducting Omar's \$80 coupon, a calculation error yields a difference of \$970 rather than \$920. All other calculations in the work are correct based on this incorrect difference. The response contains an incorrect solution but provides sound procedures and reasoning.

GUIDE PAPER 7

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

$$\begin{aligned}1000 \times 15\% &= 150 \\ 1000 - 150 &= 850 - 80 = 770 \\ 1000 - 80 &= 920 - 150 = 770\end{aligned}$$

Answer

both

paid \$

no

less

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the concepts in the task. The amount Caleb paid for his repair is calculated correctly, but the amount Omar paid is calculated incorrectly by treating the 15% off as still 15% of the original \$1,000. The response reflects a lack of essential understanding of the underlying concepts.

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

O: 15% of 1000 = 150

$$\begin{array}{r} 1000 \\ - 80 \\ \hline 920 \\ - 150 \\ \hline 770 \end{array} \rightarrow \text{Omar}$$

Omar: $1000 - 80 = 920$
 $920 - 15\% = 920 - 138 = 782$

Caleb: $1000 - 15\% = 850$
 $850 - 80 = 770$

$$\begin{array}{r} 770 \\ - 138 \\ \hline 632 \end{array}$$

Answer Omar paid \$ 632 less

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the concepts in the task. The amount Caleb paid for his repair and the discount Omar received from the 15% off coupon are calculated correctly, but there is a conceptual error when these amounts are compared directly. The response reflects a lack of essential understanding of the underlying concepts.

GUIDE PAPER 9

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

$$\text{OMAR}-\$1000 - \$80 = \$920$$

$$\$920 \times 15\% = \$138$$

$$\text{CALEB}-\$1000 \times 15\% = \$150$$

$$\$150 - \$80 = \$70$$

Answer

Caleb

paid \$

68

less

Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the concepts in the task. The discount Omar received from the 15% off coupon is calculated correctly; however, the work for Caleb is incorrect and subtracts the \$80 coupon from the \$150 of the other coupon. The response reflects a lack of essential understanding of the underlying concepts.

GUIDE PAPER 10

48

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

$$\begin{array}{r}
 \text{Omar} \quad 1,000 \\
 - \quad .80 \\
 \hline
 928
 \end{array}$$

$$\begin{array}{r}
 \text{Caleb} \quad 1,000 \\
 - \quad 15\% \\
 \hline
 850
 \end{array}$$

$$\begin{array}{r}
 850 \\
 - \quad 80 \\
 \hline
 770
 \end{array}$$

Answer Omar paid \$ 71.75 less

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the concepts in the task. Only one coupon is discounted for each person and the 15% is used incorrectly as \$0.15.

Omar and Caleb each had a repair made on their cars. The initial cost of each repair is \$1,000. Omar and Caleb each have two coupons. Each of them uses both of his coupons toward the cost of the repair. One coupon is for \$80 off the repair cost. The other coupon is for 15% off the repair cost. Omar and Caleb use their coupons in a different order, as shown below.

- Omar uses the \$80 off the repair cost coupon first. He then uses the 15% off the repair cost coupon on the remaining balance.
- Caleb uses the 15% off the repair cost coupon first. He then uses the \$80 off the repair cost coupon on the remaining balance.

Who paid the least amount of money for his car repair and how much less did he pay?

Show your work.

$$\frac{80}{1000} = \frac{x}{15}$$

$$X = 1.2.$$

Omar.

$$\frac{80}{1000} = \frac{15}{X}$$

$$X = 187.5$$

Caleb

Answer

Omar

paid \$

1.2

less

Score Point 0 (out of 3 points)

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