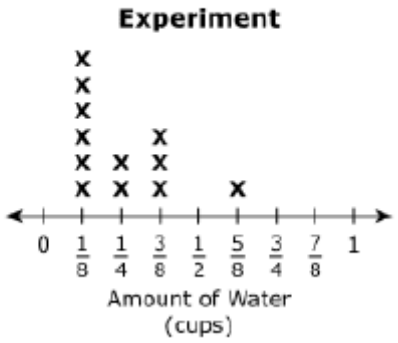
Math
Spring Operational 2015

Grade 6
PBA Item #16
Determine Cups of Water
VF799733

Prompt

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

Enter your expression and your work or explanation in the space provided.

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

Enter your answer and your work or explanation in the space provided.

Task is worth a total of 6 points.

<table>
<tr><th colspan="2">VF799733 Rubric Part A</th></tr>
<tr><th>Score</th><th>Description</th></tr>
<tr><td>3</td><td>Student response includes the following 3 elements.
Computation component = 1 point
Correct total number of cups of water
Modeling component = 2 points
Correct expression using addition and multiplication
Correct process for evaluating the expression written
Sample Student Response:
3 (cups)
$6\times\frac{1}{8}+2\times\frac{1}{4}+3\times\frac{3}{8}+1\times\frac{5}{8}$

$6\times\frac{1}{8}+2\times\frac{1}{4}+3\times\frac{3}{8}+1\times\frac{5}{8}=$
$\frac{6}{8}+\frac{2}{4}+\frac{9}{8}+\frac{5}{8}=$
$\frac{6}{8}+\frac{4}{8}+\frac{9}{8}+\frac{5}{8}=\frac{24}{8}=3$

Notes:
The student must show operations of addition AND multiplication in order to receive the modeling point. If students only use addition, they do not get the modeling point.
The student must show only one expression to receive this modeling point.
If the student writes an incorrect expression but shows a correct process for evaluating that expression, the student will receive 1 modeling point.</td></tr>
<tr><td>2</td><td>Student response includes 2 of the 3 elements.</td></tr>
<tr><td>1</td><td>Student response includes 1 of the 3 elements.</td></tr>
<tr><td>0</td><td>Student response is incorrect or irrelevant.</td></tr>
<tr><th colspan="2">VF799733 Rubric Part B</th></tr>
<tr><th>Score</th><th>Description</th></tr>
<tr><td>3</td><td>Student response includes the following 3 elements.
Computation component = 1 point
Correct total number of fluid ounces in the beaker before the water was poured by the 12 students, 56 fluid ounces</td></tr>
</table>

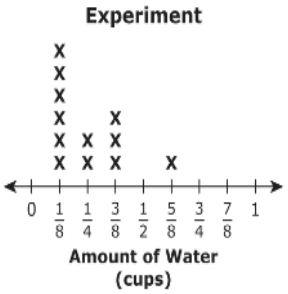
	• **Modeling component =** 2 points o Correct process for finding the amount of water in the beaker o Correct process for converting gallons and cups to fluid ounces Sample Student Response: The amount of water in the beaker can be found by adding 3 cups to a ¼ gallon. To convert ¼ gallon to fluid ounces, I need to multiply by 128, which is 32 fluid ounces. To convert 3 cups to fluid ounces, I need to multiply by 8, which is 24 fluid ounces. The amount of water in the beaker before the water was poured out is 32 + 24 = 56 fluid ounces. Notes: o Units are not required to receive credit. o The student may receive a combined total of 4 points if the modeling processes are correct but the student makes one or more computational errors resulting in incorrect answers. o The student may receive a total of 2 points if he or she computes the correct answers but shows no work or insufficient work to indicate a correct modeling process. o The student cannot receive more than 2 points for modeling if the explanations, while sufficient to indicate that the student had a correct process, contain nonsense statements, such as ¼ × 128 = 32 + 24 = 56.
2	Student response includes 2 of the 3 elements.
1	Student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

Anchor Set
A1 – A13

A1

Part A: Score Point 3
Part B: Score Point 3

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

$6\left(\frac{1}{8}\right)+2\left(\frac{1}{4}\right)+3\left(\frac{3}{8}\right)+\frac{5}{8}$

I knew that there were 6 people who used $\frac{1}{8}$ cups of water so I had to multiply $\frac{1}{8}$ $\square$ $\times 6$ which is 0.75. Then I had to add the 2 people who each used $\frac{1}{4}$ cups the water which used 0.5. Then came the 3 people who each used $\frac{3}{8}$ cups of water which used 1.125. And then finally the 1 person that used $\frac{5}{8}$ cups of water.In total, the 12 students used 3 cups of water.

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

$128 \times .25 = 32$ ounces left in the beaker
3 $cups =$ $\square$ 24 fluid ounces
$32 + 24 = 56$ fluid ounces of water was in the beaker
$\square$

Annotations

Anchor Paper 1
Part A: Score Point 3

This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 3 cups (*3 Cups*).
- The student writes a correct expression(*6 ($^1/_8$) + 2 (¼) + 3 ($^3/_8$) + ($^5/_8$)*).
- The student models a correct process for evaluating the expression (*multiply $^1/_8$ X 6 . . . add the 2 people who each used $^1/_4$ . . . 3 people who each used $^3/_8$ cups of water which used 1.125. And then finally the 1 person that used $^5/_8$*).

Part B: Score Point 3

This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 56 fluid ounces (*56 fluid ounces*).
- The student models a correct process for finding the amount of water in the beaker (*32+24*).
- The student models a correct process for converting gallons and cups to fluid ounces (*128×.25, 3 cups = 24 fluid ounces*).

A2

Part A: Score Point 3
Part B: Score Point 3

Part A

$6\left(\frac{1}{8}\right) + 2\left(\frac{2}{8}\right) + 3\left(\frac{3}{8}\right) + \frac{5}{8}$

$\frac{6}{8} + \frac{4}{8} + \frac{9}{8} + \frac{5}{8}$

$\frac{10}{8} + \frac{9}{8} + \frac{5}{8}$

$\frac{19}{8} + \frac{5}{8}$

$\frac{24}{8} =$ 3 cups of water

Part B

$4\overline{)128}$ R 0

-12

08

-8

0

32 fluid oz = $\frac{1}{4}$ gallon

8 fluid oz · 3 cups = 24 fluid ounces

32 + 24 = 56 fluid ounces

Annotations

Anchor Paper 2
Part A: Score Point 3

This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 3 cups (*3 Cups*).

- The student writes a correct expression ($6(^1/_8) + 2(^2/_8) + 3(^3/_8) + (^5/_8)$)
- The student models a correct process for evaluating the expression ($^6/_8 + ^4/_8 + ^9/_8 + ^5/_8$).

Part B: Score Point 3

This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 56 fluid ounces (*56 fluid ounces*).

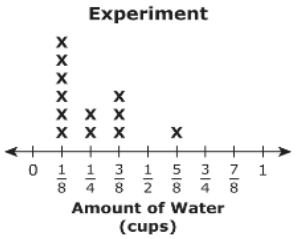
- The student models a correct process for finding the amount of water in the beaker (*32+24*).

- The student models a correct process for converting gallons and cups to fluid ounces ($4\sqrt{128}$ *, 8 fluid oz • 3 cups = 24 fluid ounces*).

A3

Part A: Score Point 3
Part B: Score Point 2

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

$\frac{1}{8} \cdot 6 + 2 \cdot \frac{1}{4} + \frac{5}{8} + \frac{3}{8} \cdot 3$
$\frac{6}{8} + 2 \cdot \frac{1}{4} + \frac{5}{8} + \frac{3}{8} \cdot 3$
$\frac{6}{8} + \frac{2}{4} + \frac{5}{8} + \frac{3}{8} \cdot 3$
$\frac{6}{8} + \frac{2}{4} + \frac{5}{8} + 1\frac{1}{8}$
$1\frac{2}{8} + \frac{5}{8} + 1\frac{1}{8}$
$1\frac{7}{8} + 1\frac{1}{8}$
3
The total number of cups of water used by the 12 students during the experiment is 3 cups of water.

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

1 $cup = 8$ fluid oz.
3 $cups = 24$ fluid oz.
1 $quart = \frac{1}{4}\, G$
1 $quart = 16$ fluid oz.
16 fluid $oz + 24$ fluid $oz = 40$ fluid oz.
The total number of fluid ounces of water in the beaker before the water was poured was 40 fluid ounces.

Annotations

Anchor Paper 3
Part A: Score Point 3

This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 3 cups (*3 Cups*).
- The student writes a correct expression ($^{1}/_{8}$ •*6 + 2* • *¼* + $^{5}/_{8}$ + $^{3}/_{8}$ •*3*).
- The student models a correct process for evaluating the expression *(*$^{6}/_{8}$ + $^{2}/_{4}$ + $^{5}/_{8}$ + *1* $^{1}/_{8}$).

Part B: Score Point 2

This response receives partial credit. The student includes two of the three required elements.

- The student models a correct process for finding the amount of water in the beaker (*16 fluid oz + 24 fluid oz*). Although the 16 fluid oz is incorrect, the process used for finding the amount of water is correct. Adding the amount of water used by the students during the experiment and the amount left in the beaker at the end of the experiment would provide the amount of water in the beaker at the beginning of the experiment.
- The student models a correct process for converting gallons and cups to fluid ounces (*1 cup=8 fluid oz., 3 cups=24 fluid oz., 1 quart =*$^{1}/_{4}$ *G, 1 quart=16 fluid oz*). Although the student uses an incorrect conversion of 16 ounces per quart, the process used by the student to determine the answer is correct, and could have led to the correct answer if the number of ounces had been correct. One quart is equal to 32 ounces, not 16 ounces.

The correct answer was not determined (*16 fluid oz + 24 fluid oz = 40 fluid oz*). If the correct number of ounces were used for the quart of liquid remaining in the beaker, the correct answer would be determined.

A4

Part A: Score Point 2
Part B: Score Point 3

Part A

$\frac{1}{8} \times 6 = \frac{6}{8}$

$\frac{1}{4} \times 2 = \frac{2}{4} = \frac{4}{8}$

$\frac{3}{8} \times \frac{3}{1} = \frac{9}{8}$

$\frac{5}{8} \times 1 = \frac{5}{8}$

$\frac{6}{8} + \frac{4}{8} + \frac{9}{8} + \frac{5}{8} = \frac{24}{8} = 3$

3 cups of water

Part B

3 cups = 24 fluid ounces

$\frac{1}{4}$ gallon = 1 quart = 2 pints = 4 cups = 32 fl oz.

24 + 32 = 56 fluid ounces

Annotations

Anchor Paper 4
Part A: Score Point 2

This response receives partial credit. The student includes two of the three required elements.

- The student determines the correct answer of 3 cups (*3 Cups*).
- The student models a correct process for evaluating the expression ($^{6}/_{8} + {}^{4}/_{8} + {}^{9}/_{8} + {}^{5}/_{8}$).

The expression shown to solve the problem is incorrect ($^{6}/_{8} + {}^{4}/_{8} + {}^{9}/_{8} + {}^{5}/_{8}$). The expression must include both multiplication and addition to be correct.

Part B: Score Point 3

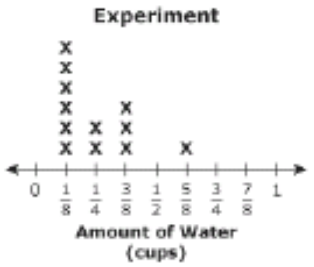
This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 56 fluid ounces (*56 fluid ounces*).
- The student models a correct process for finding the amount of water in the beaker (*24+32*).
- The student models a correct process for converting gallons and cups to fluid ounces ($^{1}/_{4}$ *gallon=1 quart=2 pints=4 cups=32 fl oz.*).

A5

Part A: Score Point 3
Part B: Score Point 1

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

$\left(6 \times \frac{1}{8}\right)+\left(2 \times \frac{1}{4}\right)+\left(3 \times \frac{3}{8}\right)+\left(1 \times \frac{5}{8}\right)$

you do the parathesis first:

$\frac{6}{8}+\frac{4}{8}+\frac{9}{8}+\frac{5}{8}$

then you do the addition

$\frac{24}{8}$

then you have to siplify to get:

3 cups

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

in total it would be $3\ \frac{1}{2}$ pints which goes to 56 fluid ounces

Annotations

Anchor Paper 5
Part A: Score Point 3

This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 3 cups (*3 Cups*).

- The student writes a correct expression (*((6 x 1/8) + (2 x 1/8) + (3 x 3/8) + (1 x 5/8))*).
- The student models a correct process for evaluating the expression ($^{6}/_{8} + {}^{4}/_{8} + {}^{9}/_{8} + {}^{5}/_{8}$).

Part B: Score Point 1

This response receives partial credit. The student includes one of the three required elements.

- The student determines the correct answer of 56 fluid ounces (*56 fluid ounces*).

No work is shown to find the amount of water in the beaker.

No attempt is made to model a correct process for converting gallons and cups to fluid ounces.

A6

Part A: Score Point 2
Part B: Score Point 2

Part A

$(\frac{1}{8} \cdot 6) + (\frac{1}{4} \cdot 2) + (\frac{3}{8} \cdot 3) + (\frac{5}{8} \cdot 1) = 3$ cups

Six students used $\frac{1}{8}$, 2 used $\frac{1}{4}$, 3 used $\frac{3}{8}$, and 1 used $\frac{5}{8}$.

Part B

Since they used 3 cups (or 24 fluid ounces), and $\frac{1}{4}$ gallon is 32 fluid ounces, there was 56 (32+24) fluid ounces in the beaker before the experiments.

Annotations

Anchor Paper 6
Part A: Score Point 2

This response receives partial credit. The student includes two of the three required elements.

- The student determines the correct answer of 3 cups (*3 cups*).
- The student writes a correct expression (*($^1/_8$ • 6) + ($^1/_4$ • 2) + ($^3/_5$ • 3) + ($^5/_8$ • 1)*).

No attempt is made to model a correct process for evaluating the expression.

Part B: Score Point 2

This response receives partial credit. The student includes two of the three required elements.

- The student determines the correct answer of 56 fluid ounces (*56*).
- The student models a correct process for finding the amount of water in the beaker (*32+24*).

The process for converting gallons and cups to fluid ounces is incomplete, as only the conversion for cups to ounces is shown (*24 fluid ounces*). A conversion of both gallons and cups to fluid ounces must be shown to receive this point for modeling. While the response states $^1/_4$ gallon is 32 fluid ounces, the work must be shown for converting gallons to fluid ounces.

A7

Part A: Score Point 3
Part B: Score Point 0

Part A

$(\frac{1}{8} \cdot 6) + (\frac{1}{4} \cdot 2) + (\frac{3}{8} \cdot 3) + (\frac{1}{2} \cdot 0) + (\frac{5}{8} \cdot 1) =$

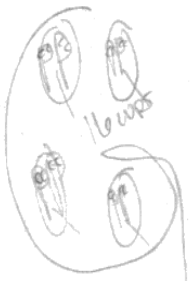
$\frac{3}{4} + \frac{1}{2} + 1\frac{1}{8} + 0 + \frac{5}{8} =$

3 total cups of water

Part B

16 cups
+ 3 cups
19 cups

19 cups =
$1\frac{3}{16}$ gallon =



1 gallon = 128 fluid ounces

152 ounces before pouring out water

$16 \overline{)128}^{8}$

$8 \times 3 = 24$

Annotations

Anchor Paper 7
Part A: Score Point 3

This response receives full credit. The student includes each of the three required elements.

- The student determines the correct answer of 3 cups (*3 total cups of water*).
- The student writes a correct expression ($(^1/_8 \bullet 6) + (^1/_4 \bullet 2) + (^3/_8 \bullet 3) + (^1/_2 \bullet 0) + (^5/_8 \bullet 1)$).
- The student models a correct process for evaluating the expression ($^3/_4 + ^1/_2 + 1\ ^1/_8 + 0 + ^5/_8$).

Part B: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

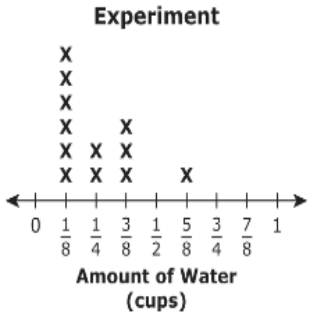
The process shown to find the amount of water in the beaker is incorrect.

The process for converting gallons and cups to fluid ounces is incomplete, as only the conversion for cups to ounces is shown ($8 \times 3 = 24$). A conversion of both gallons and cups to fluid ounces must be shown to receive this point for modeling. Although the response says 1 gallon = 128 fluid ounces, this information is given in the prompt and does not count toward showing a conversion from gallons to ounces.

A8

Part A: Score Point 2
Part B: Score Point 0

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

$$\frac{1}{8} \times 6 + \frac{2}{8} \times 2 + \frac{3}{8} \times 3 + \frac{5}{8} = \frac{24}{8} = 3$$

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

$128 \div 4 = 32$
$128 \times 3 = 384$
there was 384 fluid ounces in the beaker before the students used them.

Annotations

Anchor Paper 8
Part A: Score Point 2

This response receives partial credit. The student includes two of the three required elements.

- The student determines the correct answer of 3 cups (*3*).
- The student writes a correct expression ($^{1}/_{8} \times 6 + {}^{2}/_{8} \times 2 + {}^{3}/_{8} \times 3 + {}^{5}/_{8}$).

Note: The expression is acceptable even though it is part of an equation that contains a correct answer.

No attempt is made to model a correct process for evaluating the expression.

Part B: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

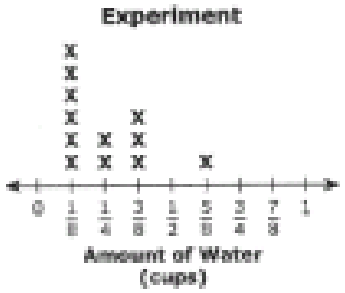
The process shown to find the amount of water in the beaker is incorrect.

The process for converting gallons and cups to fluid ounces is incomplete, as only the conversion for gallons to ounces is shown ($128 \div 4$). A conversion of both gallons and cups to fluid ounces must be shown to receive this point for modeling. The multiplication for converting cups to ounces, $8 \times 3 = 24$, does not need to be shown because it is considered a simple conversion; however, the number 24 must appear in the student's work to account for converting cups to ounces.

A9

Part A: Score Point 2
Part B: Score Point 0

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

3 cups because all you do is
$\frac{1}{8} \times 6 + \frac{1}{4} \times 2 + \frac{3}{8} \times 3 + \frac{5}{8} = 3$

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

$128 \div 3 = 42.7$
and so the answer is 42.7

Annotations

Anchor Paper 9
Part A: Score Point 2

This response receives partial credit. The student includes two of the three required elements.

- The student determines the correct answer of 3 cups (*3 cups*).
- The student writes a correct expression ($^{1}/_{8}$ *x 6 +* ¼ *x 2 +* $^{3}/_{8}$ *3 +* $^{5}/_{8}$).

No attempt is made to model a correct process for evaluating the expression.

Part B: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

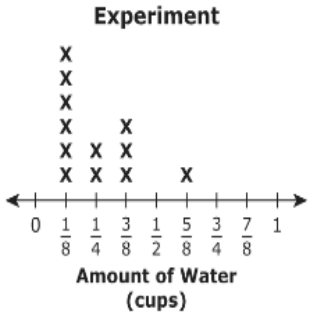
The process shown to find the amount of water in the beaker is incorrect.

No attempt is made to model a correct process for converting gallons and cups to fluid ounces.

A10

Part A: Score Point 1
Part B: Score Point 0

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

$$\left(6 \times \frac{1}{8}\right) + \left(2 \times \frac{1}{4}\right) + \left(3 \times \frac{3}{8}\right) + \left(1 \times \frac{5}{8}\right)$$

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

43 fluid ounces, because $0.75 + 0.5 + 1.125 + 0.625$ is equal to 3 then you divide 128 by 3 which gives you 43.

Annotations

Anchor Paper 10
Part A: Score Point 1

This response receives partial credit. The student includes one of the three required elements.

- The student writes a correct expression ($(6 \times 1/8) + (2 \times 1/4) + (3 \times 3/8) + (1 \times 5/8)$).

The correct answer was not determined. No attempt is made to model a correct process for evaluating the expression.

Part B: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

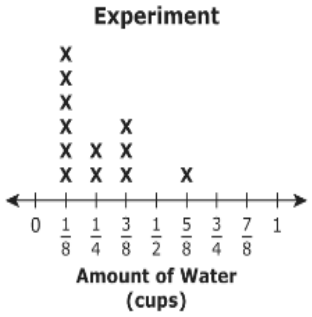
The process shown to find the amount of water in the beaker is incorrect.

No attempt is made to model a correct process for converting gallons and cups to fluid ounces.

A11

Part A: Score Point 1
Part B: Score Point 0

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

first do $\frac{1}{8} \square \times 6$ than do $\frac{1}{4} \square \times 2$ than $\frac{3}{8} \square \times 3$ than $\frac{5}{8} \square \times 1$ than you add them all up to get the total of cups used.

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

you first find out how many fluid ounces go in one gallon than you do $128 \div 4$ because you have to find $\frac{1}{4}$ of 128 fluid ounces which the i found out the it was 32 fluid ounces.

Annotations

Anchor Paper 11
Part A: Score Point 1

This response receives partial credit. The student includes one of the three required elements.

- The student models a correct process for evaluating the expression (*($^{1}/_{8}$ X 6, ¼ X 2, $^{3}/_{8}$ X 3, $^{5}/_{8}$ X 1) than you add them all up to get the total of cups used*).

The correct answer was not determined. No attempt is made to write a correct expression.

Part B: Score Point 0

This response receives no credit. The student includes none of the three required elements.

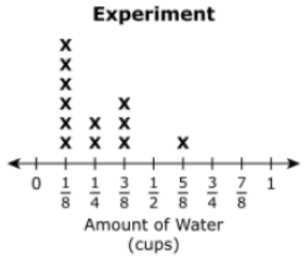
The correct answer was not determined.

The process shown to find the amount of water in the beaker is incorrect. The process shown for converting gallons and cups to fluid ounces is incomplete ($128 \div 4$). A conversion of both gallons and cups to fluid ounces must be shown to receive this point for modeling. The multiplication for converting cups to ounces, $8 \times 3 = 24$, does not need to be shown because it is considered a simple conversion; however, the number 24 must appear in the student's work to account for converting cups to ounces.

A12

Part A: Score Point 0
Part B: Score Point 0

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

Enter your expression and your work or explanation in the space provided.

$$\frac{1}{8} + \frac{1}{4} + \frac{3}{8} + \frac{5}{8}$$
$$\frac{1}{8} + \frac{2}{8} + \frac{3}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}$$

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

Enter your answer and your work or explanation in the space provided.

$$128 \div 4 = 32$$

Annotations

Anchor Paper 12

Part A: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

The expression is not correct.

No attempt is made to model a correct process for evaluating the correct expression.

Part B: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

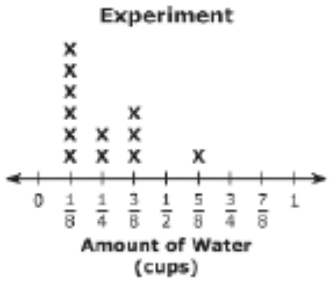
No attempt is made to show the process to find the amount of water in the beaker.

No attempt is made to show the process for converting gallons and cups to fluid ounces.

A13

Part A: Score Point 0
Part B: Score Point 0

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

6 students drank $\frac{1}{8}$ a cup of water.2 students drank $\frac{1}{4}$ a cup of water.3 students drank $\frac{3}{8}$ a cup of water.1 student drank $\frac{5}{8}$ a cup of water.the students drank a total of one cup and $\frac{3}{8}$ a cup of water

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

they have one $cup = 128$ fluid ounces and then they had $\frac{3}{8}$ a cup so that $would = 41$ fluid ounces now add that together
$128 + 41 = 169$ fluid ounces

Annotations

Anchor Paper 13

Part A: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

No attempt is made to write a correct expression.

No attempt is made to model a correct process for evaluating the expression.

Part B: Score Point 0

This response receives no credit. The student includes none of the three required elements.

The correct answer was not determined.

The process shown to find the amount of water in the jug is incorrect.

The process shown for converting gallons and cups to fluid ounces is incorrect.

Practice Set
P101 - P105

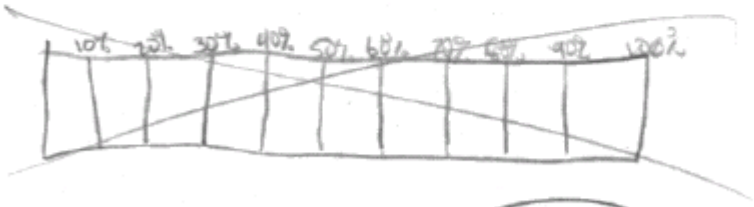
P101

Part A

$6(\frac{1}{8}) + 2(\frac{1}{4}) + 3(\frac{3}{8}) + 1(\frac{5}{8})$

Part B

$\frac{1}{4} = .25$ 128

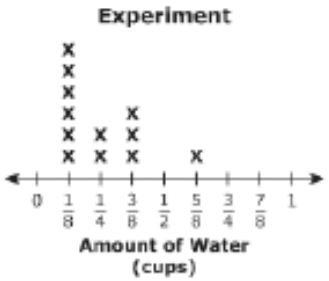


5.12
25)128.00
-125
3 0
-25
50

5.12 fluid ounces

P102

The line plot shows the amount of water used by 12 students during an experiment.



Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

$$\frac{1}{8} \times 6 + \frac{1}{4} \times 2 + \frac{3}{8} \times 3 + \frac{5}{8} = 3$$

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.

What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

There were 56 fluid ounces in the beaker before the students poured some for themselves. I figured it out be configuring my answer to part A's equation, 3, into fluid ounces, which was 24. I added that to the $\frac{1}{4}$ of a gallon left, or 32 fluid ounces. Together, they equaualed 56.

Part A

$$\left(\frac{1}{8} \cdot 6\right) + \left(\frac{1}{4} \cdot 2\right) + \left(\frac{3}{8} \cdot 3\right) + \frac{5}{8} = 3$$

Part B

96

Part A

$\frac{1}{8} \times 6 + \frac{1}{4} \times 2 + \frac{3}{8} \times 3 + \frac{5}{8}$

$\frac{3}{4} + \frac{1}{2} + 1\frac{1}{8} + \frac{5}{8}$

$\frac{5}{4} = 1\frac{1}{4} + 1\frac{6}{8} = 1\frac{3}{4}$

$2\frac{4}{4} =$ 3 cups total

Part B

1 gal. ÷ 4 = $\frac{1}{4}$ gal

128 fl. oz. ÷ 4 = 32 floz

1 cup = 8 fl. oz.

4 cups = 32 fluid oz.

There was a total of 7 cups in the beaker at 12:

3 cups + 4 cups = 7 cups

(used by students) (left over)

P105

Part A

$\left(\frac{1}{8} \times \frac{6}{1}\right) + \left(\frac{1}{4} \times 2\right) + \left(\frac{3}{8} \times 3\right) + \frac{5}{8}$

$\frac{3}{4} + \left(\frac{1}{4} \times 2\right) + \left(\frac{3}{8} \times 3\right) + \frac{5}{8}$

$\frac{3}{4} + \frac{1}{2} + \left(\frac{3}{8} \times 3\right) + \frac{5}{8}$

$\frac{3}{4} + \frac{1}{2} + \frac{9}{8} + \frac{5}{8}$

$\frac{6}{8} + \frac{4}{8} + \frac{9}{8} + \frac{5}{8} = \frac{24}{8} = 3$

3 cups of water

Part B

$3 - \frac{1}{4} =$ $2\frac{3}{4}$ cups of water

Practice Set

Paper	Score
P101	1,0
P102	2,2
P103	2,0
P104	3,2
P105	3,0