



Math
Released Item 2016

Grade 7

Servings of Juice
VF657972

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

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

Rubric

Score	Description
3	<p>Student response includes each of the following 3 elements.</p> <ul style="list-style-type: none"> • Computation component = 1 point <ul style="list-style-type: none"> ○ The student provides a number or a range of numbers that fall(s) between 120 and 136. • Modeling component = 1 point <ul style="list-style-type: none"> ○ The student provides an estimation procedure to approximate the number of servings that can be dispensed before the juice dispenser needs to be refilled. • Modeling component = 1 point <ul style="list-style-type: none"> ○ The student correctly applies the estimation procedure to determine a reasonable number of servings in a filled juice dispenser. <p>Sample Student Response:</p> <p>"Approximately 7 out of 10 students choose a 4-ounce serving. Therefore, approximately 3 out of 10 students choose the 8-ounce serving. So, for every 10 students, the total amount of juice dispensed is approximately $7 \times 4 + 3 \times 8 = 52$ fluid ounces. This means that juice is dispensed at a rate of 5.2 fluid ounces per serving."</p> <p>"Since a typical juice serving is 5.2 fluid ounces, I need to divide 640 by 5.2 to get the number of servings of juice in the full dispenser. And $640 \div 5.2$ is about 123 servings."</p> <p>Notes:</p> <ul style="list-style-type: none"> • The student may receive up to a total of 1 modeling point if he or she computes the correct answer but shows insufficient work to indicate a correct modeling process. • The student may receive only the computation point if he or she provides a reasonable estimate but does not include any work or modeling to explain how the estimate was determined. • The student may receive credit for providing equivalent expressions in the modeling process.
2	Student response includes 2 of the above elements.
1	Student response includes 1 of the above elements.
0	Student response is incorrect or irrelevant.

Anchor Set

A1 – A8

With Annotations

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

$7 \times 4 = 28$ and $3 \times 8 = 24$, so
thats the estamated number of
ounces per every 10 servings, so
 $28 + 24 = 52$
 $640 \div 52 = 12.307692$ which
times 10 is 123.07692 so that mean
sthat about it takes about 123
servings to be dispensed from the
juice dispenser before they have to fill
it up again

Annotation

Anchor Paper 1

Score Point 3

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

- The correct number of servings is given, between 120 and 136 is acceptable (123).
- A correct estimation procedure to approximate the number of servings that can be dispensed before the juice dispenser needs to be refilled is provided ($7 \times 4 = 28$, and $3 \times 8 = 24$ so that the estimated number of ounces per every 10 servings, so $28 + 24 = 52$).
- The student correctly applies the estimation procedure to determine the number of servings in a filled juice dispenser ($640 \div 52 = 12.307692$ which times 10 is 123.07692).

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

$$\begin{aligned}(7 \times 4)oz. &= 28 \\ 3 \times 8 &= 24 \\ 28 + 24 &= 52oz. \\ 650 \div 50 &\approx 13times \\ 13 \times 10 &= 130\end{aligned}$$

Annotation

Anchor Paper 2

Score Point 3

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

- The correct number of servings is given, between 120 and 136 is acceptable (130).
- The correct estimation procedure to approximate the number of servings that can be dispensed before the juice dispenser needs to be refilled is provided [$(7 \times 4)\text{oz.} = 28$, $3 \times 8 = 24$, $28 + 24 = 52\text{oz.}$].
- The student correctly applies the estimation procedure to determine the number of servings in a filled juice dispenser ($650 \div 50 \approx 13\text{times}$, $13 \times 10 = 130$).

Note the student rounds 640 to 650 and 52 to 50 to find the estimate.

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

About 544 servings

$$\frac{70}{100} = \frac{x}{640}$$

$$x = 448$$

$$448 \div 4 = 112$$

$$\frac{30}{100} = \frac{x}{640}$$

$$x = 192$$

$$112 \div 8 = 24$$

$$112 + 24 = 136$$

$$640 \div 136 = 4$$

$$136 \times 4 = 544$$

Annotation

Anchor Paper 3

Score Point 2

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

- The correct estimation procedure to approximate the number of servings that can be dispensed before the juice dispenser needs to be refilled is provided ($\frac{70}{100} = \frac{x}{640}$, $x=448$, $\frac{30}{100} = \frac{x}{640}$, $x=192$).
- The student correctly applies the estimation procedure to determine the number of servings in a filled juice dispenser ($448 \div 4 = 112$, $192 \div 8 = 24$, $112 + 24 = 136$).

The student indicates an incorrect number of servings (About 544). Note the student initially derives the correct number of servings (136), but incorrectly continues the computations to find an incorrect number of servings ($640 \div 136 = 4$, $136 \times 4 = 544$).

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

$640 \div 70\% = 448$ ounces and
 $640 - 448 = 192$ so and
 $448 \div 4 = 112$ and
 $192 \div 8 = 24$ and 24
 $+112 = 136$ servings until it needs
refilled

Annotation

Anchor Paper 4

Score Point 2

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

- A correct number of servings is given, between 120 and 136 is acceptable (136).
- The student correctly applies the estimation procedure to determine the number of servings in a filled juice dispenser is provided ($448 \div 4 = 112$ and $192 \div 8 = 24$ and $24 + 112 = 136$).

Although the student correctly solves for the number of 4 and 8 ounce servings that can be dispensed, 448 and 192, the student incorrectly shows the division of 640 by 70% instead of multiplication.

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Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

I'd say about 136 servings.
First I set up a ratio of 7:10 knowing that 10 would have to be multiplied by 64, so as would 7 to be in proportion. I got 448 servings, which you divide by 4 to get the number of servings. You still have to find out the amount of servings for the 8 ounce and do the same steps only you divide it by 8. Then you get your answer

Annotation

Anchor Paper 5

Score Point 1

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

- A correct number of servings is given, between 120 and 136 is acceptable (about 136).

Although some of the correct estimation procedure and application of the procedure is present, the response does not include enough work to earn credit for either modeling part. Also, the student indicates that 10 and 7 need to be multiplied by 64. Actually, using this method, 7 and 3 must be multiplied by 64.

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

$$\begin{aligned} 640 \div 4 &= 160 \\ 640 \div 8 &= 80 \end{aligned} \quad 120 \text{ servings}$$

Annotation

Anchor Paper 6

Score Point 1

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

- A correct number of servings is given, between 120 and 136 is acceptable (120).

Insufficient work is shown to earn credit for either modeling parts. The student takes the average of how many 4 and 8 ounce servings are available in 640 total ounces ($640 \div 4 = 160$, $640 \div 8 = 80$).

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

53 times.
7 students choose 4 oz.
3 student choose 8 oz.
 $8 + 4 = 12$
 $640 \div 12 = 53.333...$
53 times.

Annotation
Anchor Paper 7
Score Point 0
<p>The response receives no credit. The student includes none of the three required elements.</p> <p>The answer provided (53) is out of range of accepted answers.</p> <p>Incorrect work is shown for both modeling parts.</p>

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Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

$$\begin{aligned} 7 \times 4 &= 28 \text{ ounces} \\ 3 \times 8 &= 24 \text{ ounces} \end{aligned}$$

Annotation
Anchor Paper 8
Score Point 0
<p>The response receives no credit. The student includes none of the three required elements.</p> <p>No correct number of servings is provided.</p> <p>Work shown is insufficient to earn credit ($7 \times 4 = 28$, $3 \times 8 = 24$). The student does not combine the ounces to total 52.</p>

Practice Set

P101 - P105

No Annotations Included

A school cafeteria has a juice dispenser that holds 640 fluid ounces of juice when completely filled. Juice is offered in two serving sizes: 4 ounces or 8 ounces. Each day, approximately 7 out of 10 students choose the 4-ounce serving size, and the other students choose the 8-ounce serving size.

Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

640 divided by 10 then I multiplied
 $64 \times 7 = 448$ plus $64 \times 3 = 192$
and 192 divided by $8 = 24$ and 448
divided by $4 = 112$ and
 $112 + 24 = 136$ cups

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Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

120 servings



$$7 \times 4 + 3 \times 8 = 52$$

$$640 \div 52$$

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Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

i took 7×4 and got 28
then i took 8×3 and got 24 i added
 $28 + 24$ and got 52
about 52 servings can be used for
about every ten people

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Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

first i did $640 \square \times .7$. Then *I* divided that by 4. that gave me 112. then I did $640 \square \times .3$ and divided that by 8. that gave me 24. then i added 112 and 24 and got 136.

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Based on this information, estimate the number of servings that can be dispensed from the juice dispenser before it needs to be refilled. Show or explain each step you used when finding your estimate.

$$7 \times 4 + 3 \times 8 = 52$$

$$640 \div 52 = 12.3$$

in about 12 days you need to refill

Practice Set

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