

Algebra: Production Planner

Darigold Inc.

Job Description: Plan ice cream production and supervise employees

Problem:

How much ice cream mix and vanilla flavor will it take to make 1000 gallons of vanilla ice cream at 90% overrun with the vanilla flavor usage rate at 1 oz. per 10 gallon mix?

(90% overrun means that enough air is put into the frozen mix to increase its volume by 90%).

Note: 1 gallon = 128 fluid oz.

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Solution:

Total volume required = $1000 \text{ gal} \div (1 + 0.9) = 526.3 \text{ gal}$

Now let x = volume of ice cream mix

y = volume of vanilla flavor

So $x + y = 526.3$ but $y = (0.00078)(x)$ - which is negligible

So $x = 526.3$

But since we need 1 oz. of flavoring for 10 gal of mix

We get $y \text{ oz} \div 526.3 \text{ gal} = 1 \text{ oz} \div 10 \text{ gal}$

$Y = 52.6 \text{ oz}$ of flavor