

Question: How many plums will balance one pear, given that 3 apples and one pear weigh as much as 10 plums, and one apple and 6 plums balance one pear? Assume that fruits of the same kind have the same weight.

Show-o & Emu3 & Janus Pro 7B



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do not support this task.

MMaDA

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Okay, let's see. I need to figure out how many plums balance one pear. The problem gives me two equations involving apples, pears, and plums. All fruits of the same type weigh the same. Hmm, let's break it down step by step.

First, let me restate the information given. The problem says:

1. 3 apples and one pear weigh the same as 10 plums.
2. 1 apple and 6 plums balance one pear.

I need to find out how many plums equal one pear. Let me assign variables to each fruit to make it easier. Let's let A represent the weight of an apple, P represent the weight of a pear, and M represent the weight of a plum. Since all fruits of the same kind are identical in weight, these variables should work.

So translating the problem into equations: 1) $3A + P = 10M$ 2) $A + 6M = P$

The goal is to find how many plums equal one pear, so I need to express P in terms of M. So essentially, solve for P and find out how many plums one pear equals.

Looking at the two equations, maybe I can substitution or elimination. Let's see. Equation 2 gives me P in terms of A and M. If I can substitute P into equation 1, maybe I can solve for A in terms of M, and then substitute that back to find P in terms of M.

Starting with equation 2: $P = A + 6M$. Let's plug that into equation 1.

So equation 1 becomes: $3A + (A + 6M) = 10M$.

Which simplifies to $4A + 6M = 10M$

Now subtract 6M from both sides: $4A = 4M$

Divide both sides by 4: $A = M$

Wait, so an apple weighs the same as a plum? That's interesting. So if $A = M$, then from equation 2, $P = A + 6M$. Since $A = M$: $P = M + 6M = 7M$

So a pear is equal to 7 plums? But let me check if this makes sense with the first equation.

Original equation 1: $3A + P = 10M$. If $A = M$ and $P = 7M$, then substituting in: $3M + 7M = 10M$. That works out.

And equation 2: $A + 6M = P$

$M + 6M = 7M$

$7M = P$. Which also checks out.

Wait, so according to this, one pear is equivalent to 7 plums. That seems straightforward, but let me make sure I didn't skip any steps or make any miscalculations.

Starting again, the equations:

1) $3A + P = 10M$

2) $P = A + 6M$

Substitute equation 2 into equation 1:

$3A + (A + 6M) = 10M$

Which is $4A + 6M = 10M$

$6M = 4A = 4M$, so $A = M$

Then $P = A + 6M = 7M$. Yes, that's correct.

So the equations are satisfied. Both are satisfied with $A = M$ and $P = 7M$. Therefore, one pear is equal to 7 plums. So the answer should be 7 plums balance one pear.

But let me just visualize it again to be sure. Suppose a plum is a plum, then:

Original equation:

$1A + P = M + 6M = 7M$.

Then $3A + P = 3M + 7M = 10M$, which is 10 plums. Correct.

And $1A + 6M = M + 6M = 7M$, which is one pear. Perfect.

So all checks out. Therefore, the answer is 7

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