

Sample Answer:

Understand the Problem

We know:

- 450- 600 worms can produce 18 litres of castings in 9 weeks.
- There are 500 worms in half a pound
- You use 3-4 lbs of worms in a bin for 4-6 people
- I have 3 bins

We need to know:

1. How many worms are in a pound and how many litres of castings one pound of worms would produce.

We know that two halves make a whole so, if 500 worms weigh half a pound then 1 pound of worms would be made up of 1000 worms. If we have double the worms then we have double the castings, so I multiply 18×2 which equals 36. So 1 pound of worms or 1000 worms could produce 36 litres of castings in 9 weeks.

2. How many pounds of worms we have.

We will have between 9 and 12 pounds of worms in total. We multiplied the number of bins we have by the number of pounds of worms in each bin. We will use the minimum number of pounds to make our calculations.

3. The number of litres our worms would produce in a 9-week period.

We wrote a proportion with a missing term for the amount of castings in litres our worms would produce in nine weeks.

$$1:36 = 9 : \blacksquare$$

The scale factor is 9 because $1 \times 9 = 9$. So, I multiplied 36 by 9 to get the missing term. The missing term is 324.

So, we know that our worms will produce a minimum of 324 litres of castings in 9 weeks under the right conditions.

Make a Plan

1. First we will organize our data in a table of values with three columns: term number, number of weeks, number of litres. Each term number will represent a period of 9 weeks. There are 4 nine-week periods in 36

- weeks, which we calculated by dividing 36 by 9 to get 4, so there will be 4 terms in my sequence. After, I will extend it by 4 terms.
- I will create a scatter plot to predict approximately the number of litres we will have after 90 weeks.

Carry Out the Plan

- Create a table of Values

Term Number	Number of Weeks	Term Value Total Number of Castings Produced
1	9	324
2	18	648
3	27	972
4	36	1296

- Write a pattern rule.
 - The pattern rule is the term number \times 324
 - The pattern rule is, start with 324 and add on 324 to get the next term value in the sequence. Add 324 to this term value to get the next term value in the sequence and so on.
- Extend the sequence by 4 terms.

5	45	1620
6	54	1944
7	63	2268
8	72	2592

- Create a scatter plot to predict the number of castings produced after 90 weeks.
- Write your prediction

Look Back

We extended the pattern using my table of values. The number of litres produced after 90, according to our calculations, was near to our prediction reached with our scatter plot, so we think our scatter plot was accurate.

9	81	2916
10	90	3240