System Speak
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Using the system of equations below:
ab=1 (1)
bc=2 (2)
cd=3 (3)
de=4 (4)
ea=6 (5)

I can find b in terms of a using equation (1) by dividing by a to give b = 1/a which I will call equation (6). Therefore b must be a reciprocal of a due to the fact that its product must equal 1. Substituting equation (6) for the value of b into (2) gives c/a=2 and so c=2a (7). As a result , cd=3 can also be written as 2ad=3 thus the product of ad=3/2. Assuming that a or d = 1 and the other equals 3/2 , I can make effective use of trial and error to see whether these values for these two letters prove the rest of the equations true:

Sub a = 1 into (1) so b=1
Sub b=1 into (2) leaving c=2
Sub c=2 into (3) gives d=3/2 (I previously established with assumption that it would make sense if either d or a =3/2 with the other equalling 1)
If d=3/2 then e=4/3/2=8/3
Sub e=8/3 into (6) knowing that a=1 doesn't result in an answer of 6 and therefore these set of values are simply incorrect.

Using a=3/2 instead of d=3/2, b=1/3/2=2/3
Sub b= 2/3 into (2) means that c=2/2/3 thus c=3.
Knowing already that d = 1 if a =3/2 , I can check whether this assumption is correct by substituting c=3 into (3) and rearranging to find whether d=1 , which as a matter of fact it does.
If d=1 then e must equal 4 and so i can finally check whether these set of values are true by substituting e=4 and a=3/2 to see if their product is 6: 4*3/2=6.
Therefore {3/2, 2/3 , 3, 1, 4} for {a, b, c, d, e} satisfy this system. In addition , the system is also satisfied if all the values for {a, b, c, d, e} are { - 3/2 , - 2/3 , - 3 , - 1 , - 4}, in other words all the first set of values if negative also prove the equations true.