

Warmup

Arithmetic or Geometric? How do you know?

a) $3, 1, \frac{1}{3}, \frac{1}{9}, \dots$

b) $-7, -15, -23, \dots$

$\times \frac{1}{3}$ geometric ~~-8~~ arithmetic sub

Come up with 3 different explicit equations.

x	0	1	2	3	4
y	400	100	25	$\frac{25}{4}$	$\frac{25}{16}$

$$A_n = 100 \left(\frac{1}{4}\right)^{n-1}$$

$$A_n = 25 \left(\frac{1}{4}\right)^{n-2}$$

$$\frac{25}{16} \left(\frac{1}{4}\right)^{n-4}$$

$$A_n = 400 \left(\frac{1}{4}\right)^n$$

$$A_n = \frac{25}{4} \left(\frac{1}{4}\right)^{n-3}$$

Don't Break the Chain



A Solidify Understanding Task

Maybe you've received an email like this before:

Hi! My name is Bill Weights, founder of Super Scooper Ice Cream. I am offering you a gift certificate for our signature "Super Bowl" (a \$4.95 value) if you forward this letter to 10 people.

When you have finished sending this letter to 10 people, a screen will come up. It will be your Super Bowl gift certificate. Print that screen out and bring it to your local Super Scooper Ice Cream store. The server will bring you the most wonderful ice cream creation in the world—a Super Bowl with three yummy ice cream flavors and three toppings!

This is a sales promotion to get our name out to young people around the country. We believe this project can be a success, but only with your help. Thank you for your support.

Sincerely,

Bill Weights
Founder of Super Scooper Ice Cream

These chain emails rely on each person that receives the email to forward it on. Have you ever wondered how many people might receive the email if the chain remains unbroken? To figure this out, assume that it takes a day for the email to be opened, forwarded, and then received by the next person. On day 1, Bill Weights starts by sending the email out to his 8 closest friends. They each forward it to 10 people so that on day 2 it is received by 80 people. The chain continues unbroken.

1. How many people will receive the email on day 7?

8,000,000 people

X	Y
1	8
2	80

$> \times 10$

2. How many people will receive the email on day n ? Explain your answer with as many representations as possible.

EXP
 $A_n = 8(10)^{n-1}$
 $80(10)^{n-2}$
 or $800(10)^{n-3}$
 or $8000(10)^{n-4}$

RECUR: $A_1 = 8$
 $A_n = 10(A_{n-1})$

3. If Bill gives away a Super Bowl that costs \$4.95 to every person that receives the email during the first week, how much will he have spent?

\$43,999,995.60

Day 1 + Day 2 + Day 3 ... + Day 7
 $8,888,888 \times 4.95$

$\times 4$ weeks

\$175,999,982.40

