

11.7 Sequences from context

Determine the common difference or ratio, then write the recursive AND explicit formula for each situation and answer each question.

1. Sarah is preparing for a hot dog eating challenge. On the first day of training she eats 5 hot dogs. On the second 8 hot dogs, and on the third 11. Assume this pattern continues.

Common difference/ratio:

Recursive:

Explicit:

How many hot dogs will she eat on day 17?

2. The yearbook staff is unpacking a box of school yearbooks. The box weighs 286 ounces when one yearbook is unpacked, 275 for two, and 264 for 3.

Common difference/ratio:

Recursive:

Explicit:

How many yearbooks are in the box?

3. The prospector was out mining one day when he hit ore that weighs 500mg. It has a half-life of 1 day (which means that the amount of ore reduces by half each day, $g_0 = 500$).

Common difference/ratio:

Recursive:

Explicit:

Will it be better for the prospector to sell the material on day 2 for \$5/mg or on day 4 for \$25/mg?

4. After a recent knee surgery my doctor told me to get back into my jogging program slowly. So I decided to start with 12 minutes for the first week and then add 6 minutes every week.

Common difference/ratio:

Recursive:

Explicit:

How many minutes will you be running during week 12?

5. Jesse is in charge of a tennis tournament. After the first round there are 32 teams left, after the second round there are 16 teams left, and after the third round 8 teams.

Common difference/ratio:

Recursive:

Explicit:

How many teams are left after 5th round?

6. Bacteria can double their number every 10 minutes. A biologist is studying the growth rate and starts with 5 bacteria strands on a petri dish.

Common difference/ratio:

Recursive:

Explicit:

What is the growth rate for every 10 minutes?

7. Circle all the numbers for the situations that represent linear (arithmetic) situations and put a square around those that represent exponential (geometric)