## Unit 5 Lesson 2: Patterns of Growth

### 1 Which One Doesn’t Belong: Tables of Values (Warm up)

#### Student Task Statement

Which one doesn't belong?

Table A

| $x$ | $y$ |
| --- | --- |
| 1 | 8 |
| 2 | 16 |
| 3 | 24 |
| 4 | 32 |
| 8 | 64 |

Table B

| $x$ | $y$ |
| --- | --- |
| 0 | 0 |
| 2 | 16 |
| 4 | 32 |
| 6 | 48 |
| 8 | 64 |

Table C

| $x$ | $y$ |
| --- | --- |
| 0 | 1 |
| 1 | 4 |
| 2 | 16 |
| 3 | 64 |
| 4 | 256 |

Table D

| $x$ | $y$ |
| --- | --- |
| 0 | 4 |
| 1 | 8 |
| 2 | 12 |
| 3 | 16 |
| 4 | 20 |

### 2 Growing Stores

#### Student Task Statement

A food company currently has 5 convenience stores. It is considering 2 plans for expanding its chain of stores.

Plan A: Open 20 new stores each year.

1. Use technology to complete a table for the number of stores for the next 10 years, as shown here.

| * year
 | * number of stores
 | * difference from previous year
 |
| --- | --- | --- |
| * 0
 | * 5
 | *
 |
| * 1
 | * 25
 | *
 |
| * 2
 | *
 | *
 |
| * 3
 | *
 | *
 |
| * 4
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 | *
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| * 5
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| * 6
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 | *
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| * 7
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 | *
 |
| * 8
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 | *
 |
| * 9
 | *
 | *
 |
| * 10
 | *
 | *
 |

* 1. What do you notice about the difference from year to year?
	2. If there are $n$ stores one year, how many stores will there be a year later?
	3. What do you notice about the difference every 3 years?
	4. If there are $n$ stores one year, how many stores will there be 3 years later?

Plan B: Double the number of stores each year.

1. Use a technology to complete a table for the number of stores for the next 10 years under each plan, as shown here.

| * year
 | * number of stores
 | * difference fromprevious year
 | * factor fromprevious year
 |
| --- | --- | --- | --- |
| * 0
 | * 5
 | *
 | *
 |
| * 1
 | *
 | *
 | *
 |
| * 2
 | *
 | *
 | *
 |
| * 3
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| * 4
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| * 5
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| * 10
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 |

* 1. What do you notice about the difference from year to year?
	2. What do you notice about the factor from year to year?
	3. If there are $n$ stores one year, how many stores will there be a year later?
	4. What do you notice about the difference every 3 years?
	5. What do you notice about the factor every 3 years?
	6. If there are $n$ stores one year, how many stores will there be 3 years later?

### 3 Flow and Followers

#### Student Task Statement

Here are verbal descriptions of 2 situations, followed by tables and expressions that could help to answer one of the questions in the situations.

* Situation 1: A person has 80 followers on social media. The number of followers triples each year. How many followers will she have after 4 years?
* Situation 2: A tank contains 80 gallons of water and is getting filled at rate of 3 gallons per minute. How many gallons of water will be in the tank after 4 minutes?

Match each representation (a table or an expression) with one situation. Be prepared to explain how the table or expression answers the question.

A. $80⋅3⋅3⋅3⋅3$

B.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| $x$ | 0 | 1 | 2 | 3 | 4 |
| $y$ | 80 | 240 | 720 | 2,160 | 6,480 |

C. $80+3+3+3+3$

D. $80+4⋅3$

E.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| $x$ | 0 | 1 | 2 | 3 | 4 |
| $y$ | 80 | 83 | 86 | 89 | 92 |

F. $80⋅81$



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