

Warmup

Linear and Exponential

Given the following scenarios, you are to compare which method is better.

- a. **Two dollars** for each bag of leaves
- b. **Two cents** for one bag, **4 cents** for 2 bags, **8 cents** for 3 bags, and so on with this amount **doubling** for each additional bag.

Create each **explicit** equation.

Option A:

$$y = 2x$$

Option B:

$$y = 0.02(2)^{x-1}$$

Create a **table** for each option.

Option A

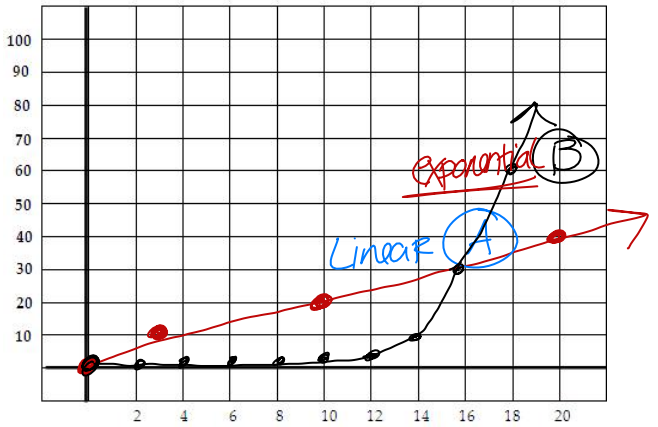
x	y
0	0
1	2
2	4
3	6
4	8
5	10

Option B

x	y
0	0
1	0.02
2	0.04
3	0.08
4	0.16
5	0.32

+2

x2



Graph each table on the graph provided.

Be sure to label **A** and **B**.

- 1) If Celia rakes 5 bags of leaves, which method does she opt for? Why?

A → \$10 B → \$0.32 (A) → More \$

- 2) What if she rakes 10 bags of leaves?

A → \$20 B → $0.02(2)^{10-1} = \$10.24$
 (A) → more \$

- 3) How many bags of leaves does she have to rake before method b pays more than method a?

11 $2(11) = 22$ $0.02(2)^{11-1} = \$20.48$
 12 $2(12) = 24$ $0.02(2)^{12-1} = \$40.96$

12 bags

- 4) Describe the difference in payment plans. What do you notice about the growth of each one? Put down ALL that you know!

A → constant rate → +2 B → exponential x2

$$0.02(2)^{100-1} = 1.27 \times 10^{28}$$

1.27