

Warm-Up!

- Get a calculator!
- Find the following answers using your calculator

$$2(2.4)^4$$

$$2 + (2.4)^3$$

$$(2.4)^0$$

Quick Check

Rewrite

$$3^{\frac{4}{7}}$$

Also

What is the domain and range of the function

$$f(x) = \sqrt{x - 3}$$

Quick Check Part 2

Graph

$$f(x) = 2^x$$

Unit 8 Exponential Functions

Section 1: Writing Functions

Exploration

- You are shopping for new clothes. You pick up \$92 worth of clothing, but its your lucky day! There is a store wide sale, 25% off everything!
- How can we solve this using two operations?
- How can we solve this using one operation?
- Which way is quicker?

Example1

- You need a new PlayStation 4. They sell at \$399.99. Maryland Sales tax is 6%. How much money are you paying for your new PlayStation.

Exploration

An initial investment of \$5,000 grows at 5% per year. What function represents the value of the investment after t years?

What is different between this one from the last one?

Determine the value after 5 years.

Example 2

- An initial investment of \$12,000 grows at 7% per year. What function represents the value of the investment after t years?
- What is the investment worth after 13 years?

Example 3

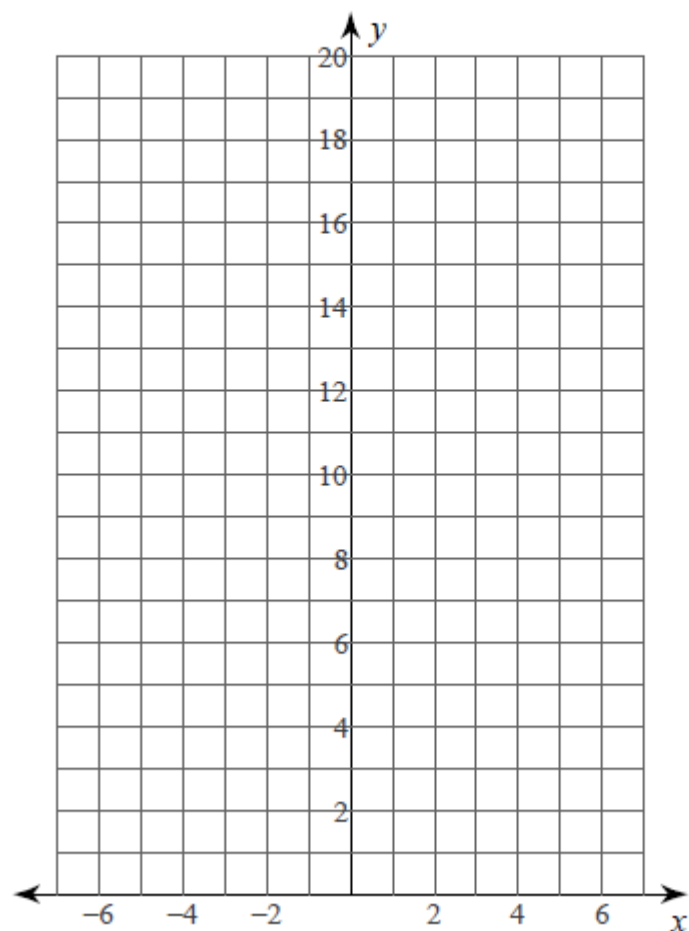
- A \$65,000 car depreciates in value by 10% each year. What function represents the value of the car after t years?

Example 4

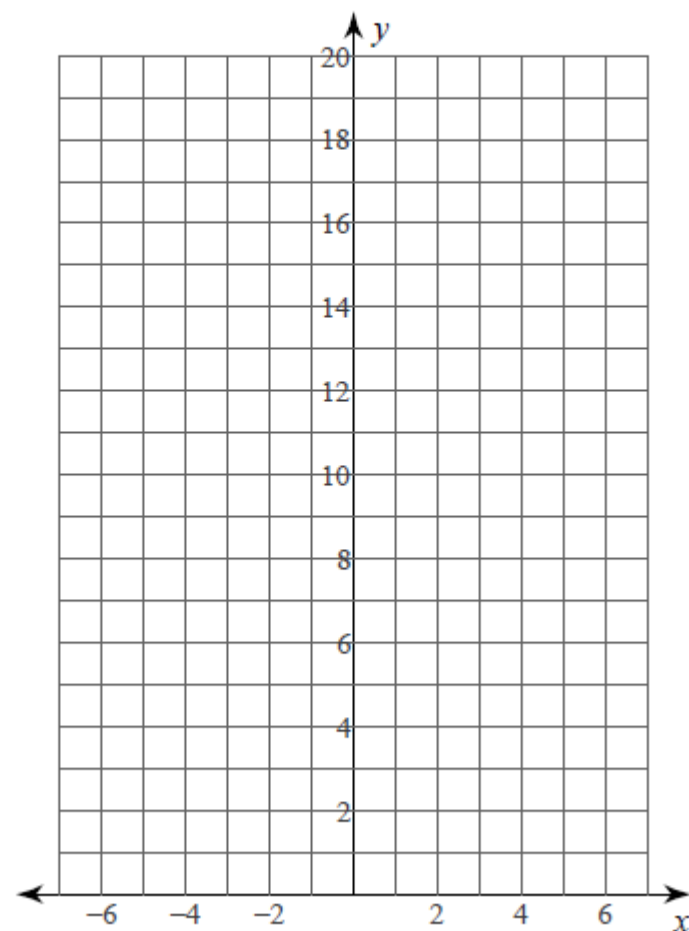
- A \$5,000 car depreciates in value by 2% each year. What function represents the value of the car after t years?
- Determine the value of the car after 7 years.

Sketch the graph of each function.

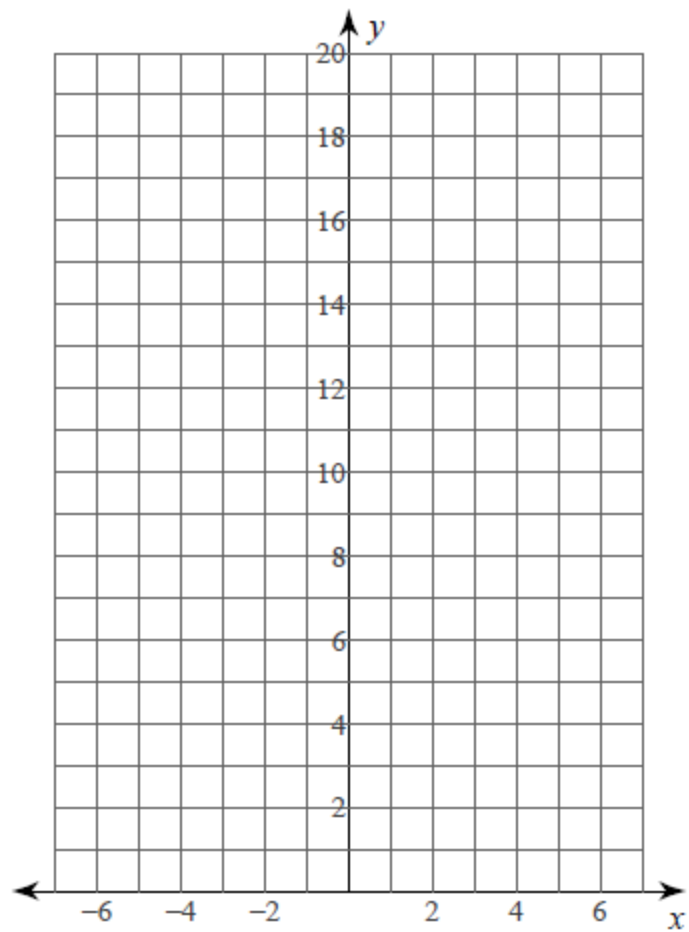
1) $y = 4 \cdot 2^x$



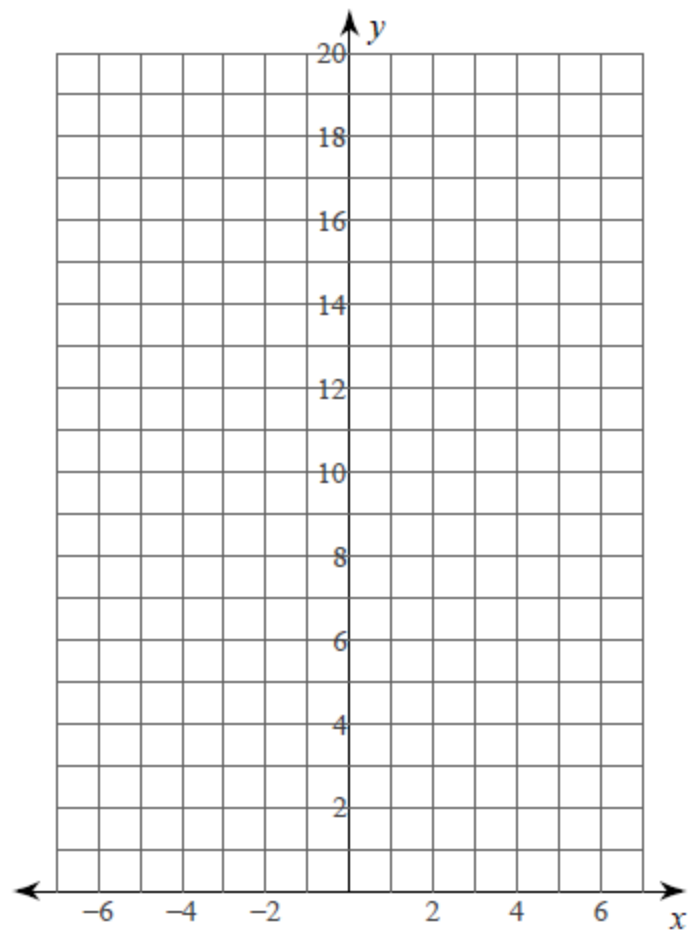
2) $y = 5 \cdot 2^x$



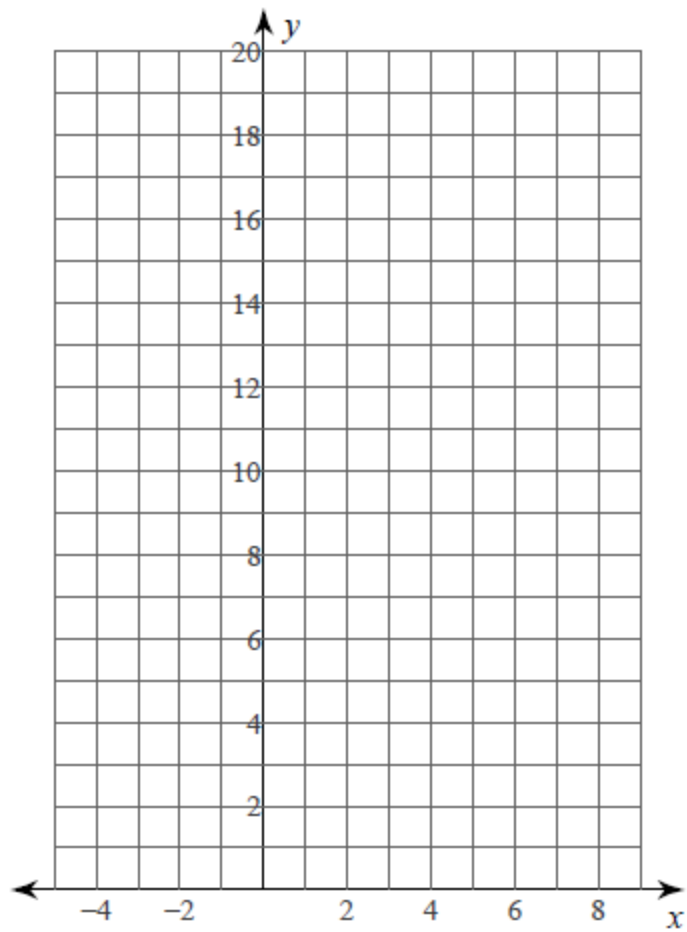
$$3) \ y = 4 \cdot \left(\frac{1}{2}\right)^x$$



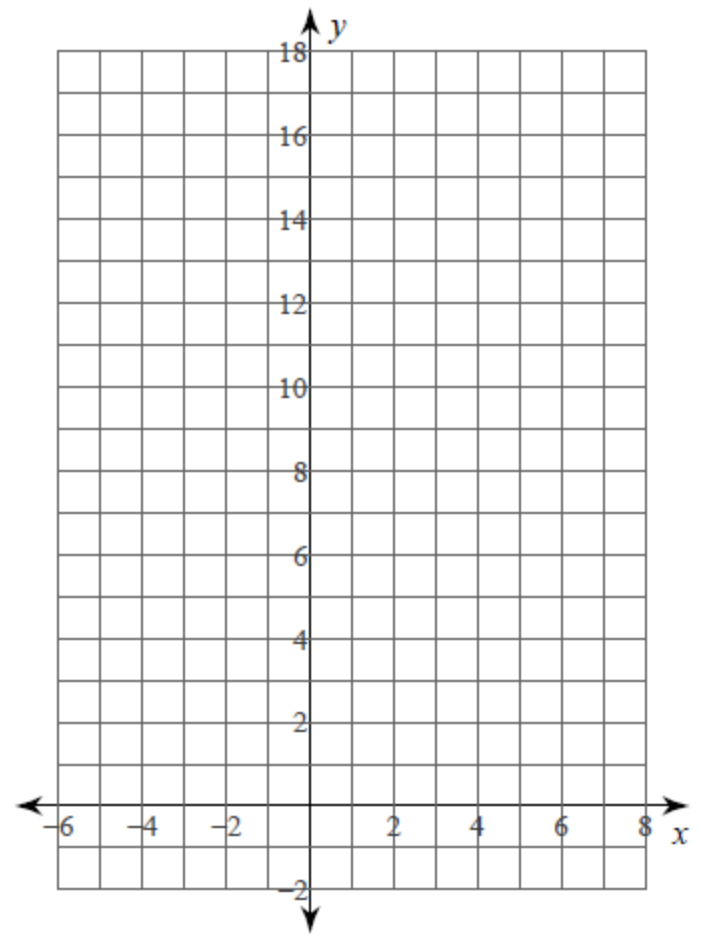
$$4) \ y = 2 \cdot \left(\frac{1}{2}\right)^x$$



5) $y = 3 \cdot 2^{x-2} + 2$



6) $y = 4 \cdot \left(\frac{1}{2}\right)^{x-1} - 2$



HW

- Create your own Increase problem
- Create your own decrease problem