

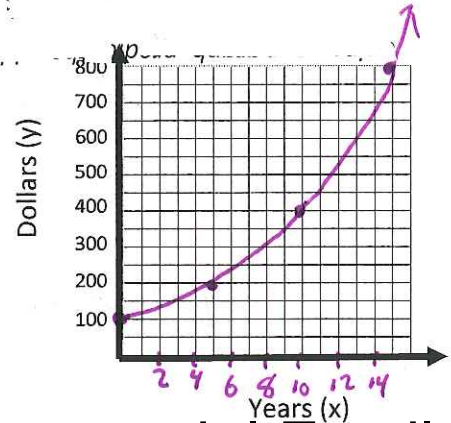
Families of Functions Intro

Name: Key

7th Grade Accelerated Math

1. A student invests \$100 and it doubles in value every 5 years. Graph the situation to show the amount of money the student would have after...

- 0 years → \$100
- 5 years → \$200
- 10 years → \$400
- 15 years → \$800



Using your graph, predict how much money this student would have after 8 years.

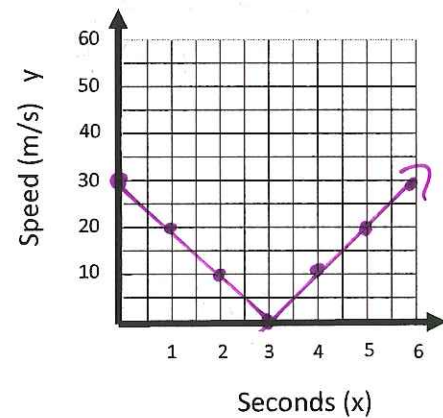
≈ \$320

$$y = 100 \cdot 2^x$$

Exponential Family

2. A football is punted with an initial vertical speed of 30 m/s. It slows down until it reaches the top of its path after 3 seconds, and then begins to speed up on its way back down. Because of gravity, the speed changes by 10 m/s every second. Find the speed of the football after...

- 0 seconds → 30 m/sec
- 1 second → 20 m/sec
- 2 seconds → 10 m/sec
- 3 seconds (top of path) → 0 m/sec
- 4 seconds → 10 m/sec
- 5 seconds → 20 m/sec
- 6 seconds → 30 m/sec



Using your graph, predict the speed of the football after 2.5 seconds

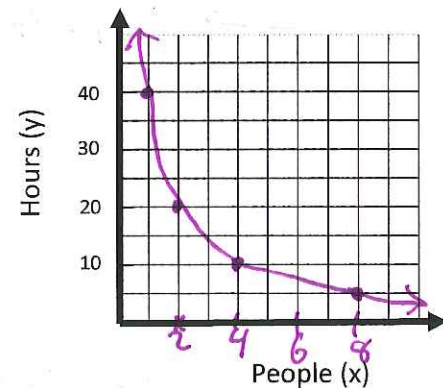
5 m/sec

$$y = 5|x - 3|$$

Absolute Value Family

3. It takes 4 people 10 hours to paint the Junior High School. Graph the situation to show the amount of time it would take to complete the job if...

- 1 person was painting → 40 hrs
- 2 people were painting → 20 hrs
- 4 people were painting → 10 hrs
- 8 people were painting → 5 hrs



Using your graph, predict how long it would take to complete the job if 5 people were working.

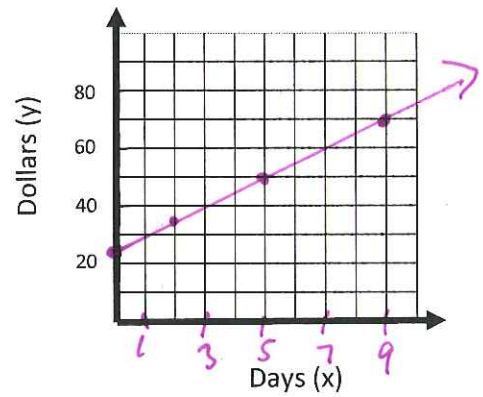
8 hrs

$$y = \frac{40}{x}$$

Rational Family

4. A student has \$25 and saves an additional \$5 each day. Graph the situation to show the amount of money the student would have after...

- 0 additional days → \$25
- 2 additional days → \$35
- 5 additional days → \$50
- 9 additional days → \$70



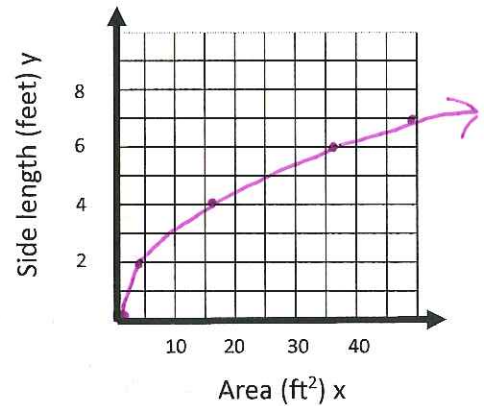
Using your graph, predict how many days it would take to earn \$45.

4 days $y = 5x + 25$

Linear Family

5. Find the side length of a square with the following areas...

- 0 ft² → 0 ft
- 4 ft² → 2 ft
- 16 ft² → 4 ft
- 36 ft² → 6 ft
- 49 ft² → 7 ft



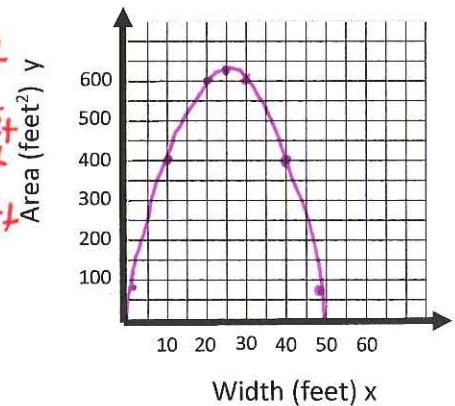
Using your graph, predict the side length of a square with an area of 20 ft².

4.5 ft $y = \sqrt{x}$

Root Family

6. Find the area (length x width) of a rectangle with a perimeter of 100 feet, and a width of...

- 2 feet → 96 ft² → length = 48 ft
- 10 feet → 400 ft² → length = 40 ft
- 20 feet → 600 ft² → length = 30 ft
- 25 feet → 625 ft² → length = 25 ft
- 30 feet → 600 ft² → length = 20 ft
- 40 feet → 400 ft² → length = 10 ft
- 48 feet → 96 ft² → length = 2 ft



Using your graph, predict the width of a rectangle with an area of 350 ft².

≈ 7.5 ft

Quadratic Family

$$y = -(x - 25)^2 + 625 \quad \text{or} \quad y = -x^2 + 50x$$