**Fitting Functions to Data**

Name:

Students can:

* Target #8: Fit a function to data and use functions to solve problems in context of the data

**WARM-UP:**

1.Evaluate the function 2. Is the data linear? Why? 3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | 0 | 3 | 9 | 12 |
| y | 5 | 3 | -1 | -3 |

$f\left(t\right)=4t^{2}-4t+12$ for t=3.

Determine if the following tables represent linear, exponential, or quadratic functions. Explain your reasoning.

1.  2.



3.

4. A skydiver pulls his chute at 2000 feet above ground. The following table shows his elevation and time as he is falling.

|  |  |
| --- | --- |
| Time (minutes) | Height (feet) |
| 0 | 2000 |
| 1 | 1500 |
| 2 | 1000 |
| 3 | 500 |
| 4 | 0 |

 Is the situation a linear, exponential, or quadratic function?

 Choose the function that best models the situation.

1. $y=-500x+2000$
2. $y=-500x^{2}+2000$
3. $y=-500^{x}+2000$

What would be the height of the skydiver after 2.5 minutes?

5. Tim Tebow throws a football for a touchdown. The following table shows the height and time for the throw.

|  |  |
| --- | --- |
| Time (seconds) | Height (feet) |
| 0 | 6 |
| 1 | 20 |
| 2 | 30 |
| 3 | 20 |
| 4 | 6 |

 Is the situation linear, exponential, or quadratic function?

 Choose the function that best models the situation.

1. $y=-3x^{2}+18x$
2. $y=-3x+18$
3. $y=-3^{x}+18x$

When would the ball be at a height of 15 ft?

**WORKSHOP:**

Determine if the following tables represent linear, exponential, or quadratic functions. Explain your reasoning.

1. 2.

3. 4.

5. 6.

7. A math student throws his math book off of a tall building towards a pool below. The following table shows the height and time of the fall.



Is the situation a linear, exponential, or quadratic function?

 Choose the function that best models the situation.

1. $y=-16^{x}+48x+160$
2. $y=-16x+160$
3. $y=-16x^{2}-48x+160$

How long would it take for the book to fall 100 feet?

8. A helicopter lifts off the ground from a helipad on top of a skyscraper. The following table shows its height along with the time.

|  |  |
| --- | --- |
| Time (seconds) | Height (feet) |
| 0 | 800 |
| 1 | 840 |
| 2 | 880 |
| 3 | 920 |
| 4 | 960 |

Is the situation a linear, exponential, or quadratic function?

 Choose the function that best models the situation.

1. $y=40x^{2}+800$
2. $y=40x+800$
3. $y=40^{x}+800$

What would be the height of the helicopter after 7 seconds?