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| **Topic/Skill**  | **Definition/Tips** | **Example****Topic: Growth and Decay**  |
| 1. Exponential Growth | When we **multiply** a number **repeatedly** by the **same number** ($\ne 1)$, resulting in the number **increasing by the same proportion** each time.The original amount can grow very quickly in exponential growth. | $1, 2, 4, 8, 16, 32, 64, 128…$ is an example of exponential growth, because the numbers are being multiplied by 2 each time. |
| 2. Exponential Decay | When we **multiply** a number **repeatedly** by the **same number** ($0<x<1)$, resulting in the number **decreasing by the same proportion** each time.The original amount can decrease very quickly in exponential decay. | $1000, 200, 40, 8…$ is an example of exponential decay, because the numbers are being multiplied by $\frac{1}{5}$ each time. |
| 3. Compound Interest | Interest paid on the **original amount and the accumulated interest**. | A bank pays 5% compound interest a year. Bob invests £3000. How much will he have after 7 years.$$3000×1.05^{7}=£4221.30$$ |
| 4. Exponential Graph | The equation is of the form $y=a^{x}$**,** where $a $is a number called the **base**.If $a>1$ the graph **increases**.If $0<a<1$, the graph **decreases**.The graph has an **asymptote** which is the **x-axis**.The **y-intercept** of the graph $y=a^{x}$ is $(0,1)$**s** | Image result for exponential function definition math |

**Knowledge Organiser**