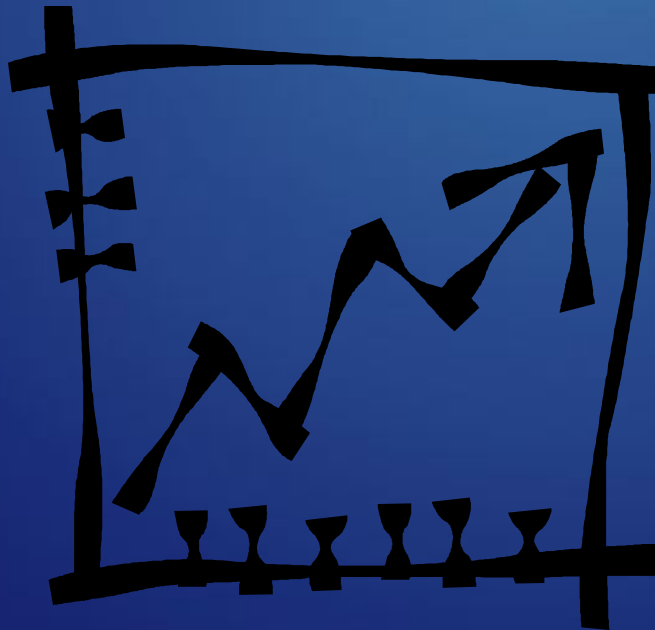


Forecasting

Hussain A. Al Awami, B.Sc. Pharm., M.Sc., MBA

Definition

Process of anticipating future results based on current data



Collecting data
for forecast

```
graph TD; A[Collecting data for forecast] --> B[Time series methods]; A --> C[Causal forecasting methods];
```

Time series
methods

Causal forecasting
methods

Time series methods

```
graph TD; A[Time series methods] --> B[Trends]; A --> C[Cyclical]; A --> D[Seasonal]; A --> E[Irregular];
```

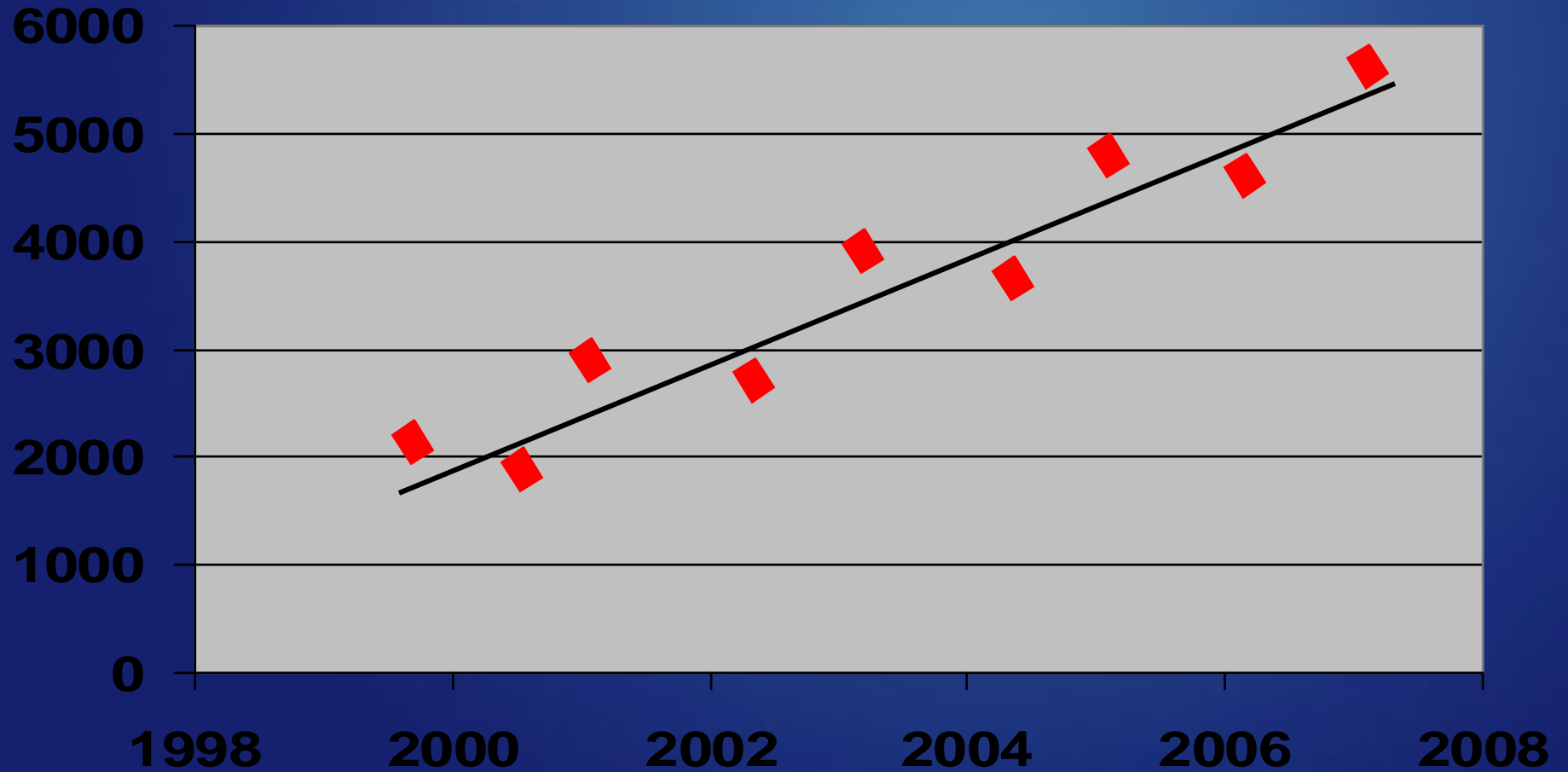
Trends

Cyclical

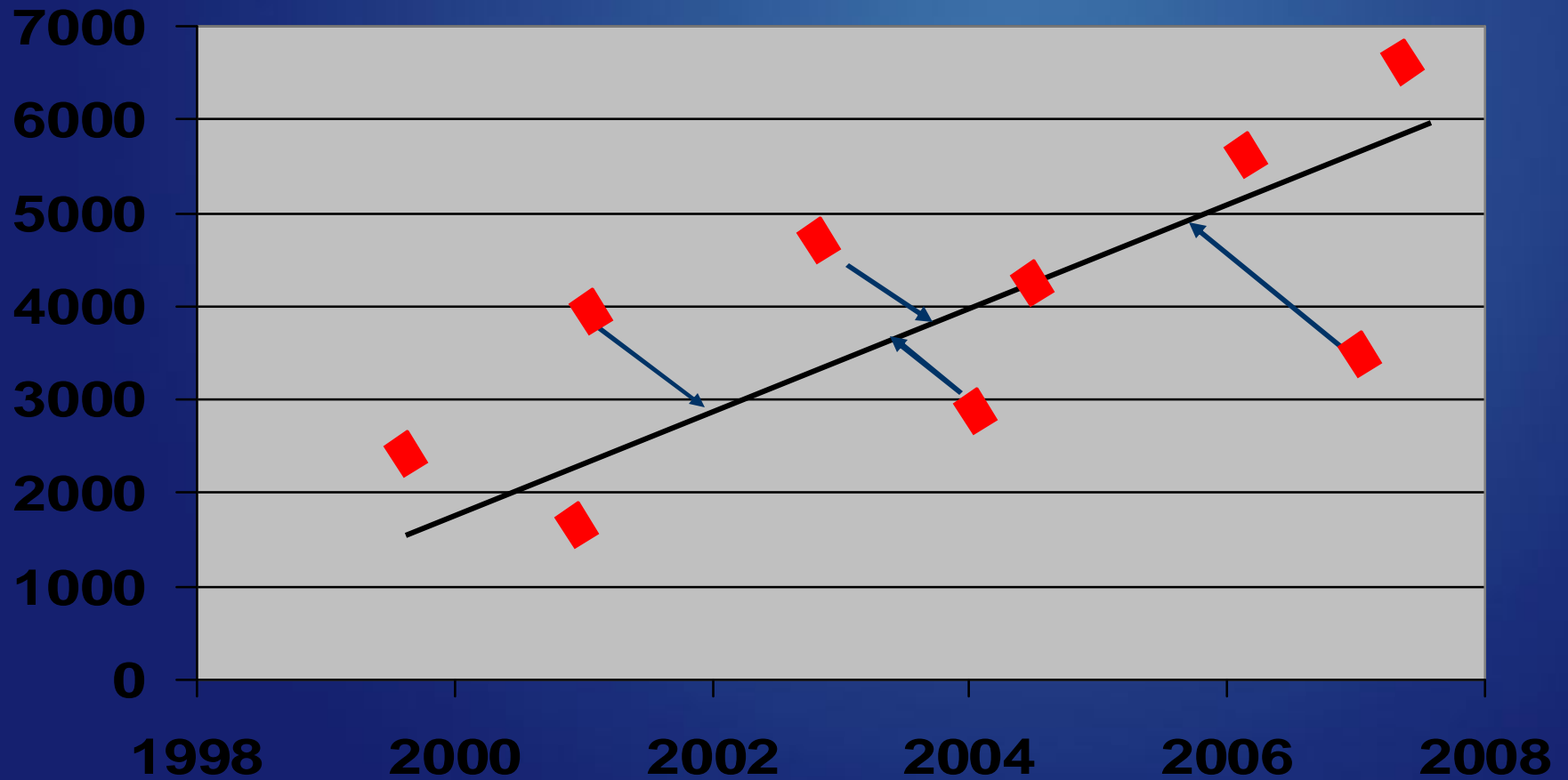
Seasonal

Irregular

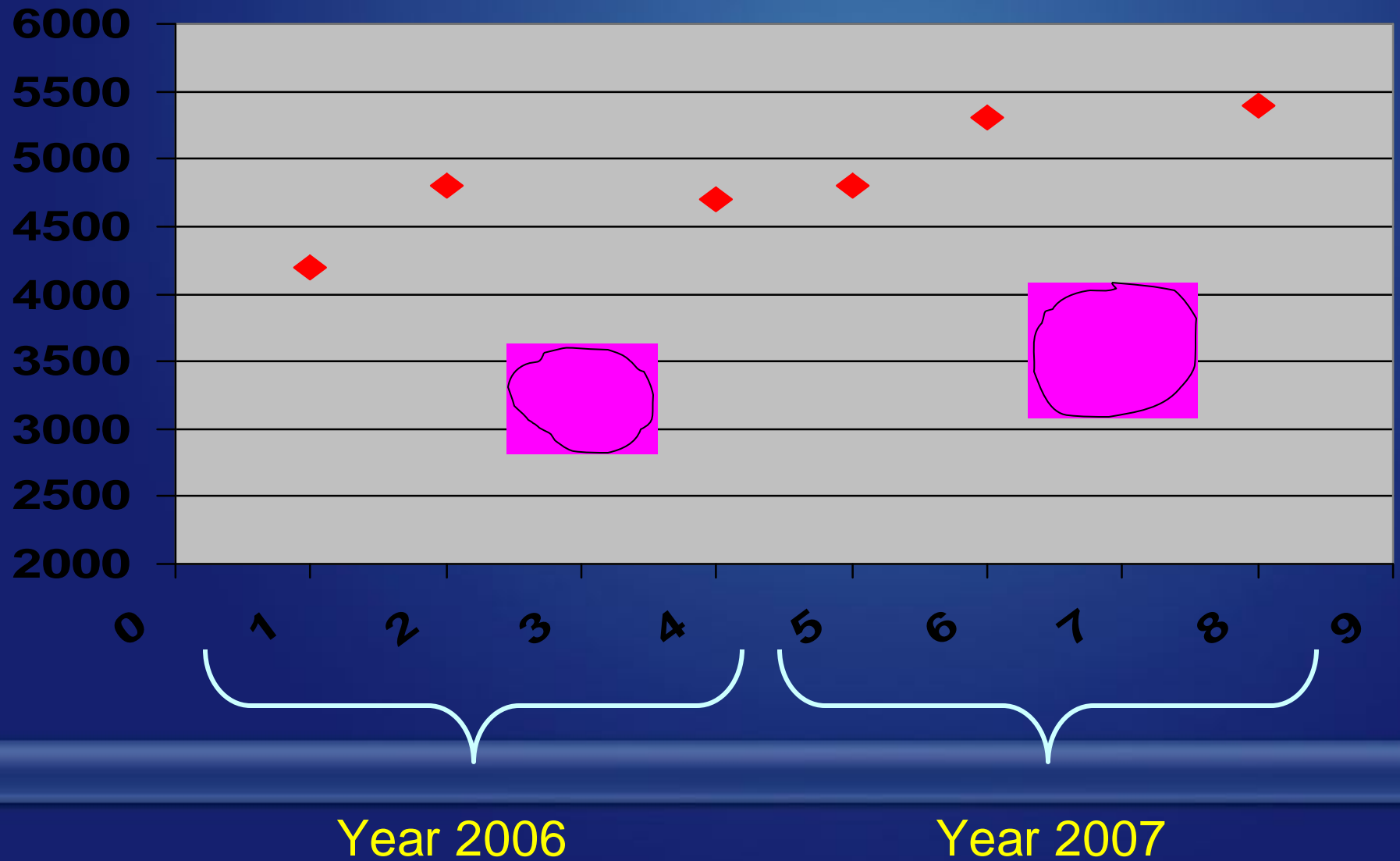
Trend pattern



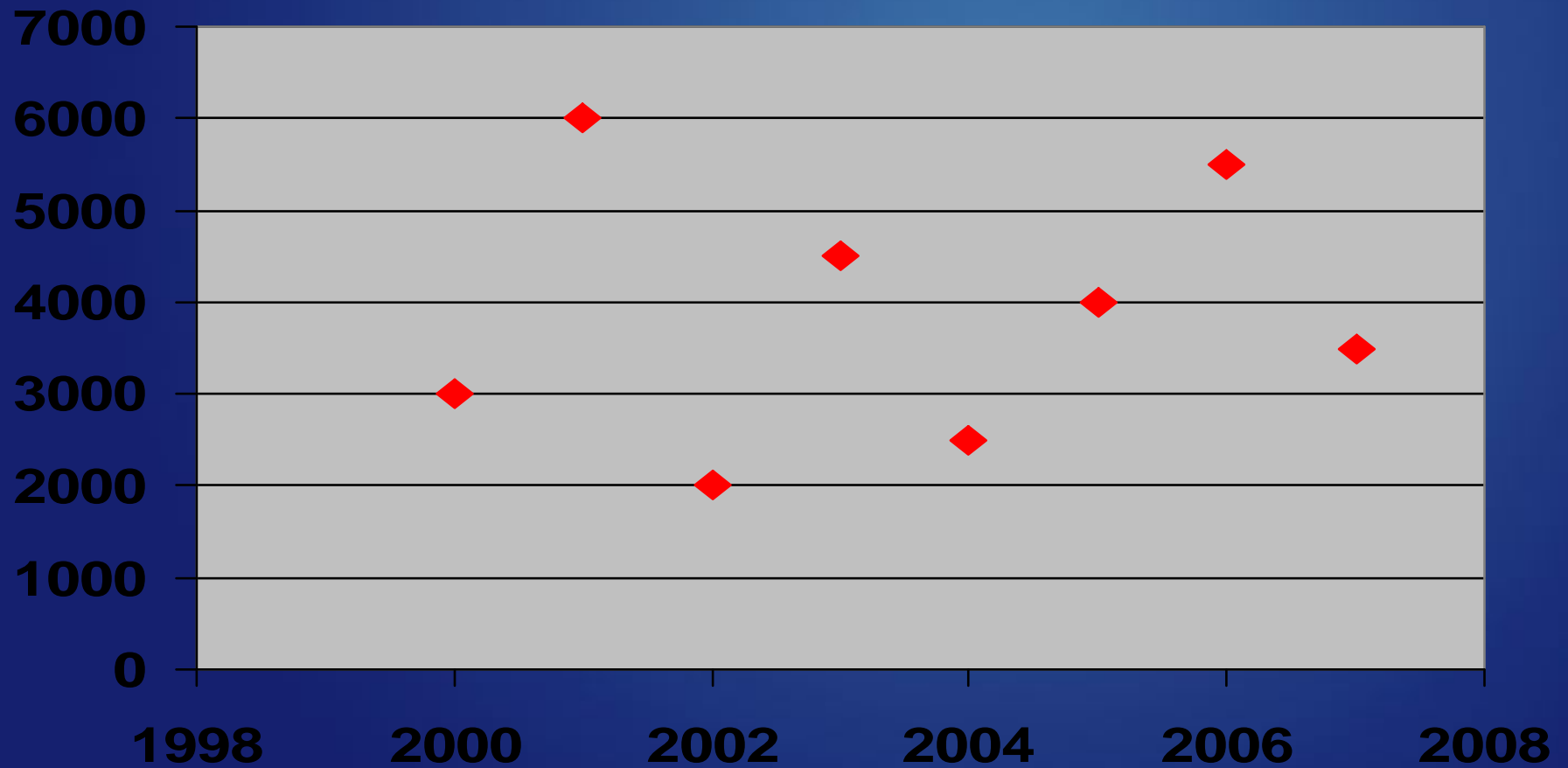
Cyclical pattern



Seasonal pattern



Irregular pattern



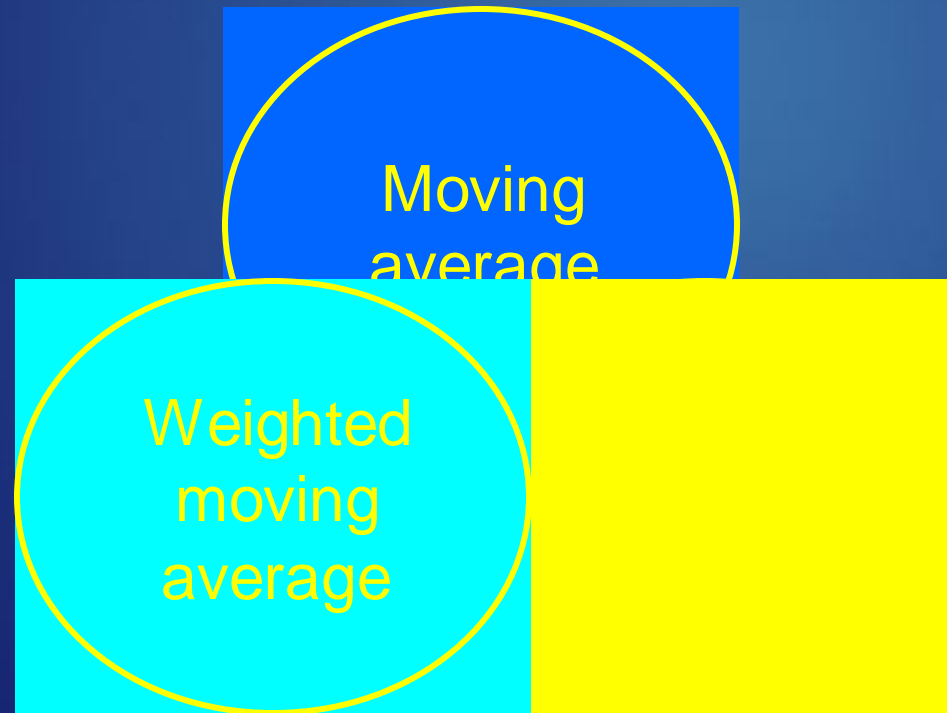
Using time series analysis in forecasting

Techniques used in forecasting

Smoothing

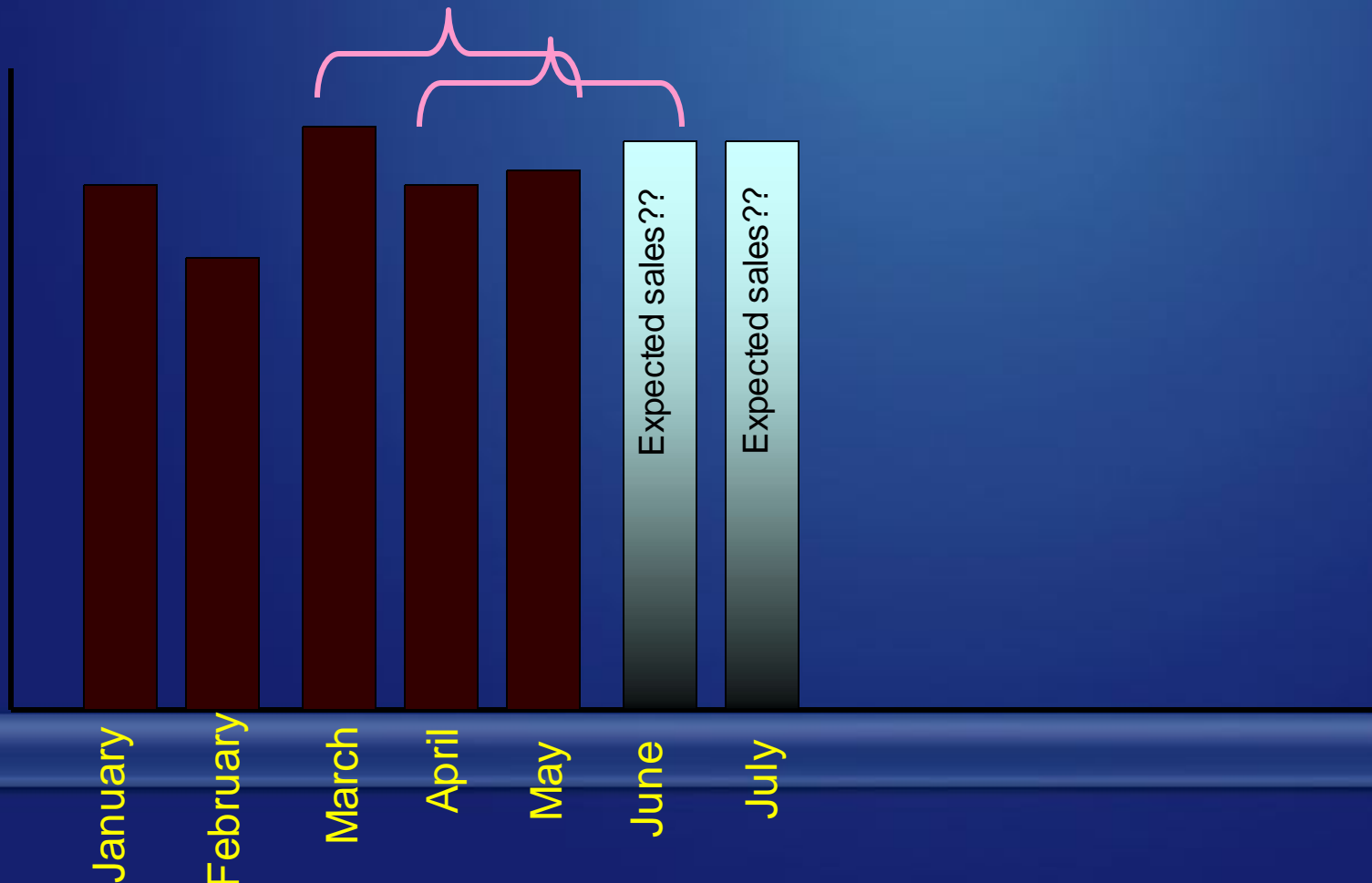
Trend projection

Smoothing

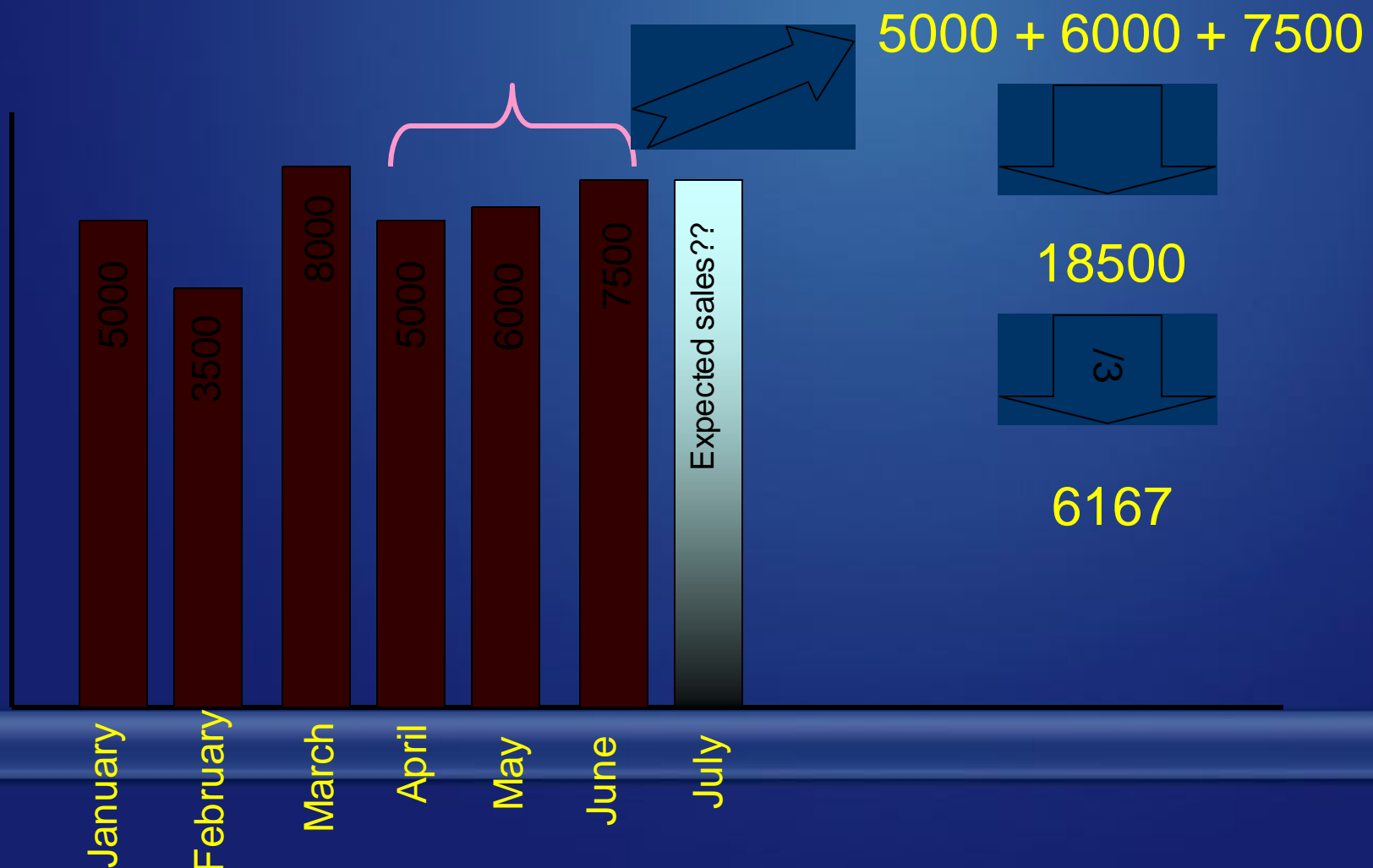


Moving average

Utilize recent data only

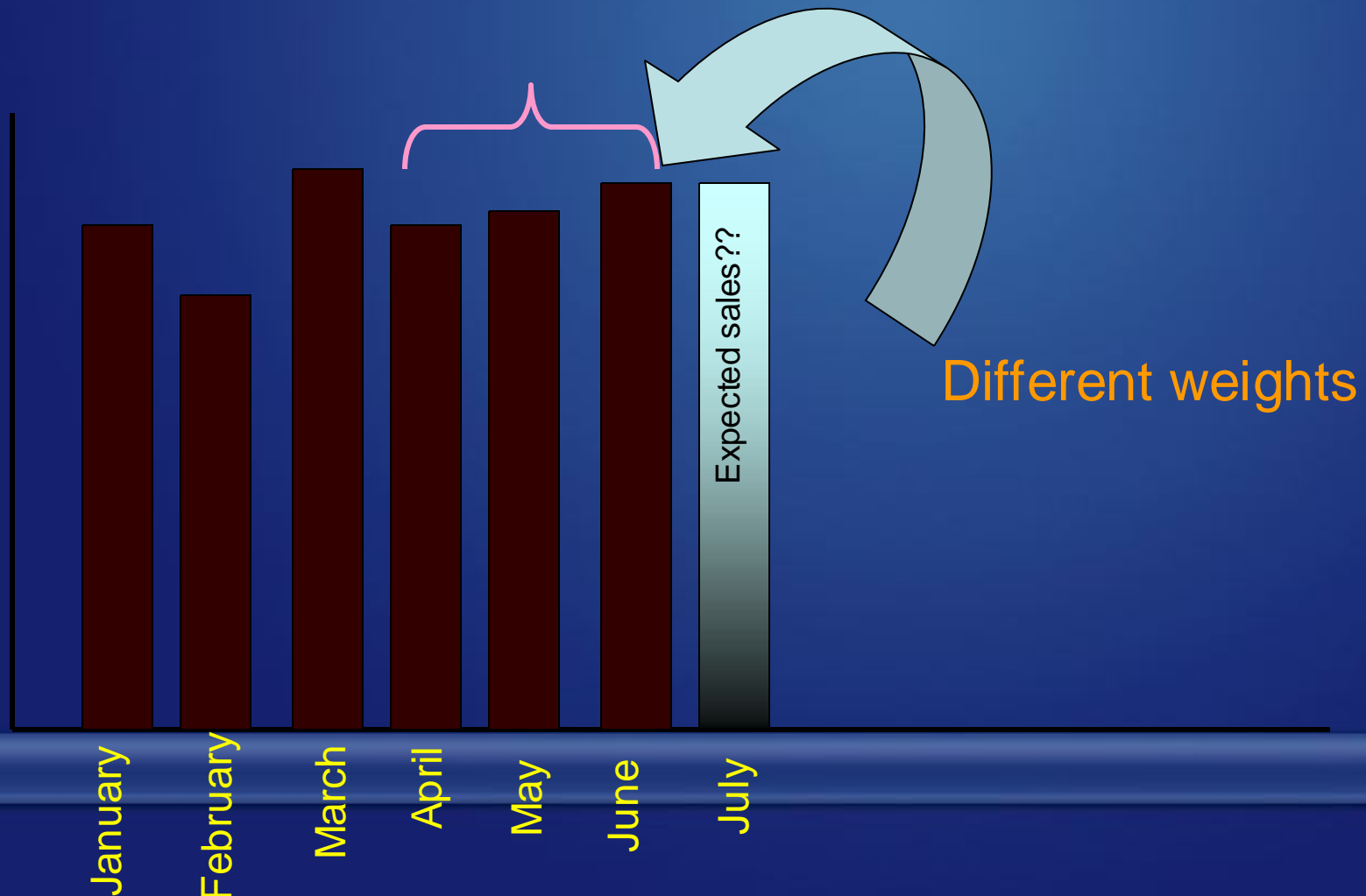


Moving average, example

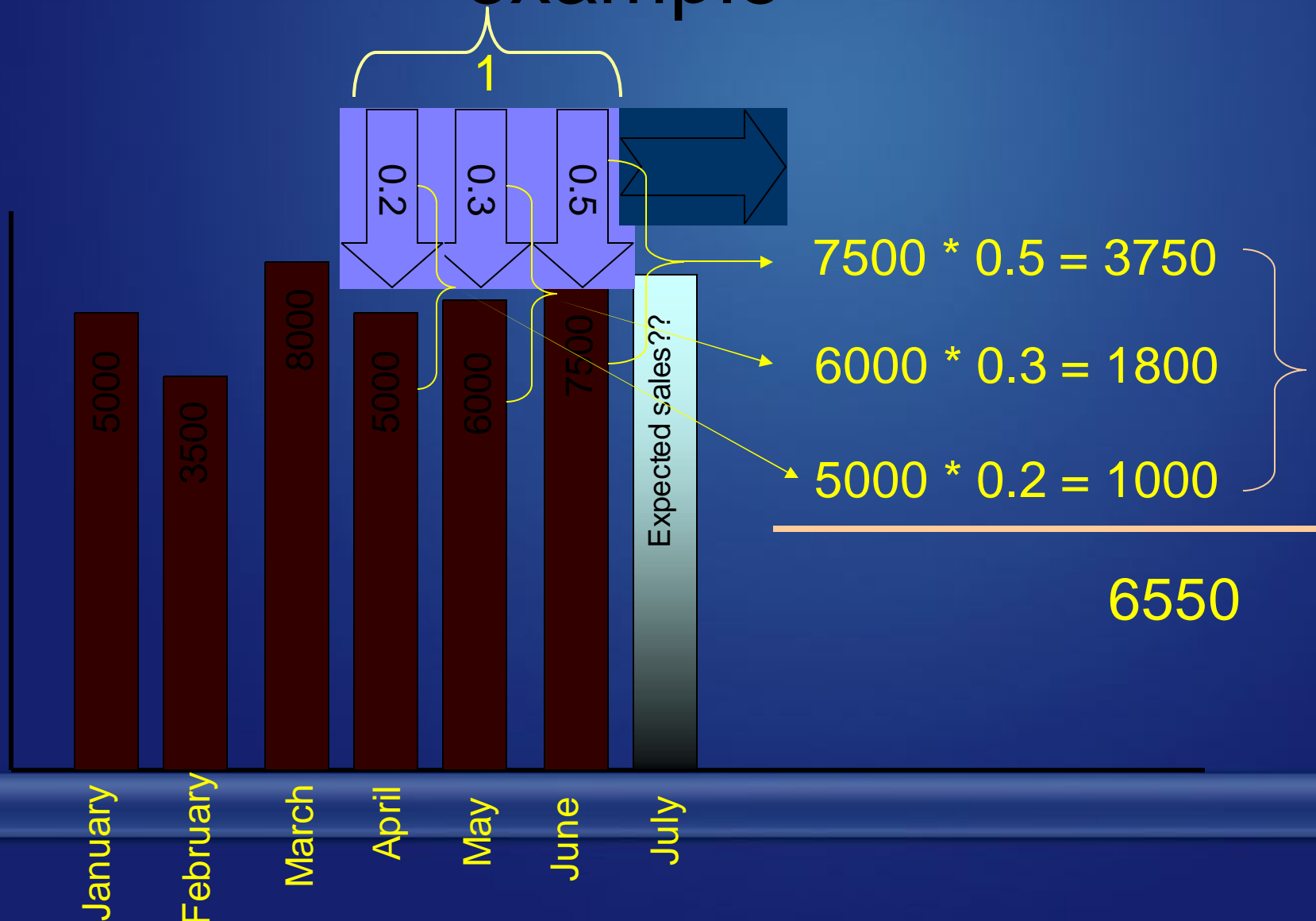


Weighted moving average

Utilize recent data only



Weighted moving average, example



Exponential smoothing

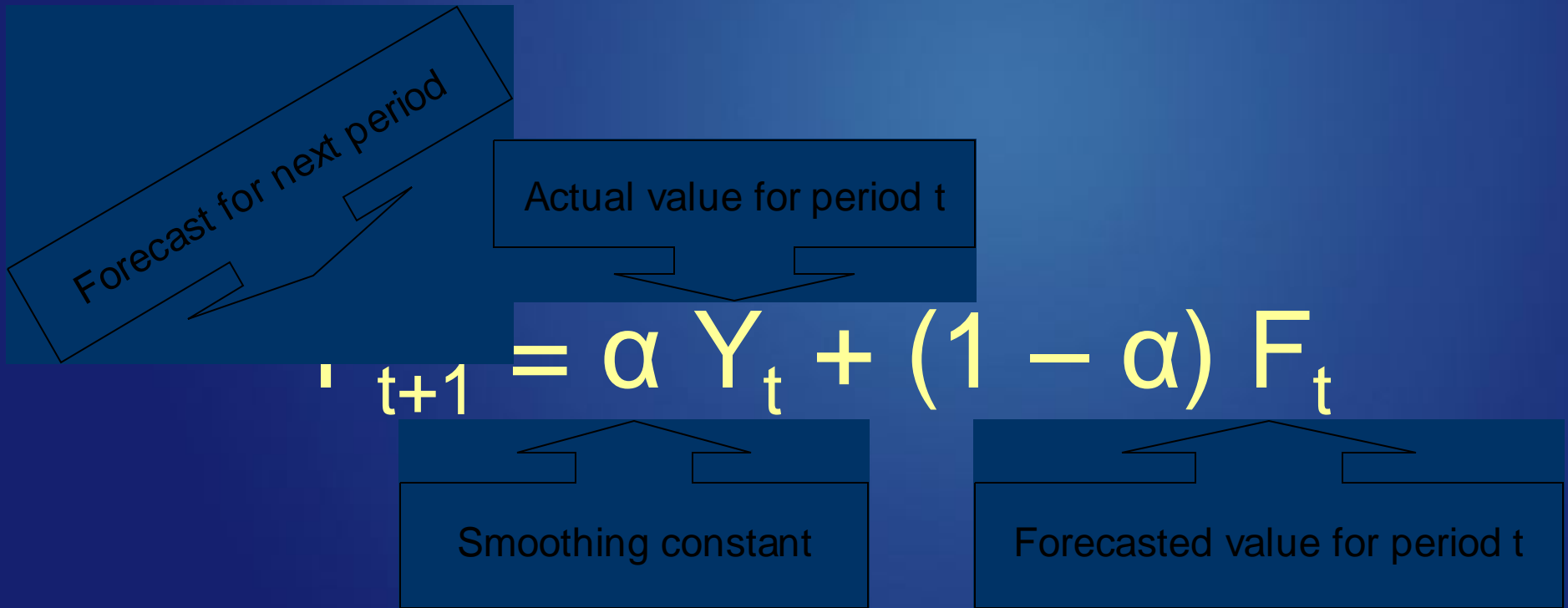
Most recent actual data

Most recent forecasted data
Using exponential smoothing

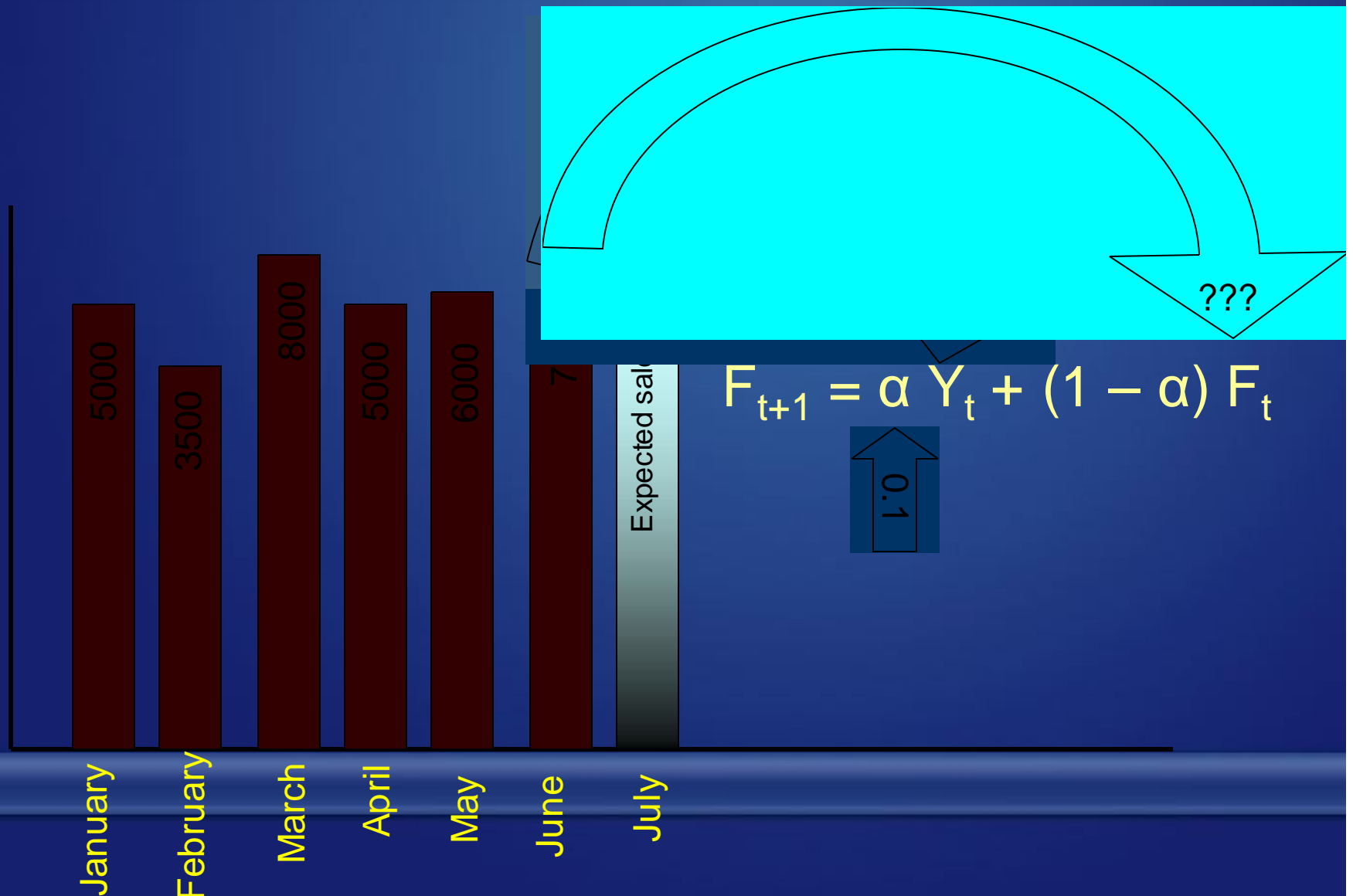
Forecasting using exponential formula

$$F_{t+1} = \alpha Y_t + (1 - \alpha) F_t$$

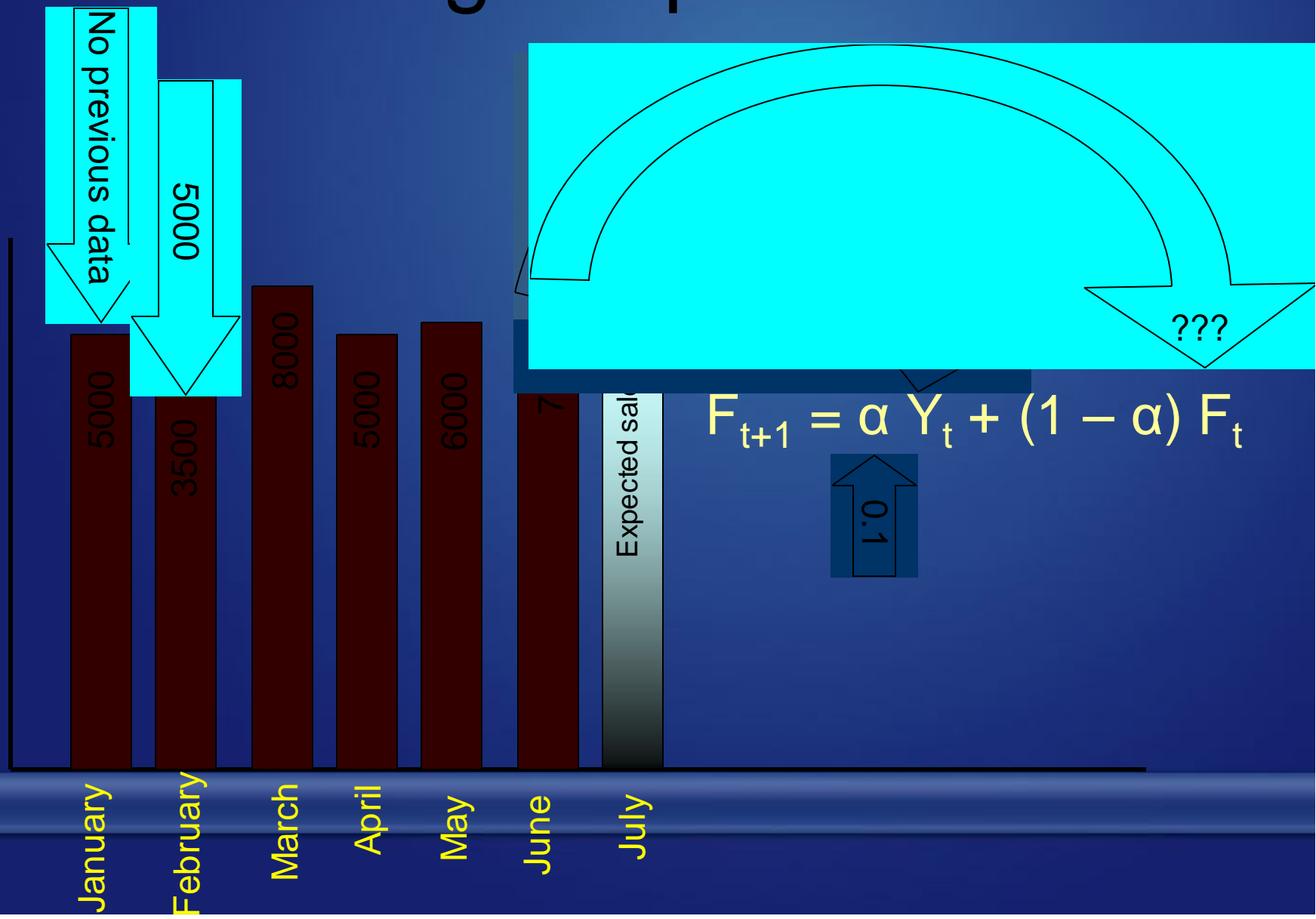
Explaining the formula



Exponential smoothing example



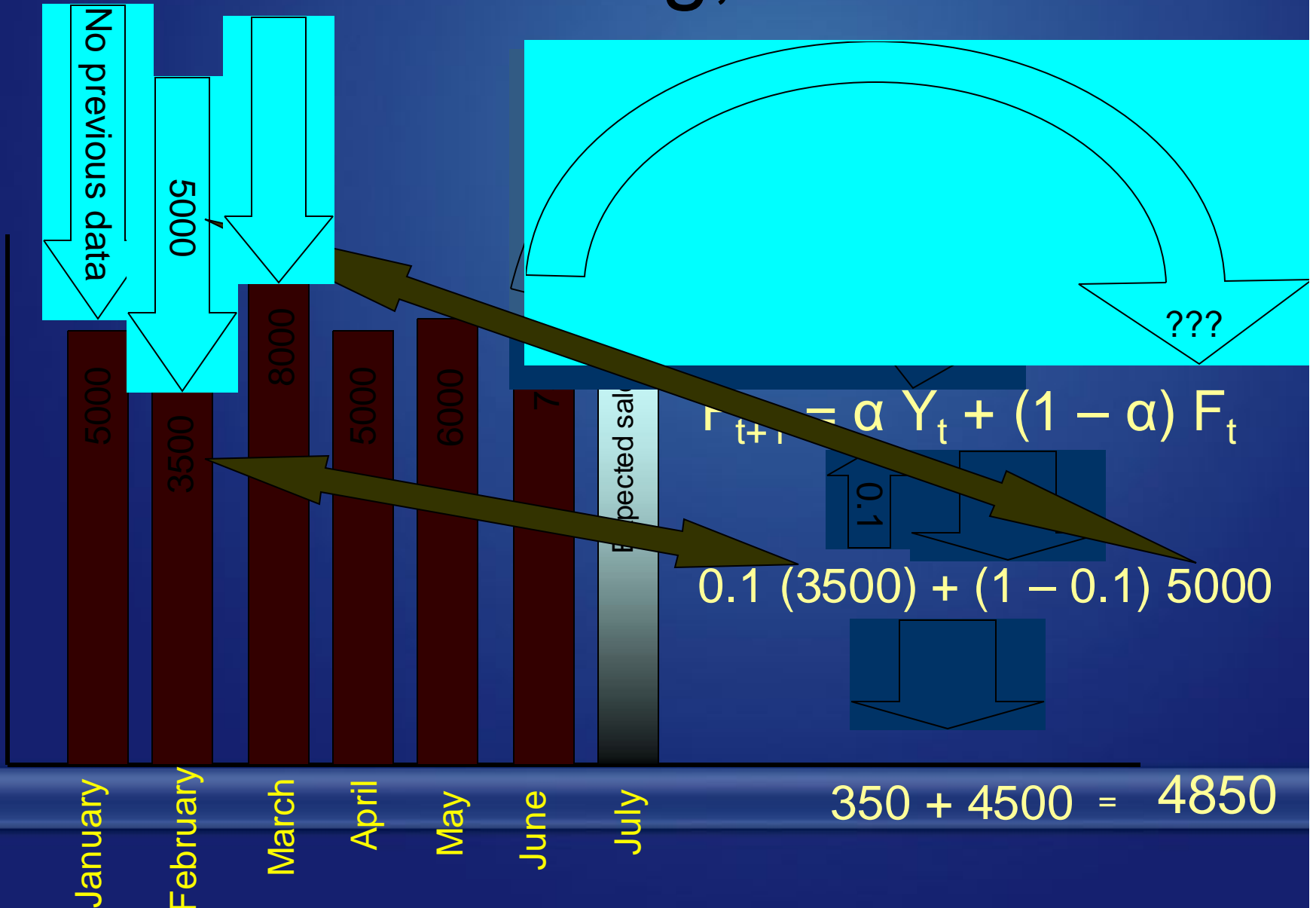
Solving the problem



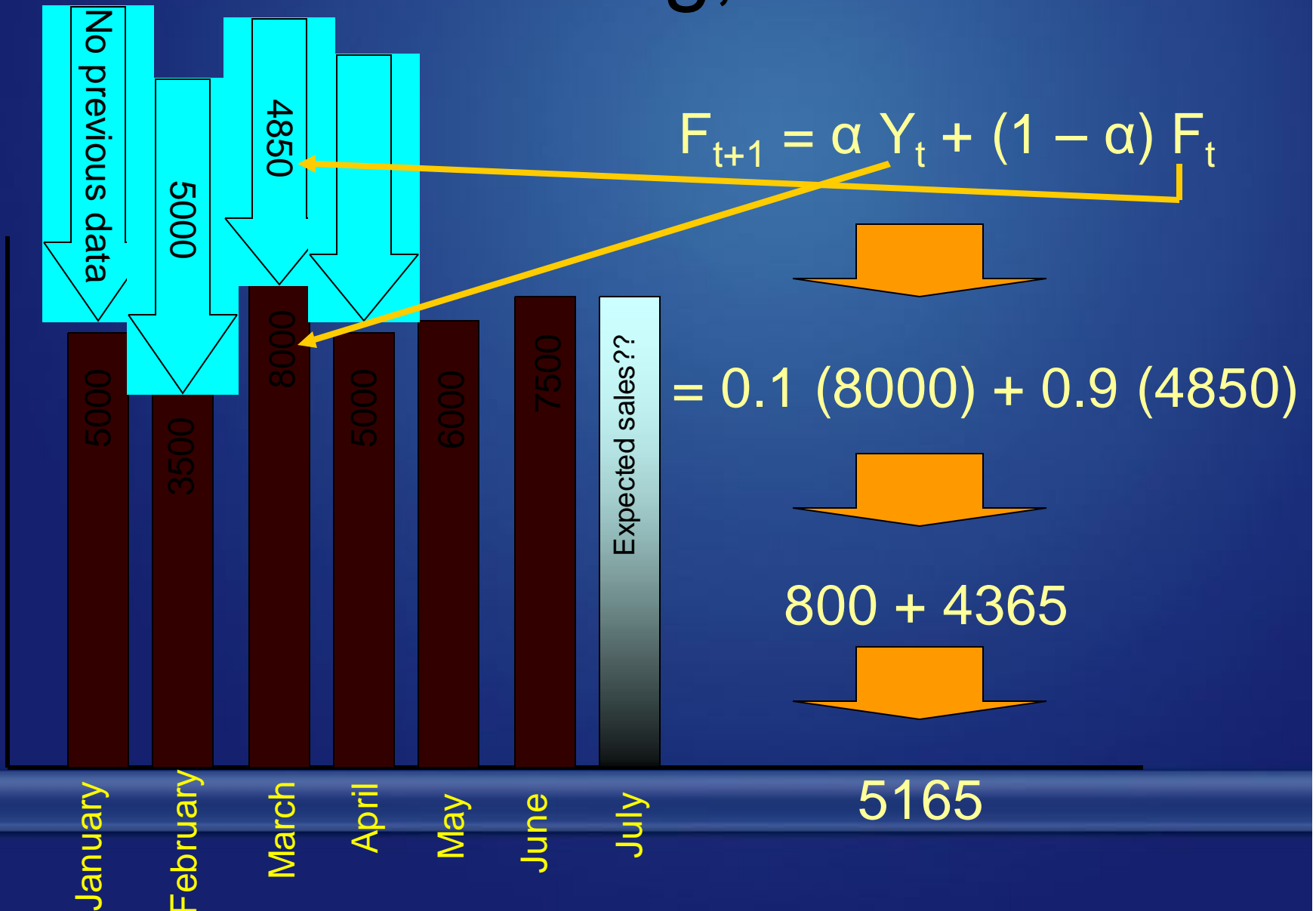
$$F_{t+1} = \alpha Y_t + (1 - \alpha) F_t$$

0.1

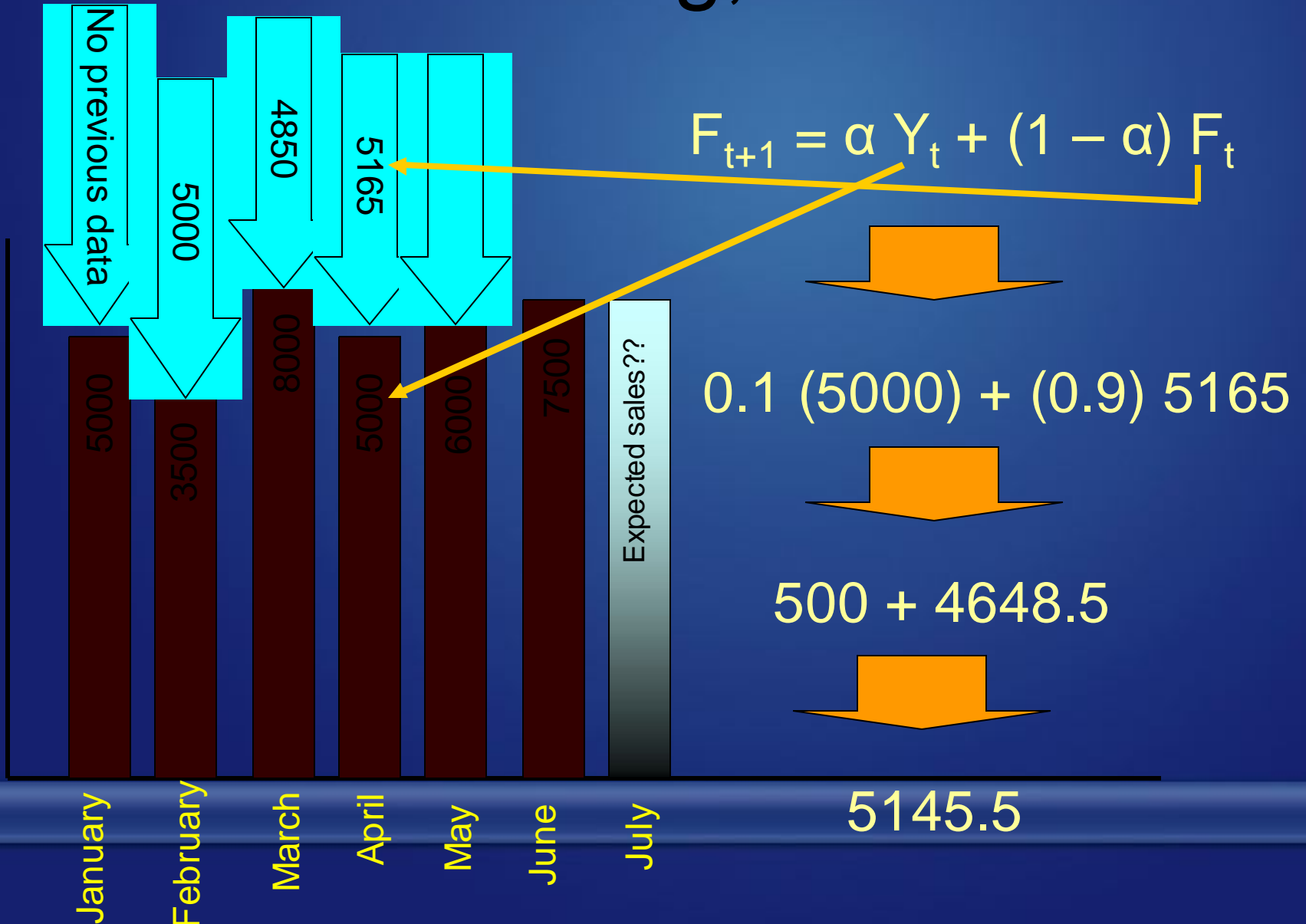
Problem solving, continue



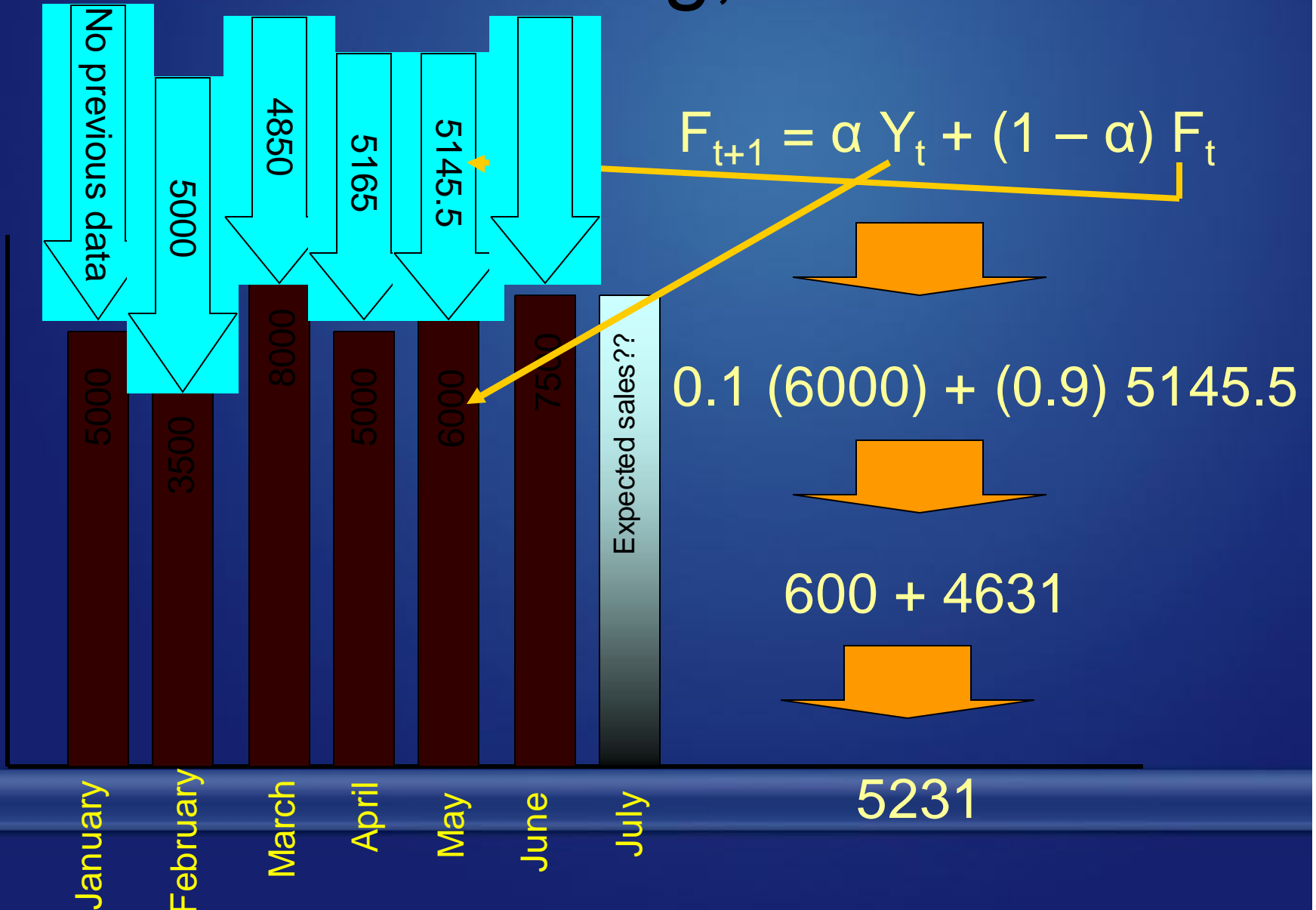
Problem solving, continue



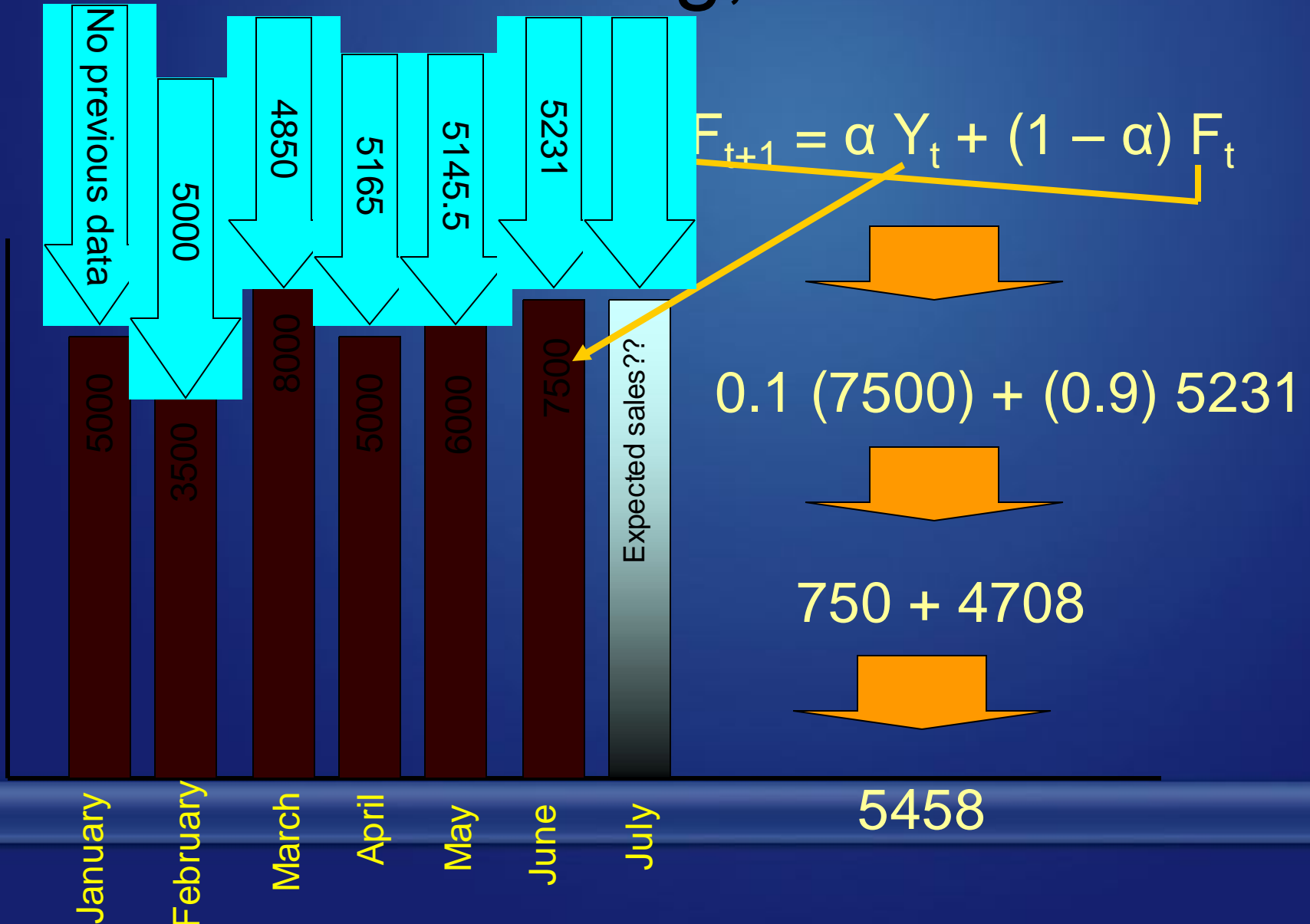
Problem solving, continue



Problem solving, continue



Problem solving, continue



Trend projection

Your presenter



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