

# Quant 101

BFS Winter 2026



February 2, 2026



# What is Quant?



# Quantitativ e Finance



# Four Pillars of Quant Finance

01

## Mathematical Models

Probability, statistics, and optimization

02

## Backtesting

Strategy tests before risking real capital

03

## Automation

Utilizing algorithms to execute trades with speed and precision

04

## Risk Management

Monitoring drawdowns, volatility, tail events



# Applications of Quant Finance



# Core Functions

## Asset Pricing & Valuation

- Determining fair value for **options, derivatives, and bonds**
- **Tools:** Black-Scholes model and Monte Carlo simulations

## Portfolio Optimization

- Allocating assets to **maximize returns** for a specific risk level
- **Framework:** Modern Portfolio Theory (MPT) and mean-variance optimization

## Risk Management

- Predicting potential losses from market volatility and credit exposure
- Developing models to survive "**Black Swan**" or adverse market events



# Industry Uses

## Algorithmic Trading

Executing trades with **machine learning** to maximize speed and remove human bias



## Hedge Fund Strategies

Using **statistical arbitrage** and trend analysis to generate profits in all market conditions

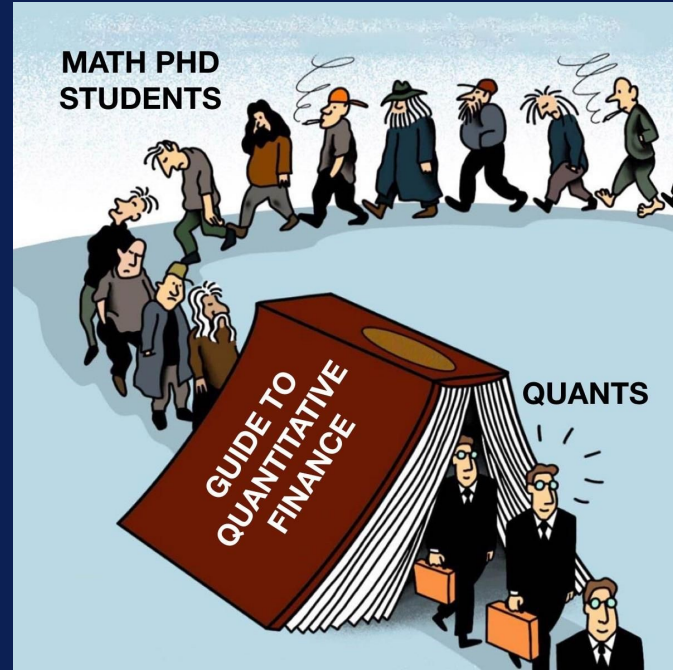


## Credit Risk Assessment

Evaluating borrower data to predict **default likelihood** and price loans accurately



# Careers in Quant





# Careers in Quant

## Researcher

Designs models and backtests strategies

## Developer

Implements models and optimizes trading infrastructure

## Trader

Manages live positions and executes trades based on model outputs

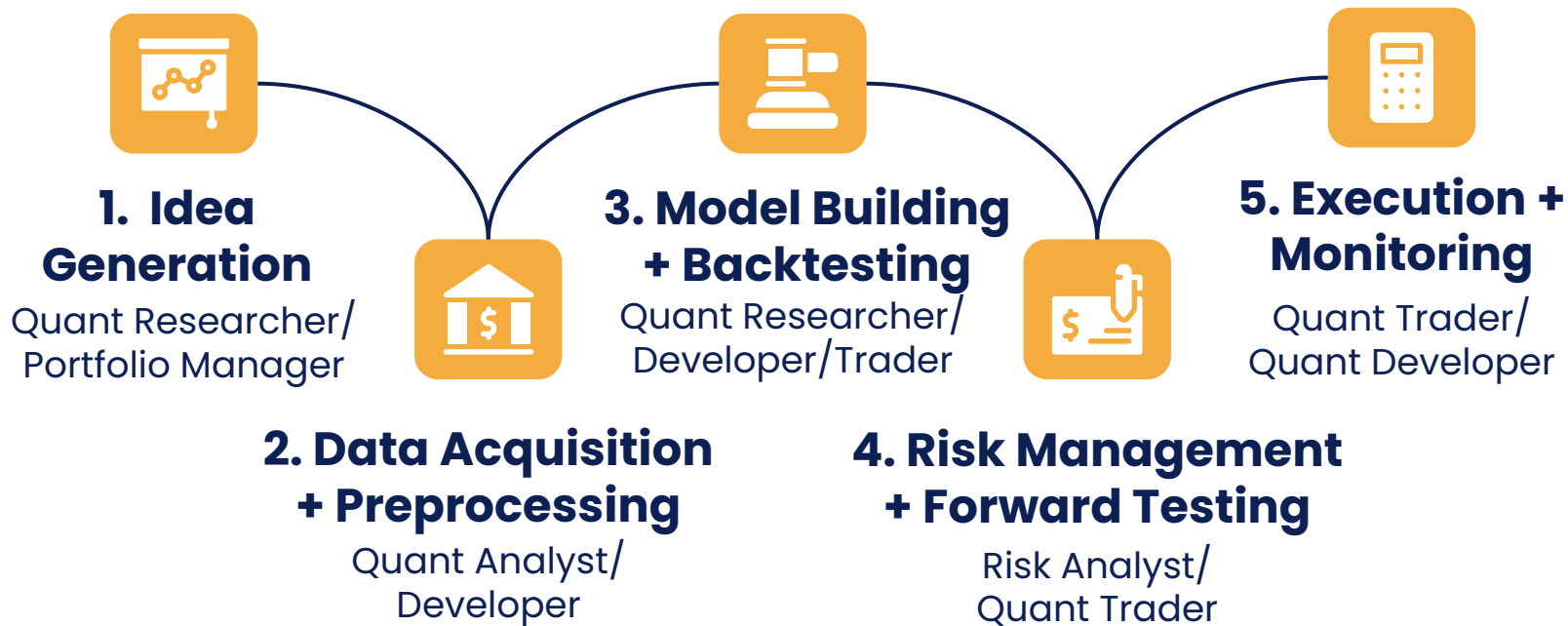
## Risk Analyst

Measures market exposure and executes hedging to ensure compliance

## Portfolio Manager

Directs asset allocation to meet long-term client goals and risk targets

# Quant Strategy Lifecycle



# Key Quant Strategies

## Statistical Arbitrage

Capitalize on market inefficiencies

## Factor Investing

Target specific drivers of return



## Risk Parity

Allocate by risk rather than capital

## Machine Learning/AI

Process large datasets, simulate decision-making



# Time Series Patterns

**Time Series:** data collected over regular time intervals, helps us understand market behavior

- E.g. stock price over time

**Core Ideas** in time series market data:

- Momentum
- Mean Reversion
- Volatility Clustering
- Regime Shifts
- Fat Tails + Black Swans

**Time Series Analysis:** identify trends, seasonal/cyclical patterns, generate predictions

- Autoregressive Integrated Moving Average (ARIMA)



# Technologies and Tools

## Programming Languages

Python, R, C++, Java  
MATLAB, Julia

## Data Visualization Tools

Tableau, PowerBI,  
Python Matplotlib

## Cloud Computing

AWS, Google Cloud,  
Microsoft Azure

## Machine Learning/ AI Frameworks

Scikit-Learn, LLMs,  
TensorFlow, PyTorch

## High-Performance Computing Systems

Supercomputers, GPU  
clusters, high-speed servers



# Requirements



## Education

- Bachelors (groundwork)
- Masters (desired)
- PhD (ideal for research/ niche topics)



## Technical Skills

- Mathematics
- Financial Acumen
- Programming



## Soft Skills

- Problem-Solving
- Communication
- Detail Orientation



# Recruitment



## Online Assessments (OAs)

- Math/logic tests
  - mental math, stats/probability, trading/gambling simulations
- Zetamac to practice mental math



## Interviews

- Probability, statistics, problem solving
- Assess aptitude in math, stats, cs, finance, and problem-solving



# Thanks!

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# Introduction

n

Images reveal large amounts of data, so remember: use an image instead of a long text. Your audience will appreciate it



01

# Objectives

You can enter a subtitle here if you need it



# The slide title goes here!

Do you know what helps you make your point clear?  
Lists like this one:

- They're simple
- You can organize your ideas clearly
- You'll never forget to buy milk!

And the most important thing: the audience won't miss  
the point of your presentation



# The slide title goes here!



## Mercury

Mercury is the closest planet to the Sun and the smallest one



## Venus

Venus has a beautiful name and high temperatures



# Objectives



## Stopping poverty

Mercury is the closest planet to the Sun and the smallest one



## Sustainable development

Venus has a beautiful name and high temperatures





02

# Obstacles

You can enter a subtitle here if you need it



# Obstacles



## Geopolitical factors

Venus is the second planet from the Sun



## Commercial disputes

Jupiter is the biggest planet of them all



## Financial volatility

Saturn is a gas giant and has several rings



## Non-economic factors

Despite being red, Mars is a cold place





# Key elements

You can enter a subtitle here if you need it





# Key elements



## Private sector

Venus has a  
beautiful name



## Government

Mercury is the  
smallest planet



## Civil society

Earth is the planet  
we live on



# Key elements



## Data A

Venus is a  
hot planet



## Data B

Jupiter is a  
big planet



## Data C

Mars is a  
cold planet



## Data D

Mercury is a  
small planet



# Risks

## Volatility

Mercury is the smallest planet

## Imbalance

Venus is the second planet from the Sun

## Uncertainty

Mars is actually a very cold place

## Debts

Jupiter is the biggest planet of them all

## Salaries

Earth is the planet we live on

## Financing

Neptune is very far from the Sun



# Risks

## Money

Jupiter is the  
biggest planet



## Debts

Saturn is the  
ringed planet



## Loans

Neptune is far  
away from us



# Awesome words





“This is a quote, words full of  
wisdom that someone  
important said and can make  
the reader get inspired.”

—Someone Famous





**A picture is worth  
a thousand words**



**A picture is worth  
a thousand words**





# Main keys for bank day

Images reveal large amounts of data, so remember: use an image instead of a long text. Your audience will appreciate it





# Main keys for bank day

Images reveal large amounts of data,  
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of a long text. Your audience will  
appreciate it



# 150,000

Big numbers catch your audience's attention





# 386,000 km

Distance between the Earth and the Moon

# 333,000

The Sun's mass compared to Earth's

# 9h 55m 23s

Jupiter's rotation period



# 333,000

The Sun's mass compared to Earth's

# 9h 55m 23s

Jupiter's rotation period



# Profitability percentage

**25%**



Venus is the second planet from the Sun

**50%**



Mars is actually a very cold place

**75%**



Mercury is the smallest planet

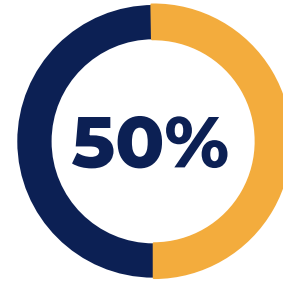


# Profitability percentage



## Venus

Venus is the second planet from the Sun



## Mars

Mars is actually a very cold place



# Structure of banking industry

Bank name	Type	Banking system
Write here the name...	International	Conventional
Write here the name...	Local	Digital
Write here the name...	International	Digital
Write here the name...	Local	Conventional



# Currency checklist



	Name	Symbol	Description
✓	Dollar	\$	Mercury is the smallest planet
✗	Euro	€	Venus has a beautiful name
✓	Yen	¥	Mars is actually a very cold place
✗	Pound	£	Jupiter is the biggest planet



# Global overview of banking

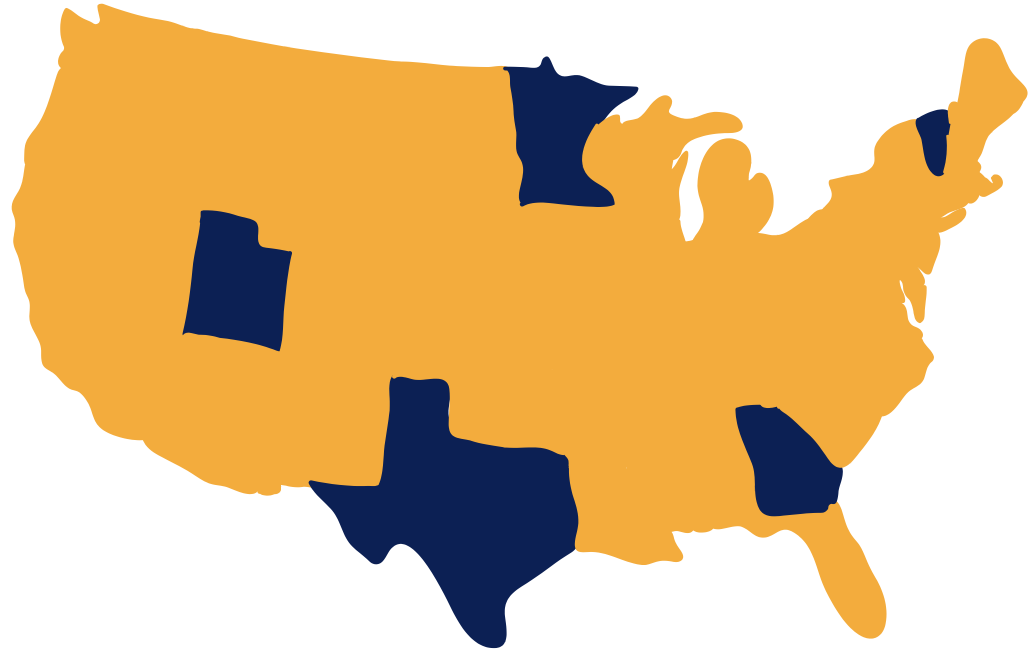


# USA overview of banking



## Mars

Mars is actually  
a cold planet



# Number of new banks



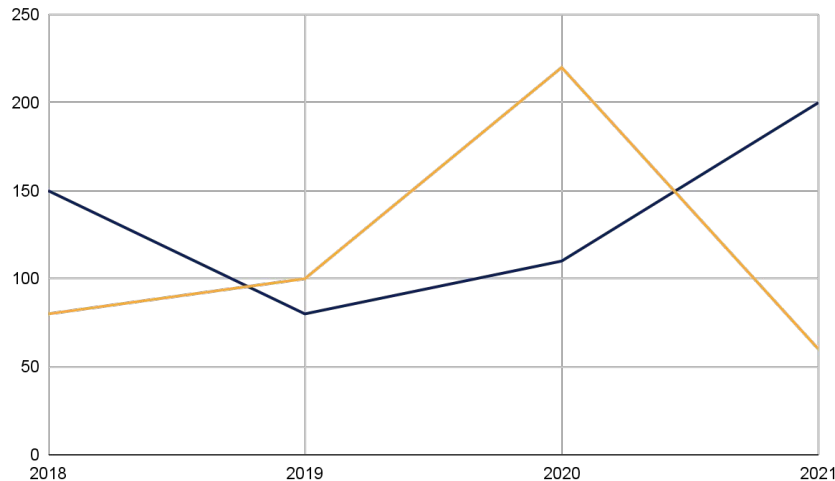
## Digital

Venus has a beautiful name



## Non-digital

Jupiter is the biggest planet of them all



Follow the link in the graph to modify its data and then paste the new one here. For more info, click [here](#)



# Number of new banks

■ Non-digital ■ Digital ■ Traditional



Follow the link in the graph to modify its data and then paste the new one here. For more info, click here



**25%**

Jupiter is the biggest planet of them all



**25%**

Venus has a beautiful name, but also high temperatures



**50%**

Despite being red, Mars is actually a cold place

# The benefits of banking

## Loans

Neptune is the farthest planet from the Sun

## Mortgage

Jupiter is the biggest planet in the Solar System



## Charges

Saturn is a gas giant and has several rings

## Assets

Despite being red, Mars is actually a cold place



# The benefits of banking



## Loans

Neptune is the farthest planet from the Sun



## Mortgage

Jupiter is the biggest planet in the Solar System



## Charges

Saturn is a gas giant and has several rings



# History of the event



**1990**

Venus is a beautiful place



**2015**

Mars is a very cold planet



**2020**

Neptune is far away from us



**2002**

Saturn is the ringed planet



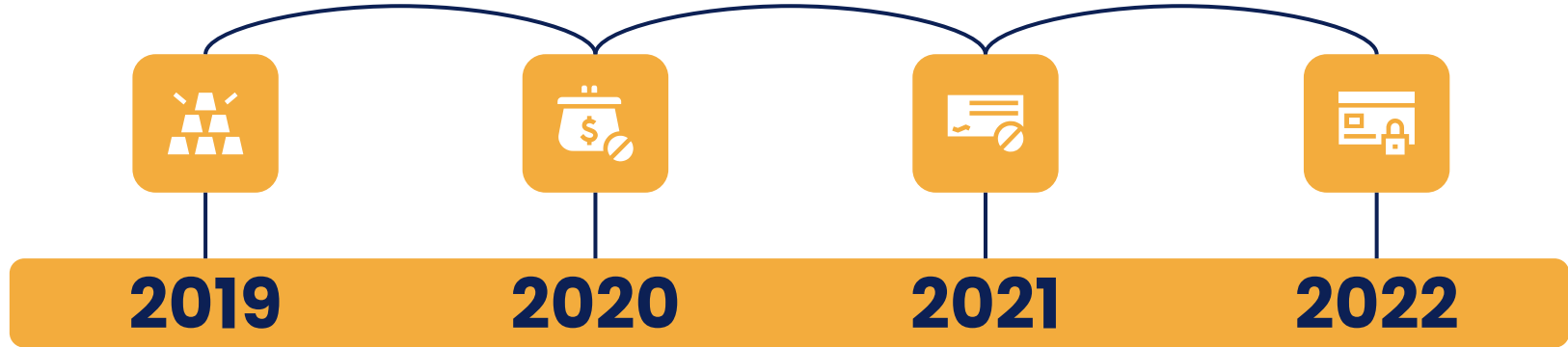
**2019**

Jupiter is the biggest planet





# History of the event



## Saturn

Saturn is the ringed planet

## Jupiter

Jupiter is a big planet

## Earth

Earth harbors lots of life

## Mars

Mars is a very cold planet



# When is it celebrated?



## December 4th

Mercury is the  
closest planet to  
the Sun

Mon	Tue	Wed	Thu	Fri	Sat	Sun
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2



# When is it celebrated?

## Check list for the day

- ☒ Go to the bank
- ☐ Call to the bank
- ☒ Open a bank account
- ☒ Deposit money
- ☐ Transfer money
- ☒ Ask for a loan

## Notes for the day

- Jupiter is the biggest planet
- Mars is actually a cold planet
- Mercury is the smallest planet
- Neptune is far away from the Sun
- Saturn is a gas giant and has rings
- Earth is the third planet from the Sun



# Banking progress

## Step 1

Mercury is a small planet



## Step 3

Mars is a very cold place



## Step 2

Saturn is the ringed planet

## Step 4

Jupiter is the biggest planet



# Banking progress

## Step 1

Mercury is the closest planet to the Sun and the smallest



## Step 2

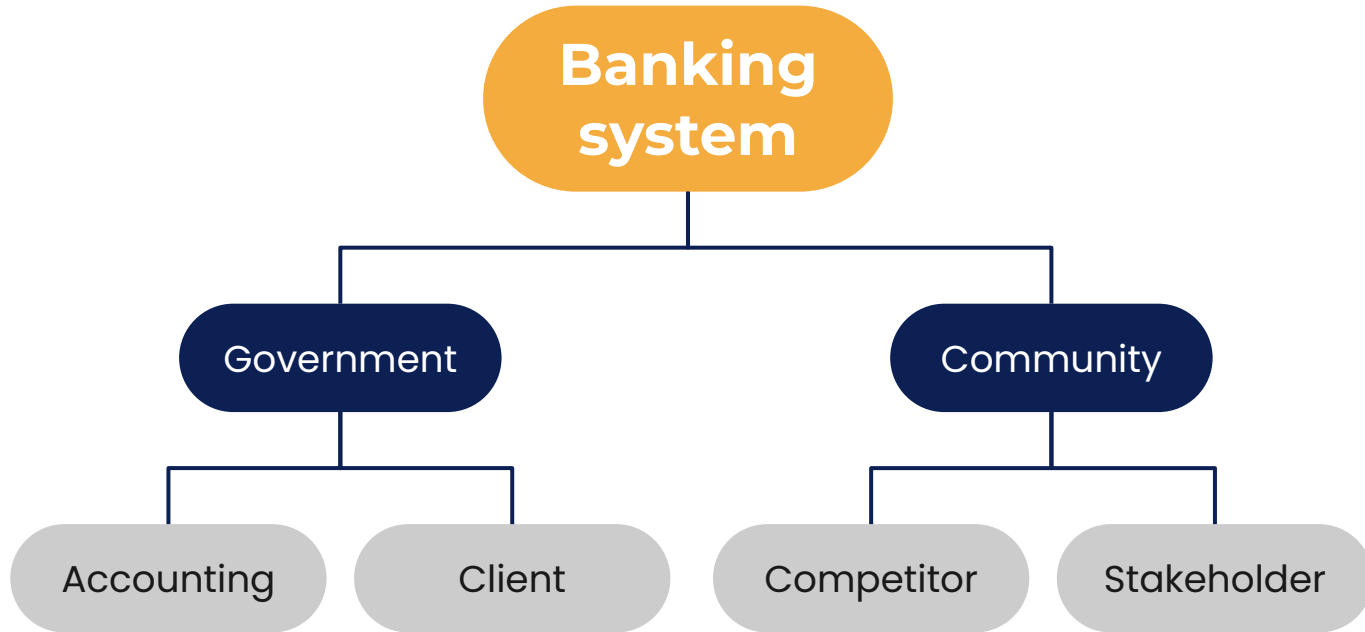
Venus has a beautiful name, but also high temperatures

## Step 3

Despite being red, Mars is actually a cold place



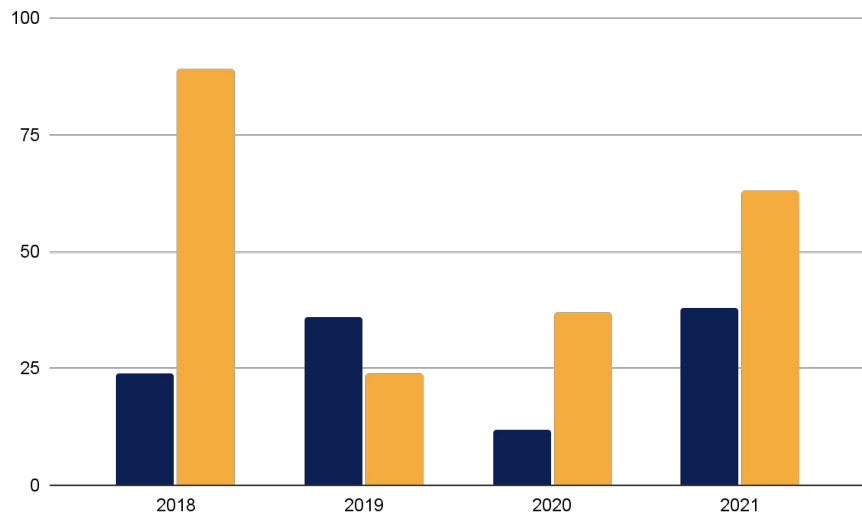
# Diagram of banking



# Organizational chart



# Digital banking market



Follow the link in the graph to modify its data and then paste the new one here. For more info, click here



## Digital payments

Venus has a beautiful name

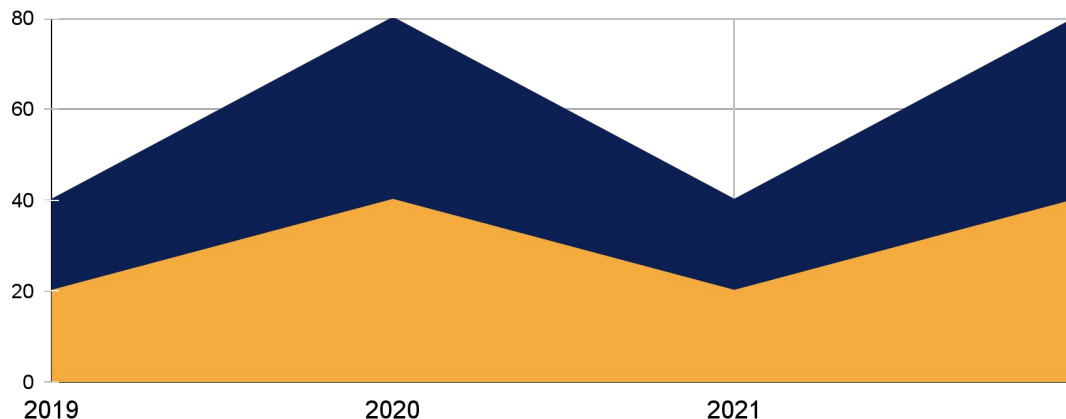


## Digital sales

Jupiter is the biggest planet



# Digital banking market



## ■ Payments

Venus has a beautiful name

## ■ Sales

Jupiter is the biggest planet

Follow the link in the graph to modify its data and then paste the new one here. For more info, click here





# Conclusions

Images reveal large amounts of data, so remember: use an image instead of a long text. Your audience will appreciate it





# Conclusions

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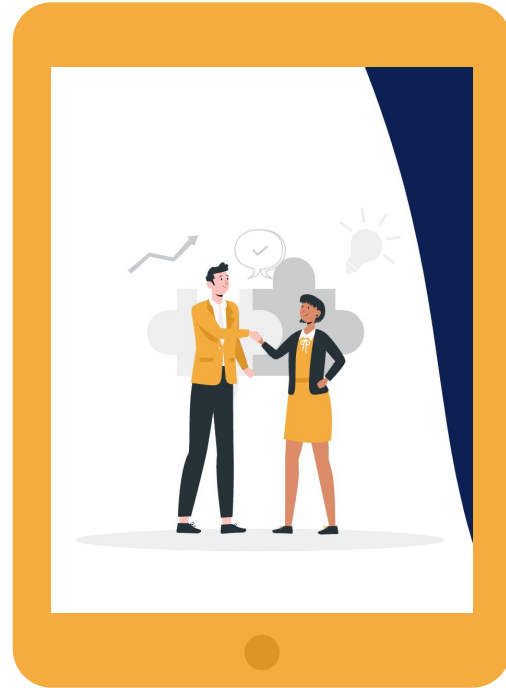
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# Tablet app

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# Phone app

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# Our team



**Jenna Doe**

You can talk a bit  
about this person



**Mark Stone**

You can talk a bit  
about this person



# Our team



**Wilson  
Moore**

You can talk a bit  
about this  
person here



**Barbara  
Scott**

You can talk a bit  
about this  
person here



**Peter  
Jones**

You can talk a bit  
about this  
person here



**Elsa  
Segal**

You can talk a bit  
about this  
person here





# Percentages



**20%**



Despite being red, Mars is a very cold place



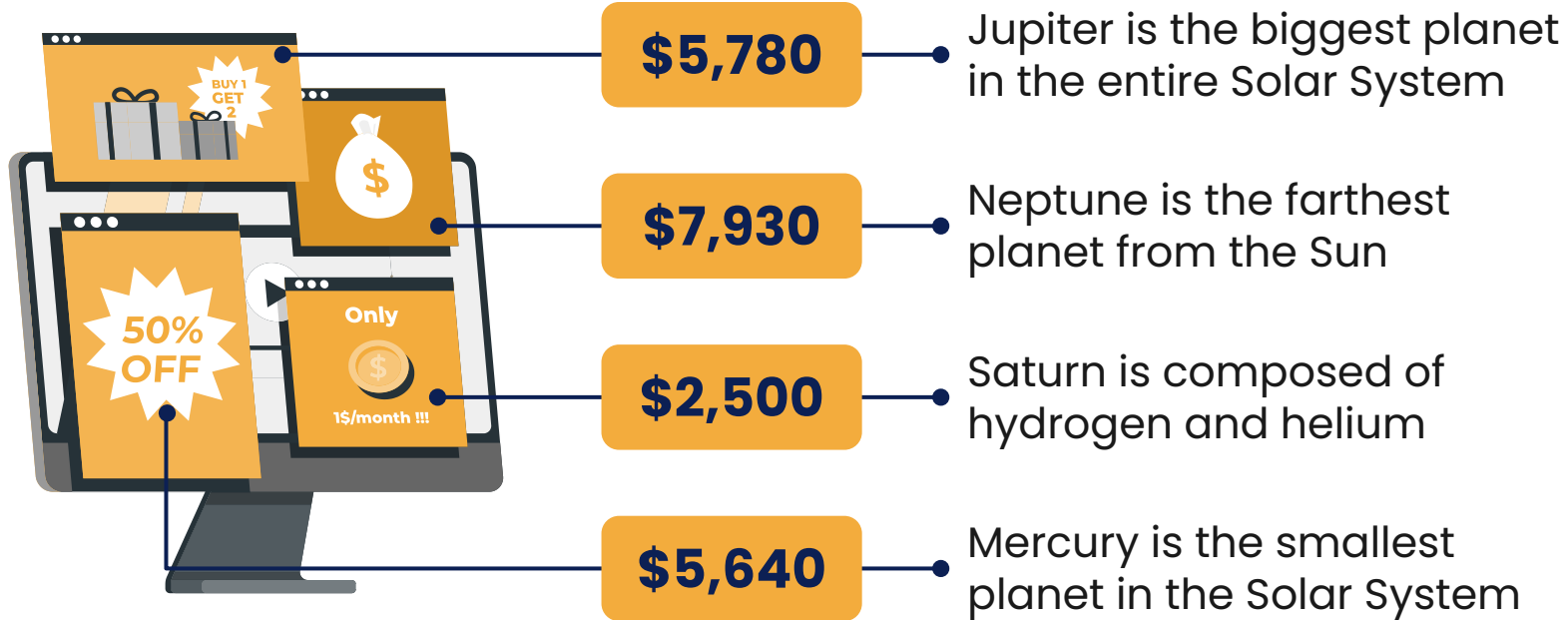
**80%**



Saturn is composed of hydrogen and helium



# Investments: data



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# Icon pack: economy | filled



# Icon pack: economic crisis



# Alternative resources

- ATM Machine Flat Illustrations
- Bankruptcy Flat Illustrations
- Investing Flat Illustrations
- Audit Flat Illustrations



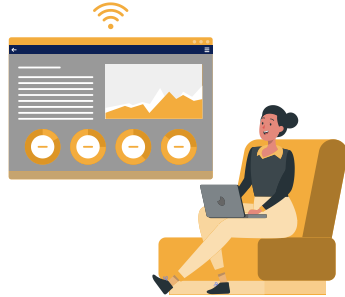
# Alternative resources

- Money motivation
- Banknote
- Credit card
- Spreadsheets



# Alternative resources

- Development focus
- Online report





# Alternative infographics



## Saturn

Saturn is the ringed planet



## Jupiter

Jupiter is the biggest planet



## Mercury

Mercury is a small planet



## Mars

Mars is actually a cold place



# Alternative infographics

**Saturn**

01

Saturn is the  
ringed planet

**Jupiter**

02

Jupiter is the  
biggest planet

**Venus**

03

Venus is the  
hottest planet

**Mars**

04

Mars is actually  
a cold place



# Resources

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## Vectors:

- Credit card Flat Illustrations
- Wallet Flat Illustrations
- Investment data Flat Illustrations
- Personal Finance Flat Illustrations
- Currency Flat Illustrations
- Tax Flat Illustrations
- Piggy Bank Flat Illustrations
- Revenue Flat Illustrations



# Resources

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- Online transactions
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- Finance app
- Usa map design with pastel colors
- Savings
- House icons pack



# Resources

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- Anonymous woman paying in shop
- Side view businessman calculating finance numbers
- Medium shot woman holding pen
- Smiling african young businessman talking on mobile phone sitting on staircase with laptop

## Icons:

- Icon Pack: Economy | Filled



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- Portrait of successful blonde young woman with crossed arms standing against gray backdrop
- Smiling man with crossed arms
- Brunette businesswoman posing
- Rear view of a woman holding debit card and using laptop for shopping online
- Woman keeping reports at table

## Icons:

- Economic crisis icon pack



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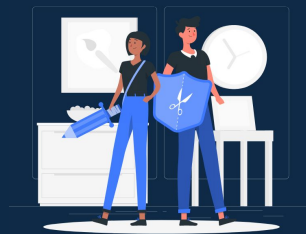
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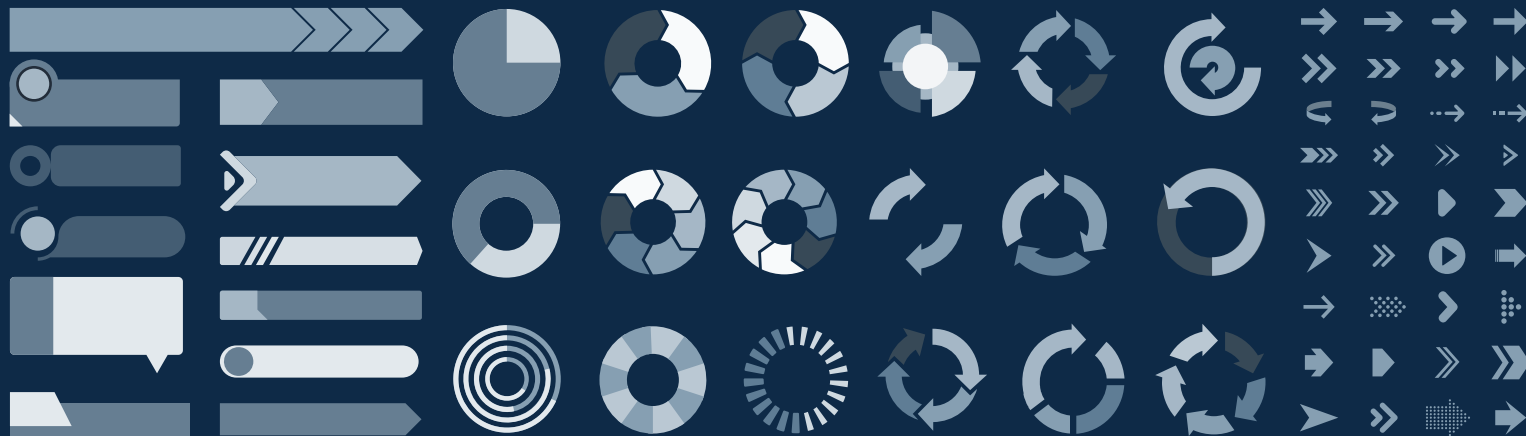


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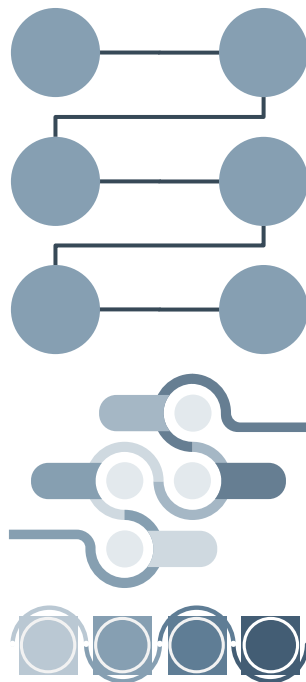
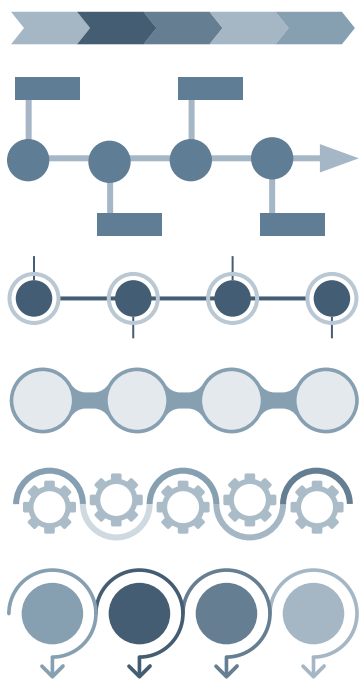
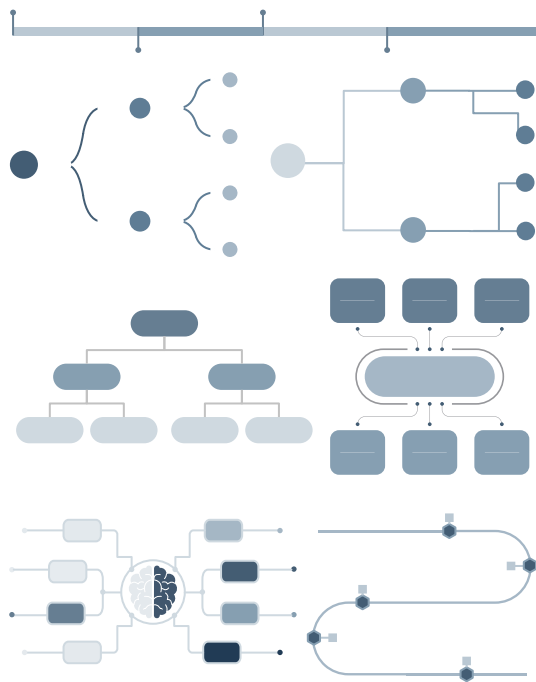
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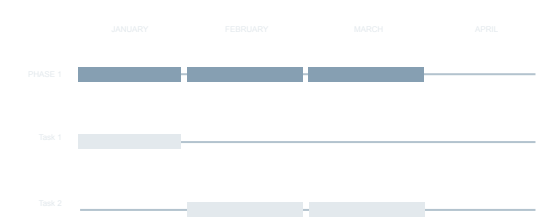
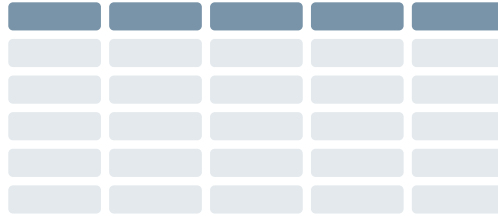
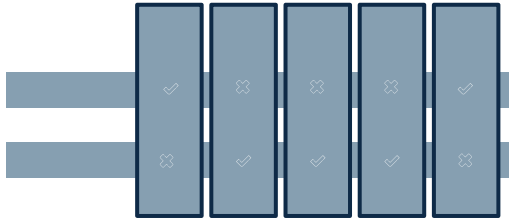
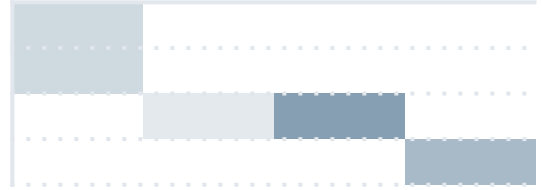
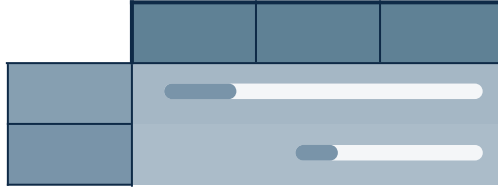
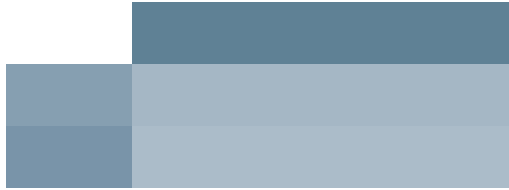
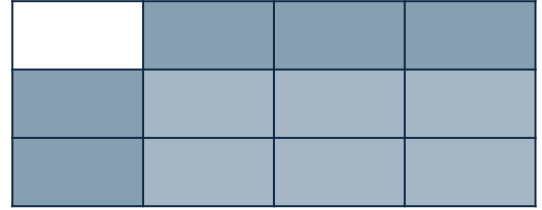
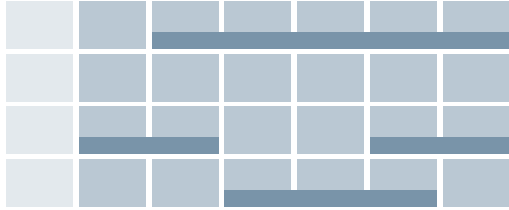
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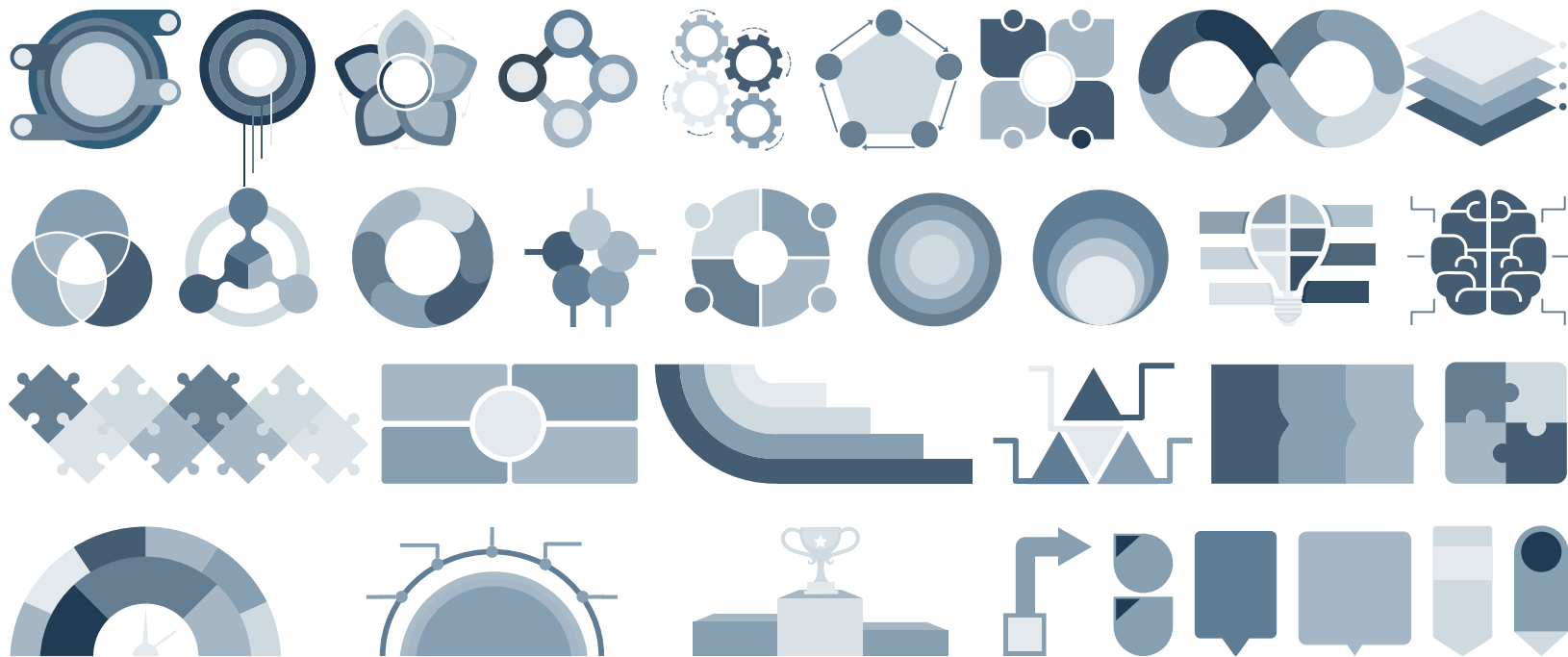
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## Medical Icons



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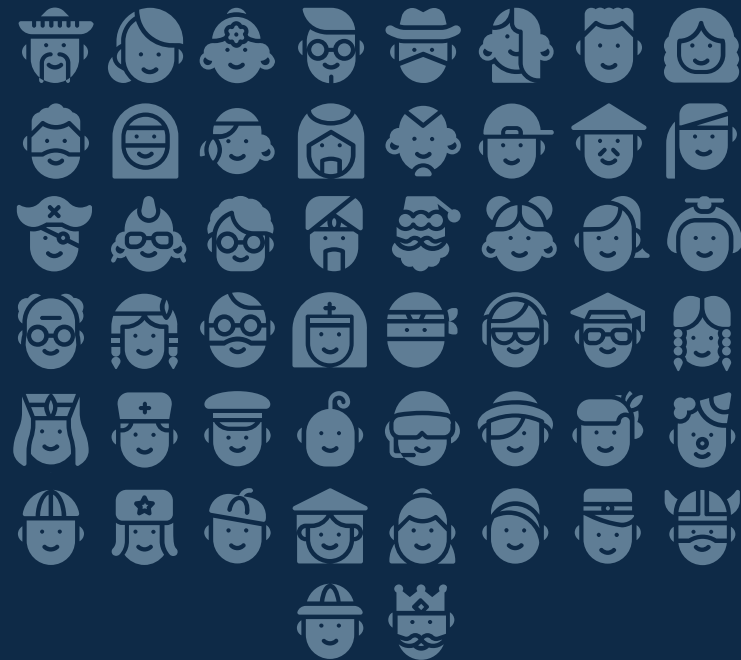
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# Help & Support Icons



# Avatar Icons



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## Performing Arts Icons



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