

What is a Mutual Fund?

Lesson Summary

What is a Mutual Fund? explains mutual funds and how can they aid in investment strategies.

Lesson Objectives

- Define and identify the characteristics of a mutual fund.
- Use the newspaper and Internet to research mutual funds.
- Use their research on mutual funds to help determine team investments for The Stock Market Game.
- Create and deliver a presentation on mutual funds, their risk, and performance.

NCTM Standards

- 1A - Understand numbers, ways of representing numbers, relationships among numbers, and number systems.
 1B - Understand meanings of operations and how they relate to one another.
 2A - Understand patterns, relations and functions.
 5A - Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.
 5B - Select and use appropriate statistical methods to analyze data.
 5C - Develop and evaluate inferences and predictions that are based on data.
 5D - Understand and apply basic concepts of probability.
 6A - Build new mathematical knowledge through problem solving.
 8B - Communicate mathematical thinking coherently and clearly to peers, teachers, and others.
 8C - Analyze and evaluate the mathematical thinking and strategies of others.
 8D - Use the language of mathematics to express mathematical ideas precisely.
 9A - Recognize and use connections among mathematical ideas.
 9C - Recognize and apply mathematics in contexts outside of mathematics.
 10A - Create and use representations to organize, record, and communicate mathematical ideas.
 10C - Use representations to model and interpret physical, social, and mathematical phenomena.

Mathematical Strands

	Thinking Algebraically	Students find percentages.	
	Interpreting Statistics	Students interpret information on mutual fund assets by calculating percentages.	
	Communicating Quantitative Information	Students use information on different companies to construct a graphical representation of the holdings of a mutual fund.	
	Tackling Complex Problems	Students will read the profiles of different investors. Given this information, they will then hypothesize what type of mutual fund would be the best investment for each person and then sketch a histogram to show how the assets of that mutual fund would be allocated.	

Practicing with Percentages

Percentages are a very important part of analyzing financial information.

In this exercise, you will find the percentage of the total mutual fund's worth invested in different stock types.

Remember,

$$\frac{\text{part_of_investment}}{\text{total_investment}} \cdot 100\%$$

1. Mutual Fund A (total value = \$51.7 million)
 - \$13.4 million invested in growth stocks _____ % invested in growth stocks
 - \$20.1 million invested in value stocks _____ % invested in value stocks
 - \$18.2 million invested in blend stocks _____ % invested in blend stocks

2. Mutual Fund B (total value = \$51.3 million)
 - \$34.8 million invested in small cap stocks _____ % invested in small cap
 - \$10.2 million invested in mid cap stocks _____ % invested in mid cap
 - \$6.3 million invested in large cap stocks _____ % invested in large cap

3. Mutual Fund C (total value = \$1,881 million = \$1.881 billion)
 - \$500 million (services) _____ % invested in services
 - \$280 million (healthcare) _____ % invested in healthcare
 - \$126 million (consumer goods) _____ % invested in consumer goods
 - \$975 million (technology) _____ % invested in technology

4. Mutual Fund D (total value = \$3,177 million = \$3.177 billion)
 - \$37 million (industrial goods) _____ % invested in industrial goods
 - \$1.2 billion (basic materials) _____ % invested in basic materials
 - \$755 million (conglomerates) _____ % invested in conglomerates
 - \$85 million (financial) _____ % invested in financial services
 - \$1.1 billion (utilities) _____ % invested in utilities

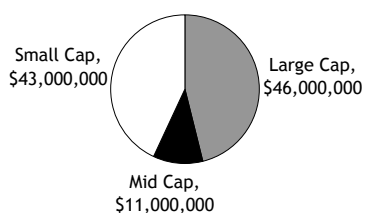
COMMUNICATING QUANTITATIVE INFORMATION

Understanding Mutual Funds' Holdings

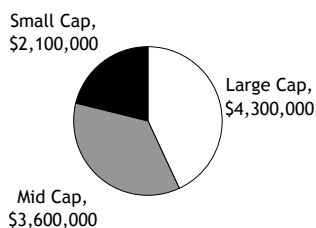
In order for investors to tell what kinds of stocks a mutual fund has invested in, investors often turn to graphs designed specifically to explain this information.

Below are pie charts that represent the assets of different mutual funds. For each mutual fund, state or calculate what percentage of assets is invested in each category presented in the pie chart.

Mutual Fund A

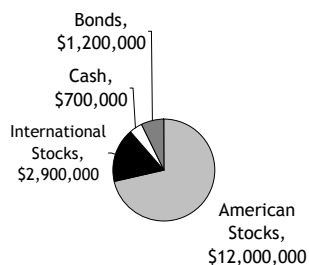


Mutual Fund B



2.

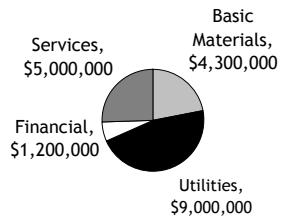
Mutual Fund C



3.

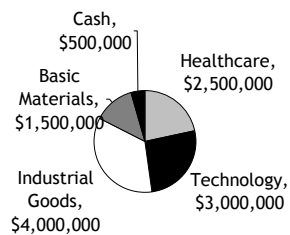
COMMUNICATING QUANTITATIVE INFORMATION

Mutual Fund D



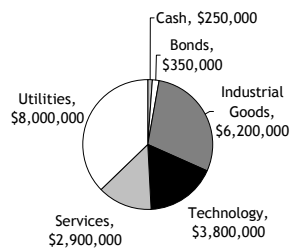
4.

Mutual Fund E



5.

Mutual Fund F



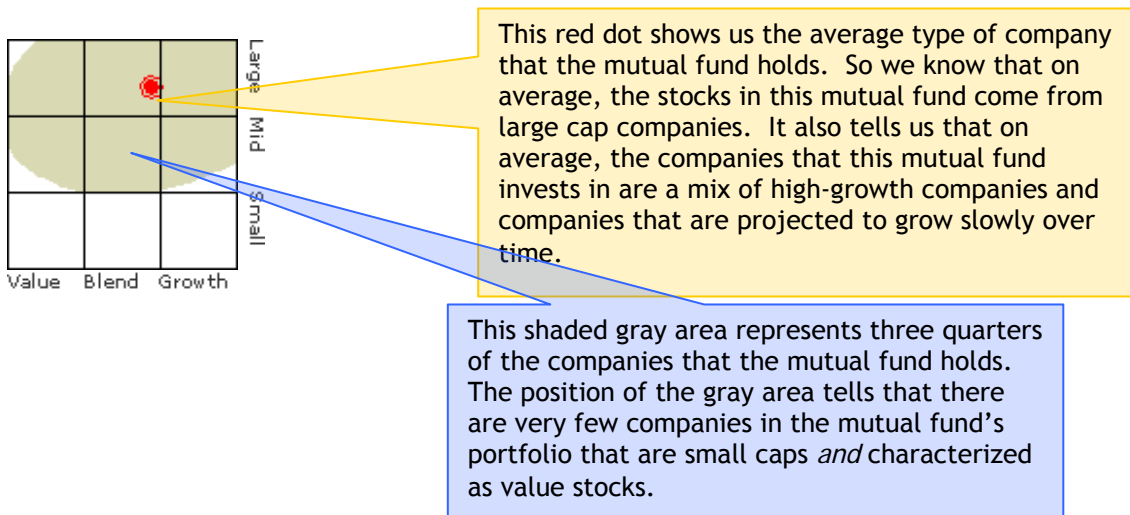
6.

COMMUNICATING QUANTITATIVE INFORMATION

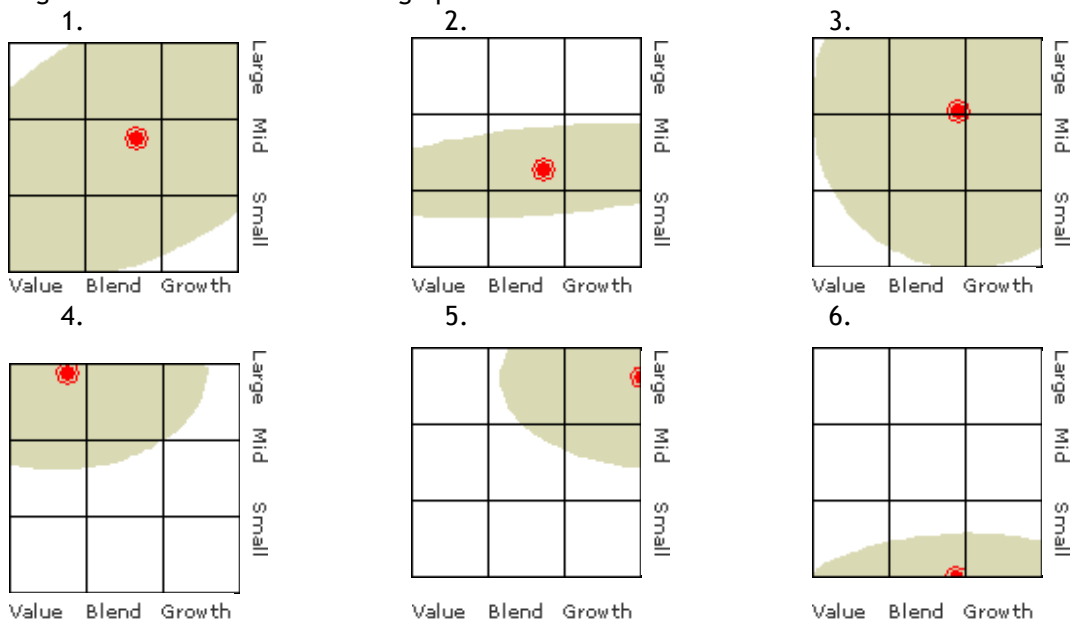
Interpreting Ownership Zone Graphs

Mutual funds can be thought of as someone else’s stock portfolio. If you buy shares of a mutual fund, it’s like buying shares of a very large portfolio that has many different stocks in it. Investors often like to know in what kinds of stocks mutual funds are invested, and they can use “Ownership Zone” graphs to find that information. Because mutual fund managers won’t reveal their exact combination of stocks, they instead publish these graphs that show the types of stock the mutual fund owns.

Below is an ownership zone graph of Janus Contrarian (JSVAX) mutual fund from February 20, 2007. (Source: <http://quicktake.morningstar.com/fundnet/Portfolio.aspx?Country=USA&Symbol=JSVAX#anchor1>)



Below are ownership graphs for different mutual funds. Interpret the information provided by writing a few sentences about each graph.

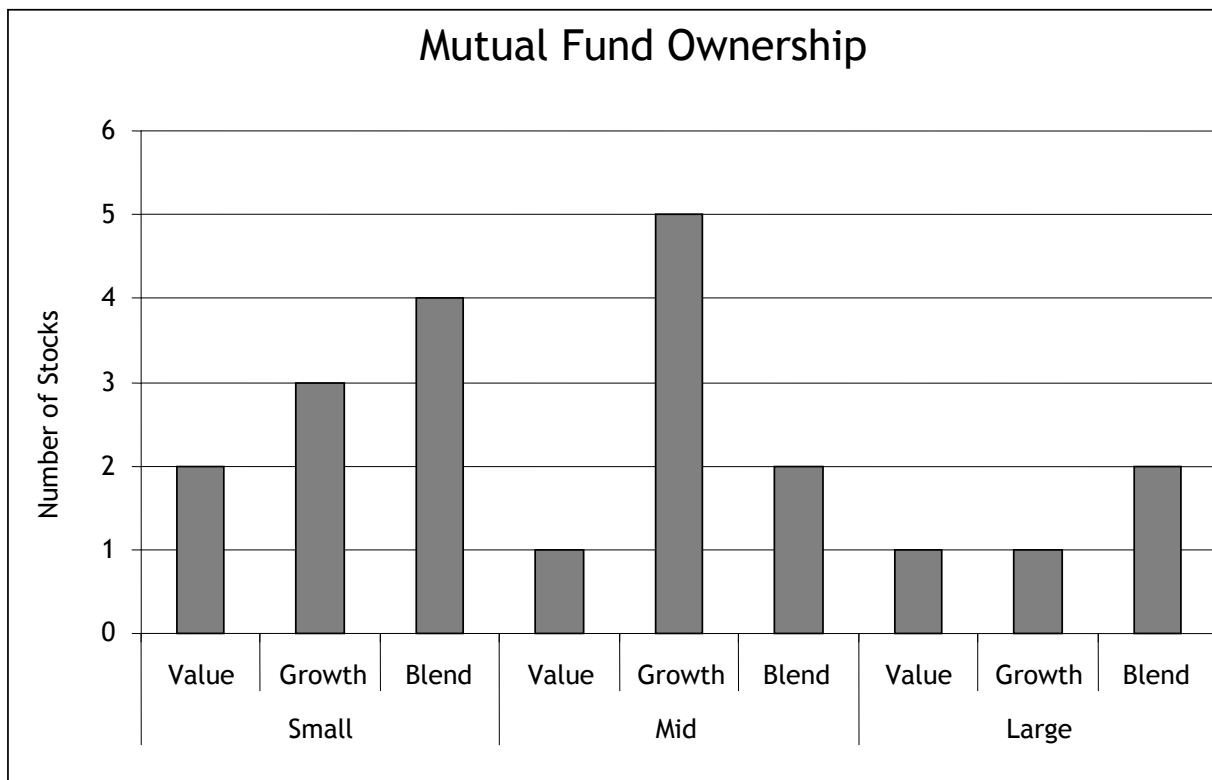


Which of the above funds is the most diversified in terms of risk and cap size? Which is the least diversified by the same criteria? How do you know?

COMMUNICATING QUANTITATIVE INFORMATION

Displaying Mutual Funds' Holdings

One way to show how a mutual fund is invested is to use a histogram, as shown below.



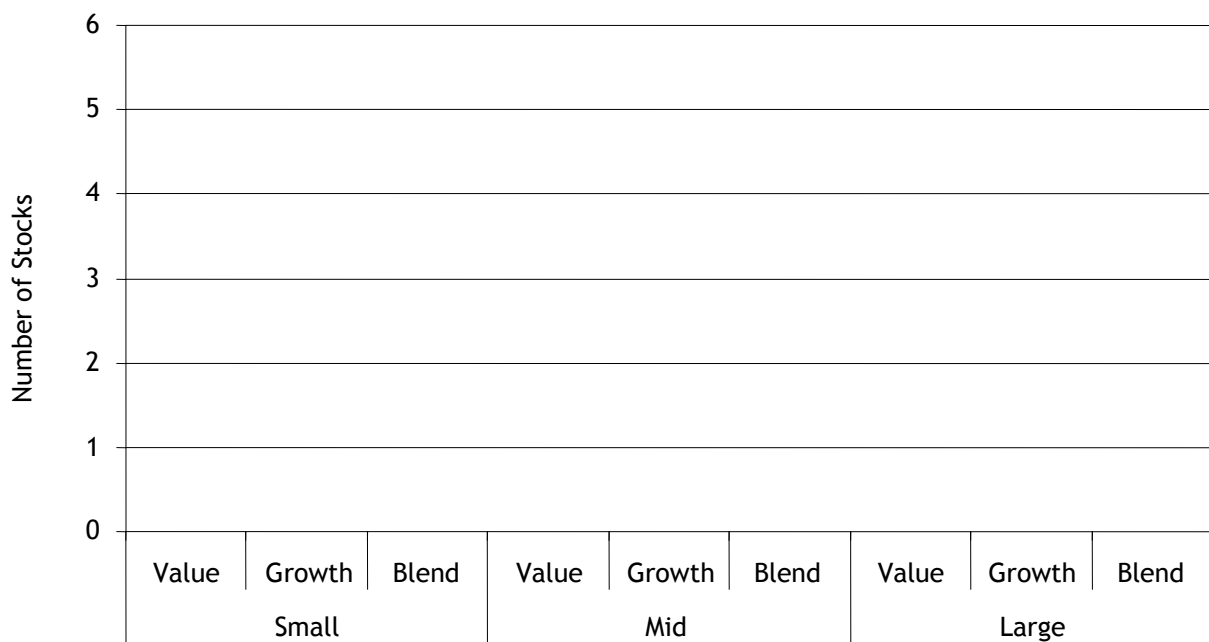
To construct a histogram, add one unit to the appropriate column for each company listed. Use the companies' profiles below. (Hint: For this exercise, use the following to categorize the market capitalization for each company: small cap < \$1 billion, \$1 billion ≤ mid cap ≤ \$5 billion, and large cap > \$5 billion.)

Company	Growth Rating	Cap	Cap-Size Category
1	Value	13.22 B	
2	Blend	1.30 B	
3	Growth	18.17 B	
4	Value	1.20 B	
5	Blend	27.04 B	
6	Growth	22.96 B	
7	Value	746.12 M	
8	Value	26.06 B	
9	Value	13.42 B	
10	Growth	17.95 B	
11	Blend	1.23 B	
12	Blend	1.27 B	
13	Growth	34.42 B	
14	Growth	34.31 B	
15	Blend	35.45 B	

COMMUNICATING QUANTITATIVE INFORMATION

16	Growth	960.57 M	
17	Blend	38.38 B	
18	Growth	211.80 M	
19	Growth	390.61 M	
20	Blend	404.86 M	
21	Growth	419.14 M	
22	Blend	421.20 M	
23	Blend	589.42 M	
24	Blend	37.27 B	
25	Blend	44.04 B	
26	Growth	4.34 B	
27	Growth	1.04 B	
28	Blend	433.55 M	
29	Value	1.06 B	

Mutual Fund Ownership



On average, what type of stocks does this mutual fund invest in?

TACKLING COMPLEX PROBLEMS

Choosing Mutual Funds for Investors

As you have been learning, different investors have different priorities and need different investment strategies. Some investors chase volatile stocks, while others invest in stable, small-growth companies for the long term.

Given the profiles of the investors below, think of the type of mutual fund that would best fit each investor. Write a brief description of the mutual fund you would choose for each. Then graph what the asset allocation of that mutual fund might look like.

1. Susan is interested in a diversified portfolio, but can tolerate some risk in the stocks that she owns. While she is not a financial whiz, her financial advisor has been very good about giving her a basic education in the workings of the stock market. She is most concerned about being broadly invested.



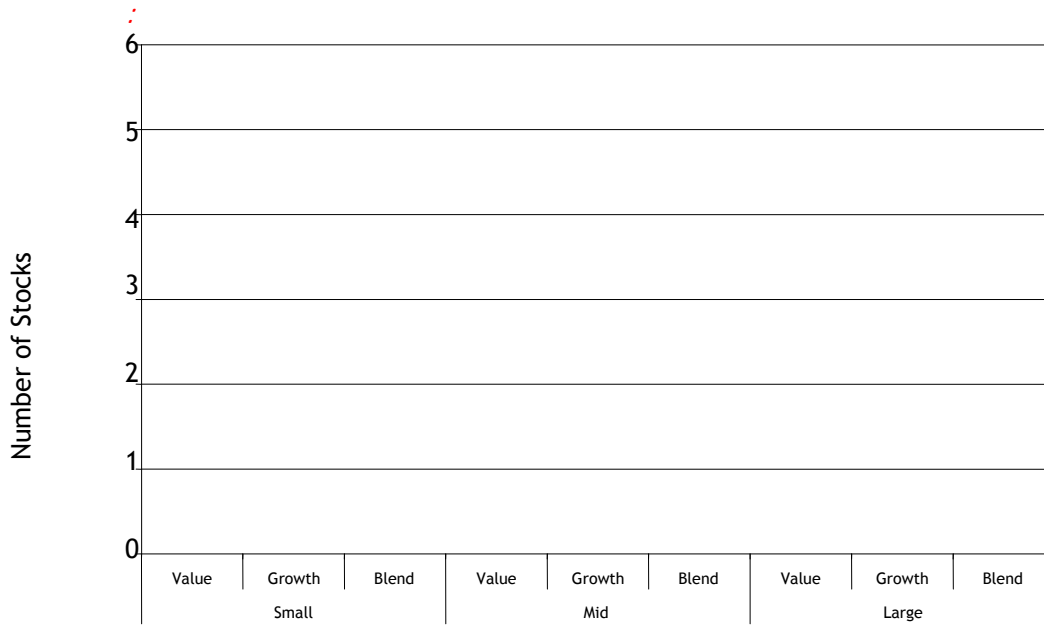
TACKLING COMPLEX PROBLEMS

2. Rajib is a young, very well-paid consultant who knows a lot about investments and how the market works. His job requires a good working knowledge of stocks, mutual funds, and bonds. Rajib is comfortable taking risks with his investments and is not concerned with short term volatility of stocks because he plans to invest money for a long time.



TACKLING COMPLEX PROBLEMS

3. Omar is looking for small, but consistent growth from his investments. He is very cautious about investing and wants to know that while he may not make great gains from his investments, his money is safe. He knows that he will only be invested for a short time in the stock market and only wants to invest if he can be persuaded that the investment won't be volatile.



What is a Mutual Fund?

ANSWER KEY

Please Note: 1. Prices included in lesson are not representative of actual market data and are for instructional purposes only. 2. Discrepancies may occur between student responses and the answer keys as a result of how far calculations were taken past the decimal point. In most instances, numbers were rounded from the thousandth or ten thousandth place.

Practicing with Percentages

Percentages are a very important part of analyzing financial information.

In this exercise, you will find the percentage of the total mutual fund's worth invested in different stock types.

Remember,

$$\frac{\text{part_of_investment}}{\text{total_investment}} \cdot 100\%$$

Solution: (\$13.4 million ÷ \$51.7 million) (100%) = 0.25918 x 100 = 25.92%

Answers:

1. Mutual Fund A (total value = \$51.7 million)

\$13.4 million invested in growth stocks	<i>25.92%</i> invested in growth stocks
\$20.1 million invested in value stocks	<i>38.88%</i> invested in value stocks
\$18.2 million invested in blend stocks	<i>35.20%</i> invested in blend stocks

2. Mutual Fund B (total value = \$51.3 million)

\$34.8 million invested in small cap stocks	<i>67.84%</i> invested in small cap
\$10.2 million invested in mid cap stocks	<i>19.88%</i> invested in mid cap
\$6.3 million invested in large cap stocks	<i>12.28%</i> invested in large cap

3. Mutual Fund C (total value = \$1,881 million = \$1.881 billion)

\$500 million (services)	<i>26.58%</i> invested in services
\$280 million (healthcare)	<i>14.89%</i> invested in healthcare
\$126 million (consumer goods)	<i>6.70%</i> invested in consumer goods
\$975 million (technology)	<i>51.83%</i> invested in technology

4. Mutual Fund D (total value = \$3,177 million = \$3.177 billion)

\$37 million (industrial goods)	<i>1.16%</i> invested in industrial goods
\$1.2 billion (basic materials)	<i>37.77%</i> invested in basic materials
\$755 million (conglomerates)	<i>23.76%</i> invested in conglomerates
\$85 million (financial)	<i>2.68%</i> invested in financial services
\$1.1 billion (utilities)	<i>34.62%</i> invested in utilities



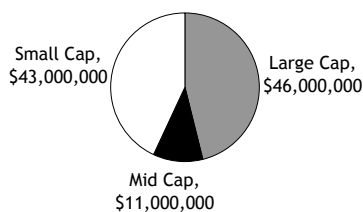
COMMUNICATING QUANTITATIVE INFORMATION

Understanding Mutual Funds' Holdings

In order for investors to tell what kinds of stocks a mutual fund has invested in, investors often turn to graphs designed specifically to explain this information.

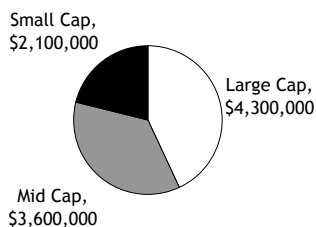
Below are pie charts that represent the assets of different mutual funds. For each mutual fund, state or calculate what percentage of assets is invested in each category presented in the pie chart.

Mutual Fund A



*Answer for Mutual Fund A:
Total Value = \$100,000,000
Small Cap 43%, Mid Cap 11%,
Large Cap 46%*

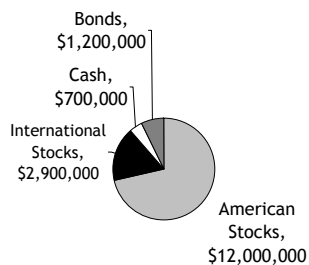
Mutual Fund B



*Answer for Mutual Fund B:
Total Value = \$1,000,000
Small Cap 21%, Mid Cap 36%,
Large Cap 43%*

2.

Mutual Fund C



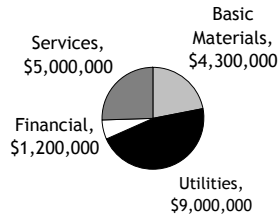
*Answer for Mutual Fund C:
Total Value = \$16,800,000
Bonds 7.14%, Cash 4.17%,
International Stocks 17.26%,
American Stocks 71.43%*

3.



COMMUNICATING QUANTITATIVE INFORMATION

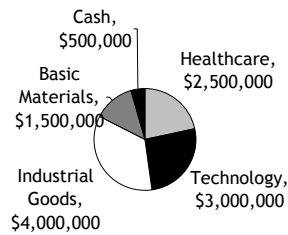
Mutual Fund D



*Answer for Mutual Fund D:
Total Value = \$19,500,000
Basic Materials 22.05%
Services 25.64%
Financials 6.15%
Utilities 46.15%*

4.

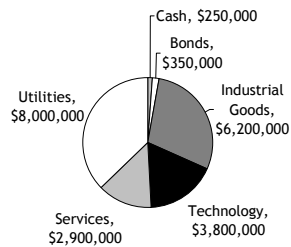
Mutual Fund E



*Answer for Mutual Fund E:
Total Value = \$11,500,000
Cash 4.35%
Basic Materials 13.04%
Ind. Goods 34.78%
Health 21.74%
Technology 26.09%*

5.

Mutual Fund F



*Answers for Mutual Fund F:
Total Value = \$21,500,000
Cash 1.16%
Utilities 37.21%
Services 13.49%
Technology 17.67%
Ind. Goods 28.84%
Bonds 1.63%*

6.

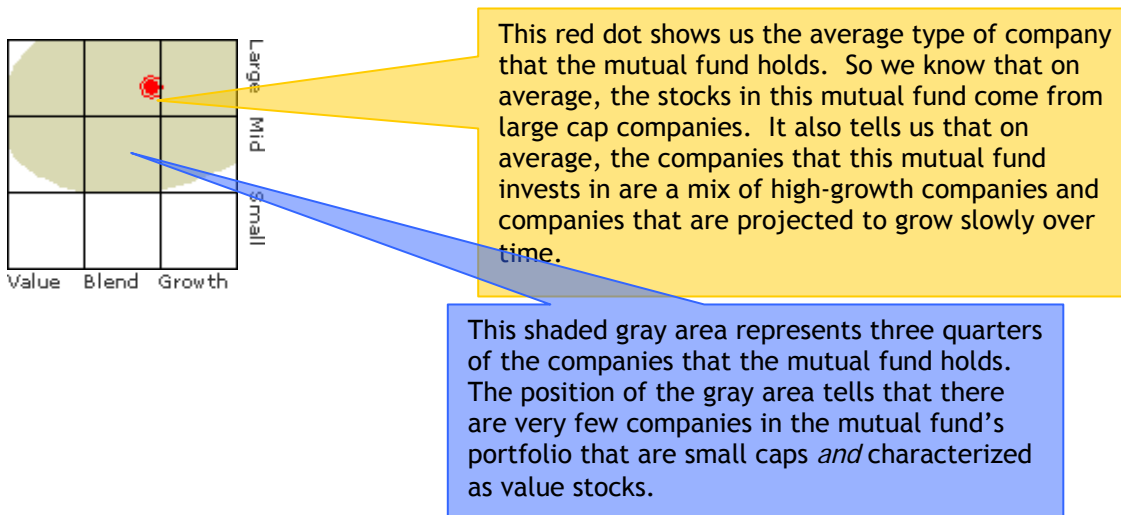


COMMUNICATING QUANTITATIVE INFORMATION

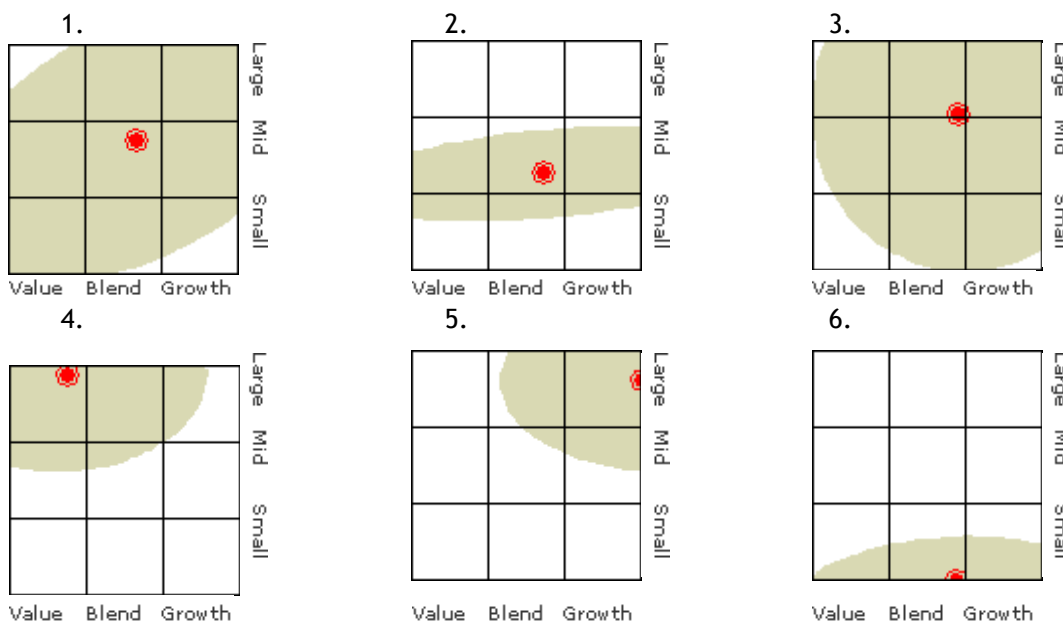
Interpreting Ownership Zone Graphs

Mutual funds can be thought of as someone else’s stock portfolio. If you buy shares of a mutual fund, it’s like buying shares of a very large portfolio that has many different stocks in it. Investors often like to know in what kinds of stocks mutual funds are invested, and they can use “Ownership Zone” graphs to find that information. Because mutual fund managers won’t reveal their exact combination of stocks, they instead publish these graphs that show the types of stock the mutual fund owns.

Below is an ownership zone graph of Janus Contrarian (JSVAX) mutual fund from February 20, 2007. (Source: <http://quicktake.morningstar.com/fundnet/Portfolio.aspx?Country=USA&Symbol=JSVAX#anchor1>)



Below are ownership graphs for different mutual funds. Interpret the information provided by writing a few sentences about each graph.



Answers:

COMMUNICATING QUANTITATIVE INFORMATION

- 1. This fund is made up mostly of large and mid cap stocks. There is a small percentage of small cap stocks. This would be a moderate fund.*
- 2. This fund is made up almost exclusively of mid cap stocks. This fund has no large cap stocks and only a small amount of small cap stocks.*
- 3. This is a diversified fund. It contains large, mid and small cap stocks.*
- 4. This fund is made up of mostly large cap value and blend stocks. There are very few mid cap stocks. No small stocks will be found in this fund. This is a conservative fund.*
- 5. This fund is a large cap growth fund. It has twice as many large cap stocks as mid cap stocks. No small cap stocks are in this fund.*
- 6. This fund is for the risk taker. No large cap or mid cap stocks are in this fund. It is made up exclusively of small stocks.*

Which of the above funds is the most diversified in terms of risk and cap size? Which is the least diversified by the same criteria? How do you know?

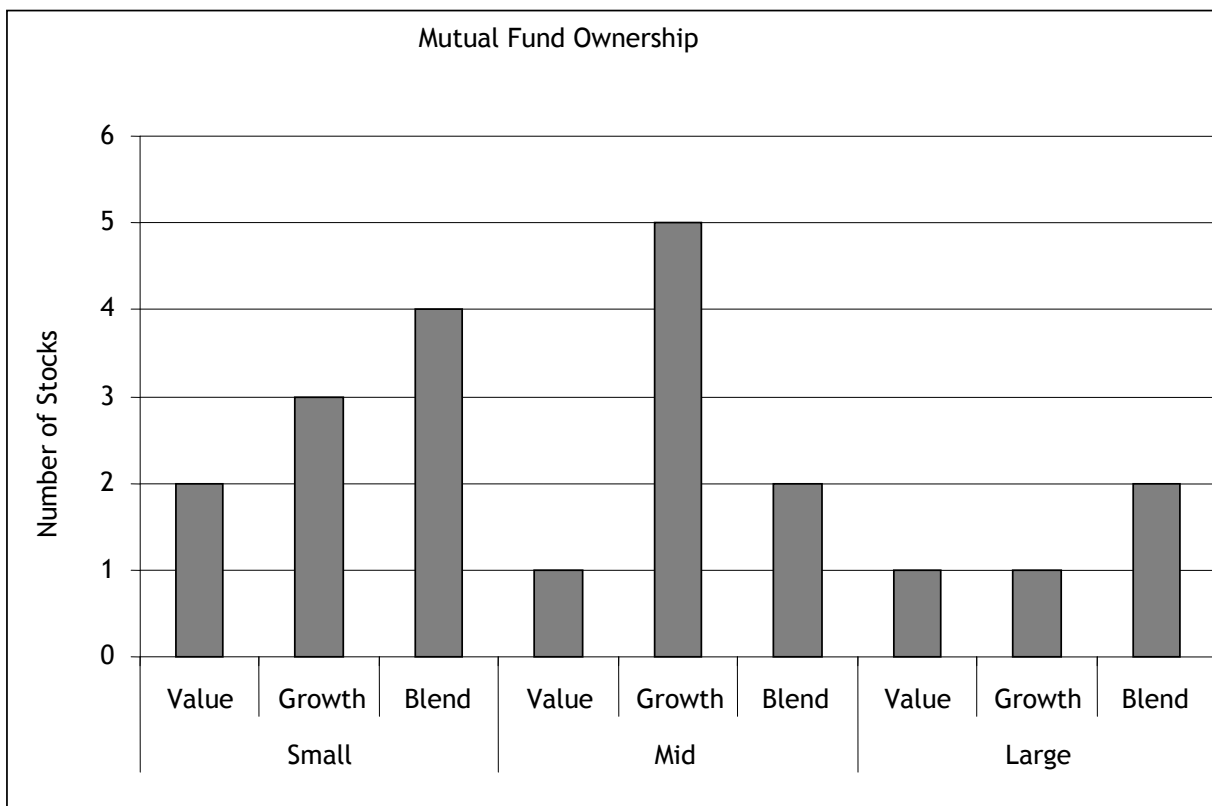
Answer: Mutual Fund #3 is the most diversified in terms of risk and cap size. Mutual Fund #6 is the least diversified in terms of risk and cap size.



COMMUNICATING QUANTITATIVE INFORMATION

Displaying Mutual Funds' Holdings

One way to show how a mutual fund is invested is to use a histogram, as shown below.



To construct a histogram, add one unit to the appropriate column for each company listed. Use the companies' profiles below. (Hint: For this exercise, use the following to categorize the market capitalization for each company: small cap < \$1 billion, \$1 billion ≤ mid cap ≤ \$5 billion, and large cap > \$5 billion.)

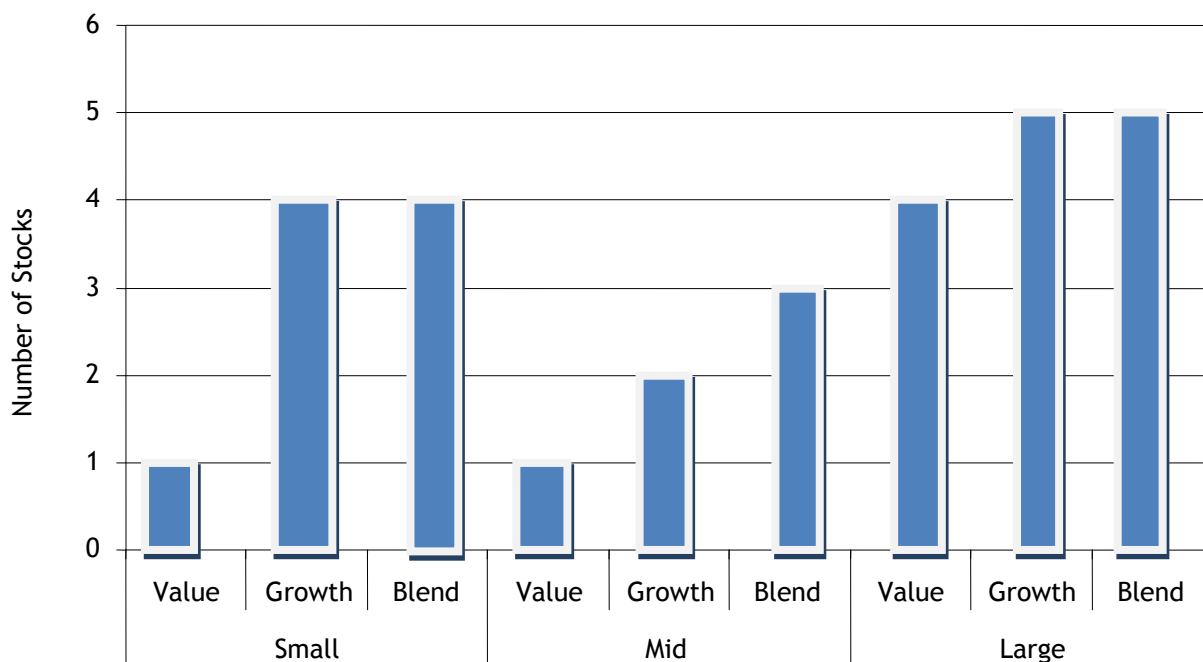
Company	Growth Rating	Cap	Cap-Size Category
1	Value	13.22 B	<i>Large</i>
2	Blend	1.30 B	<i>Mid</i>
3	Growth	18.17 B	<i>Large</i>
4	Value	1.20 B	<i>Mid</i>
5	Blend	27.04 B	<i>Large</i>
6	Growth	22.96 B	<i>Large</i>
7	Value	746.12 M	<i>Small</i>
8	Value	26.06 B	<i>Large</i>
9	Value	13.42 B	<i>Large</i>
10	Growth	17.95 B	<i>Large</i>
12	Blend	1.23 B	<i>Mid</i>
12	Blend	1.27 B	<i>Mid</i>
13	Growth	34.42 B	<i>Large</i>
14	Growth	34.31 B	<i>Large</i>
15	Blend	35.45 B	<i>Large</i>



COMMUNICATING QUANTITATIVE INFORMATION

16	Growth	960.57 M	<i>Small</i>
17	Blend	38.38 B	<i>Large</i>
18	Growth	211.80 M	<i>Small</i>
19	Growth	390.61 M	<i>Small</i>
20	Blend	404.86 M	<i>Small</i>
21	Growth	419.14 M	<i>Small</i>
22	Blend	421.20 M	<i>Small</i>
23	Blend	589.42 M	<i>Small</i>
24	Blend	37.27 B	<i>Large</i>
25	Blend	44.04 B	<i>Large</i>
26	Growth	4.34 B	<i>Mid</i>
27	Growth	1.04 B	<i>Mid</i>
28	Blend	433.55 M	<i>Small</i>
29	Value	1.06 B	<i>Mid</i>

Mutual Fund Ownership



On average, what type of stocks does this mutual fund invest in?

Answer:

In this fund there are 13 large cap stocks. That's about half of the 29 stocks in this portfolio. The dominant categories are large cap growth (5 stocks) and large cap blend (5 stocks). The average would approximately be the mid cap blend.



TACKLING COMPLEX PROBLEMS

Choosing Mutual Funds for Investors

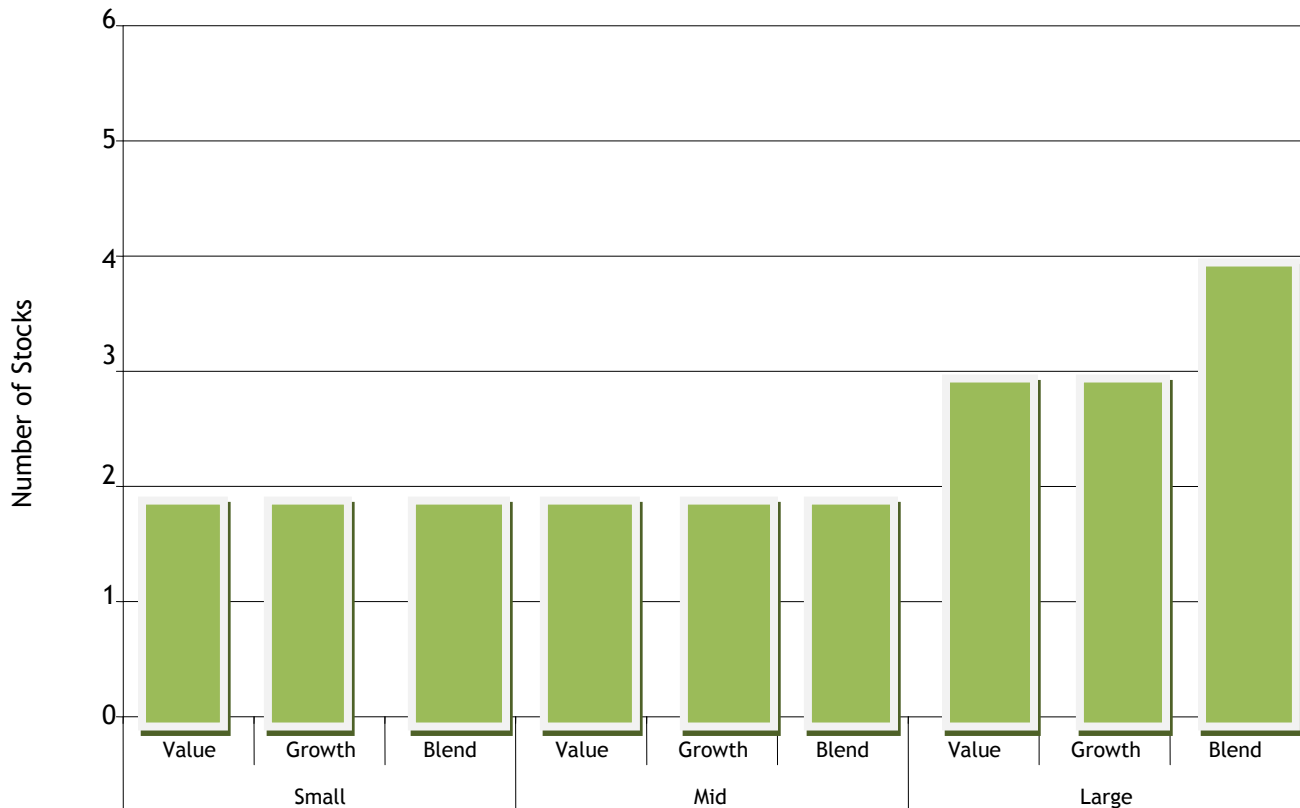
As you have been learning, different investors have different priorities and need different investment strategies. Some investors chase volatile stocks, while others invest in stable, small growth companies for the long term.

Given the profiles of the investors below, think of the type of mutual fund that would best fit each investor. Write a brief description of the mutual fund you would choose for each. Then graph what the asset allocation of that mutual fund might look like.

1. Susan is interested in a diversified portfolio, but can tolerate some risk in the stocks that she owns. While she is not a financial whiz, her financial advisor has been very good about giving her a basic education in the workings of the stock market. She is most concerned about being broadly invested.

Possible Answer:

Susan's mutual fund should be well-diversified, and should include almost equal investments in small, mid, and large cap stocks. Although she can tolerate some risk, a higher concentration in large cap stocks will help her stay slightly conservative.

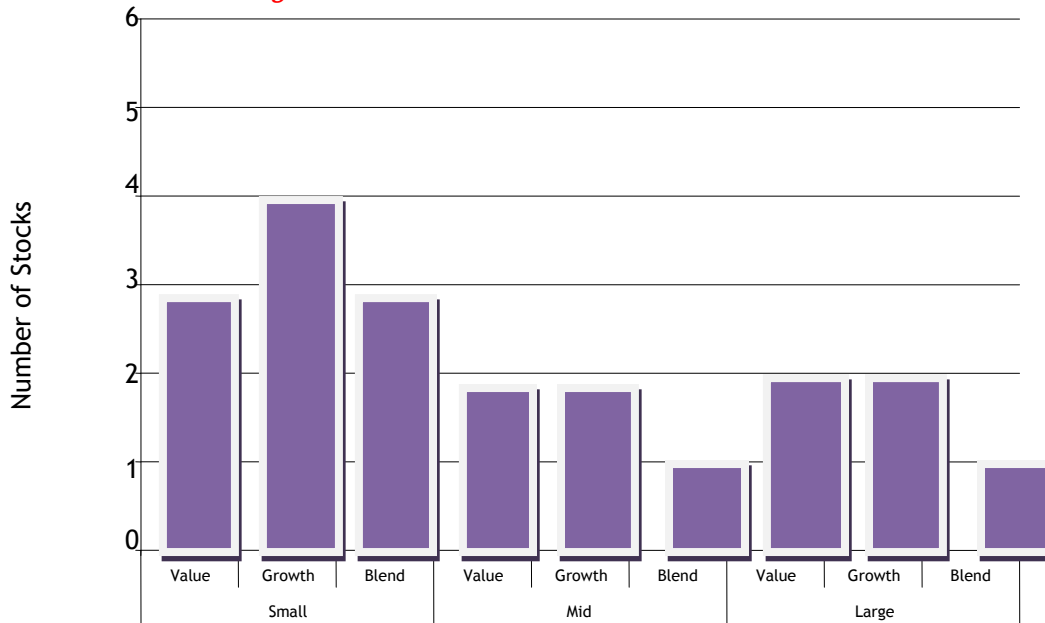


TACKLING COMPLEX PROBLEMS

2. Rajib is a young, very well-paid consultant who knows a lot about investments and how the market works. His job requires a good working knowledge of stocks, mutual funds, and bonds. Rajib is comfortable taking risks with his investments and is not concerned with short term volatility of stocks because he plans to invest money for a long time.

Possible Answer:

Since Rajib plans to invest over the long-term and is comfortable taking risks, his portfolio can tolerate more concentration in small cap stocks but should include some mid and large as well.



What is a Mutual Fund?

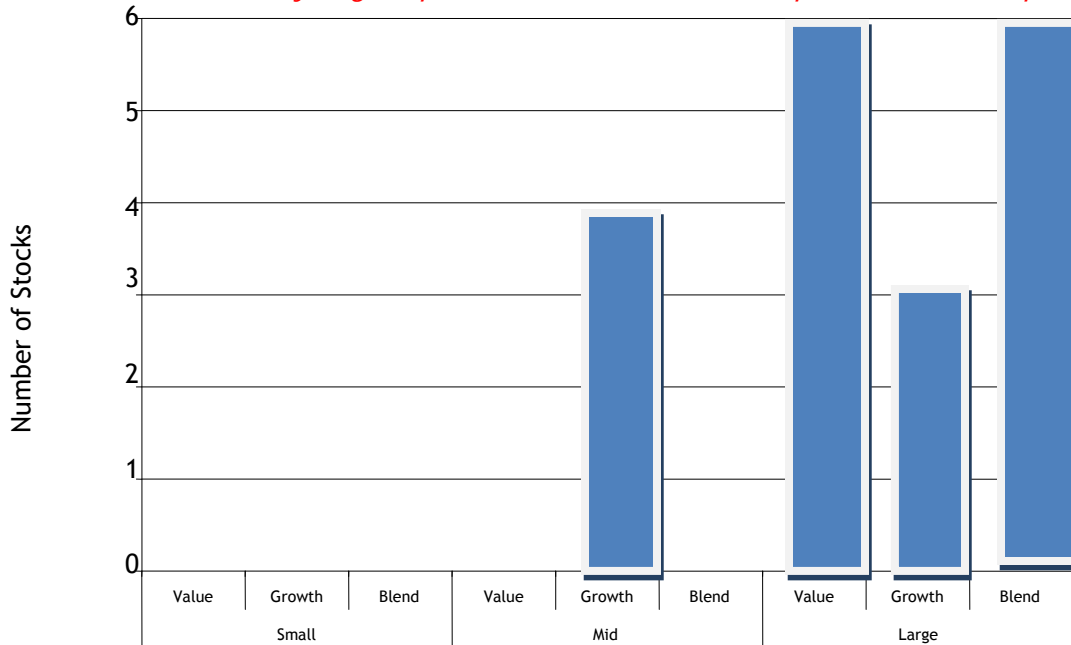
Answer Key

TACKLING COMPLEX PROBLEMS

3. Omar is looking for small, but consistent growth from his investments. He is very cautious about investing and wants to know that while he may not make great gains from his investments, his money is safe. He knows that he will only be invested for a short time in the stock market and only wants to invest if he can be persuaded that the investment won't be volatile.

Possible Answer:

Since Omar is only interested in short-term, safe investments, his portfolio should include mainly large cap stocks with minimal mid cap and no small cap stocks.



What is a Mutual Fund?

Answer Key