Math6.org Activities for Graphing

Vocabulary Studies

___1) On-Line Word Search
___2) 3 Column Notes
___3) Flash Cards
___4) Crossword Puzzle
___5) Matching Practice
___6) Vocabulary Millionaire!

Tests and Games

___38) Averages Millionaire
___39) Mid Chapter Quiz
___40) Quiz Bowl
___41) Practice Test
___42) Graphing Millionaire

Activities by Lesson

6.1 Make a Table

___1) Review Worksheet
___2) Lesson Quiz
___3) **Logic - Use a Table

6.2 Range, Mean, Median & Mode

___4) Review Worksheet
___5) Mean (GP)
___6) Median (GP)
___7) Mode (GP)
___8) Range (GP)
___9) Lesson Quiz
___10) **Averages with Excel
___11) **Averages Millionaire

6.3 Additional Data and Outliers

___12) Review Worksheet
___13) Lesson Quiz
___14) **Excel - Effects of Outliers

6.4 Bar Graphs

___15) Review Worksheet
___16) Scale and Interval Practice
___17) Lesson Quiz
___18) **Excel - Making Bar Graphs

6.5 Frequency Tables & Histograms

___19) Review Worksheet
___20) Lesson Quiz
___21) **Excel - Making Histograms
___22) **Frequency Puzzle

6.6 Ordered Pairs

___23) Review Worksheet
___24) Ordered Pairs Practice
___25) Lesson Quiz
___26) **Pirate Treasure

6.7 Line Graphs

___27) Review Worksheet
___28) Lesson Quiz
___29) **Line Graphing with Excel

6.8 Misleading Graphs

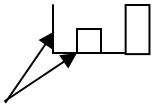
___30) Review Worksheet
___31) Lesson Quiz
___32) **Excel - Changing Axis Values

6.9 Stem-and-Leaf Plots

___33) Review Worksheet
___34) Stem & Leaf (GP)
___35) Lesson Quiz
___36) **Excel - Old Fashioned Grading

Name _____

Word List – 3 Column Notes

Word	Definition	Example
Axis	the horizontal and vertical edges of the graph	
Bar Graph		
Coordinate Grid		
Cumulative Frequency		
Double Bar Graph		
Double Line Graph		
Frequency Table		
Histogram		
Horizontal		
Interval		
Line Graph		
Mean		
Median		
Misleading		
Mode		
Ordered Pair		
Outlier		
Range		
Scale		
Stem-and-Leaf Plots		
Table		
Vertical		

You will need to copy this onto **your own paper** to make proper 3 column notes.

Math Journal - Chapter 6 - Collect and Display Data

6.01 Complete # 7 on page 274.

6.02 The Math6.org extension for this lesson (6.2) will teach you how to use a spreadsheet (Excel) to find the various averages for a data set. (cheat on your homework!) You may complete that extension or write a how to paragraph that models finding the median of the following data set. {5, 6, 7, 8, 9, 10}

6.03 The Math6.org extension for this lesson (6.3) will show you why a spreadsheet (Excel) is very helpful when dealing with outliers and additional data. You may complete that extension or complete # 10 on page 281.

6.04 The Math6.org extension for this lesson (6.4) will teach you how to use a spreadsheet (Excel) to create and decorate a bar graph. You may complete this extension or create a hand drawn bar graph showing the 5 most populated cities in the United States.

6.05 The Math6.org extension for this lesson (6.5) will show you how to use Microsoft Excel to create histograms. You may complete this extension or create a hand drawn frequency table and histogram for the following data set. {Ages of Whales that Scientists Tracked and Studied - 10, 11, 35, 36, 55, 28, 32, 46, 57, 69, 58, 14, 8, 9, 10, 11, 7, 12, 8, 13, 11, 12, 25, 19, 45, 52, 35, 42, 62, 27, 31, 29, 15, 17, 16, 18, 20, 19, 22 34, 29, 30, 20, 25, 13, 14, 15, 16, 15, 17}

6.06 Draw or print a picture on a coordinate plane. Plot as many ordered pairs as possible and record them. Create an ordered pair worksheet and have a friend try to duplicate your picture by plotting your ordered pairs and connecting the dots.

6.07 The Math6.org extension for this lesson (6.7) will teach you how to use a spreadsheet (Excel) to create and decorate a line graph. You may complete this extension or create a hand drawn line graph showing the population of your school, church or club over the last 5 years.

6.08 The Math6.org extension for this lesson (6.8) will teach you how to use a spreadsheet (Excel) to create and decorate an unfair graph. You may complete this extension or create a pair of hand drawn graphs showing the following data set as nearly equal and greatly different. {Grades: John 93, Debbie 89; Clarisa 90}

6.09 Complete the Box and Whisker Plots Extension on pages 308 - 309.

General Scoring Rubric:

0 No Response
1 Wrong response
2 Weak response
3 Showed understanding
4 Showed understanding and cited an example
5 Showed understanding, cited examples and communicated effectively enough to enable others to understand.

Math Objectives

4.01

Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle.

Essential Question

Stem-and-Leaf Plots were very handy in the days before the computer was available to almost everyone everywhere. But in this day and age, they are not used very much at all. Would you support removing Stem-and-Leaf Plots from our educational objectives or should Stem-and-Leaf Plots be removed as an educational objective? (Explain)

Wayne County Schools 21st Century Instructional Lesson Plan
Stem and Leaf Plots

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

4.01
Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle.

Essential Question(s) **(In student-friendly terms)**

Stem-and-Leaf Plots were very handy in the days before the computer was available to almost everyone everywhere. But in this day and age, they are not used very much at all. Would you support removing Stem-and-Leaf Plots from our educational objectives or should Stem-and-Leaf Plots be removed as an educational objective? (Explain)

Assess **(Look at student data to plan. Use formative and/or summative assessments.)**

Review and assess student comfort and competence understanding the place value system used to write numbers. (A good day to refresh alternate base number concepts with the higher learners)

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Today we will learn to make and analyze stem-and-leaf plots. These stem-and-leaf plots will make everything to do with analyzing averages much easier.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating		Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:
___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate
Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

Complete the Box and Whisker Plots Extension on pages 308 - 309.

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Stem and Leaf Plots

Essential Question:	Stem-and-Leaf Plots were very handy in the days before the computer was available to almost everyone everywhere. But in this day and age, they are not used very much at all. Would you support removing Stem-and-Leaf Plots from our educational objectives or should Stem-and-Leaf Plots be removed as an educational objective? (Explain)
Objective (s) Numbers:	**4.01**
Outcomes:	Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle.
Materials:	Textbook pages 305-309; Reteaching 6.9
Anticipatory Set:	Today we will learn to make and analyze stem-and-leaf plots.

During the Lesson

Presentation of Information:	
Integration of Other Subjects:	Reading (vocabulary, problem solving, analyzing expectation)
Integration of Reading:	Reading for information and interpretation.
Integration of Technology:	Computer, Projector, PowerPoint, Internet
Modeling:	You can use place value to make a stem-and-leaf plot. List the tens digits in order from least to greatest in the first, or stem, column. Then, for each tens digit, record the ones digit for each data value in order from least to greatest in the second, or leaves, column.
Differentiation:	504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.
Guided Practice:	Use Reteaching 6.9 to model this skill.

After the Lesson

Independent Practice	Text page 306 - 307 {1- 8, 17} **AIG**: {9-17, 19} Assign workbook page 6.9
Closure / Assessment:	Complete the Box and Whisker Plots Extension on pages 308 - 309.

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **6** activities connected with this lesson

Stem & Leaf Guided Practice

**Old Fashioned Grading

Name _____ Date _____ Class _____

CHAPTER 6-9

Reteach

Stem-and-Leaf Plots

You can use place value to make a stem-and-leaf plot.

Points Earned in Games During Basketball Season						
27	16	34	29	48	12	33
20	18	42	51	27	32	41

Write the numbers in order from least to greatest.

12 16 18 20 27 27 29 32 33 34 41 42 48 51

List the tens digits in order from least to greatest in the first, or stem, column. Then, for each tens digit, record the ones digit for each data value in order from least to greatest in the second, or leaves, column.

Points Earned

Stem	Leaves
1	2 6 8
2	0 7 7 9
3	2 3 4
4	1 2 8
5	1

Key: 1 | 2 = 12

Make sure your graph has a title and a key.

Use the data to make a stem-and-leaf plot.

1.

Valerie's Test Scores				
62	84	93	88	89
76	68	81	91	88

Valerie's Test Scores

Stem	Leaves

Key: 6 | 2 = _____

2. What is the range?

_____

_____

3. What is the median?

_____

_____

4. What is the mode?

_____

_____

Math Objectives

5.04

Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.

Essential Question

Tables are used to organize data. Often the data is arranged in chronological order, other times you may want to organize the data in alphabetical or numerical order. Which order do you think would be the best organization for a graph showing the Time of Day and the Temperature at that time? (Explain)

Wayne County Schools 21st Century Instructional Lesson Plan
Make a Table

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

5.04
Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.

Essential Question(s) (In student-friendly terms)

Tables are used to organize data. Often the data is arranged in chronological order, other times you may want to organize the data in alphabetical or numerical order. Which order do you think would be the best organization for a graph showing the Time of Day and the Temperature at that time? (Explain)

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Assess student strengths and weaknesses regarding reading level and organizational techniques. Determine which students need to build the tables by hand.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

You can make a table to organize data. Then you can use the table to see patterns and draw conclusions. Today we will learn to use tables and organize data.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating		Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:
___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate
Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

Complete # 7 on page 274. (building a table)

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Make a Table

Essential Question:	Tables are used to organize data. Often the data is arranged in chronological order, other times you may want to organize the data in alphabetical or numerical order. Which order do you think would be the best organization for a graph showing the Time of Day and the Temperature at that time? (Explain)
Objective (s) Numbers:	**5.04**
Outcomes:	Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.
Materials:	Textbook pages 272-274; Reteaching 6.1
Anticipatory Set:	Today we will learn to use tables and organize data.

During the Lesson

Presentation of Information:	
Integration of Other Subjects:	Reading (vocabulary, problem solving, analyzing expectation)
Integration of Reading:	Reading for information and interpretation.
Integration of Technology:	Computer, Projector, PowerPoint, Internet
Modeling:	You can make a table to organize data. Then you can use the table to see patterns and draw conclusions.
Differentiation:	504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.
Guided Practice:	Use Reteaching 6.1 to guide students through table generation and application.

After the Lesson

Independent Practice	Text page 273 - 274 {1, 3, 5-7} **AIG**: {1, 3, 6-8} Assign workbook page 6.1
Closure / Assessment:	Complete # 7 on page 274.

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **5** activities connected with this lesson

**Logic - Use a Table

Name _____ Date _____ Class _____

LESSON 6-1

Reteach

Make a Table

You can make a table to organize data. Then you can use the table to see patterns and draw conclusions.

During the week-long book fair, 324 books were sold. On Monday, 45 books were sold. On Tuesday, students bought 58 books. On Wednesday, 79 books were sold. Sixty-two books were sold on Thursday, and students bought 51 books on Friday.

Day	Books Sold
Monday	45
Tuesday	58
Wednesday	79
Thursday	62
Friday	51

To make a table, arrange the information in order by days so you can see patterns over time. Remember to make headings for each column of the table.

From the table, you can see that the number of books sold increased from Monday to Wednesday, and decreased from Wednesday to Friday.

Use the data to make a table. Then use the table to find a pattern in the data and draw a conclusion.

1. During the championship series, the school basketball team earned 24 points in the first game, 28 points in the second game, 33 points in the third game, 42 points in the fourth game, and 49 points in the last game.

_____

_____

_____

_____

2. In the sixth grade, 18 students study Spanish, 35 students study French, 11 students study Latin, and 5 students study no foreign language at all.

_____

_____

Math Objectives

4.05

Determine and compare experimental and theoretical probabilities for independent and dependent events.

Essential Question

Which type of average would you choose to best describe the average age of the people in your class? (Explain)

Wayne County Schools 21st Century Instructional Lesson Plan
Range, Mean, Median and Mode

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

4.05
Determine and compare experimental and theoretical probabilities for independent and dependent events.

Essential Question(s) (In student-friendly terms)

Which type of average would you choose to best describe the average age of the people in your class? (Explain)

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Review and evaluate student abilities regarding ordering numbers and simple addition.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Today we will learn about range, mean, median and mode of a data set.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating		Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:
___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate
Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

The Math6.org extension for this lesson (6.2) will teach you how to use a spreadsheet (Excel) to find the various averages for a data set. (cheat on your homework!) You may complete that extension or write a how to paragraph that models finding the median of the following data set. {5, 6, 7, 8, 9, 10}

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **120 minutes**

Range, Mean, Median and Mode

Essential Question:	Which type of average would you choose to best describe the average age of the people in your class? (Explain)
Objective (s) Numbers:	**4.05**
Outcomes:	Determine and compare experimental and theoretical probabilities for independent and dependent events.
Materials:	Textbook pages 275-277
Anticipatory Set:	Today we will learn about range, mean, median and mode of a data set.
Presentation of Information:	
Integration of Other Subjects:	Reading (vocabulary, problem solving, analyzing expectation)
Integration of Reading:	Reading for information and interpretation.
Integration of Technology:	Computer, Projector, PowerPoint, Internet
Modeling:	The range is the difference between the greatest and least values in the set of data. The mean or average is the sum of the items divided by the number of items. The median is the middle value of an ordered set of data. If there are two middle values, the median is the mean of those two values. The mode is the value that occurs most often in a set of data.
Differentiation:	504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.
Guided Practice:	Find the range, mean, median, and mode of each set of values. {23, 78, 45, 22} {102, 79, 82, 103, 79} {56, 99, 112, 112, 56}

After the Lesson

Independent Practice	Text page 276 - 277 {1–5} **AIG**: {2–5, 7} Assign workbook page 6.2
Closure / Assessment:	The Math6.org extension for this lesson (6.2) will teach you how to use a spreadsheet (Excel) to find the various averages for a data set. (cheat on your homework!) You may complete that extension or write a how to paragraph that models finding the median of the following data set. {5, 6, 7, 8, 9, 10}

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **10** activities connected with this lesson

Mean Guided Practice
Median Guided Practice
Mode Guided Practice
Range Guided Practice
**Averages with Excel
**Averages Millionaire

Math Objectives

4.05

Determine and compare experimental and theoretical probabilities for independent and dependent events.

Essential Question

Recognizing an outlier is easy - but deciding whether or not it is fair to eliminate an outlier when calculating an average is a much trickier decision. Can you develop a plan to set some rules for consideration to help people decide if dropping an outlier to calculate an average is a reasonably fair thing to do?

Wayne County Schools 21st Century Instructional Lesson Plan
Additional Data and Outliers

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

4.05
Determine and compare experimental and theoretical probabilities for independent and dependent events.

Essential Question(s) (In student-friendly terms)

Recognizing an outlier is easy - but deciding whether or not it is fair to eliminate an outlier when calculating an average is a much trickier decision. Can you develop a plan to set some rules for consideration to help people decide if dropping an outlier to calculate an average is a reasonably fair thing to do?

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Assess student understanding of mean and median.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Create a data set for class age including me. Show how much the mean changes with and without my data. Today we learn how additional data and outliers effect the average of a data set.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating		Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

The Math6.org extension for this lesson (6.3) will show you why a spreadsheet (Excel) is very helpful when dealing with outliers and additional data. You may complete that extension or complete # 10 on page 281.

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Additional Data and Outliers

Essential Question:	Recognizing an outlier is easy - but deciding whether or not it is fair to eliminate an outlier when calculating an average is a much trickier decision. Can you develop a plan to set some rules for consideration to help people decide if dropping an outlier to calculate an average is a reasonably fair thing to do?
Objective (s) Numbers:	**4.05**
Outcomes:	Determine and compare experimental and theoretical probabilities for independent and dependent events.
Materials:	Textbook pages 278-283; Reteaching 6.3
Anticipatory Set:	Today we learn how additional data and outliers effect the average of a data set.

During the Lesson

Presentation of Information:	
Integration of Other Subjects:	Reading (vocabulary, problem solving, analyzing expectation)
Integration of Reading:	Reading for information and interpretation.
Integration of Technology:	Computer, Projector, PowerPoint, Internet
Modeling:	An outlier is a value in a set of data that is much greater or much less than the other values.
Differentiation:	504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.
Guided Practice:	Use reteaching 6.3 to model outliers and their effects on the averages of a data set.

After the Lesson

Independent Practice	Text page 280 - 281 {1–7} **AIG**: {4–8, 11} Assign workbook page 6.3
Closure / Assessment:	The Math6.org extension for this lesson (6.3) will show you why a spreadsheet (Excel) is very helpful when dealing with outliers and additional data. You may complete that extension or complete # 10 on page 281.

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are 5 activities connected with this lesson
**Excel - Effects of Outliers

Name _____ Date _____ Class _____

CHAPTER 6

Quiz

Section A

Choose the best answer.

1. The following table displays the amount of electricity that a city used during four time periods. Use the table to draw a conclusion.

Time of Day	Power Used
6 A.M. – 12 P.M.	19 megawatts
12 P.M. – 6 P.M.	32 megawatts
6 P.M. – 12 A.M.	22 megawatts
12 A.M. – 6 A.M.	11 megawatts

A The power usage steadily increases throughout the day.

B The most electricity is consumed between the hours of 12 P.M. and 6 P.M.

C The least amount of power used during a 6-hour period is 10 megawatts.

D The power usage steadily decreases throughout the day.

2. Find the range of the data set.
42, 30, 46, 52, 37, 38, 49

F 30 **H** 42

G 22 **J** 7

3. Find the median of the data set.
15, 9, 19, 13, 23, 22, 11

A 15 **C** 11

B 16 **D** 14

4. Find the mean of the data set.
32, 23, 34, 29, 15, 17

F 26 **H** 25

G 19 **J** 23

5. Find the mode of the data set.
2, 1, 3, 0, 1, 0, 2, 1, 0, 0

A 0 **C** 1

B 0 and 1 **D** 3

6. Which value best describes the data?
8, 9, 10, 12, 14, 15, 18, 18, 63

F mean **H** median

G mode **J** outlier

7. Which value in the data set is an outlier? 15, 15, 15, 16, 16, 17, 45

A 15 **C** 20

B 16 **D** 45

Name _____ Date _____ Class _____

CHAPTER 6

Quiz

Section A

Choose the best answer.

1. The following table displays the amount of electricity that a city used during four time periods. Use the table to draw a conclusion.

Time of Day	Power Used
6 A.M. – 12 P.M.	19 megawatts
12 P.M. – 6 P.M.	32 megawatts
6 P.M. – 12 A.M.	22 megawatts
12 A.M. – 6 A.M.	11 megawatts

A The power usage steadily increases throughout the day.

(B) The most electricity is consumed between the hours of 12 P.M. and 6 P.M.

C The least amount of power used during a 6-hour period is 10 megawatts.

D The power usage steadily decreases throughout the day.

2. Find the range of the data set.
42, 30, 46, 52, 37, 38, 49

F 30 **H** 42

(G) 22 **J** 7

3. Find the median of the data set.
15, 9, 19, 13, 23, 22, 11

(A) 15 **C** 11

B 16 **D** 14

4. Find the mean of the data set.
32, 23, 34, 29, 15, 17

F 26 **(H)** 25

G 19 **J** 23

5. Find the mode of the data set.
2, 1, 3, 0, 1, 0, 2, 1, 0, 0

(A) 0 **C** 1

B 0 and 1 **D** 3

6. Which value best describes the data?
8, 9, 10, 12, 14, 15, 18, 18, 63

F mean **(H)** median

G mode **J** outlier

7. Which value in the data set is an outlier? 15, 15, 15, 16, 16, 17, 45

A 15 **C** 20

B 16 **(D)** 45

Name _____ Date _____ Class _____

LESSON 6-3

Reteach

Additional Data and Outliers

An **outlier** is a value in a set of data that is much greater or much less than the other values.

Number of Minutes Spent on Homework

Mon	Tue	Wed	Thurs	Fri
47	42	45	46	10

The outlier is 10 minutes, because it is much less than the other values in the set.

An outlier may affect the mean, median, or mode.

Data without Friday's value: mean = 45 median = 45.5 no mode
Data with Friday's value: mean = 38 median = 45 no mode

When Friday's value is included, the mean decreases by 7 minutes, the median decreases by 0.5 minutes, and the mode stays the same. The mean is most affected by the outlier because it is less than every value except for the outlier itself.

Find the mean, median, and mode for the set of data with and without the outlier.

1. 22, 25, 48, 26, 21, 27, 26, 29

With outlier: _____

Without outlier: _____

When an outlier affects the mean, median, or mode, choose a value that best describes the data.

In the example above, the median best describes the data because 45 minutes is closer to most of the data values in the set.

Find the mean, median, and mode. Then decide which best describes the set of data.

2. 16, 12, 14, 17, 81, 18, 13, 19, 14, 19

_____

_____

Math Objectives

4.05

Determine and compare experimental and theoretical probabilities for independent and dependent events.

Essential Question

Bar graphs are an excellent way to look at and compare data. Explain how you would make a bar graph of the five largest states in the USA. (action plan)

Wayne County Schools 21st Century Instructional Lesson Plan

Bar Graphs

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

4.05
Determine and compare experimental and theoretical probabilities for independent and dependent events.

Essential Question(s) (In student-friendly terms)

Bar graphs are an excellent way to look at and compare data. Explain how you would make a bar graph of the five largest states in the USA. (action plan)

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Review the lesson quiz results from Make a Table. Assess ability to grasp scale and interval ideas and remediate the skills required to establish the scale and interval requirements for graphing.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Today we will learn how to properly display and analyze data in bar graphs.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating	✓	Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

The Math6.org extension for this lesson (6.4) will teach you how to use a spreadsheet (Excel) to create and decorate a bar graph. You may complete this extension or create a hand drawn bar graph showing the 5 most populated cities in the United States.

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Bar Graphs

Essential Question: Bar graphs are an excellent way to look at and compare data. Explain how you would make a bar graph of the five largest states in the USA. (action plan)

Objective (s) Numbers: **4.05**

Outcomes: Determine and compare experimental and theoretical probabilities for independent and dependent events.

Materials: Textbook pages 284-288; Scale and Interval Practice; Graph Paper (medium)

Anticipatory Set: Today we will learn how to properly display and analyze data in bar graphs.

During the Lesson

Presentation of Information:

Integration of Other Subjects: Reading (vocabulary, problem solving, analyzing expectation)

Integration of Reading: Reading for information and interpretation.

Integration of Technology: Computer, Projector, PowerPoint, Internet

Modeling: Part 1 - Scale and Interval Practice - Complete the Scale and Interval Activity @ Math6.org together.
Part 2 - You can make a bar graph to compare amounts.
To make a bar graph using the data in the table, first choose a scale that includes all of the data values.
Next, separate the scale into equal parts, called intervals.
Then draw bars to match the data.
The bars should be of equal width and should not touch.
Give your graph a title and label its axes.

Differentiation: 504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.

Guided Practice: Make a group graph of the following table.

Canned Food Drive Totals			
Grade	6	7	8
Cans Collected	96	74	62

After the Lesson

Independent Practice: Text page 286 - 287 {1–12}
AIG: {7-15}
Assign workbook page 6.4

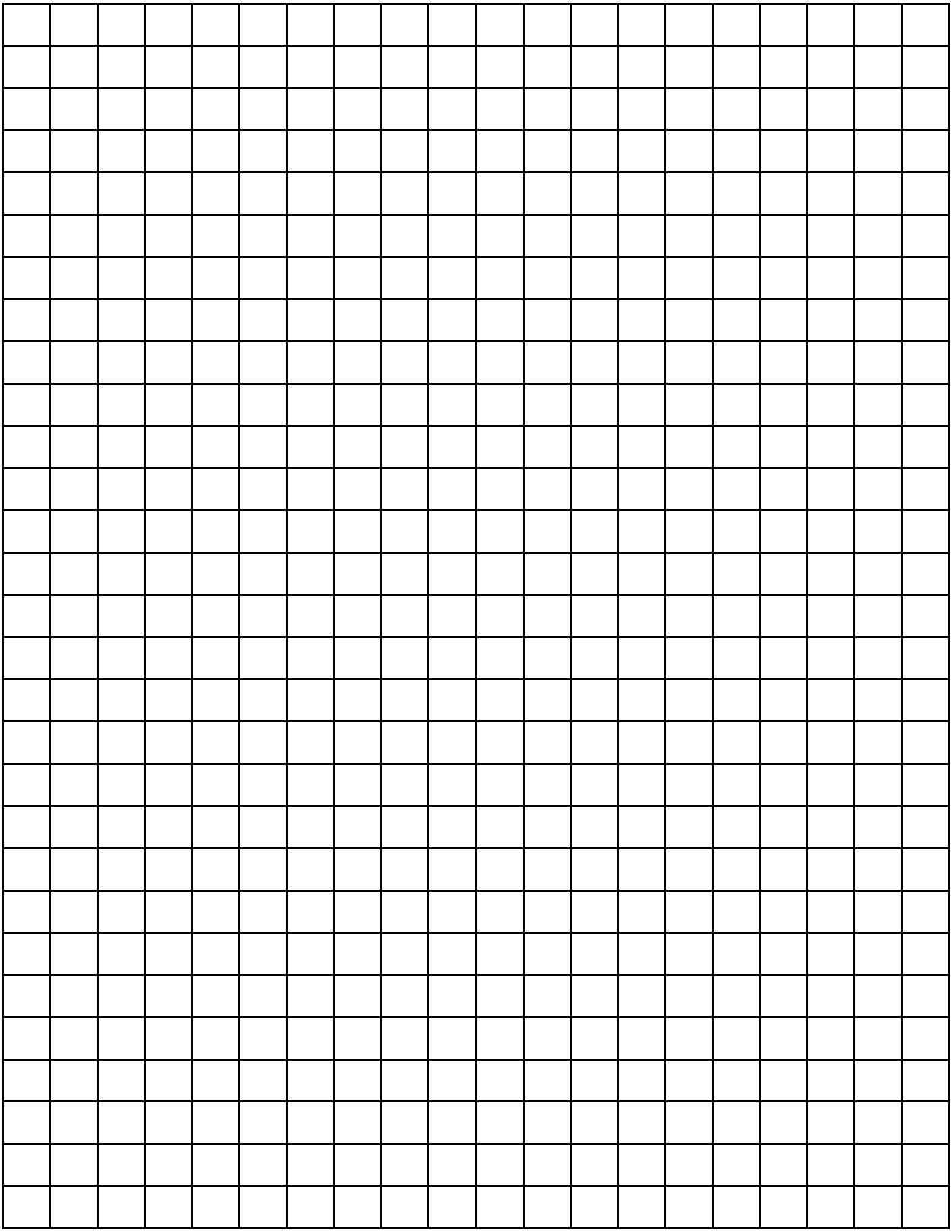
Closure / Assessment: The Math6.org extension for this lesson (6.4) will teach you how to use a spreadsheet (Excel) to create and decorate a bar graph. You may complete this extension or create a hand drawn bar graph showing the 5 most populated cities in the United States.

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **6** activities connected with this lesson

Scale and Interval Practice

**Excel - Making Bar Graphs



Math Objectives

4.01

Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle.

Essential Question

Histograms can be changed (often dramatically) by changing the interval used for the x axis. Use the data on the length of each US presidency on page 292 to create a histogram with the intervals of (0-3),(4-7),(8+). Then create another one with the intervals (0-4),(5-8),(9+). Which histogram do you think is the better representation of US presidencies?

(explain)

Wayne County Schools 21st Century Instructional Lesson Plan
Frequency Tables and Histograms

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

4.01
Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle.

Essential Question(s) **(In student-friendly terms)**

Histograms can be changed (often dramatically) by changing the interval used for the x axis. Use the data on the length of each US presidency on page 292 to create a histogram with the intervals of (0-3),(4-7),(8+). Then create another one with the intervals (0-4),(5-8),(9+). Which histogram do you think is the better representation of US presidencies? (explain)

Assess **(Look at student data to plan. Use formative and/or summative assessments.)**

Review and assess student comfort and competence with the skills required to establish the scale and interval requirements for graphing.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Today we will learn to record and organize data in frequency tables and histograms.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	✓
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating	✓	Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

The Math6.org extension for this lesson (6.5) will show you how to use Microsoft Excel to create histograms. You may complete this extension or create a hand drawn frequency table and histogram for the following data set. {Ages of Whales that Scientists Tracked and Studied - 10, 11, 35, 36, 55, 28, 32, 46, 57, 69, 58, 14, 8, 9, 10, 11, 7, 12, 8, 13, 11, 12, 25, 19, 45, 52, 35, 42, 62, 27, 31, 29, 15, 17, 16, 18, 20, 19, 22 34, 29, 30, 20, 25, 13, 14, 15, 16, 15, 17}

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Frequency Tables and Histograms

Essential Question: Histograms can be changed (often dramatically) by changing the interval used for the x axis. Use the data on the length of each US presidency on page 292 to create a histogram with the intervals of (0-3),(4-7),(8+). Then create another one with the intervals (0-4),(5-8),(9+). Which histogram do you think is the better representation of US presidencies? (explain)

Objective (s) Numbers: **4.01**

Outcomes: Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle.

Materials: Textbook pages 290-293; Reteaching 6.5 (A and B); Graph Paper (medium)

Anticipatory Set: Today we will learn to record and organize data in frequency tables and histograms.

During the Lesson

Presentation of Information:

Integration of Other Subjects: Reading (vocabulary, problem solving, analyzing expectation)

Integration of Reading: Reading for information and interpretation.

Integration of Technology: Computer, Projector, PowerPoint, Internet

Modeling: A frequency table tells the number of times an event, category, or group occurs.
The cumulative frequency is the running total of all of the frequencies.
A histogram is a bar graph that shows the number of values that occur within each interval.
You make a histogram the same way you make any other bar graph, except that the bars touch. They do not overlap.

Differentiation: 504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.

Guided Practice: Use Reteaching 6.5 (A and B) to Guide this skill.

After the Lesson

Independent Practice: Text page 292 - 293 {1–6, 9–10}
AIG: {5–6, 9–10, 13, 14}
Assign workbook page 6.5

Closure / Assessment: The Math6.org extension for this lesson (6.5) will show you how to use Microsoft Excel to create histograms. You may complete this extension or create a hand drawn frequency table and histogram for the following data set. {Ages of Whales that Scientists Tracked and Studied - 10, 11, 35, 36, 55, 28, 32, 46, 57, 69, 58, 14, 8, 9, 10, 11, 7, 12, 8, 13, 11, 12, 25, 19, 45, 52, 35, 42, 62, 27, 31, 29, 15, 17, 16, 18, 20, 19, 22 34, 29, 30, 20, 25, 13, 14, 15, 16, 15, 17}

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **6** activities connected with this lesson

**Excel - Making Histograms

**Frequency Puzzle

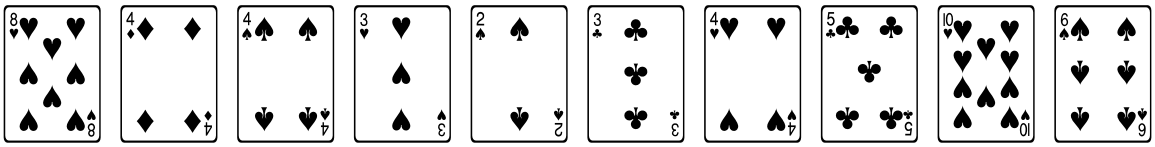
Name _____ Date _____ Class _____

LESSON 6-5

Reteach

Frequency Tables and Histograms

Julie picked the following cards from a deck.



You can make a tally table to organize the data. Make a row for each suit of cards. Then for each card, make a tally mark in the appropriate row.

Julie's Cards

Clubs	Spades	Hearts	Diamonds
||	|||	||||	|

1. Make a tally table to organize the data.

Rolls of a Number Cube						
2	3	6	5	1	4	1
3	3	5	1	6	1	4

A frequency table tells the number of times an event, category, or group occurs. The cumulative frequency is the running total of all of the frequencies.

To make a frequency table of Julie's data, make a row for each type of card.Then use the tally table to find the frequency of picking each type of card.

	Julie's Cards			
Card	**Clubs**	**Spades**	**Hearts**	**Diamonds**
Frequency	2	3	4	1
Cumulative Frequency	2	5	9	10

2. Make a frequency table for the tally table you made Exercise 1.

Name _____ Date _____ Class _____

LESSON 6-5

Reteach

Frequency Tables and Histograms (continued)

Sometimes, you can make a frequency table with intervals or a histogram.

Number of Jumping Jacks Completed in 30 Seconds				
12	28	24	32	35
31	38	55	43	52
42	49	18	22	15
47	37	19	31	37

A frequency table can organize the data with intervals.

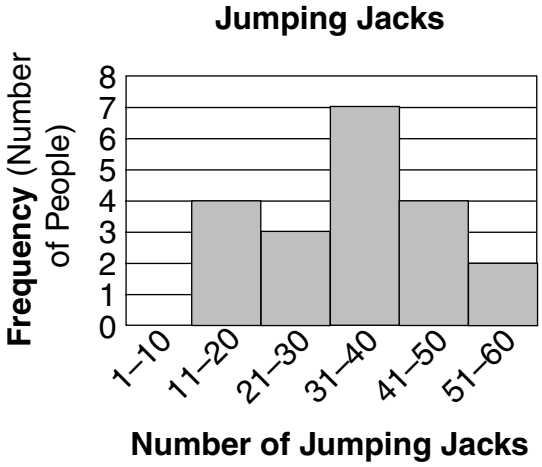
Jumping Jacks

Interval	Frequency
1–10	0
11–20	4
21–30	3
31–40	7
41–50	4
51–60	2

A histogram is a bar graph that shows the number of values that occur within each interval.

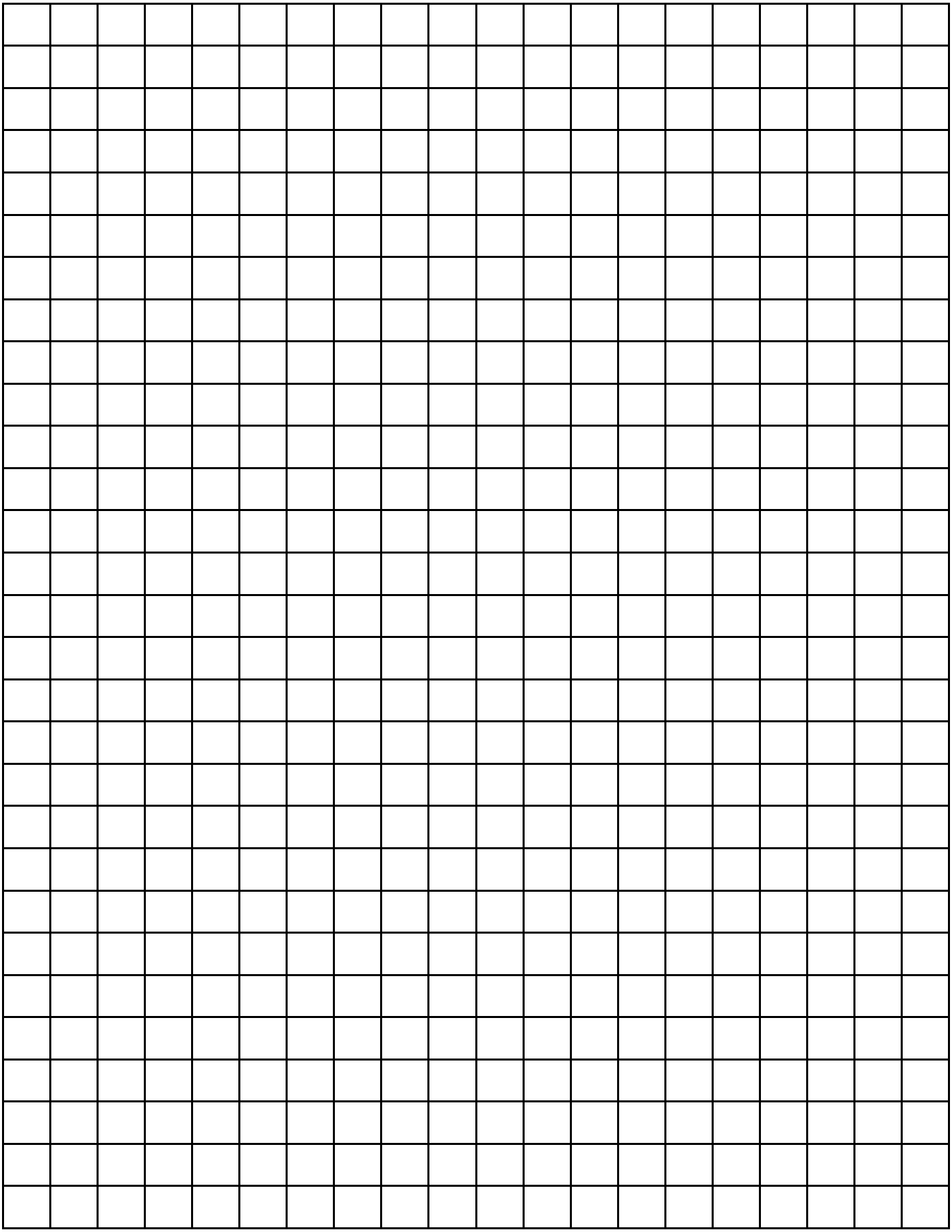
You make a histogram the same way you make any other bar graph, except that the bars touch. They do not overlap.

Here is a histogram for the frequency table above.



3. Use the data to make a histogram.

Total Books Read by Participants in Summer Reading Program				
5	3	8	7	6
2	9	10	1	2
4	5	7	3	5
3	1	0	10	4
3	5	8	2	1
1	7	0	4	11



Math Objectives

3.04

Solve problems involving geometric figures in the coordinate plane.

Essential Question

Coordinates in math always give you the x coordinate followed by the y coordinate. In Social Studies and Science we find that earth coordinates are often given as longitude (y) and latitude (x). Scientists and mathematicians may one day agree on a single presentation for every set of coordinates, is so, which way do you think they should go? (x,y) or (y,x)

(explain)

Wayne County Schools 21st Century Instructional Lesson Plan
Ordered Pairs

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

3.04
Solve problems involving geometric figures in the coordinate plane.

Essential Question(s) (In student-friendly terms)

Coordinates in math always give you the x coordinate followed by the y coordinate. In Social Studies and Science we find that earth coordinates are often given as longitude (y) and latitude (x). Scientists and mathematicians may one day agree on a single presentation for every set of coordinates, is so, which way do you think they should go? (x,y) or (y,x) Explain.

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Assess student understanding of quadrant one mapping.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Refresh students memory of the Archaeological Mapping activity we did in the fall. Have students quickly sketch those results. Today we will learn to graph ordered pairs on a coordinate plane.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching	✓	Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating	✓	Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

_✓_small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

Draw or print a picture on a coordinate plane. Have your group plot as many ordered pairs as possible and record them. Create an ordered pair worksheet and have a friend try to duplicate your picture by plotting your ordered pairs and connecting the dots.

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Ordered Pairs

Essential Question: Coordinates in math always give you the x coordinate followed by the y coordinate. In Social Studies and Science we find that earth coordinates are often given as longitude (y) and latitude (x). Scientists and mathematicians may one day agree on a single presentation for every set of coordinates, is so, which way do you think they should go? (x,y) or (y,x) Explain.

Objective (s) Numbers: **3.04**

Outcomes: Solve problems involving geometric figures in the coordinate plane.

Materials: Textbook pages 297-300; Coordinate Plane; Quadrant 1 Grids

Anticipatory Set: Today we will learn to graph ordered pairs on a coordinate plane.

During the Lesson

Presentation of Information:

Integration of Other Subjects: Reading (vocabulary, problem solving, analyzing expectation)

Integration of Reading: Reading for information and interpretation.

Integration of Technology: Computer, Projector, PowerPoint, Internet

Modeling: A coordinate plane is formed by horizontal and vertical lines and is used to locate points.
An ordered pair names the location of a point by using two numbers.
The fist is X and shows the horizontal movement.
The second is Y and shows the vertical movement.

Differentiation: 504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.

Guided Practice: Teach the quadrants I - IV.
Plot the following on the coordinate plane.
{A (5, 6)} {B (-3, 2)} {C (-7, 0)} {D (1, -5)} {E (-1, -3)} {F (4, 3)} {G (5, -5)} {H (-2, -4)}

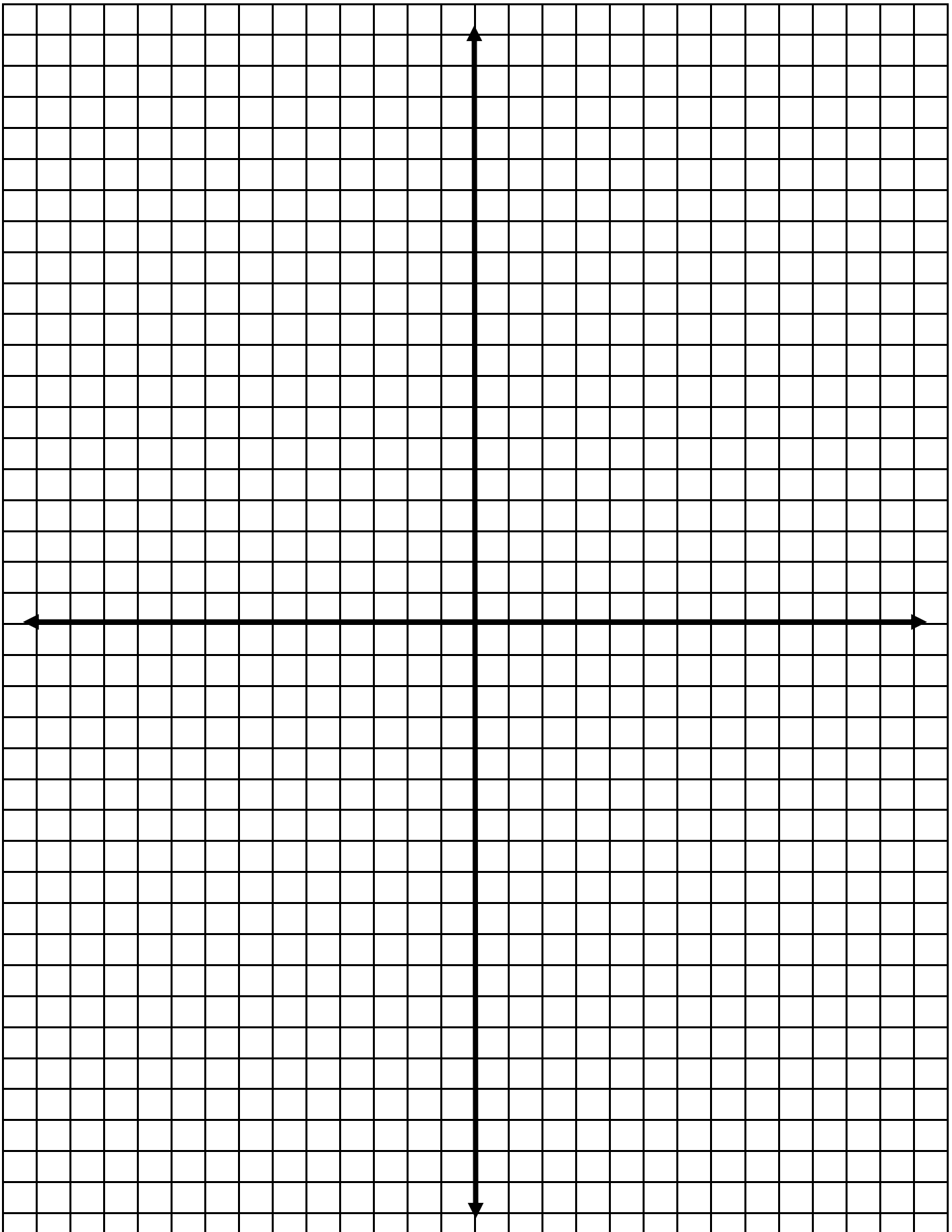
After the Lesson

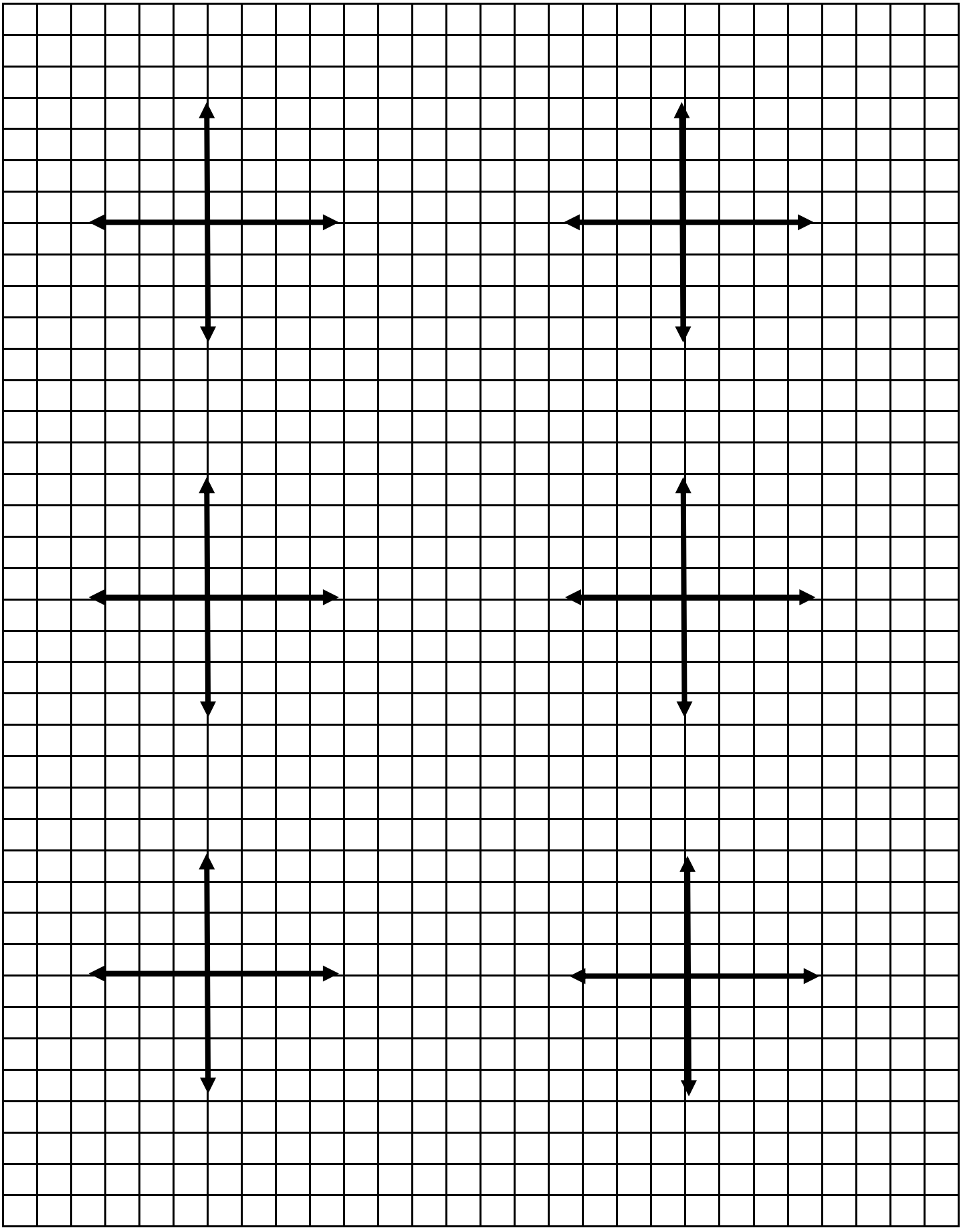
Independent Practice: Text page 295 - 296 {1–22, 23–35 odd}
AIG: {11–38}
Assign workbook page 6.6

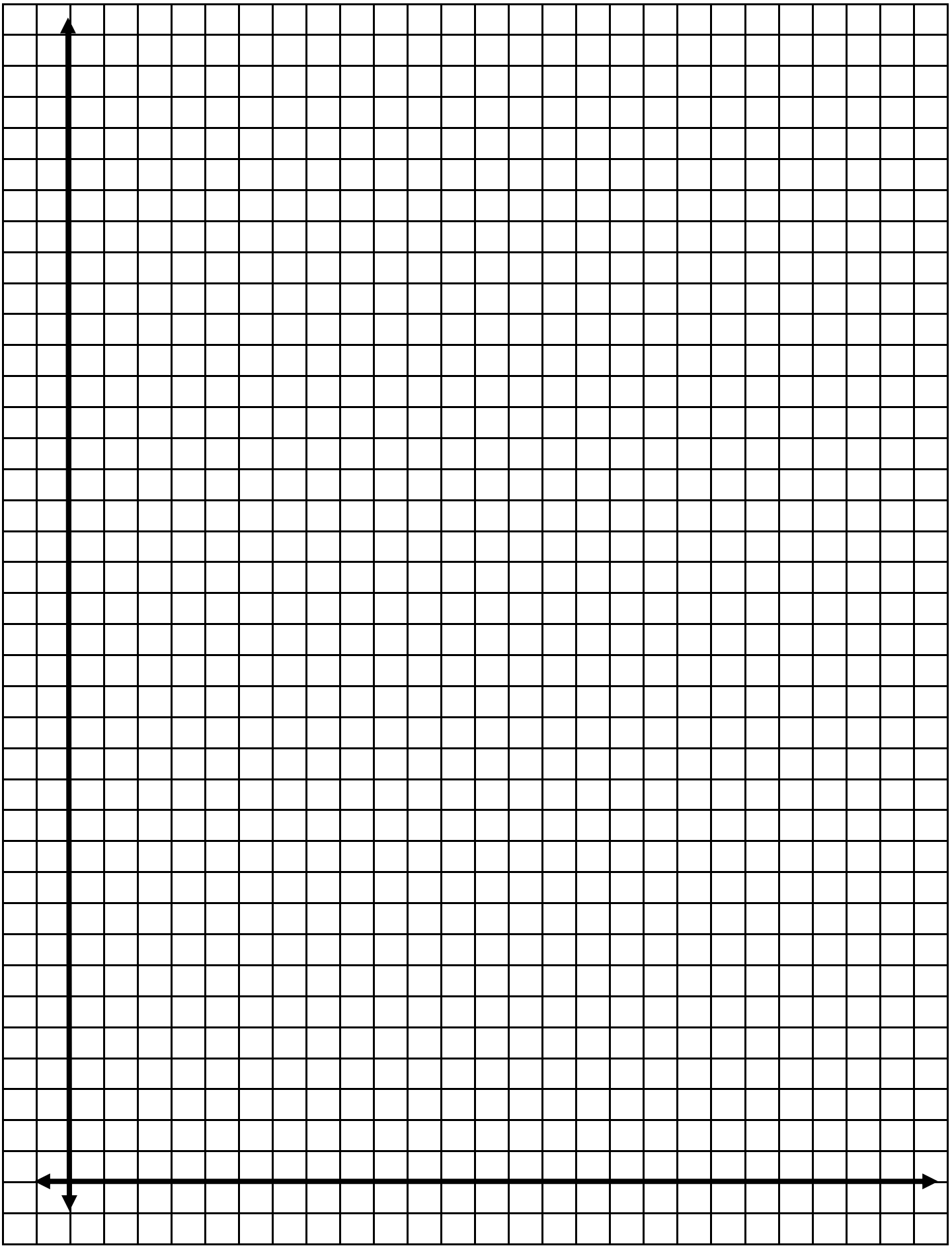
Closure / Assessment: Draw or print a picture on a coordinate plane. Plot as many ordered pairs as possible and record them. Create an ordered pair worksheet and have a friend try to duplicate your picture by plotting your ordered pairs and connecting the dots.

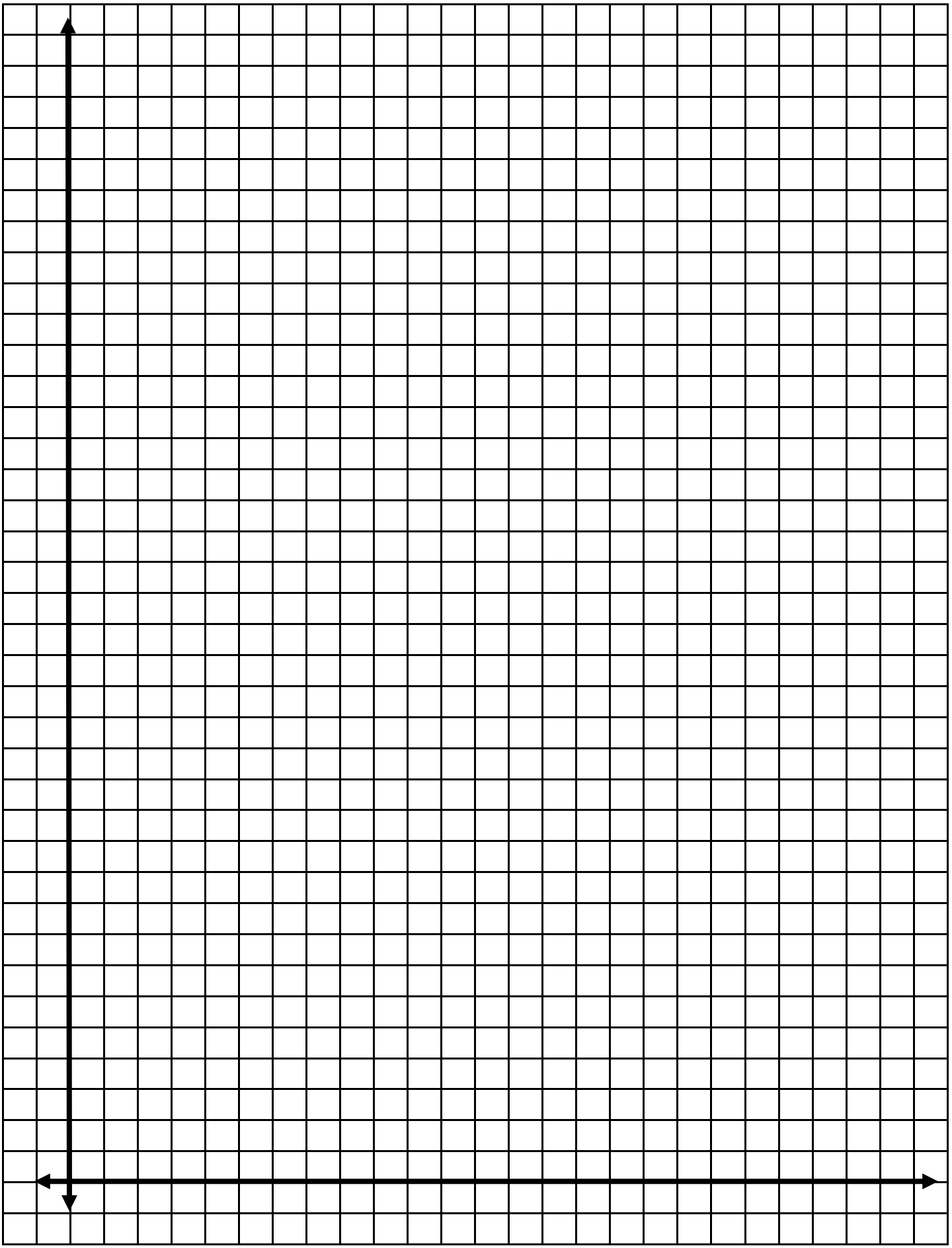
Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **6** activities connected with this lesson
Ordered Pairs Practice
**Pirate Treasure









Math Objectives

4.06

Design and conduct experiments or surveys to solve problems; report and analyze results.

Essential Question

Line Graphs are used to show changes in data over periods of time. This is very handy for spotting ascending and descending trends. Make a bar graph and a line graph for the data regarding life expectancy in the US on page 298. Can you see and explain why/how the line graph truly is a better choice for this data?

Wayne County Schools 21st Century Instructional Lesson Plan

Line Graphs

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

4.06
Design and conduct experiments or surveys to solve problems; report and analyze results.

Essential Question(s) (In student-friendly terms)

Line Graphs are used to show changes in data over periods of time. This is very handy for spotting ascending and descending trends. Make a bar graph and a line graph for the data regarding life expectancy in the US on page 298. Can you see and explain why/how the line graph truly is a better choice for this data?

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Review and assess student comfort and competence with the skills required to establish the scale and interval requirements for graphing.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Today we will learn to display and analyze data in line graphs.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating	✓	Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

The Math6.org extension for this lesson (6.7) will teach you how to use a spreadsheet (Excel) to create and decorate a line graph. You may complete this extension or create a hand drawn line graph showing the population of your school, church or club over the last 5 years.

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Line Graphs

Essential Question: Line Graphs are used to show changes in data over periods of time. This is very handy for spotting ascending and descending trends. Make a bar graph and a line graph for the data regarding life expectancy in the US on page 298. Can you see and explain why/how the line graph truly is a better choice for this data?

Objective (s) Numbers: **4.06**
Outcomes: Design and conduct experiments or surveys to solve problems; report and analyze results.

Materials: Textbook pages 297-300; Scale and Interval Practice; Graph Paper (medium)
Anticipatory Set: Today we will learn to display and analyze data in line graphs.

During the Lesson

Presentation of Information:
Integration of Other Subjects: Reading (vocabulary, problem solving, analyzing expectation)
Integration of Reading: Reading for information and interpretation.
Integration of Technology: Computer, Projector, PowerPoint, Internet

Modeling: Part 1 - Scale and Interval Practice - Complete the Scale and Interval Worksheet together. (again)
Part 2 - A line graph shows change over time.
To make a line graph, label the axes.
Then determine an appropriate scale and interval for each axis.
Think of the data in the table as ordered pairs. Mark a point for each ordered pair.
Then connect the points with straight segments.
Make sure your line graph has a title.

Differentiation: 504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.

Guided Practice: Make a line graph for the following data.

Savings Account Balance				
Jan	Feb	March	April	May
30	40	35	45	25

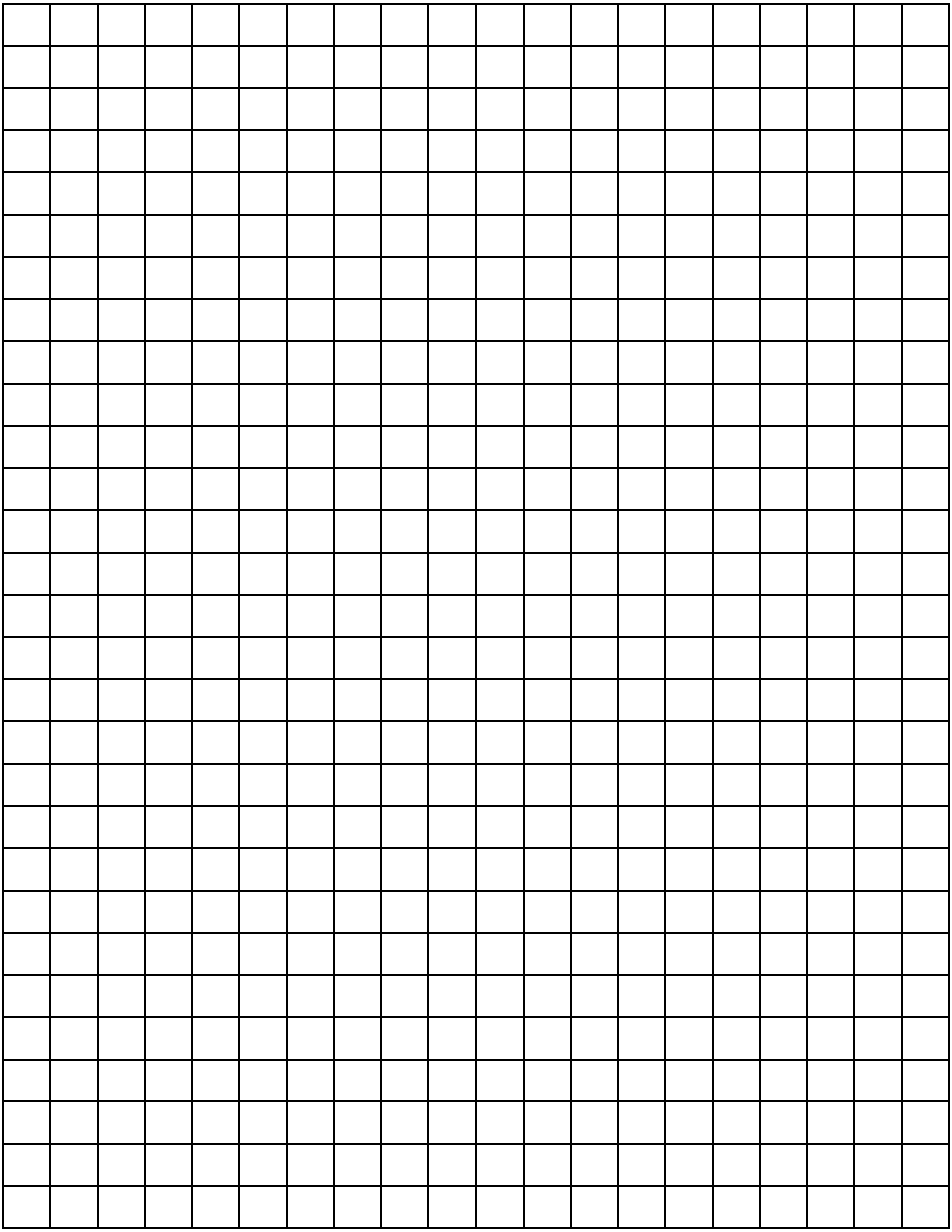
After the Lesson

Independent Practice: Text page 299 - 300 {1–11}
AIG: {3–13}
Assign workbook page 6.7

Closure / Assessment: The Math6.org extension for this lesson (6.7) will teach you how to use a spreadsheet (Excel) to create and decorate a line graph. You may complete this extension or create a hand drawn line graph showing the population of your school, church or club over the last 5 years.

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are 5 activities connected with this lesson
**Line Graphing with Excel



Math Objectives

4.06

Design and conduct experiments or surveys to solve problems; report and analyze results.

Essential Question

Misleading graphs are not really lies because the data must be accurate. However, the person who is making the graph is hoping that the reader will be too busy or uneducated to notice that they are being mislead. Do you think that this is lying and if so, should a misleading graph manufacturer be punished for telling a lie? (Explain)

Wayne County Schools 21st Century Instructional Lesson Plan
Misleading Graphs

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

4.06
Design and conduct experiments or surveys to solve problems; report and analyze results.

Essential Question(s) (In student-friendly terms)

Misleading graphs are not really lies because the data must be accurate. However, the person who is making the graph is hoping that the reader will be too busy or uneducated to notice that they are being mislead. Do you think that this is lying and if so, should a misleading graph manufacturer be punished for telling a lie? Explain.

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Review and assess student comfort and competence with the skills required to establish the scale and interval requirements for graphing.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences	✓	Reinforcing effort and providing recognition	✓	Nonlinguistic representation	✓	Setting objectives and providing feedback	✓
Questions, cues, and advance organizers	✓	Summarizing and note taking	✓	Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes. Differentiated assignments and practice will focus on remediation and enrichment of lower and higher ability groups.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Present the graph and tell the story of asking a very busy boss for a raise. Have the children figure out why I don't deserve one. Today we will learn to recognize and build misleading graphs.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion	✓	**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	✓
Hands-on experiences		**Direct Instruction**	✓	**Modeling**	✓
Presentation	✓	**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps	✓	Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals	✓	Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating	✓	Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

___small group _✓_student pairs _✓_whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

The Math6.org extension for this lesson (6.8) will teach you how to use a spreadsheet (Excel) to create and decorate an unfair graph. You may complete this extension or create a pair of hand drawn graphs showing the following data set as nearly equal and greatly different. {Grades: John 93, Debbie 89; Clarisa 90}

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Misleading Graphs

Essential Question: Misleading graphs are not really lies because the data must be accurate. However, the person who is making the graph is hoping that the reader will be too busy or uneducated to notice that they are being mislead. Do you think that this is lying and if so, should a misleading graph manufacturer be punished for telling a lie? Explain.

Objective (s) Numbers: **4.06**
Outcomes: Design and conduct experiments or surveys to solve problems; report and analyze results.

Materials: Textbook pages 301-304; Graph Paper (medium)
Anticipatory Set: Today we will learn to recognize and build misleading graphs.

During the Lesson

Presentation of Information:
Integration of Other Subjects: Reading (vocabulary, problem solving, analyzing expectation)
Integration of Reading: Reading for information and interpretation.
Integration of Technology: Computer, Projector, PowerPoint, Internet

Modeling: Graphs are often made to influence you. When you look at a graph, you need to figure out if the graph is accurate or if it is misleading.
A graph can be misleading if the scale, interval, bar width or even colors are changed.
You many never change the data (lie) to mislead.
Present and discuss the graphs using the overhead. (attached)

Differentiation: 504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.

Guided Practice: Create a fair graph, misleading toward equity and misleading toward greatness for the following data.

Fast Food Favorites	
McDonalds	9
Burger King	7
Other	5

After the Lesson

Independent Practice: Text page 303 - 304 {1–9, 10 **or** 11}
AIG: {5–9, 10 **or** 11, 12, 14}
Assign workbook page 6.8

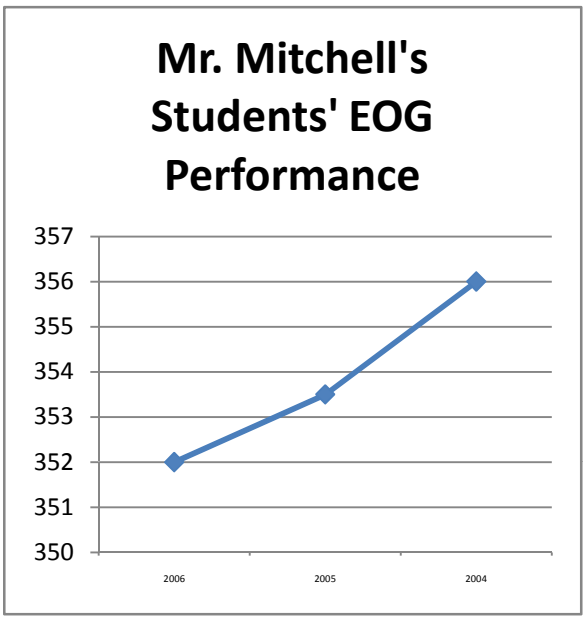
Closure / Assessment: The Math6.org extension for this lesson (6.8) will teach you how to use a spreadsheet (Excel) to create and decorate an unfair graph. You may complete this extension or create a pair of hand drawn graphs showing the following data set as nearly equal and greatly different. {Grades: John 93, Debbie 89; Clarisa 90}

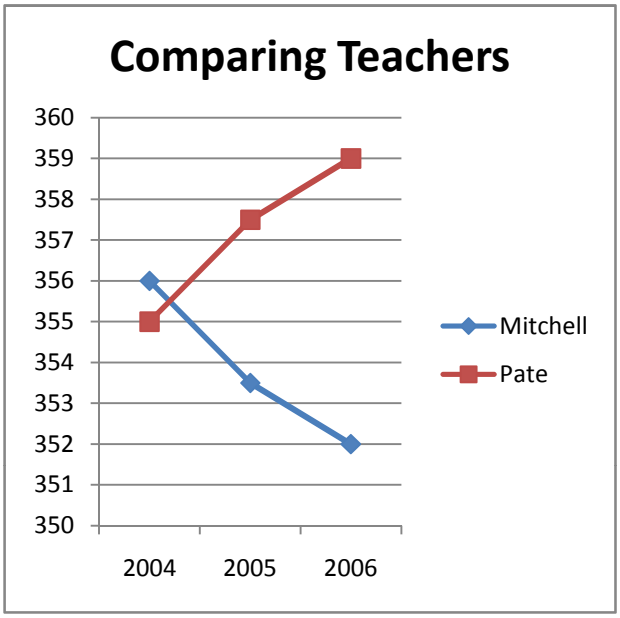
Integration with School-wide Focus: Improve mathematics computation and problem solving.

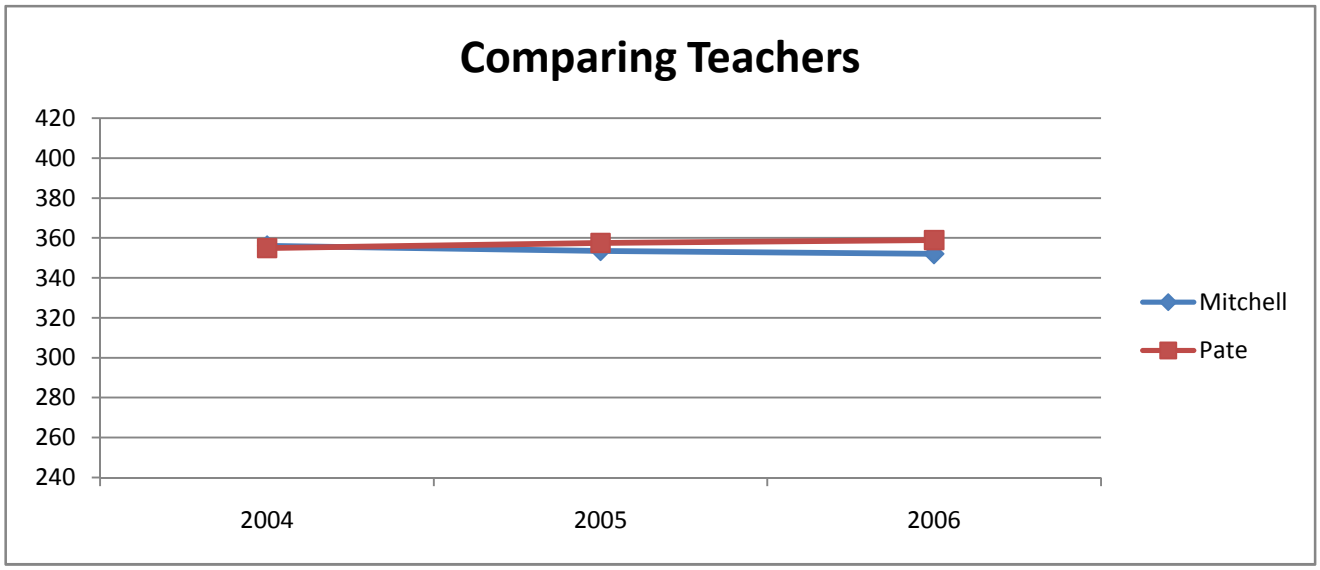
Related Math6.org Activities: There are **5** activities connected with this lesson
**Excel - Changing Axis Values

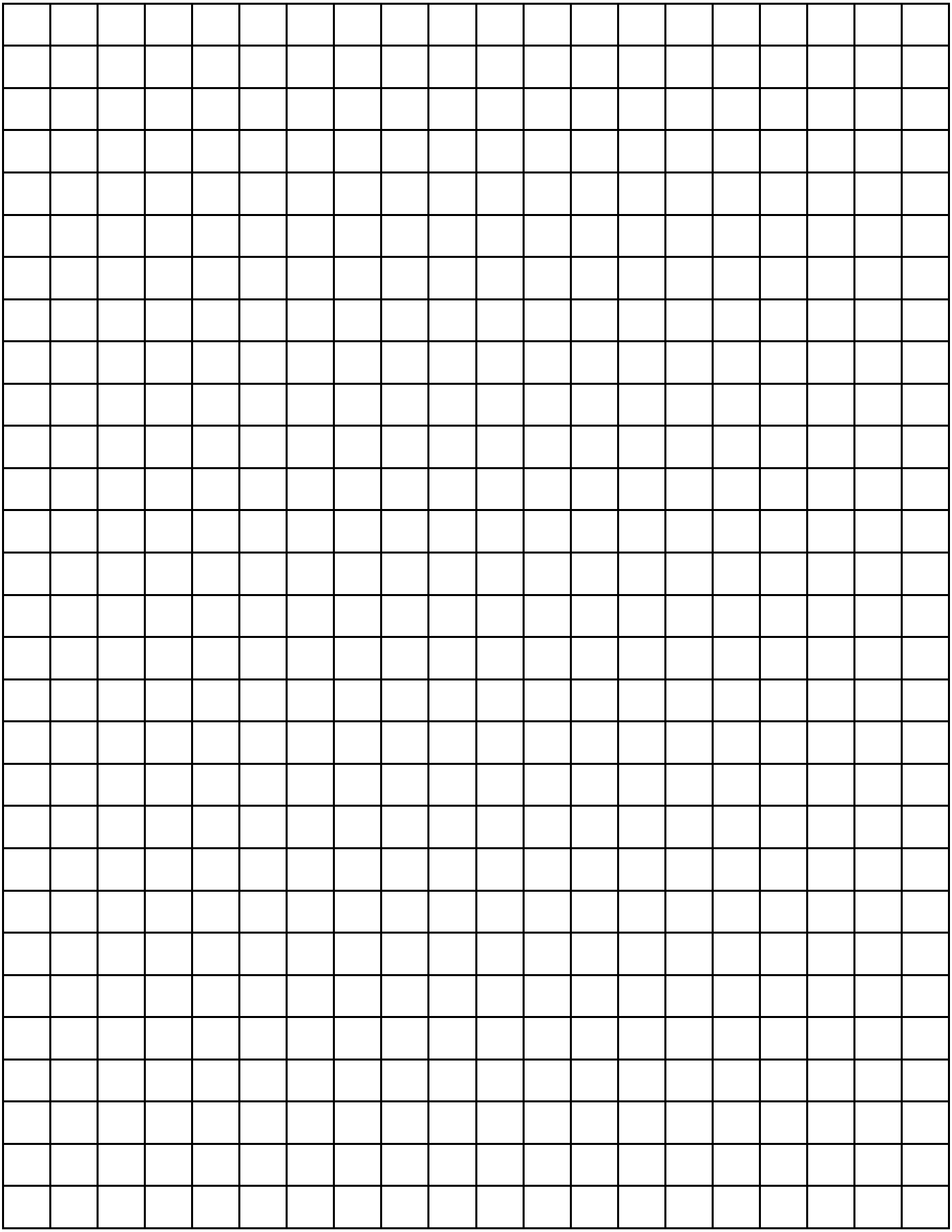
The first graph is a graph that Mr. Mitchell made to use when he asked Mrs. Best to give him a raise. Should Mrs. Best offer him a raise?

The second set of graphs show the comparison between Mr. Mitchell and Mrs. Pate. The teachers were told to compare themselves to their colleagues to find the weakest teacher (to fire). Which graph did Mr. Mitchell use?









Math Objectives

3.04, 4.01, 4.05, 4.06, 5.04

Solve problems involving geometric figures in the coordinate plane. Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle. Determine and compare experimental and theoretical probabilities for independent and dependent events. Design and conduct experiments or surveys to solve problems; report and analyze results. Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.

Essential Question

What steps do you think have been the most helpful in preparing yourself for the examination on a set of skills? (decision making)

Wayne County Schools 21st Century Instructional Lesson Plan
Collect and Display Data Review

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

3.04, 4.01, 4.05, 4.06, 5.04
Solve problems involving geometric figures in the coordinate plane. Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle. Determine and compare experimental and theoretical probabilities for independent and dependent events. Design and conduct experiments or surveys to solve problems; report and analyze results. Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.

Essential Question(s) (In student-friendly terms)

What steps do you think have been the most helpful in preparing yourself for the examination on a set of skills? (decision making)

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Examine student performance on various skill assessments, journals and projects.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences		Reinforcing effort and providing recognition	✓	Nonlinguistic representation		Setting objectives and providing feedback	✓
Questions, cues, and advance organizers		Summarizing and note taking		Cooperative learning	✓	Generating and testing hypotheses	
Homework and practice	✓						

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA. Additional student and teacher modeling, paired learning groups, and concrete representations will help to guide all students to reach expected outcomes.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Today we will review the skills that we have been studying during this unit. We will practice test taking skills and remediate those skills about which we don't feel as comfortable as others.

Instructional Practices Used in this Lesson

Coaching	✓	**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion		**Providing opportunities for practice**	✓	**Teacher-directed Questions and Answers**	
Hands-on experiences		**Direct Instruction**		**Modeling**	
Presentation		**Testing**		Other: Math6.org	✓

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share	✓	Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps		Student Facilitators	✓	Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals		Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment	✓	Drawing or illustrating		Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

___small group _✓_student pairs ___whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

Have co-operative learning groups review and discuss their answers before turning their papers in for correction by the teacher.

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Collect and Display Data Chapter Review

Essential Question: What steps do you think have been the most helpful in preparing yourself for the examination on a set of skills? (decision making)

Objective (s) Numbers: **3.04, 4.01, 4.05, 4.06, 5.04**

Outcomes: Solve problems involving geometric figures in the coordinate plane. Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle. Determine and compare experimental and theoretical probabilities for independent and dependent events. Design and conduct experiments or surveys to solve problems; report and analyze results. Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.

Materials: Textbook pages 314-317; Test Form B

Anticipatory Set: Today we will review the skills that we have been studying during this unit. We will practice test taking skills and remediate those skills about which we don't feel as comfortable as others.

During the Lesson

Presentation of Information:

Integration of Other Subjects: Reading (vocabulary, problem solving, analyzing expectation)

Integration of Reading: Reading for information and interpretation.

Integration of Technology: Computer, Projector, PowerPoint, Internet

Modeling: Discuss the value of careful review, the process that should occur when errors are made and the importance of reviewing material that students are less comfortable with.

Differentiation: 504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.

Guided Practice: Discuss Instructions for the review on pages 314-316. Have the students review the Headings and address and questions or requests for immediate remediation.

After the Lesson

Independent Practice: Text page 314-316 {1-20}
AIG: {1-20}
Assign Test Form B

Closure / Assessment: Have co-operative learning groups review and discuss their answers before turning their papers in for correction by the teacher.

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **many** activities connected with this lesson

Vocabulary Matching Practice
Practice Test
Graphing Quiz Bowl
Graphing Millionaire

Name _____ Date _____ Class _____

CHAPTER 6

Chapter Test

Form B

In 1965, 520,000 children were enrolled in preschool. In 1975, 1,748,000 were enrolled. In 1985, 2,491,000 were enrolled. In 1995, 4,399,000 were enrolled, and in 2000, 4,481,000 children were enrolled.

1. Make a table of the data.

2. Find the range, mean, median, and mode. 89 99 77 94 86 89

_____

_____

Attendance at Weekly Sales Meetings

Date	Number in Attendance
July 3	48
July 10	50
July 17	36
July 24	47
July 31	53
August 7	50
August 14	38

3. Find the mean, median, and mode.

_____

4. Which of the mean, median, and mode best describes the data?

_____

5. Make a bar graph.

Number of students in each class

Math	23	Gym	26
Spanish	12	Science	24
English	25	History	19

12	3	9	7	10
10	3	8	10	5
5	8	6	0	11
11	9	7	4	5
3	3	6	13	2
14	2	3	12	5

6. The data in the table are the numbers of responses by the Swanton Rescue Squad for each day in April. Make a frequency table with intervals.

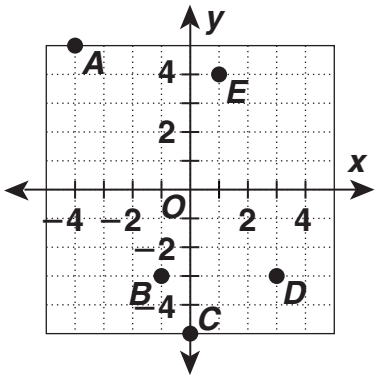
Name _____ Date _____ Class _____

CHAPTER 6

Chapter Test

Form B, continued

7. Name the ordered pairs for each location on the grid.



A _____ *B* _____

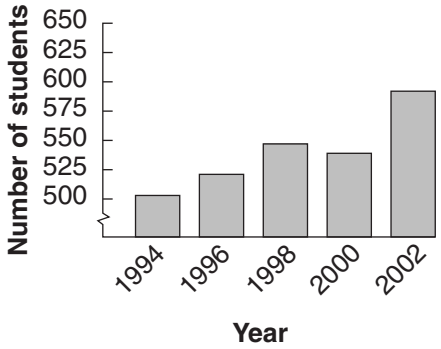
C _____ *D* _____

E _____

8. Make a line graph.

Year	Sales (in thousands)
1996	$114
1997	$130
1998	$144
1999	$140
2000	$152
2001	$154

Enrollment at Southern Middle School



9. Why is this graph misleading?

_____

10. What might people believe from the misleading graph?

_____

_____

_____

11. Make a stem-and-leaf plot. 46 61 76 67 53 46 46 53 48 64 74

Stem	Leaves

Essential Question

Has your life improved or do you feel burdened by the steps you took after the last chapter to improve your test taking? (Explain)

Wayne County Schools 21st Century Instructional Lesson Plan
Collect and Display Data Assessment

NAME:	Subject: Math
Date:	Grade Level (s): 6

Standards/Objectives Addressed (NCSCOS)

3.04, 4.01, 4.05, 4.06, 5.04
Solve problems involving geometric figures in the coordinate plane. Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle. Determine and compare experimental and theoretical probabilities for independent and dependent events. Design and conduct experiments or surveys to solve problems; report and analyze results. Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.

Essential Question(s) (In student-friendly terms)

Has your life improved or do you feel burdened by the steps you took after the last chapter to improve your test taking? (Explain)

Assess (Look at student data to plan. Use formative and/or summative assessments.)

Examine student performance on concepts review.

High Yield Instructional Strategies (check all that apply to the lesson)

Identifying similarities and differences		Reinforcing effort and providing recognition	✓	Nonlinguistic representation		Setting objectives and providing feedback	✓
Questions, cues, and advance organizers		Summarizing and note taking		Cooperative learning		Generating and testing hypotheses	
Homework and practice							

Learner Diversity

- **How will you differentiate to meet the needs of all learners in your class?**

504 modifications ET and RA.

Engage (Anticipatory Set)

- **Capture the students' attention, stimulate their thinking and help them access prior knowledge. Consider novelty, meaning and emotion.**

Today we will assess our mastery of Collecting and Displaying Data.

Instructional Practices Used in this Lesson

Coaching		**Providing Directions/ Instructions**	✓	**Learning Centers**	
Discussion		**Providing opportunities for practice**		**Teacher-directed Questions and Answers**	
Hands-on experiences		**Direct Instruction**		**Modeling**	
Presentation		**Testing**	✓	Other:	

Suggested brained-based learning activities promoting the above Instructional Practices					
Think-Pair-Share		Instructional Games		Music/Rhyme/Rhythm/Rap	
Thinking Maps		Student Facilitators		Movement	
Technology Integration	✓	Storytelling		Humor	
Use of visuals		Field Trips(Virtual)		Project/Problem- Based Learning	
Metaphor/Simile/Analogy		Reciprocal Teaching		Mnemonics	
Peer/Self Assessment		Drawing or illustrating		Other:	
Writing/Reflecting/Journals	✓	Simulations/Role Play		Other:	

Type(s) of Grouping Used:

___small group ___student pairs ___whole group _✓_individual

Explain, Explore, Elaborate

Content Chunks: How will you divide and teach the content?

- **Transitions should be used every 5-15 minutes to keep the students' brains engaged.**
- **Involve students in an analysis of their explorations.**
- **Use reflective activities to clarify and modify student understanding.**
- **Give students time to think, plan, investigate and organize collected information.**
- **Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.**

See next page for instructional detail.

Evaluate (Feedback/Closure)

- **Evaluate throughout the lesson. Are students able to answer the Essential Question(s)?**
- **Present students with a scoring guide (such as a rubric) at the beginning to self-assess.**
- **What assessment(s) will be used to be sure the students are successful?**

Write a paragraph evaluation of your expected performance on this test. What did you do well on? What did you have trouble with? How did you prepare for this test and what would you like to do differently for the next exam?

Describe, Analyze, Reflect:

- **How effective was the lesson? How did the strategies help the students deepen their understanding? Cite evidence of student work, performance, behaviors, and/or remarks to support your view.**
- **What caused the lesson to go well? What challenges did you encounter?**
- **What did you do to contribute to the lesson's effectiveness?**
- **What learning did you take from this lesson to apply to future lessons? What would you do differently next time?**

Date: _____ Time Frame: **80 minutes**

Collect and Display Data Assessment

Essential Question:	Has your life improved or do you feel burdened by the steps you took after the last chapter to improve your test taking? (Explain)
Objective (s) Numbers:	**3.04, 4.01, 4.05, 4.06, 5.04**
Outcomes:	Solve problems involving geometric figures in the coordinate plane. Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle. Determine and compare experimental and theoretical probabilities for independent and dependent events. Design and conduct experiments or surveys to solve problems; report and analyze results. Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.
Materials:	Cumulative Assessment (Form B)
Anticipatory Set:	Today we will assess our mastery of Data Collection and Display

During the Lesson

Presentation of Information:	
Integration of Other Subjects:	Writing (evaluation) Reading (vocabulary, problem solving, analyzing expectation)
Integration of Reading:	Reading for information and interpretation.
Integration of Technology:	Computer, Projector, PowerPoint, Internet
Modeling:	Review the Practice Test, answer questions and model answers.
Differentiation:	504 modifications ET and RA. Additional student and teacher modeling will help to guide all students to reach expected outcomes.
Guided Practice:	Discuss the Instructions.

After the Lesson

Independent Practice	Assign Cumulative Review Test Form B
Closure / Assessment:	Write a paragraph evaluation of your expected performance on this test. What did you do well on? What did you have trouble with? How did you prepare for this test and what would you like to do differently for the next exam? Choose a Journal entry to share with your class.

Integration with School-wide Focus: Improve mathematics computation and problem solving.

Related Math6.org Activities: There are **many** activities connected with this lesson

Vocabulary Matching Practice
Practice Test
Graphing Quiz Bowl
Graphing Millionaire

Name _____ Date _____ Class _____

CHAPTER 6

Cumulative Test

Form B

Select the best answer for questions 1–43.

1. Find median of the data set.
18, 22, 25, 15, 17, 35, 32, 32, 36

A 28 **C** 25

B 26 **D** 32

2. What is the LCM of 12, 16, and 24?

F 4 **H** 24

G 96 **J** 48

3. Sarah has 111 fewer marbles than Jessica. If m stands for the number of marbles Jessica has, which expression represents the number of marbles Sarah has?

A $m + 111$ **C** $m - 111$

B $\frac{m}{111}$ **D** $111 - m$

4. Which expression has the greatest value?

F $6.35 \cdot 2.4$ **H** $45.26 \div 7.3$

G $14\frac{1}{2} \div 4$ **J** $3\frac{1}{2} \cdot 4\frac{3}{4}$

5. Which type of display best shows a change over time?

A stem-and-leaf plot

B histogram

C line graph

D cumulative frequency

6. Which decimal is equivalent to $9\frac{5}{8}$?

F 9.125 **H** 9.5

G 9.375 **J** 9.625

7. Find the mean and median of the data set. 35, 40, 37, 36, 42, 42, 34

A mean: 38; median: 37

B mean: 38; median: 42

C mean: 37; median: 38

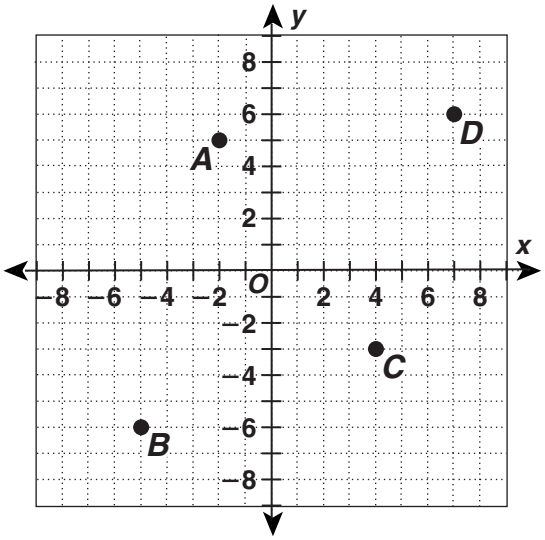
D mean: 42; median: 37

8. Identify the outlier in the following data set. 65, 72, 81, 74, 28, 74

F 74 **H** 65

G 72 **J** 28

9. Which ordered pair represents C on the coordinate grid?



A $(-4, 3)$ **C** $(-4, -3)$

B $(-3, -4)$ **D** $(4, -3)$

10. What is the product of 5 and $\frac{1}{8}$?

F $5\frac{1}{8}$ **H** $\frac{5}{8}$

G $\frac{8}{5}$ **J** 5.8

Name _____ Date _____ Class _____

CHAPTER 6

Cumulative Test

Form B, continued

11. What is the best unit of measurement to use to measure the length of a driveway?

A millimeters **C** meters

B centimeters **D** kilometers

12. Look at the table below. Which two students have the highest mean scores?

Student	Test 1	Test 2	Mean
Kei	85	95	?
Jeremiah	100	85	?
Devon	87	73	?
Charles	90	94	?

F Kei and Jeremiah

G Jeremiah and Devon

H Devon and Charles

J Charles and Jeremiah

13. Which equation is true given $w = 7$?

A $7w = 28$ **C** $49 \div w = 7$

B $78 + w = 88$ **D** $83 - w = 77$

14. In which set are the numbers all between 0.6 and 1.96?

F 0.145, 2, 1.95

G 0.607, 1.85, 1.206

H 0.62, 1.37, 1.98

J 0.89, 1.06, 1.972

15. Which number is equal to 6.4?

A $6\frac{4}{100}$ **C** $6\frac{2}{5}$

B $\frac{64}{100}$ **D** $\frac{16}{25}$

16. Which expression shows twelve less than a number?

F $12 - w$ **H** $\frac{12}{w}$

G $12w$ **J** $w - 12$

17. Margot paid for tickets to the county fair. She bought 3 season passes for $13.00 each and paid with a $50 bill. How much change did she receive?

A $10 **C** $15

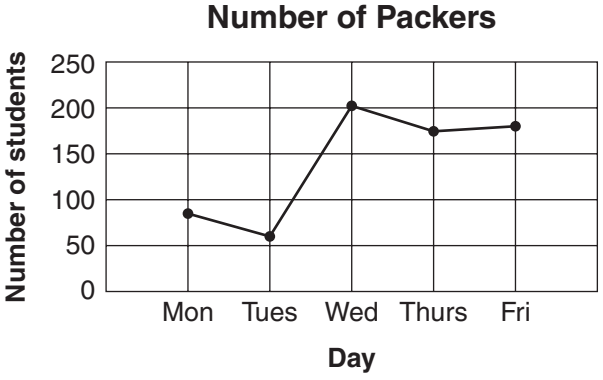
B $11 **D** $37

18. What is 5.67×10^5 written in standard notation?

F 56,700 **H** 5,670,000

G 567,000 **J** 56,700,000

19. Estimate the median number of students who pack their lunch.



A 60 **C** 170

B 80 **D** 200

20. Divide $12\frac{3}{4} \div \frac{2}{3}$.

F $8\frac{1}{2}$ **H** $19\frac{1}{8}$

G $12\frac{1}{4}$ **J** $18\frac{3}{4}$

Name _____ Date _____ Class _____

CHAPTER 6

Cumulative Test

Form B, continued

21. Which rule best describes the pattern 6, 11, 16, 21, 26, …?

A Add 5 repeatedly.

B Start with 6 and add 5 repeatedly.

C Start with 6 and multiply by 2.

D Start with 6 and add 6 repeatedly.

22. Subtract $18\frac{1}{2} - 10\frac{3}{16}$.

F $8\frac{11}{16}$ **H** $8\frac{1}{4}$

G $8\frac{5}{16}$ **J** $7\frac{1}{4}$

23. Which fraction is *not* equivalent to 0.375?

A $\frac{3}{8}$ **C** $\frac{15}{40}$

B $\frac{375}{1{,}000}$ **D** $\frac{80}{200}$

24. Which word phrase describes the expression $6x - 2$?

F six times x

G two less than six times x

H six minus two x

J two minus six times x

25. Which is the GCF of 18 and 54?

A 3 **C** 18

B 6 **D** 27

26. Which expression has a value of 24?

F $4 + 2^2$ **H** $(4 + 2)^2$

G $4^2 + 2^3$ **J** $4^2 - 2^2$

27. Which number is divisible by 2, 3, and 13?

A 726 **C** 858

B 816 **D** 728

28. What is $\frac{204}{50}$ written as a mixed number?

F $4\frac{2}{25}$ **H** $4\frac{1}{50}$

G $3\frac{13}{75}$ **J** $2\frac{1}{50}$

29. Bob ran 3.2 miles, Ortez ran $3\frac{1}{4}$ miles, Miguel ran $3\frac{2}{7}$ miles and Jamie ran 3.08 miles. Who ran the longest distance?

A Bob **C** Miguel

B Ortez **D** Jamie

30. Which of the following numbers is prime?

F 87 **H** 91

G 89 **J** 93

31. A dress maker uses $1\frac{7}{8}$ yards of material to make one child's dress. How many dresses can be made from a piece of material that is 30 yards?

A 14 **C** 16

B 15 **D** 21

32. Matthew grew $6\frac{3}{4}$ inches over a two year period. If he grew $2\frac{1}{2}$ inches the first year, how many inches did he grow the second year?

F 4 in. **H** $4\frac{1}{2}$ in.

G $4\frac{1}{4}$ in. **J** 5 in.

Name _____ Date _____ Class _____

CHAPTER 6

Cumulative Test

Form B, continued

33. Which set of numbers is ordered from least to greatest?

A $\frac{1}{3}, \frac{5}{8}, 0.45$ **C** $\frac{1}{3}, 0.45, \frac{5}{8}$

B $0.45, \frac{5}{8}, \frac{1}{3}$ **D** $0.45, \frac{5}{8}, \frac{1}{3}$

34. Tammy bought $7\frac{1}{3}$ pounds of thistle seed and $9\frac{1}{4}$ pounds of suet. How many total pounds did she buy?

F $16\frac{2}{7}$ pounds **H** $17\frac{1}{4}$ pounds

G $16\frac{7}{12}$ pounds **J** 18 pounds

35. What is the value of the expression $6 + 3(9 - 1) \div 2$?

A 12 **C** 18

B 19 **D** 36

36. What is the prime factorization of 81?

F 3^4 **H** $2^2 \times 3 \times 7$

G $2^2 \times 3^2$ **J** 2×3^3

37. Multiply $6\frac{3}{4} \cdot 1\frac{1}{2}$.

A $10\frac{1}{8}$ **C** $6\frac{3}{8}$

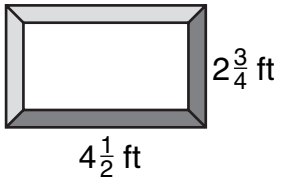
B $10\frac{1}{4}$ **D** $6\frac{1}{4}$

38. A thread on a sewing machine bobbin is 40 m long. Which is *not* an equivalent length?

F 0.04 km **H** 40,000 mm

G 4,000 cm **J** 0.4 km

39. What is the perimeter of the figure shown?



A $7\frac{1}{4}$ ft **C** $14\frac{1}{2}$ ft

B $8\frac{3}{8}$ ft **D** $15\frac{1}{4}$ ft

40. Solve $x - 45 = 123$.

F $x = 78$ **H** $x = 158$

G $x = 168$ **J** $x = 5{,}535$

41. Eric wants to attend conservation camp this summer. The camp costs $1,000. So far he has saved $823. How much more does he need to save?

A $134 **C** $200

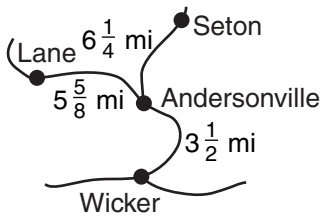
B $177 **D** $1,823

42. Solve $25 + w = 142$.

F $w = 167$ **H** $w = 172$

G $w = 117$ **J** $w = 5.68$

43. Cornell drove from Seton to Andersonville then he drove to Lane. How many miles did he drive?



A $11\frac{1}{2}$ miles **C** $11\frac{7}{8}$ miles

B $9\frac{1}{3}$ miles **D** $1\frac{1}{2}$ miles

Name _____

Collect and Display Data Assessment

1	A	B	C	D
2	F	G	H	J
3	A	B	C	D
4	F	G	H	J
5	A	B	C	D
6	F	G	H	J
7	A	B	C	D
8	F	G	H	J
9	A	B	C	D
10	F	G	H	J
11	A	B	C	D
12	F	G	H	J
13	A	B	C	D
14	F	G	H	J
15	A	B	C	D
16	F	G	H	J
17	A	B	C	D
18	F	G	H	J
19	A	B	C	D
20	F	G	H	J

21	A	B	C	D
22	F	G	H	J
23	A	B	C	D
24	F	G	H	J
25	A	B	C	D
26	F	G	H	J
27	A	B	C	D
28	F	G	H	J
29	A	B	C	D
30	F	G	H	J
31	A	B	C	D
32	F	G	H	J
33	A	B	C	D
34	F	G	H	J
35	A	B	C	D
36	F	G	H	J
37	A	B	C	D
38	F	G	H	J
39	A	B	C	D
40	F	G	H	J
41	A	B	C	D
42	F	G	H	J
43	A	B	C	D

Name _____

Collect and Display Data Assessment

1	A	B	C	D
2	F	G	H	J
3	A	B	C	D
4	F	G	H	J
5	A	B	C	D
6	F	G	H	J
7	A	B	C	D
8	F	G	H	J
9	A	B	C	D
10	F	G	H	J
11	A	B	C	D
12	F	G	H	J
13	A	B	C	D
14	F	G	H	J
15	A	B	C	D
16	F	G	H	J
17	A	B	C	D
18	F	G	H	J
19	A	B	C	D
20	F	G	H	J

21	A	B	C	D
22	F	G	H	J
23	A	B	C	D
24	F	G	H	J
25	A	B	C	D
26	F	G	H	J
27	A	B	C	D
28	F	G	H	J
29	A	B	C	D
30	F	G	H	J
31	A	B	C	D
32	F	G	H	J
33	A	B	C	D
34	F	G	H	J
35	A	B	C	D
36	F	G	H	J
37	A	B	C	D
38	F	G	H	J
39	A	B	C	D
40	F	G	H	J
41	A	B	C	D
42	F	G	H	J
43	A	B	C	D

Collect and Display Data Assessment

1	A	B		D
2	F	G	H	
3	A	B		D
4	F	G	H	
5	A	B		D
6	F	G	H	
7		B	C	D
8	F	G	H	
9	A	B	C	
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20	F	G		J

21	A		C	D
22	F		H	J
23	A	B	C	
24	F		H	J
25	A	B		D
26	F		H	J
27	A	B		D
28		G	H	J
29	A	B		D
30	F		H	J
31	A	B		D
32	F		H	J
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35	A	B		D
36		G	H	J
37		B	C	D
38	F	G	H	
39	A	B		D
40	F		H	J
41	A		C	D
42	F		H	J
43	A	B		D

Chapter 6 Assessment

6	100%
5	83%
4	67%
3	50%
2	33%
1	17%
0	0%