

Essential Elements Math Pacing Guide



November

Background

The Essential Elements Math Pacing Guide was inspired by realizing that there is a small amount of information found on the internet to help support educators who teach those who follow an alternate curriculum for our amazing 1% of the student population in education. I wanted to create something that could help serve as a guide, a support, an understanding of how to hold our students to high academic achievement, just like their regular education peers.

Regular education materials are abundant and come with pacing guides with how to implement the prescribed curriculum that the school decided to buy into. Within those curriculums, a good majority of publishers incorporated how to differentiate Instruction for struggling learners, for English Language Learners and/or English as a Second Language learners. However, there does not seem to be a supplementary curriculum that aligns to how to modify instruction and materials for those who follow the alternate curriculum so the 1% of students with disabilities aligned to the alternate curriculum could also learn a modified version of the same materials as their non-disabled peers in an inclusive setting.

Your partner in education,

Jeanette Nowak

Updated May 2022

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November Outline

Standards covered during November:

- [M.EE.6.SP.5](#) - Summarize data distributions shown in graphs or tables.
- [M.EE.7.SP.3](#) - Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.
- [M.EE.8.SP.4](#) - Construct a graph or table from given categorical data, and compare data categorized in the graph or table.

According to the Dynamic Learning Maps (DLM) website, these are the commonly tested standards that are used for the DLM assessment.

How to Access Math Instruction and Materials from Unique

1. <https://www.n2y.com/unique-learning-system/>
2. Log in using the provided username and password you received
3. Click on Unique Learning System
4. Click on the three lines →
5. Select Monthly Lessons/Unit Lessons
6. Select Math
 - a. When selecting materials, select PDF icon to save and print



Understanding Differentiated Levels In Unique

- Level 3 Learners – can read text and can participate more independently in the lesson (Independent)
- Level 2 Learners- require pictorial support and require mild to moderate support to participate in the lesson (Supported)
- Level 1 Learners- require extensive supports to participate in the lesson (Participatory).

Measuring Success by the Essential Elements Standards

Students who take DLM assessments are instructed and assessed on *Essential Elements*. Essential Elements are grade-specific expectations about what students with the most significant cognitive disabilities should know and be able to do. The Essential Elements relate to college and career readiness standards for students in the general population.

November Math Pacing Guide 6th Grade

[M.EE.6.SP.5](#) - Summarize data distributions shown in graphs or tables.

Learning Goal:

- Level 2-3 – Students will summarize data by overall shape.
- Level 1 – Students will order objects and classify.

Essential Questions:

- What is the shape of the data?
- How is the data in this graph the same?
- How is the data in this graph different?
- Does this data have a pattern and if so, what is the pattern?
- How is this data distributed?
- How could I summarize my interpretation of the data?

Vocabulary:

- **data** – A collection of facts, such as numbers, words, measurements, observations or even just descriptions of things.
- **graph** – A diagram of values, usually shown as lines.
- **pattern** – Things arranged following a rule or rules.
- **X axis** - The line on a graph that runs horizontally (left-right) through zero.
- **Y axis** - The line on a graph that runs vertically (up-down) through zero.
- **outlier** - A value that "lies outside" (is much smaller or larger than) most of the other values in a set of data.
- **compare** – consider how things are the same.
- **contrast** – consider how things are different.
- **organize** – to arrange things based on a plan.



Mini-Map for M.EE.6.SP.5

Subject: Mathematics

Statistics and Probability (SP)

Grade: 6

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.6.SP.5 Summarize data distributions shown in graphs or tables.	M.6.SP.5 Summarize numerical data sets in relation to their context, such as by: Reporting the number of observations. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Arrange objects in a specific order (e.g., smallest to largest). Group objects by some attribute value (e.g., shape, size, texture, numerical pattern).	Communicate understanding that distribution of data can be described by the overall shape of the distribution. Recognize that in a line plot, "x" is used to represent the data values, and labels are used to represent x-	Analyze data distribution to recognize outliers, peaks, or symmetric distribution. Recognize data values substantially larger or smaller than the other values as outliers. Recognize peaks as data	Summarize data distribution by describing the overall shape of data in terms of outliers, peaks, and symmetric distribution.	Recognize appropriate measures of center, such as mean or median, by analyzing the overall shape of the data distribution. For example, use the mean to describe the center if the data distribution is symmetric, and use

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
	axis, y-axis, and the title of the graph.	values that most frequently occur. Recognize symmetric distribution as distributions where the left- and right-hand sides of the distributions are roughly equal.		median to describe the center if the data distribution is not symmetric.

Jeanette Nowak @ msnnowak.com

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

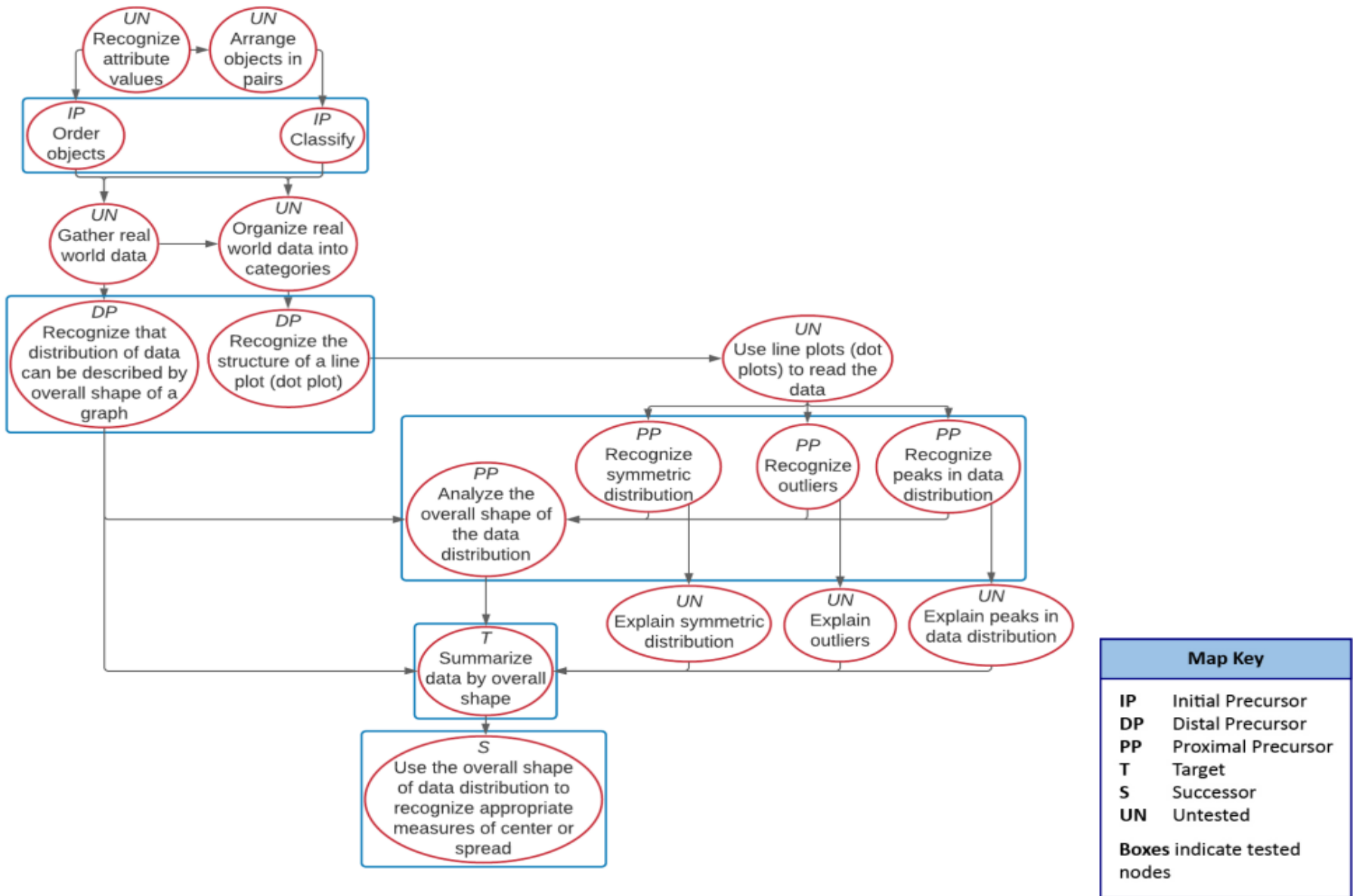
In order to summarize data, students begin by learning to recognize what is the same and different between familiar items; color, shape, quantity, size, texture, and pattern. Educators should take care to use attribute words while defining and demonstrating their meaning. While students do not need to say these words, they do need to learn the meanings. Students will also begin to group two or more items in the same set based on an attribute (e.g., two tigers, bumpy balls and bumpy gravel, red spoons). As the students group two or more items, the educator will demonstrate the representation in a bar graph or line plot and encourage students to actively participate in its creation.

How is the Distal Precursor related to the Target?

Students can actively participate in the creation of graphs and line plots by placing representations, x's, or dots for each response to the research question. When the graph or line plot is complete, the educator will encourage students to use their core vocabulary to describe the overall shape of the data and will also demonstrate the description (e.g., up, not up, same).

Jeanette Nowak @ msi,

M.EE.6.SP.5 Summarize data distributions shown in graphs or tables.



Rubric of Student Success

[M.EE.6.SP.5](#) - Summarize data distributions shown in graphs or tables.

Level 3 Students will... Successor and Target Students will...	Level 2 Students will... Proximal Precursor and Distal Precursor Students will...	Level 1 Students will... Initial Precursor Students will...
Level 3	Level 2	Level 1
<p>Successor</p> <ul style="list-style-type: none"> Use the overall shape of data distribution to recognize appropriate measures of center or spread <p>Target</p> <ul style="list-style-type: none"> Summarize data by overall shape 	<p>Proximal Precursor</p> <ul style="list-style-type: none"> Recognize peaks in data distribution Recognize outliers Recognize symmetric distribution Analyze the overall shape of the data distribution <p>Distal Precursor</p> <ul style="list-style-type: none"> Recognize that distribution of data can be described by overall shape of a graph Recognize the structure of a line plot (dot plot) 	<p>Initial Precursor</p> <ul style="list-style-type: none"> Order objects Classify

Instructional Ideas

[M.EE.6.SP.5](#) - Summarize data distributions shown in graphs or tables.

Information can be collected, displayed, summarized and analyzed.

The big idea is that it is important not only to read information from graphs but to make inferences, draw conclusions, and make predictions.

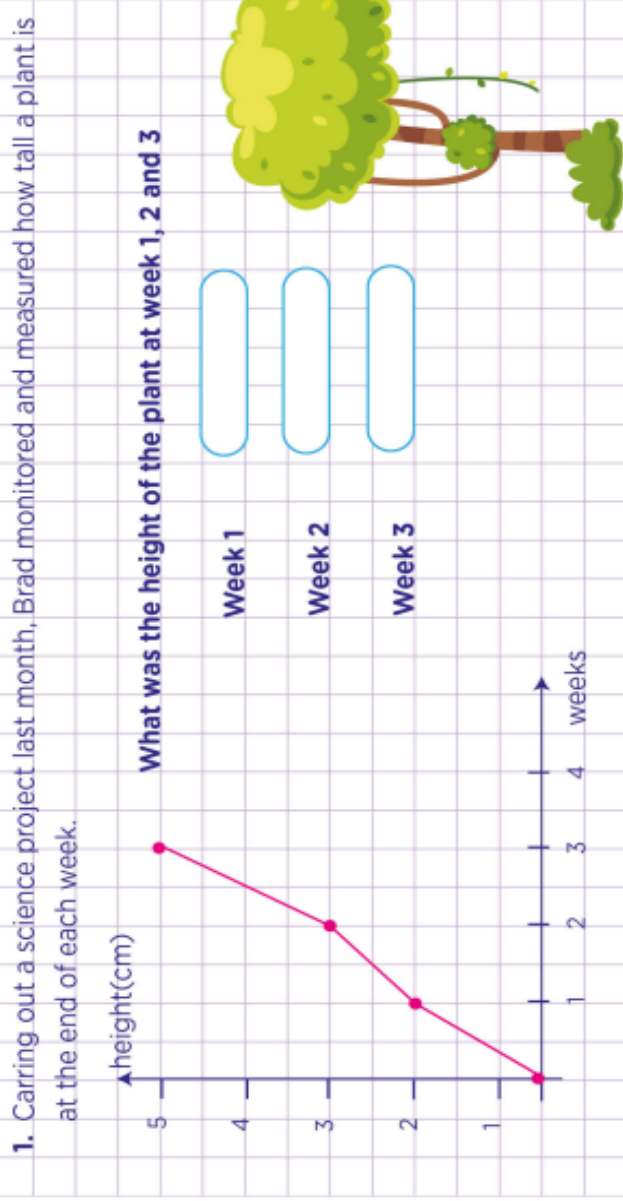
- Introduce by asking the essential questions.
- Summarize data by overall shape, identify outliers.
- Identify most common value.
- Identify the middle value, identify highest and lowest value.
- Identify peaks in data distribution.
- Identify symmetric distribution (data is balanced on both sides of the mean).
- Use manipulatives as needed.
- Students may use a calculator if needed.
- Provide students with their own number line and anchor chart.
- Included worksheets are examples of what to look for when finding additional materials that best fits your students needs.

Additional Instructional Ideas

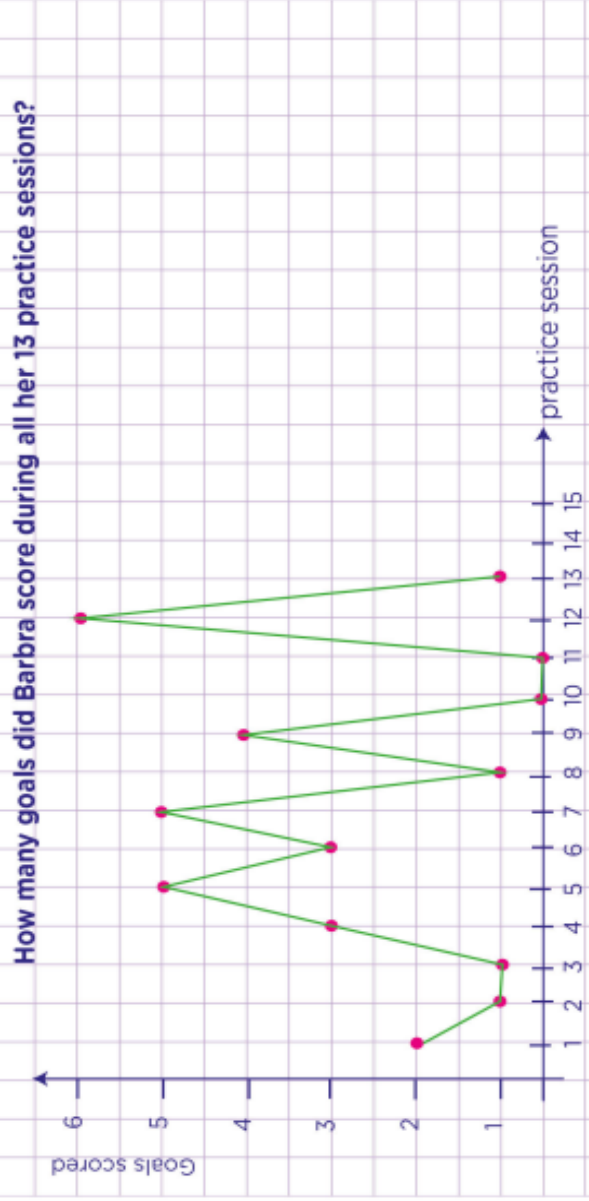
- Go to website for additional instructional resources, materials, and activities for lessons:

Name: Class:

Interpret line graphs

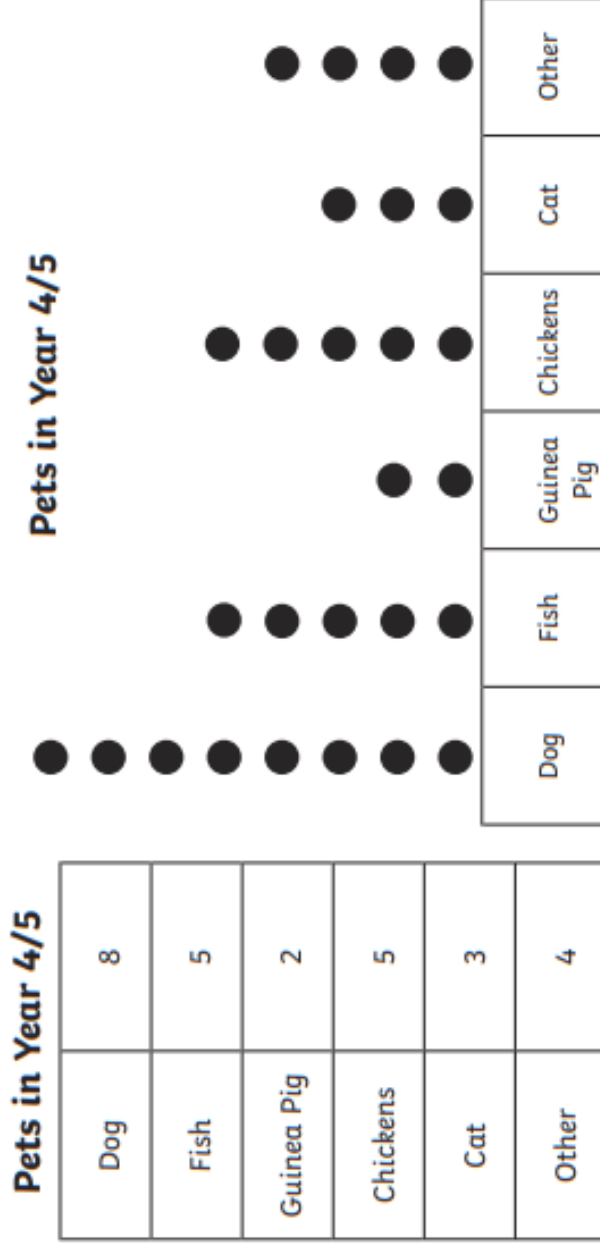


2. Barbra is practicing handball skills in scoring goals. During each practice session she counts the number of goals she makes in 15 tries. She kept the data from 13 practice sessions and made the line graph below



Dot Plot Data Interpretation

I can interpret data presented in a dot plot (ACMSP120).



1. If every student chose only one pet, how many students were surveyed?

2. What type of pets might be in the 'other' section?

3. Which pet is represented the least in the class?

4. How many students have this type of pet?

5. Which pets are equally represented in the class?

6. How many students have these pets?

7. Which pet is the most common for this class?

8. How many students have either a dog or a cat?

9. How many students do not have a guinea pig?

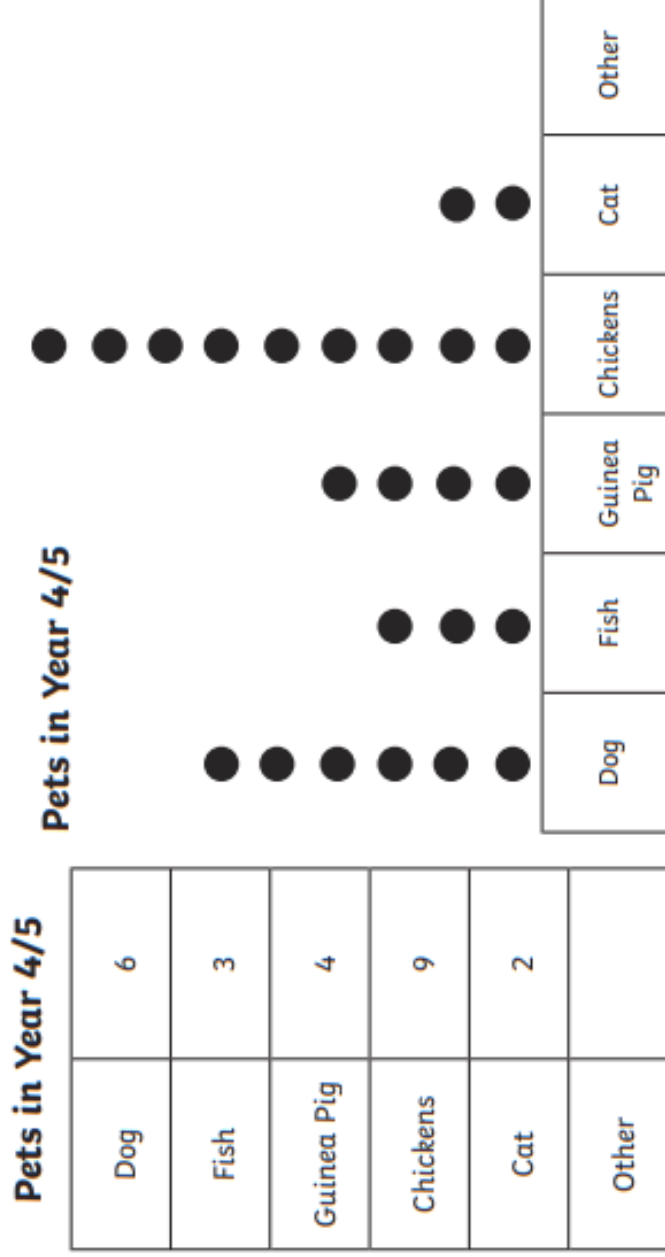
10. Two students were away and did not get to place their pet on the dot plot. Add in another person for owning a chicken and one for owning a snake.

11. What is the new total of students who were surveyed?

12. Why do you think there is an 'other' option instead of listing these pets?

Dot Plot Data Interpretation

I can interpret data presented in a dot plot (ACMSP120).



1. 'Other' pets have the same number as fish. Draw the dots on the graph.

2. How many students have these pets?

3. If every student chose only one pet, how many students were surveyed?

4. What type of pets might be in the 'other' section?

5. Which pet is represented the most in the class?

6. How many students have this type of pet?

7. Which pet is the least common for this class?

8. How many students have either a fish or a dog?

9. How many students do not have chickens?

10. How many pets have four (4) legs (not including the 'other' section)?

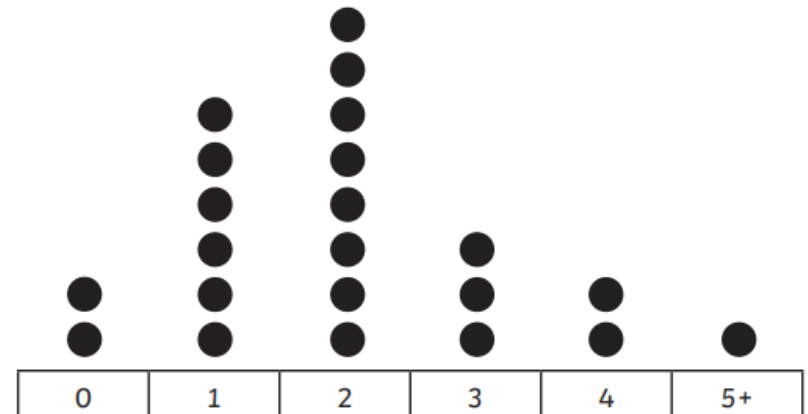
11. Which two pets, when added together, equal eleven (11)?

12. Why do you think there is an 'other' option instead of listing these pets?

Dot Plot Data Interpretation Challenge Cards



Number of Siblings

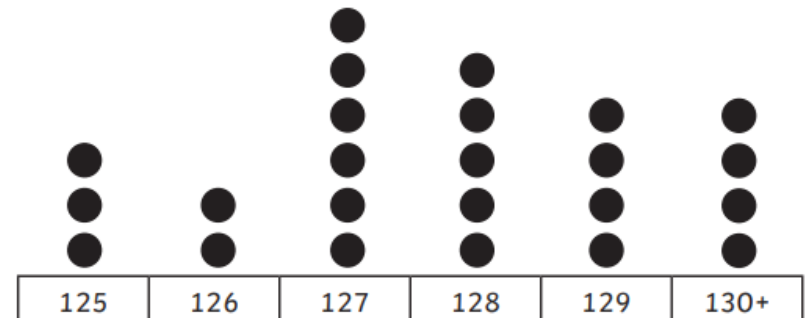


Number of Siblings

Questions:

1. How many students were surveyed?
2. How many families have four children?
3. How many students are the only children in their family?
4. How many students have three or more siblings?

Height of Students

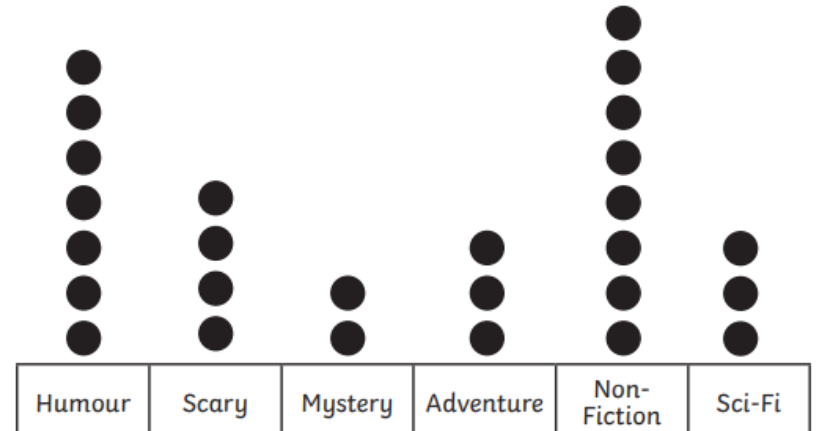


Height of Students

Questions:

1. How many students' heights were recorded?
2. What measurement would have been used?
3. How many students are under 127cm tall?
4. What is the shortest height in the class?

Favourite Book Genres

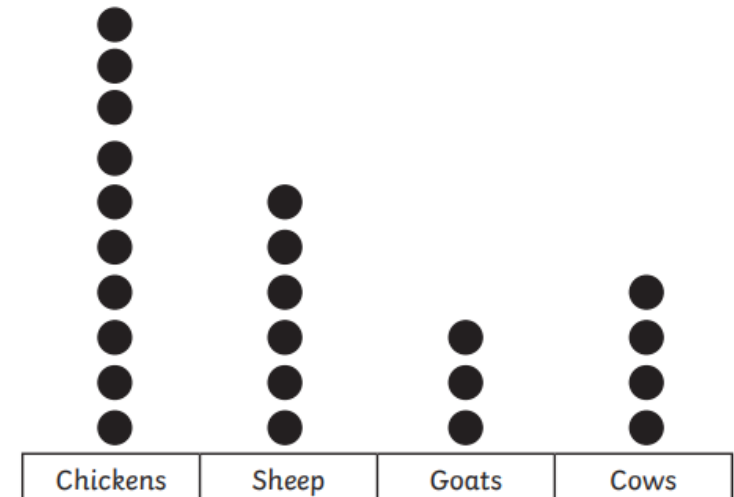


Favourite Book Genres

Questions:

1. How many students were surveyed?
2. How many book genres are represented?
3. How many students like to read mystery or adventure books?
4. How many more students like to read non-fiction books over Sci-Fi books?

Animals on the School Farm

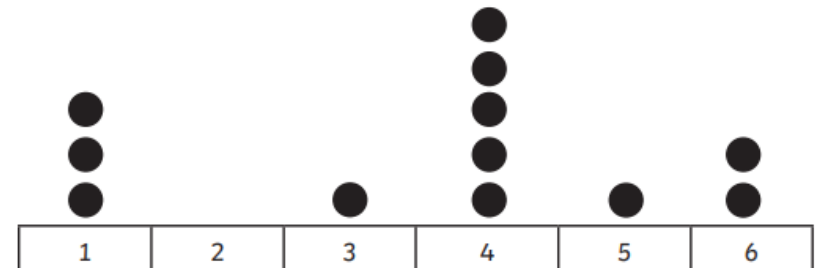


Animals on the School Farm

Questions:

1. How many animals does the school have?
2. How many four (4) legged animals are there at the school?
3. If every day each chicken laid one egg, how many eggs would the school get in one day?
4. Each type of animal is housed in a separate enclosure. How many animal enclosures are there?

Dice Roll Frequency

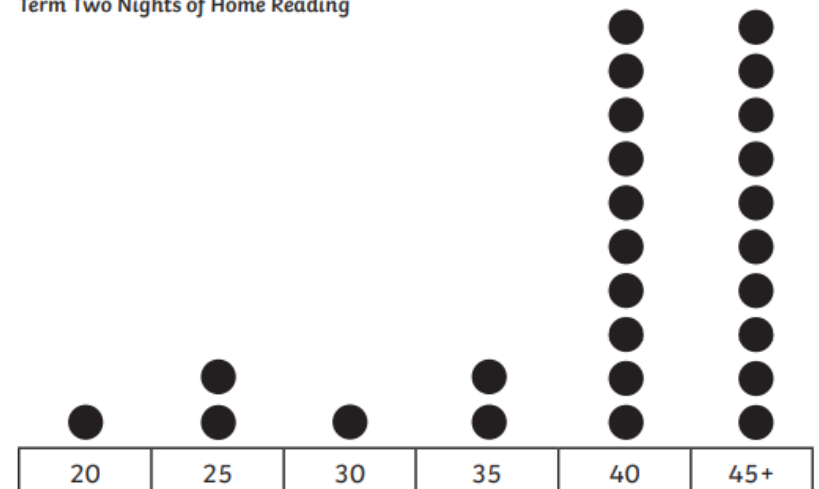


Dice Roll Frequency

Questions:

1. How many times was the dice rolled?
2. Which number was not rolled?
3. Which number was rolled an even number of times?
4. Which numbers were both rolled just once?

Term Two Nights of Home Reading

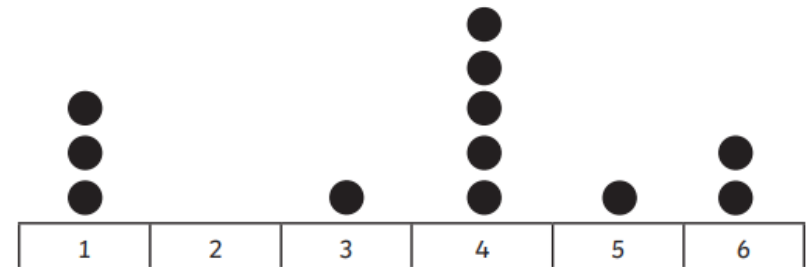


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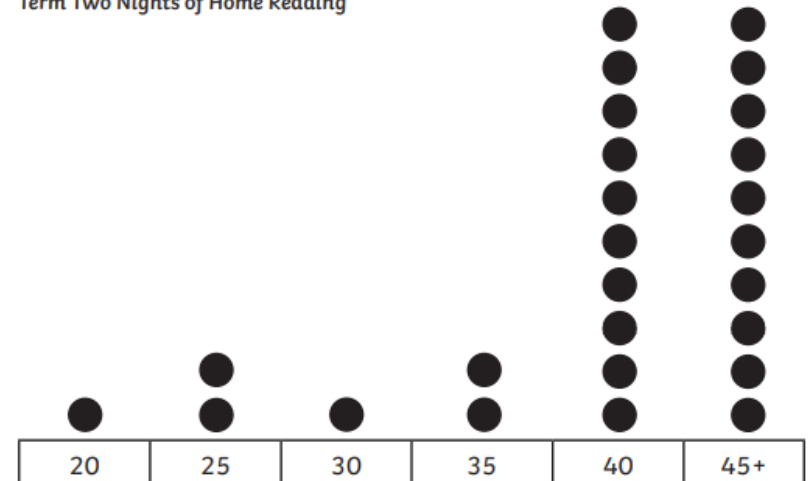


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Term Two Nights of Home Reading

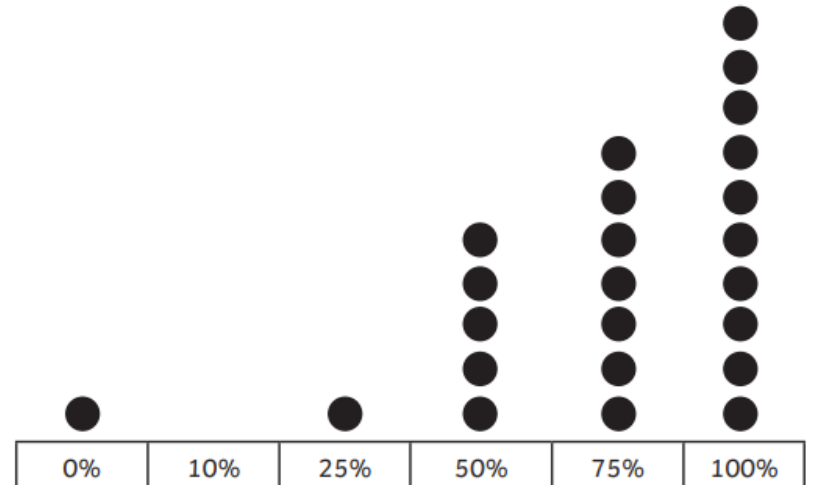


Term Two Nights of Home Reading

Questions:

1. How many students read on fewer than 30 nights?
2. If there are ten weeks in a term, how many students read for over 50% of the week nights?
3. How many students participated in nightly reading?
4. How many students read for at least 45 nights?

Spelling Test Results



Spelling Test Results

Questions:

1. How many students got 100% on their test?
2. How many students did not get any words correct?
3. How many students got over 50% of their words correct?
4. How many students participated in the spelling test?

Answers

Number of Siblings = 1)22 2)2 3)2 4)6

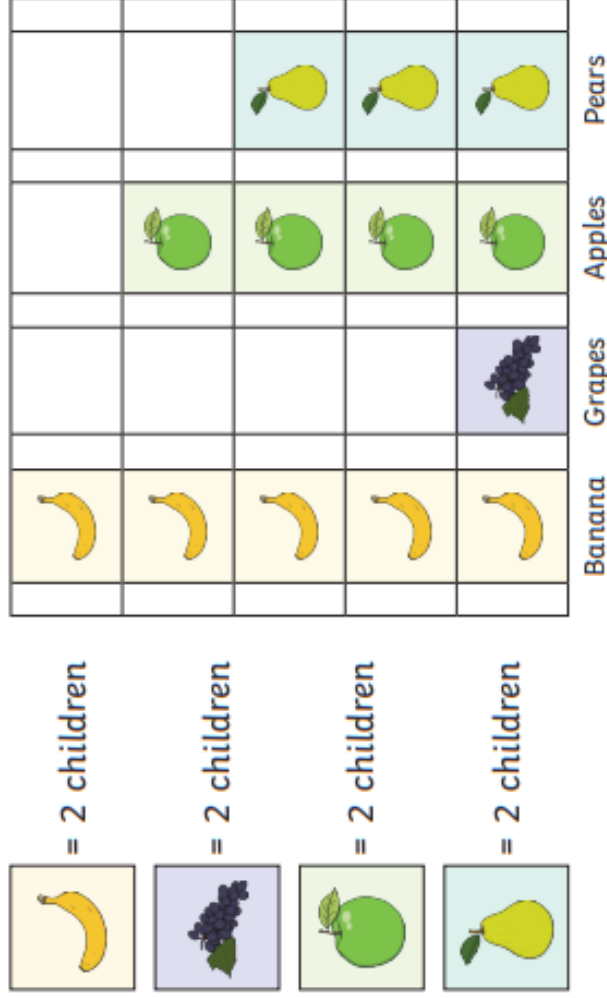
Height of Students = 1)24 2)centimetres (cm)
3)5 4)125cm

Favourite Book Genres = 1)27 2)6 3)5
4)8 - 3 = 5

Animals on the School Farm = 1)23 2)13
3)10 4)4

Interpreting Scaled Pictograms

Learning Objective: I can interpret scaled pictograms



Answer the following questions.

What is the favourite fruit? _____

How many children chose apples as their favourite fruit? _____

How many more children chose bananas than grapes, as their favourite fruit? _____

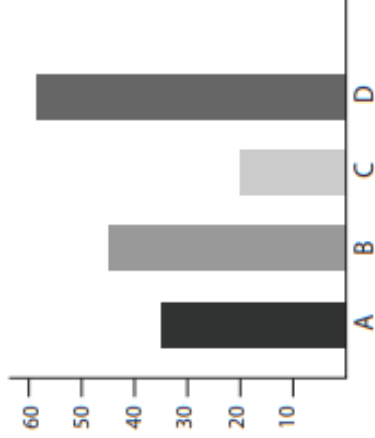
How many children chose apples or pears as their favourite fruit? _____

Write your own questions for a friend.

VOCABULARY CARDS





EL SUPPORT LESSON PLAN: LET'S COLLECT DATA!

bar graph



a graph using bars that compares quantities or numbers

category

Fruit	Vegetable
 	 

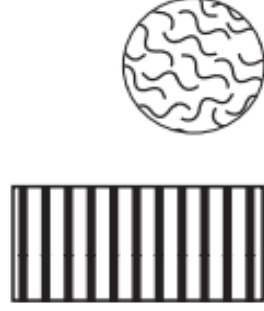
data grouped by labels

compare



consider how things are the same

contrast



consider how things are different



VOCABULARY CARDS

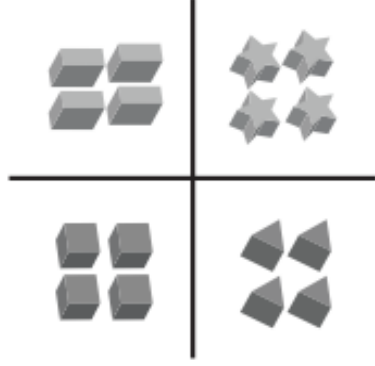
EL SUPPORT LESSON PLAN: LET'S COLLECT DATA!

data



facts or statistics that are collected to learn more about something

organize



to arrange things based on a plan



October Math Pacing Guide 7th Grade

[M.EE.7.SP.3](#) - Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.

Learning Goal:

- Level 2-3 – Students will use visual overlap of two sets of data to compare variability of two populations.
- Level 1 – Students will order objects.

Essential Questions:

- What is this data telling me?
- What does this data represent?
- What comparisons or conclusions can you make from the data?

Vocabulary:

- **data** – A collection of facts, such as numbers, words, measurements, observations or even just descriptions of things.
- **graph** – A diagram of values, usually shown as lines.
- **pattern** – Things arranged following a rule or rules.
- **X axis** - The line on a graph that runs horizontally (left-right) through zero.
- **Y axis** - The line on a graph that runs vertically (up-down) through zero.
- **outlier** - A value that "lies outside" (is much smaller or larger than) most of the other values in a set of data.
- **compare** – consider how things are the same.
- **contrast** – consider how things are different.
- **organize** – to arrange things based on a plan



Mini-Map for M.EE.7.SP.3

Subject: Mathematics

Statistics and Probability (SP)

Grade: 7

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.7.SP.3 Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.	M.7.SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Arrange objects in a specific order or by following a specific rule (e.g., arranging three pencils by increasing length). Group like items by attributes and distinguish between like items based on simple characteristics, such as shape, size, texture, and numerical pattern.	Recognize the structure of bar graphs, picture graphs, and line plots such as the title and labels for the x- and y-axes. Understand that bars are used to display data on bar graphs, where the height of the bar represents the data values. Understand that pictures or symbols are used to display data on picture graphs, where the number of pictures or symbols represents the data values. Understand that on a line plot, "x" is used to	Recognize symmetric distribution, outliers, and peaks in a data distribution shown graphically. Recognize data values substantially larger or smaller than the other values as outliers. Recognize peaks as data values that most frequently occur. Recognize symmetric distribution as distributions where the left- and right-hand sides of the distributions are roughly equal.	Compare variability of two data sets (i.e., spread out or grouped together) by overlapping the shapes of two data distributions. Compare differences in shapes of two or more sets of data (i.e., peaks, outliers, or symmetric distribution).	Draw inferences by comparing the shape and spread of two data sets (e.g., compare the peaks of two sets of data, height of soccer players and height of basketball players, to communicate that basketball players are, in general, taller than soccer players).

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
	represent the data values.	Recognize whether a set of scores is spread-out or grouped together (variability).		

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

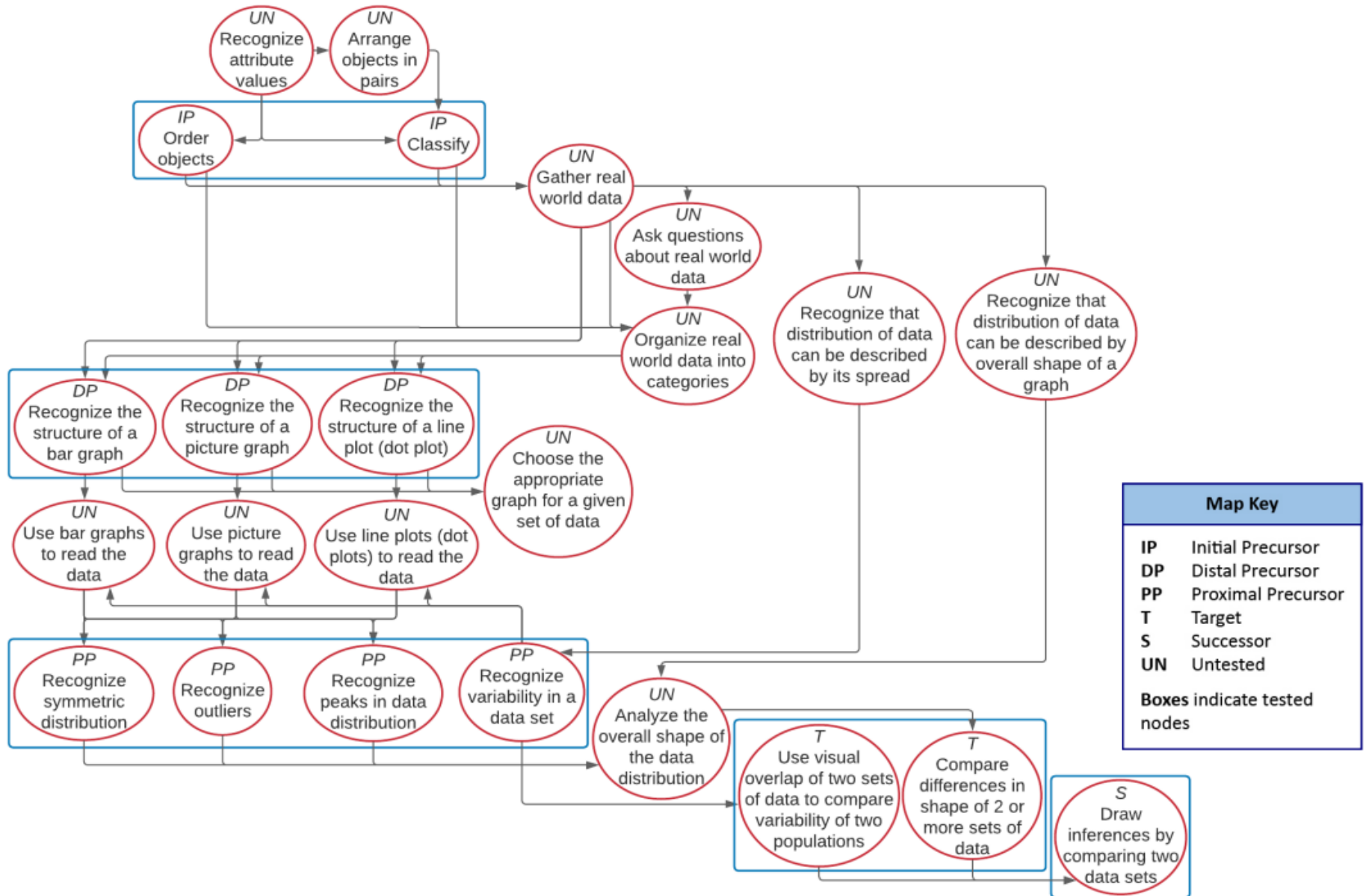
How is the Initial Precursor related to the Target?

In order to compare data, students begin by learning to recognize what is the same and different between familiar items; color, shape, quantity (1-4), size, texture, and pattern. Educators should take care to use attribute words while defining and demonstrating their meaning. While students do not need to say these words, they do need to learn the meanings. Students will also begin to group two or more items in the same set based on an attribute (e.g., two tigers, bumpy balls and bumpy gravel, red spoons). As the students group two or more items, the educator will demonstrate the representation in a bar graph or line plot and encourage students to actively participate in its creation.

How is the Distal Precursor related to the Target?

Students actively participate in the creation of graphs and line plots by placing representations, x's, or dots for each response to the research question.

M.EE.7.SP.3 Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.



Rubric of Student Success

[M.EE.7.SP.3](#) - Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.

<p>Level 3 Students will...</p> <p>Successor and Target Students will...</p>	<p>Level 2 Students will...</p> <p>Proximal Precursor and Distal Precursor Students will...</p>	<p>Level 1 Students will...</p> <p>Initial Precursor Students will...</p>
<p>Level 3 Unique does not have lessons on this standard.</p>	<p>Level 2 Unique does not have lessons on this standard.</p>	<p>Level 1 Unique does not have lessons on this standard.</p>
<p>Successor</p> <ul style="list-style-type: none"> • Draw inferences by comparing two data sets <p>Target</p> <ul style="list-style-type: none"> • Use visual overlap of two sets of data to compare variability of two populations • Compare differences in shape of 2 or more sets of data 	<p>Proximal Precursor</p> <ul style="list-style-type: none"> • Recognize symmetric distribution • Recognize outliers • Recognize peaks in data distribution • Recognize variability in a data set <p>Distal Precursor</p> <ul style="list-style-type: none"> • Recognize the structure of a bar graph • Recognize the structure of a picture graph • Recognize the structure of a line graph (dot plot) 	<p>Initial Precursor</p> <ul style="list-style-type: none"> • Order objects • Classify

Instructional Ideas

[M.EE.7.SP.3](#) - Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph. Numbers can be converted.

Information can be collected, displayed, summarized, and analyzed.

The big idea is that data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.

- Introduce by asking the essential questions.
- Read, interpret, and draw conclusions from data presented in picture graphs, line plots, and bar graphs.
- Use visual overlap of two sets of data to compare their variability.
- Compare differences in shape of 2 sets of data.
- Use comparative language such as more/less/equal.
- Use manipulatives as needed.
- Students may use a calculator if needed.
- Included worksheets are examples of what to look for when finding additional materials that best fits your student's needs.

Additional Instructional Ideas

- Go to website for additional instructional resources, materials, and activities for lessons:

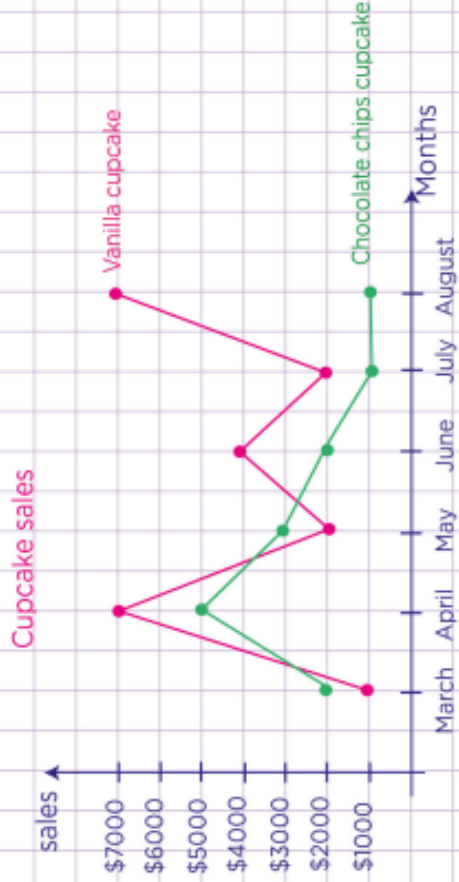
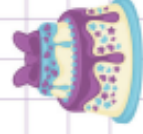
Jeanette Nowak

Name: Class:

Interpret double line graphs.

1. The owner of a cupcake shop reviewed the sales of cupcakes for the past 6 months.
(March-August).

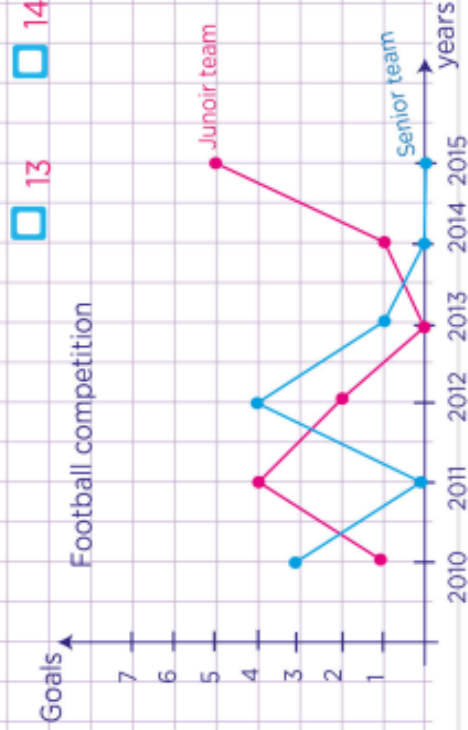
In May, was more money made from selling vanilla cupcakes or chocolate chips cupcakes?



Vanilla cupcake Chocolate chips cupcake

2. In Remy's school, football competitions are organized every year between the Junior and Senior students. The line graph below shows each year's scores of the two teams.

How many goals did the senior team score from 2010 - 2015 in all ?



13 14 8 10



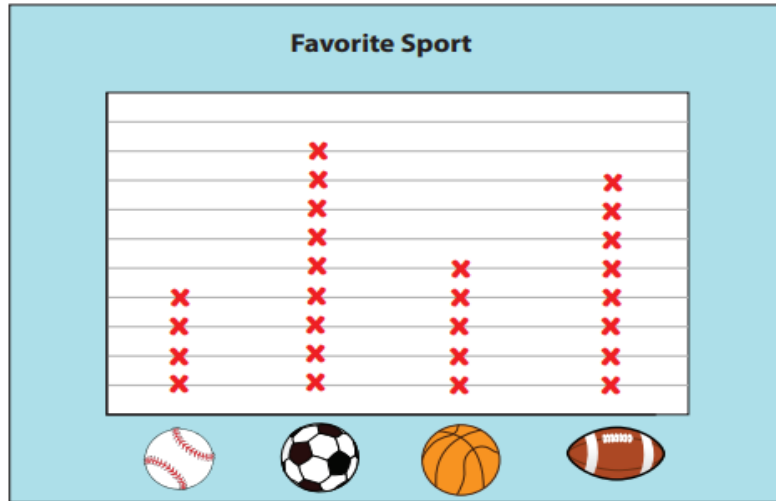
Name: _____

Date: _____

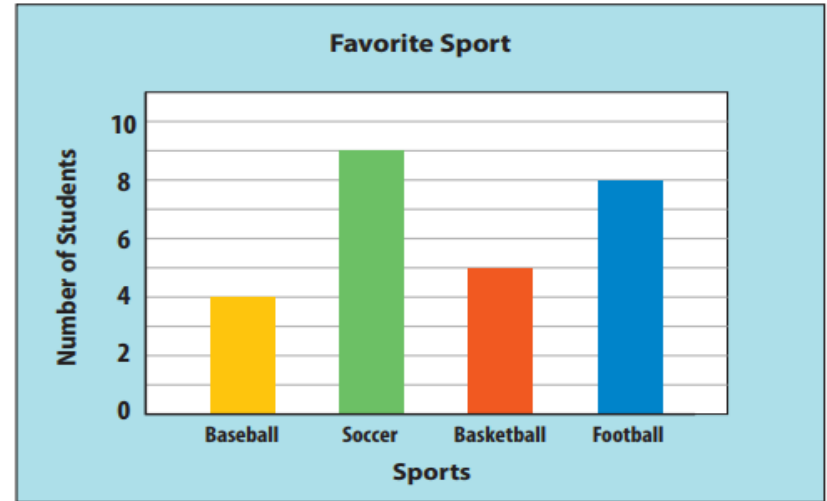
Comparing Sets of Data

Directions: What do you notice about each set of data? How are they the same? How are they different?

Line Plot:



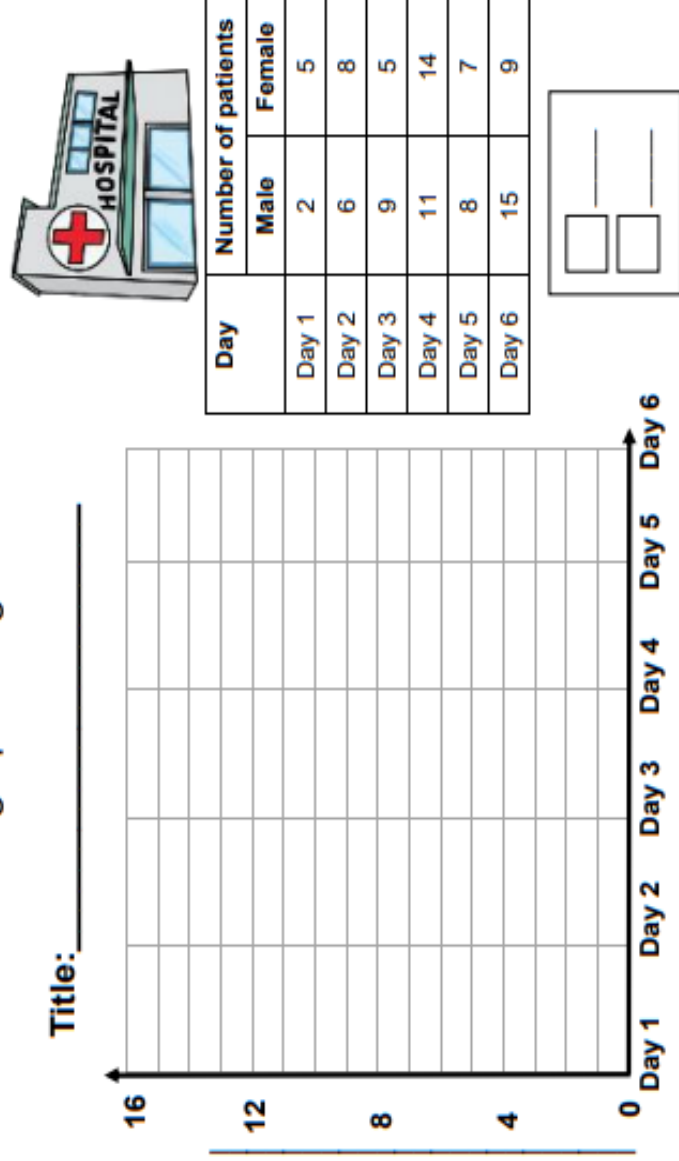
Bar Graph:



Hospital double line graph

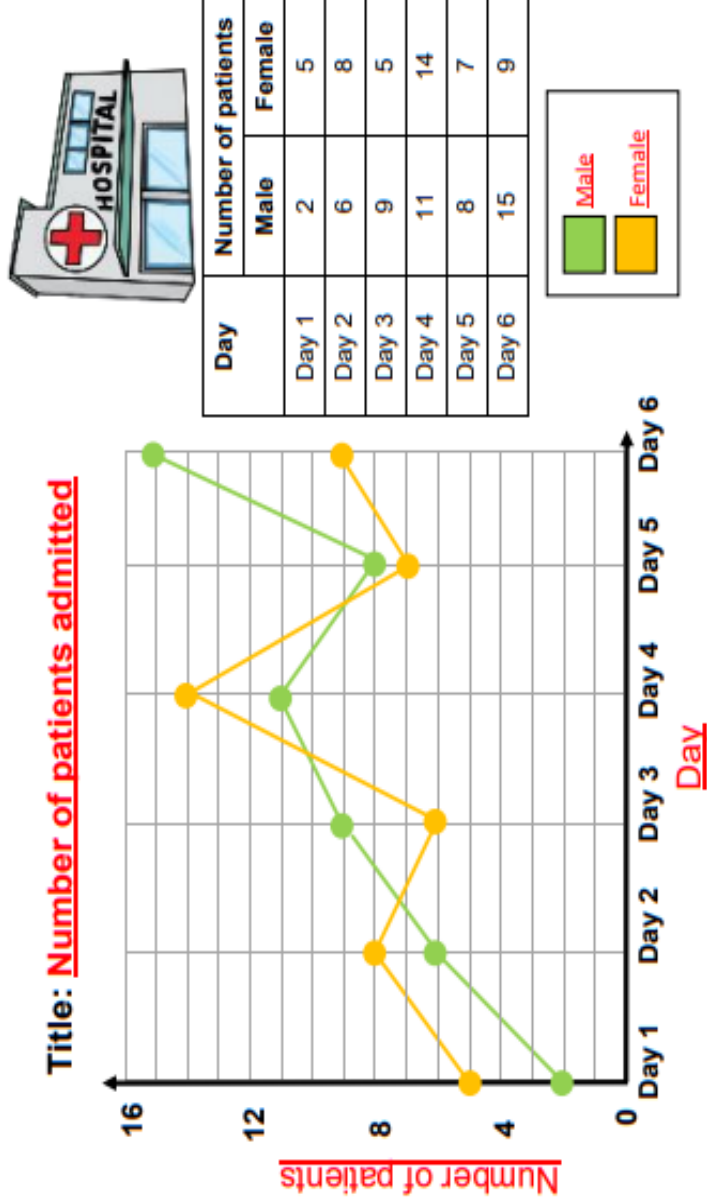
Data and Graphing Worksheet

The hospital recorded the patients admitted for six days.
 Draw a double line graph using the data.



1. How many patients were admitted on Day 5? _____
2. How many more male than female patients were admitted on day 5 and 6? _____
3. On which day did the hospital admit the greatest number of patients? _____
4. What is the difference between the number of patients on day 2 and 4? _____
5. Which days did the hospital admit an equal number of patients? _____
6. How many days did the hospital have more female than male patients? _____

Answers



How many patients were admitted on Day 5? **15 patients**

How many more male than female patients were admitted on day 5 and 6? **7 male patients**

On which day did the hospital admit the greatest number of patients? **Day 4**

What is the difference between the number of patients on day 2 and 4? **11 patients**

Which days did the hospital admit an equal number of patients? **Days 2 and 3**

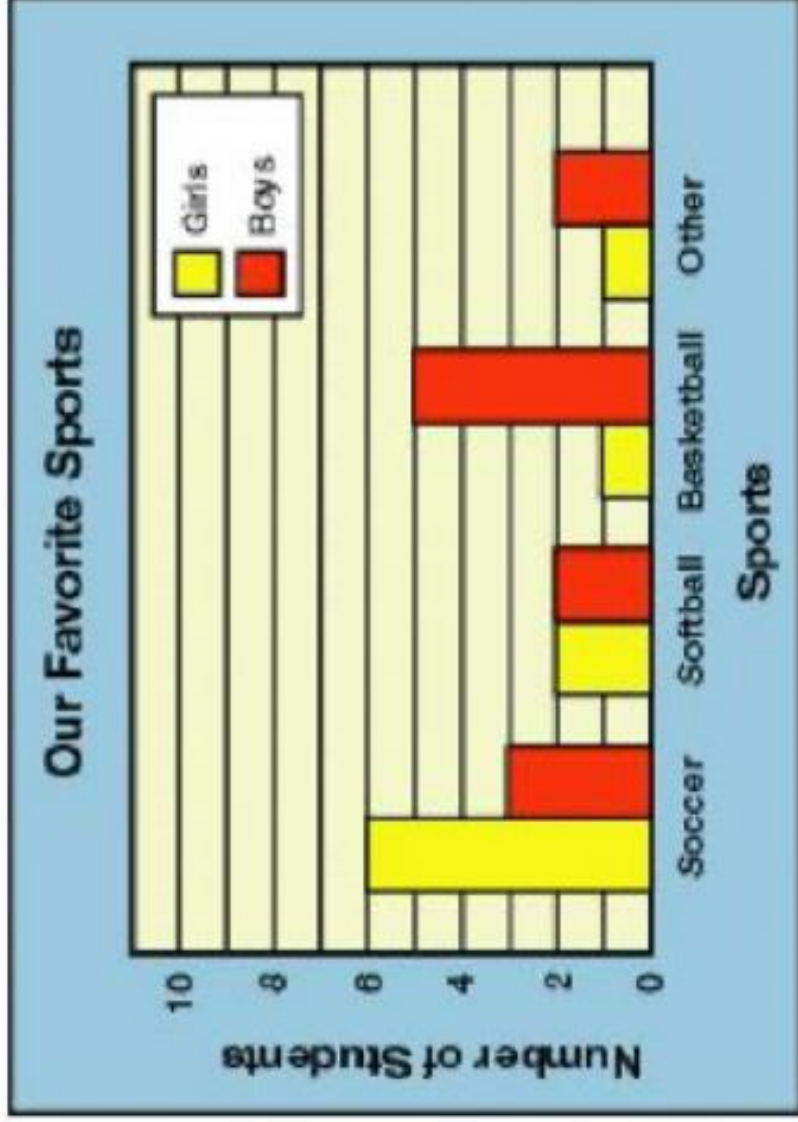
How many days did the hospital have more female than male patients? **3 days**

Name: Date:

Mathematics

Double Bar Graph

Instruction: Use the graph to respond to the questions below.



1. A. Tell how many boys and girls play each sport.

Sport	Boys	Girls
Softball	<input type="text"/>	<input type="text"/>
Basketball	<input type="text"/>	<input type="text"/>
Soccer	<input type="text"/>	<input type="text"/>
Other	<input type="text"/>	<input type="text"/>

B. What is the total amount of students?

2. Write the TWO sports that show the same amount that boys favor.

3. a. How many boys are there altogether?

b. How many girls are there altogether?

c. What is the total number of boys and girls?

4. a. Which sport do the girls favor the most?

b. Which sport do the boys favor the most?

5. Which TWO sports are the least favored ones for girls?

6. How many more girls favor soccer than boys?

7. Which sport do both boys and girls favor showing the same amount?

8. What is the difference between boys and girls in basketball?

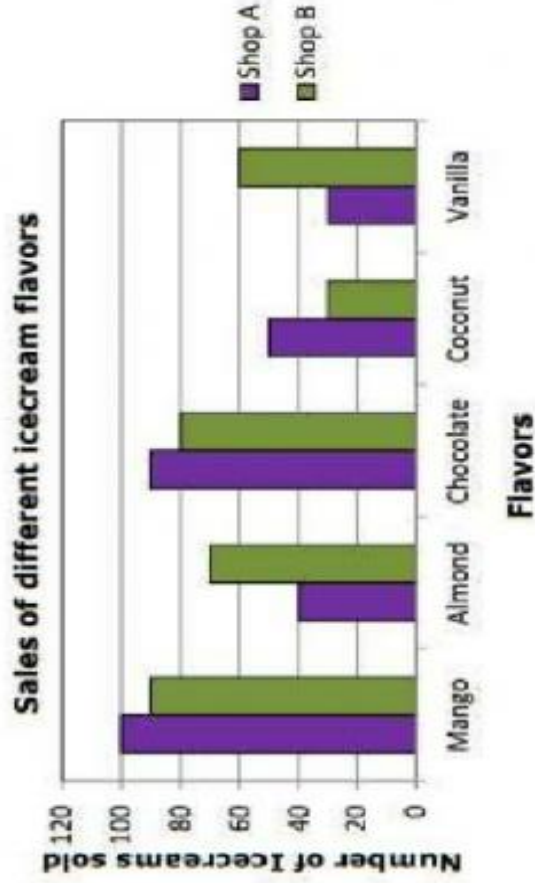
9. What is the title of this double bar graph?

10. What do we call the box with the colours that represent the girls and boys?

Name _____

Date _____

Double Bar Graph Worksheet



According to bar graph, answer the following questions.

	Answers
1	How many Mango ice-cream were sold by Shop A?
2	Which flavor of ice-cream do people like most in shop A?
3	Find the total numbers of Chocolate ice-creams sold by shop A and shop B.
4	Which shop sold 30 coconut ice-creams?
5	Find the total numbers of Coconut ice-creams sold by shop A and shop B?
6	Which flavor of ice-cream do people like the most in shop B? Chocolate or Vanilla?

November Math Pacing Guide 8th Grade

[M.EE.8.SP.4](#) - Construct a graph or table from given categorical data, and compare data categorized in the graph or table.

Learning Goal:

- Level 2-3 – Students will read and represent various types of graphs.
- Level 1 – Students will order objects.

Essential Questions:

- How can this data be displayed in a graph?
- How can this data be displayed in a table?
- What comparisons can be made from the data?
- How would I describe the comparison of the data?

Vocabulary:

- **data** – A collection of facts, such as numbers, words, measurements, observations or even just descriptions of things.
- **graph** – A diagram of values, usually shown as lines.
- **pattern** – Things arranged following a rule or rules.
- **X axis** - The line on a graph that runs horizontally (left-right) through zero.
- **Y axis** - The line on a graph that runs vertically (up-down) through zero.
- **outlier** - A value that "lies outside" (is much smaller or larger than) most of the other values in a set of data.
- **compare** – consider how things are the same.
- **contrast** – consider how things are different.
- **organize** – to arrange things based on a plan



Mini-Map for M.EE.8.SP.4

Subject: Mathematics

Statistics and Probability (SP)

Grade: 8

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.8.SP.4 Construct a graph or table from given categorical data, and compare data categorized in the graph or table.	M.8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Arrange objects in a specific order or by following a specific rule (e.g., arranging three pencils by increasing length). Group like items by attributes and distinguish between like items based on simple characteristics such as shape, size, texture, and numerical pattern.	Recognize the structure of bar graphs, picture graphs, line plots, and tally charts, such as the title and labels for the x- and y-axes. Understand that bars are used to display data on bar graphs. Understand that pictures, symbols, or geometric figures are used to display data on picture graphs. Understand that on a line plot, "x" is used to	Answer questions by lifting information from a bar graph, picture graph, line plot, and tally chart and understand the information represented on the graph (e.g., in the graph representing students' favorite ice cream, how many students like strawberry ice cream? How many students like chocolate ice cream?).	Represent data on bar graphs, picture graphs, line plots, and tally charts. Use bar graphs, picture graphs, line plots, and tally charts to answer questions (e.g., how many, most, least) that require interpretation and integration of information presented on the graph.	Draw inferences or make predictions by interpreting information presented on a bar graph, picture graph, line plot, or tally chart (e.g., on the bar graph representing the number of pizzas required for a certain number of people, predict the number of pizzas needed for 20 people).

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
	represent the data values, and tally marks are used to represent data on a tally chart.			

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

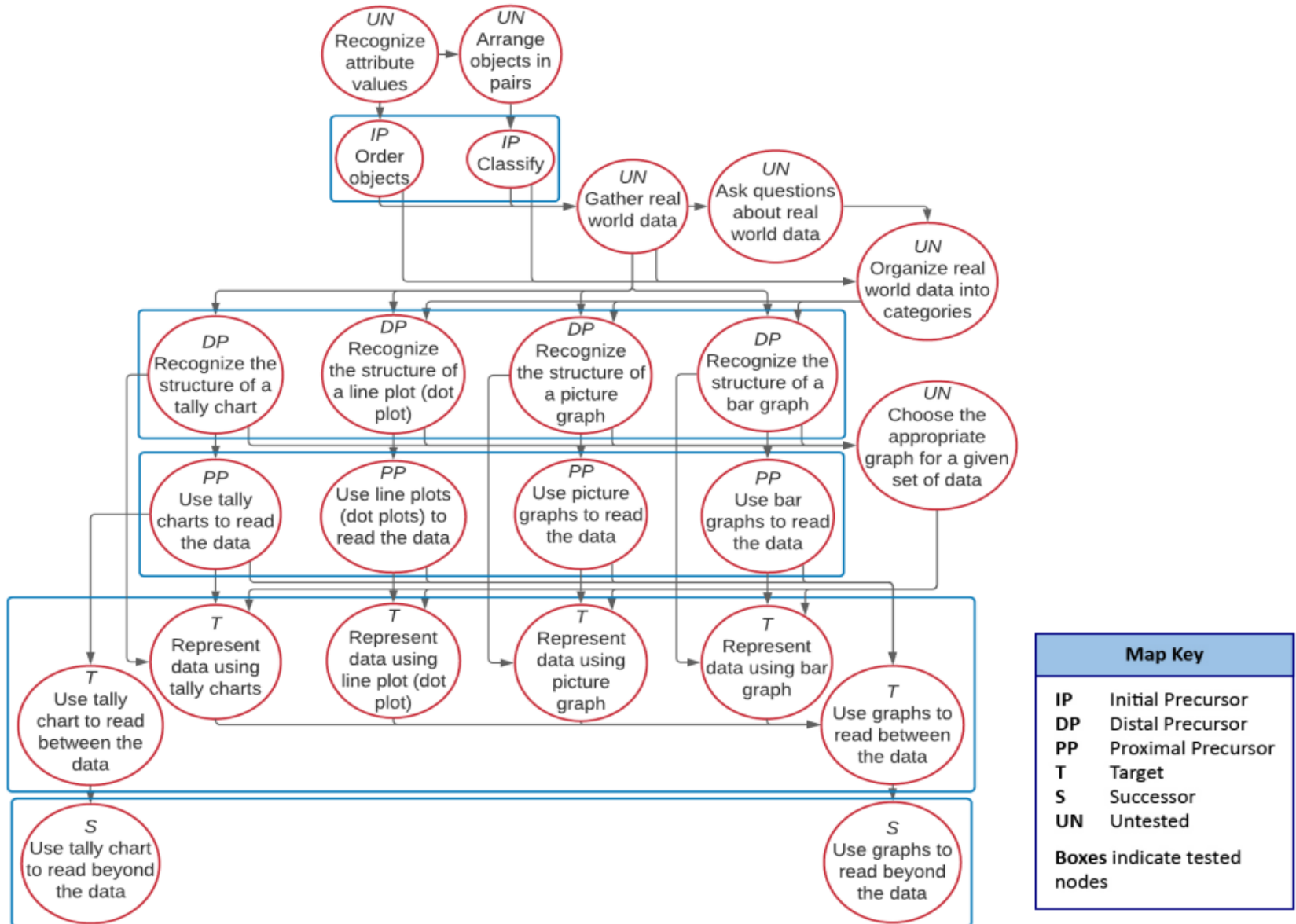
How is the Initial Precursor related to the Target?

In order to represent and use data, students begin by learning to recognize what is the same and different between familiar items such as color, shape, quantity, size, texture, and pattern. Educators should take care to use attribute words (e.g., circle/square, more/less/same, rough/smooth, red, green, red, green) while defining and demonstrating their meaning. While students do not need to say these words, they do need to learn the meanings. Students will also begin to group two or more items in the same set based on an attribute. As the students group two or more items, the educator will demonstrate the representation in a bar graph or line plot and encourage students to actively participate in its creation.

How is the Distal Precursor related to the Target?

Students actively participate in the creation of bar graphs, picture graphs, line plots, and tally charts by placing representations, x's, or dots for each response to the research question.

M.EE.8.SP.4 Construct a graph or table from given categorical data, and compare data categorized in the graph or table.



Rubric of Student Success

[M.EE.8.SP.4](#) - Construct a graph or table from given categorical data, and compare data categorized in the graph or table.

Level 3 Students will... Successor and Target Students will...	Level 2 Students will... Proximal Precursor and Distal Precursor Students will...	Level 1 Students will... Initial Precursor Students will...
<p>Level 3 Unique does not have lessons on this standard.</p>	<p>Level 2 Unique does not have lessons on this standard.</p>	<p>Level 1 Unique does not have lessons on this standard.</p>
<p>Successor</p> <ul style="list-style-type: none"> • Use graphs to read beyond the data • Use tally chart to read beyond the data <p>Target</p> <ul style="list-style-type: none"> • Use tally chart to read between the data • Represent data using tally charts • Represent data using line plot (dot plot) • Represent data using picture graph • Represent data using bar graph 	<p>Proximal Precursor</p> <ul style="list-style-type: none"> • Use tally charts to read the data • Use line plots (dot plots) to read the data • Use picture graphs to read the data • Use bar graphs to read the data <p>Distal Precursor</p> <ul style="list-style-type: none"> • Recognize the structure of a tally chart • Recognize the structure of a line plot (dot plot) • Recognize the structure of a picture graph 	<p>Initial Precursor</p> <ul style="list-style-type: none"> • Order objects • classify

- Use graphs to read between the data

- Recognize the structure of a bar graph

Jeanette Nowak @ msnowakhomeroom.com

Instructional Ideas

[M.EE.8.SP.4](#) - Construct a graph or table from given categorical data, and compare data categorized in the graph or table.

Information can be collected, displayed, summarized, and analyzed.

The big idea is that data can be displayed in a graph or table to be compared. Data can be used to answer questions.

- Introduce by asking the essential questions.
- Decide what data will be represented
- Construct a graph or table from given categorical data
- Compare data categorized in the graph or table
- Use manipulatives as needed.
- Students may use a calculator if needed.
- Included worksheets are examples of what to look for when finding additional materials that best fits your student's needs.

Additional Instructional Ideas

- Go to website for additional instructional resources, materials, and activities for lessons:

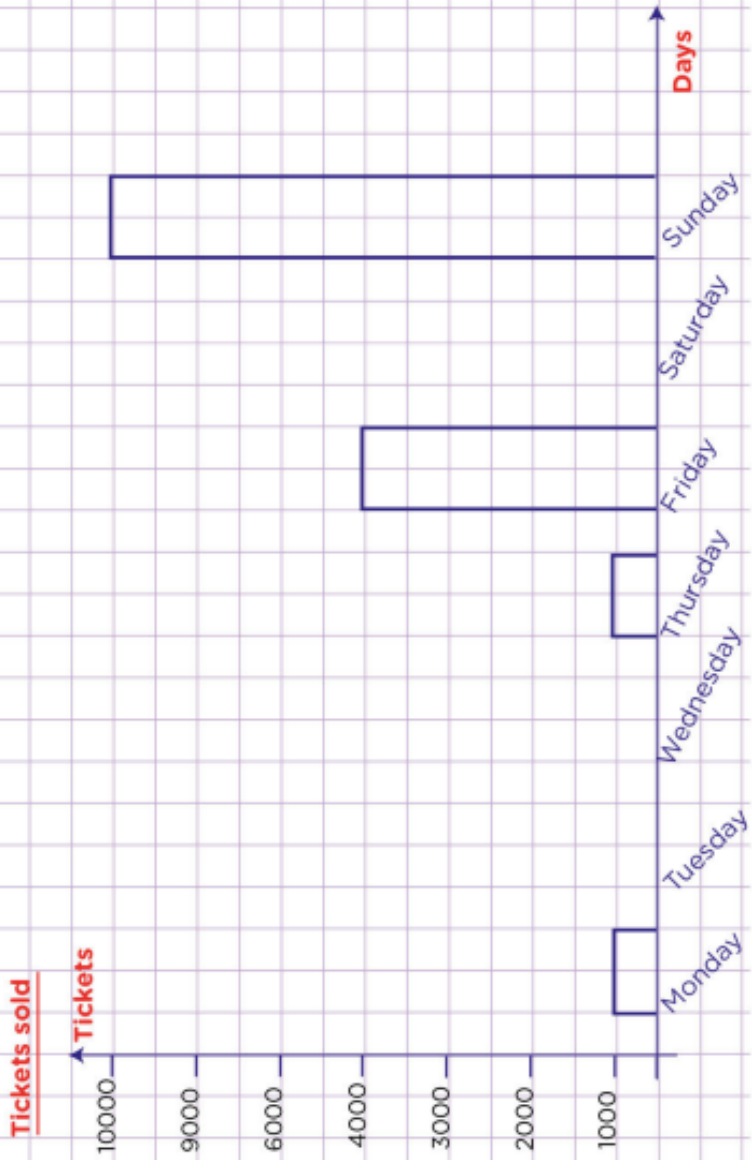
Name: Class:

Create bar graphs

Paul sells tickets in front of a football stadium. He kept track of the number of tickets he sold last week.

Use the data in the table to complete the bar graph below.

Tickets sold	
Day	Number of tickets
Monday	1,000
Tuesday	2,000
Wednesday	2,000
Thursday	1,000
Friday	4,000
Saturday	9,000
Sunday	10,000



Dot Plot Challenge

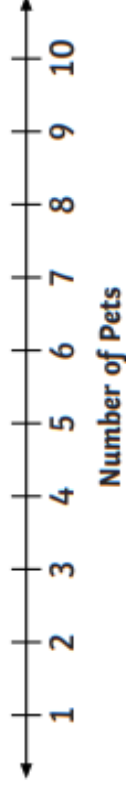
Instructions: Create a dot plot for each real-world situation.

- For National Pet Month, students at Ingrid's school were allowed to bring their pets to class. Teachers took a tally of the number of pets that were brought to school each day.

Use the data to complete the dot plot below:

Number of Pets Counted per Day

4	7	8	10	5
4	3	2	8	10
10	4	10	2	7
8	6	3	5	1

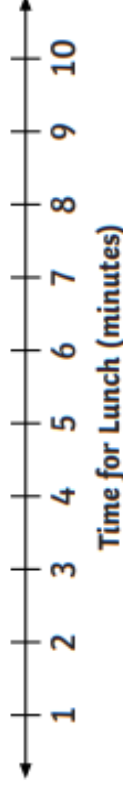


- Kids at summer camp took a survey which asked, "How long does it take you to eat lunch?" The campers responded with a variety of different answers.

Use the data to complete the dot plot below:

Time for Lunch (minutes)

1	1	3	4	2
5	9	10	10	9
7	7	8	3	7
5	9	6	7	3



Name: Class:

Create frequency tables

1. While offloading a truck, Charles counted the number of broken vases in each box. Use the data to complete the frequency chart below.

Broken vases per box:

50, 35, 30, 30, 39, 45, 42, 59, 60, 43, 31, 56, 52, 40, 34, 48, 55, 60, 35, 50, 60, 31.

Fill in the missing number

Broken vases per box	
No of broken vases	number of boxes
30 - 39	
40 - 49	5
50 - 59	
60 - 69	3



2. A journalism student keeps a record of the number of pages in several major news papers. Use the data to complete the frequency chart below

Pages of news papers, 100, 120, 70, 71, 73, 90, 92, 80, 85, 85, 100, 90, 159, 159, 200, 200, 73, 70, 92, 88, 99, 111, 113.

Fill in the missing numbers

pages per news paper	
No of pages	No of news papers
70 - 80	6
81 - 90	
91 - 100	
111 - 200	7



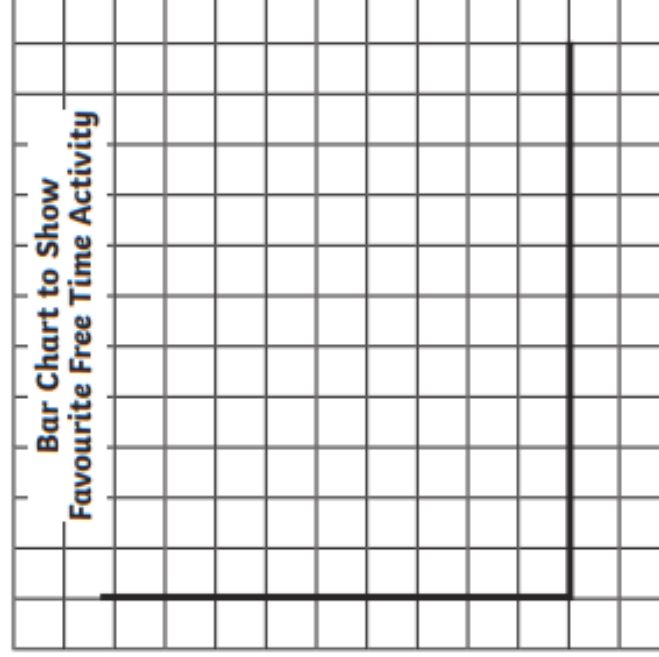
Collecting and Presenting Data

30 children were asked to choose what their favourite activity for a free afternoon at home would be. Here are their answers.



1. Fill in the tally chart and then calculate the total of each response.
2. Draw a bar chart to present your data.

Activity	Tally	Total
Swimming		
Trip to the park		
Play computer games		
Baking		
Reading		

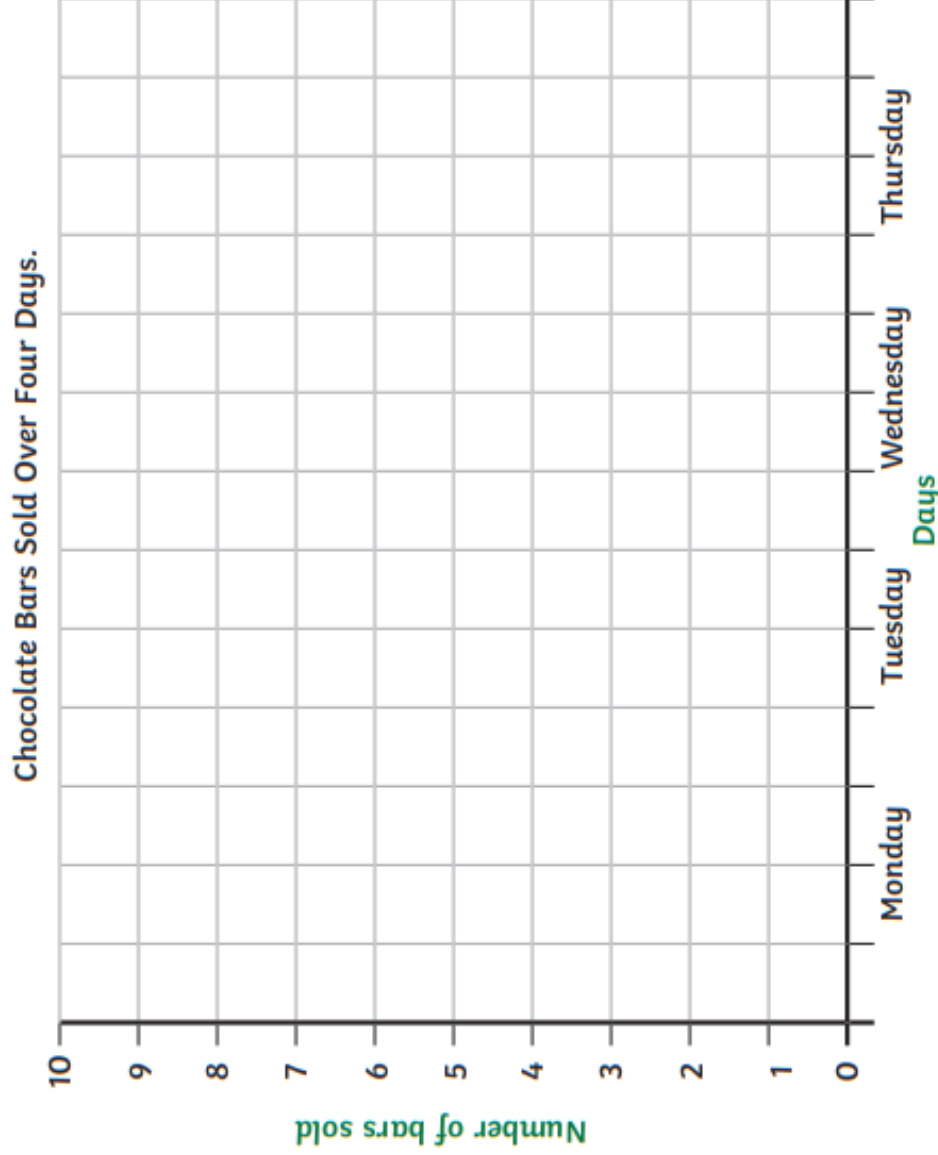


Chocolate Bars Bar Chart

1. Here is a table of the chocolate bars sold to customers in a shop over 4 days:

	Monday	Tuesday	Wednesday	Thursday
Mars	1	1	3	4
Twix	0	2	2	3
Galaxy	3	3	0	0
Milky Way	2	2	2	2
Total				

2. Now draw a bar chart to show these results.

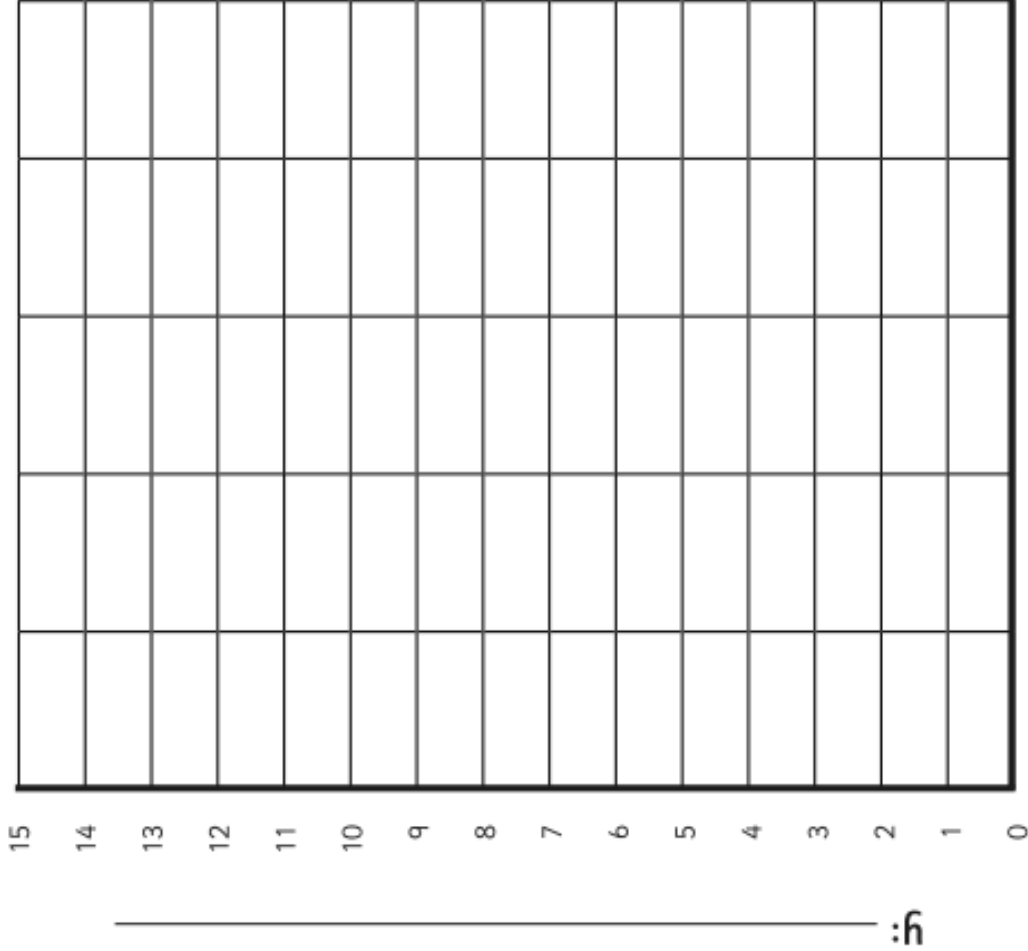


Making Pictograms

Date: _____ Name: _____

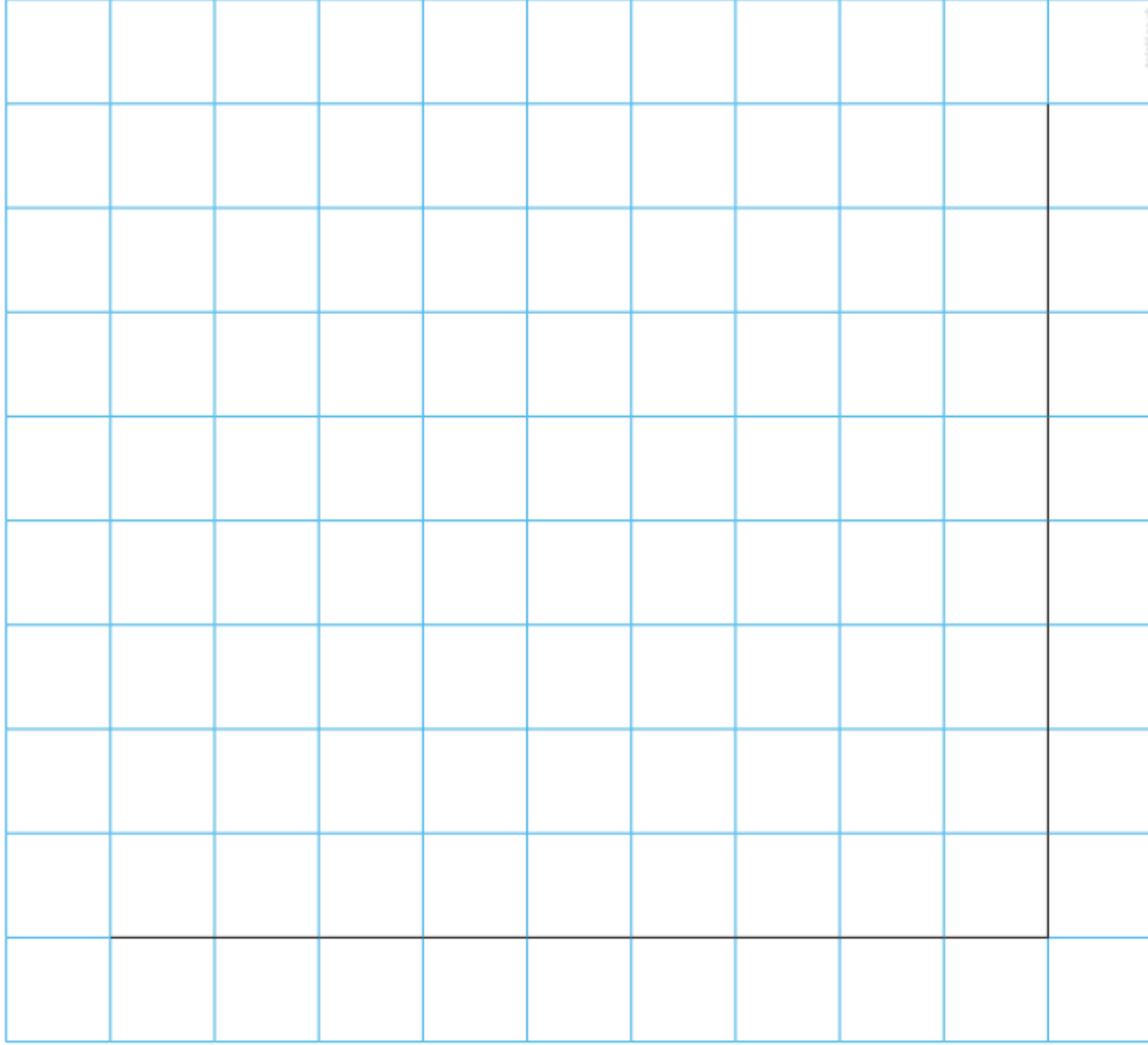
Pictogram Title: _____

Key: =



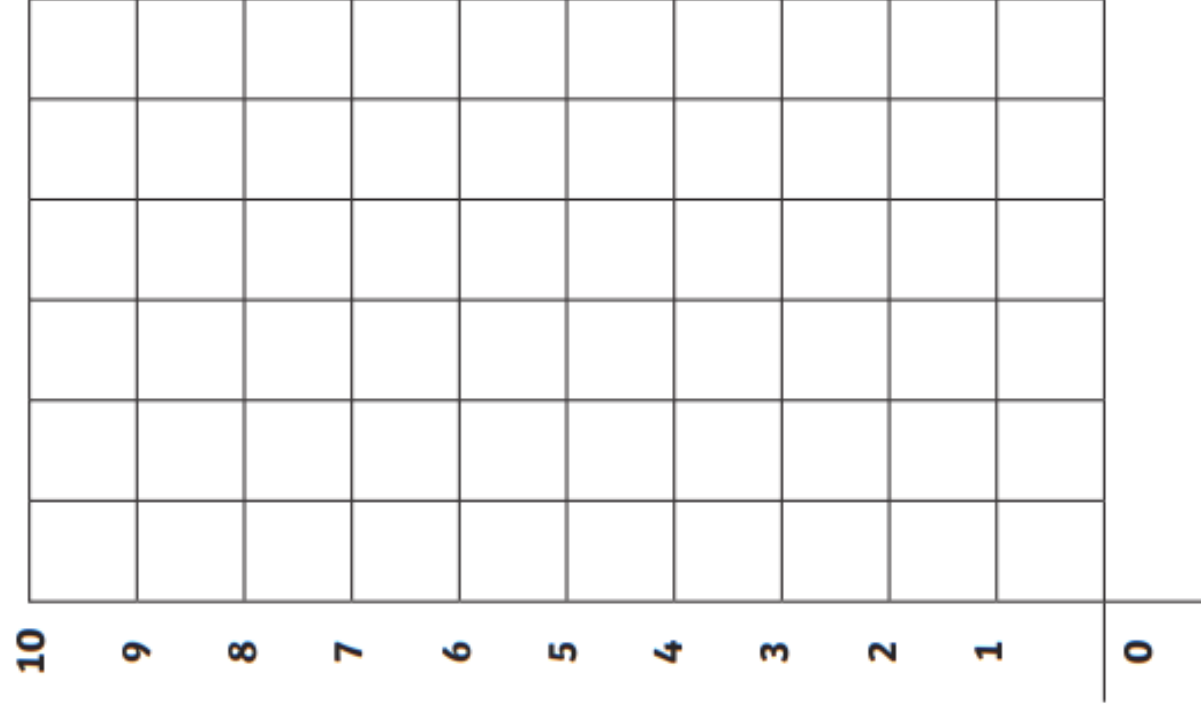
X: _____

A bar graph to show



Tally and Graph Worksheet

tally									
total									



Questions

1. Which one is the least?

2. Which one is greatest?

3. Are any of them equal?

4. What is the difference between the greatest and least?

Credits

Websites Used for Worksheets and Lesson Ideas:

- <https://www.education.com>
- <https://www.twinkl.com>
- <https://www.superteacherworksheets.com>
- <https://www.easyteacherworksheets.com>
- <https://www.mathworksheets4kids.com>
- <https://www.math-salamanders.com>
- <https://www.math-drills.com>
- <https://www.mathsisfun.com/definitions/index.html>

Resources Used to Help Create the Pacing Guide:

DLM Essential Elements Unpacking

- <https://www.dlmpd.com/dlm-essential-elements-unpacking>

Instructional Resources for YE Model States

- <https://dynamiclearningmaps.org/instructional-resources-ye/mathematics>

Dynamic Learning Maps

- <https://dynamiclearningmaps.org>

Unique Learning System

- <https://www.n2y.com/unique-learning-system>

Jeanette Nowak @ msnowakhomeroom.com