Growing Mathletes Facilitator Training Day 2

In-Person

Summer 2023

DAY 2

Day 2 Agenda

1. **LAUNCH**
2. **Lesson Modeling: Monday Week 1**
    a. Baseball Field Geometry
    b. Base Running
3. **Lesson Modeling: Tuesday Week 1**
    a. Broad Jump
    b. Wingspan

LUNCH

4. **Lesson Modeling: Wednesday Week 1**
    a. Intro to Batting Average
    b. Modeling Batting Average
5. **Workshop Thursday Week 1 Lessons**
    a. Nutrition
    b. Stealing Bases

Part 2.1: LAUNCH

Check In

“If you really knew me, you would know…”

What is something about you that relates to the theme of **learning or growth mindset?**

Overview of 2-Week Calendar

	Monday	Tuesday	Wednesday	Thursday
Today's Focus Week 1	• Baseball Field Geometry • Base Running	• Broad Jump • Wingspan	• Intro to Batting Average • Modeling Batting Average	• Nutrition • Stealing Bases
Week 2	• Negro Leagues Road Trip	• Strike Zone • Fielding Percentage	• Throwing Distance • Launch Angle	• Design a Baseball Stadium

Part 2.2a:
Lesson - Baseball Field Geometry

Baseball Field Geometry

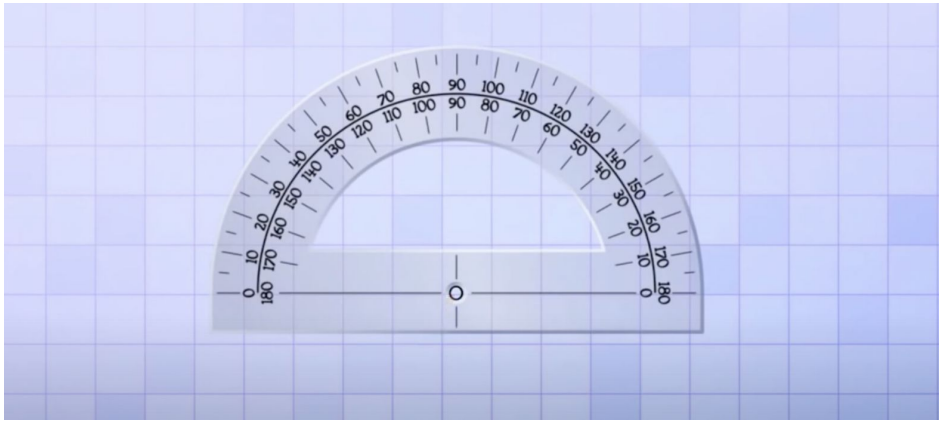
Measuring with Protractors

Key Concepts

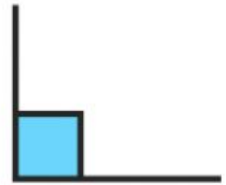
Facilitators Only

How to Use a Protractor to Measure Angles

Math Antics: Measuring Angles (0:00 - 2:31) Video for Kids
Angles: Measuring Angles with a Protractor (0:00-2:49) Video for Facilitators



ACUTE ANGLE
Less than 90^0



RIGHT ANGLE
Exact 90^0

OBTUSE ANGLE
Greater than 90^0
and less than 180^0

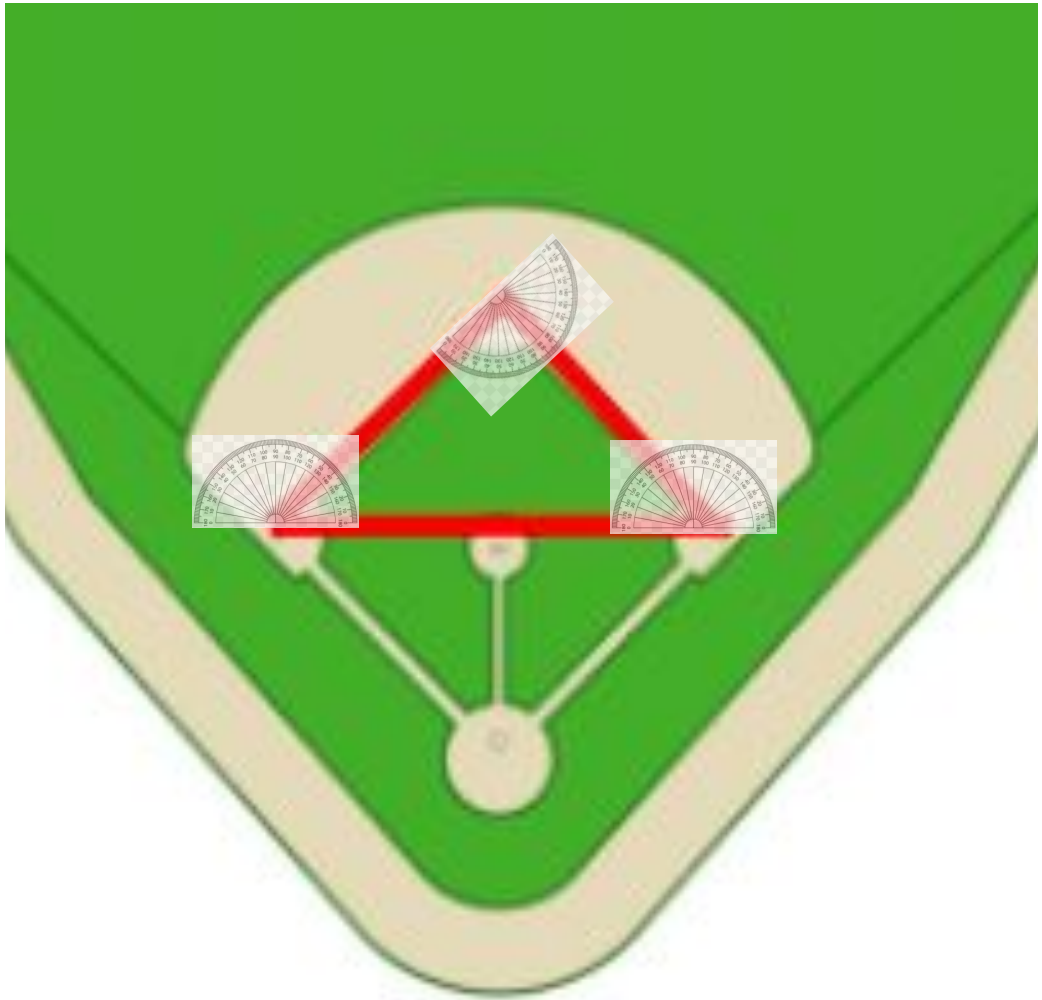
Activity 1

https://www.youtube.com/watch?v=Fr46LtLG7iw&ab_channel=ChelseaWirschem

How to Position a Protractor to Measure Angles

Facilitators Only

The base of the protractor should be aligned with one side of the triangle and the circle in the middle of the base of the protractor should be placed on a corner (vertex) of the triangle.



Baseball Field Geometry Discussion

- What do you think are the key ideas for this lesson (math, baseball, growth mindset)? How do different parts of this lesson support youth understanding of the key ideas?
- What do you expect to be exciting for your youth? What might be challenging or less engaging?
- Do you have any initial thoughts about how you might adapt this lesson for your own club?

Part 2.2b:
Lesson - Base Running

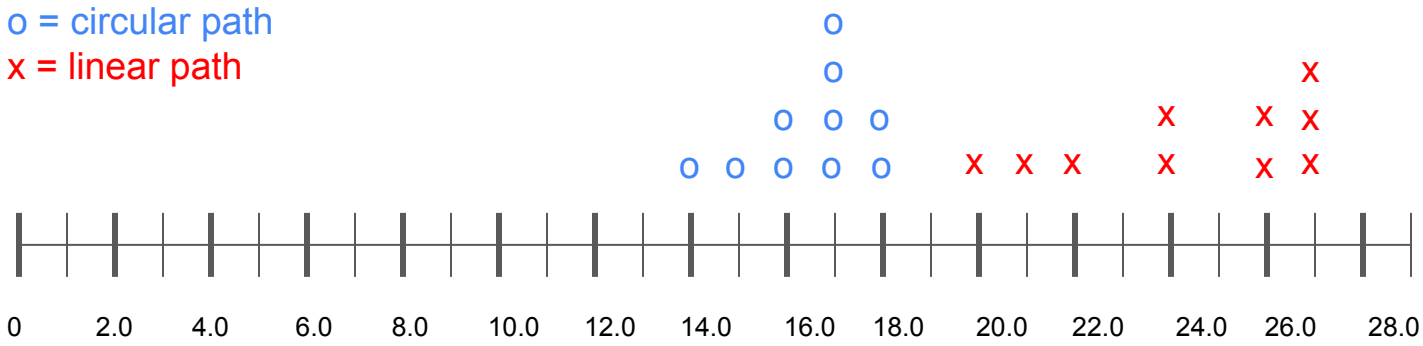
Base Running

Line Plots

Key Concepts

Sample Completed Line Plot of Running Times

Facilitators Only



Base Running Discussion

- What do you think are the key ideas for this lesson (math, baseball, growth mindset)? How do different parts of this lesson support youth understanding of the key ideas?
- What do you expect to be exciting for your youth? What might be challenging or less engaging?
- Do you have any initial thoughts about how you might adapt this lesson for your own club?

BREAK

REMINDER: Order lunch, set up for Broad Jump & Wingspan

Part 2.3a:
Lesson - Broad Jump

Broad Jump

Line Plots

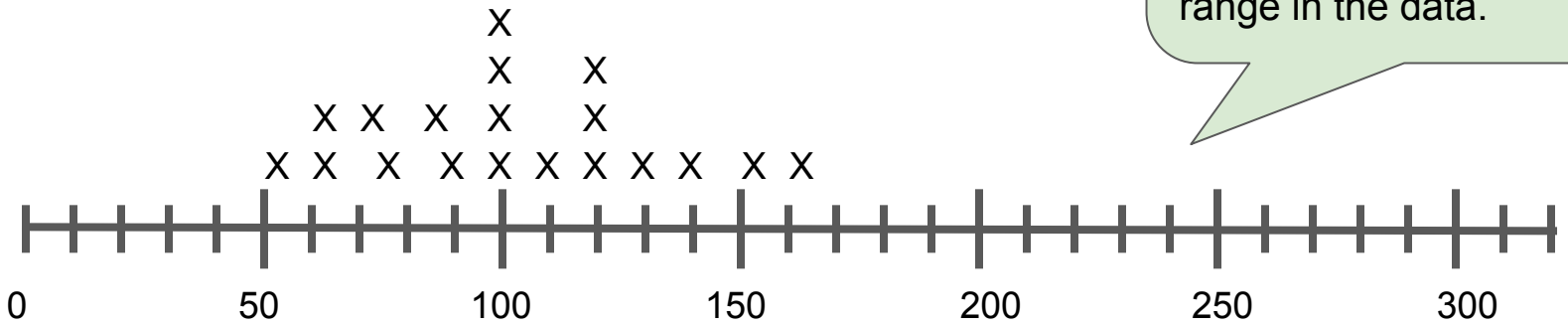
Key Concepts

Key Math Concepts: Line Plots

Facilitators Only

What is our lowest data point?
What is our highest data point?
If we start our line plot at 0 and go up to ____, can we show all of our data points?

The horizontal line is divided into equal increments and labelled.
The values need to reflect the range in the data.



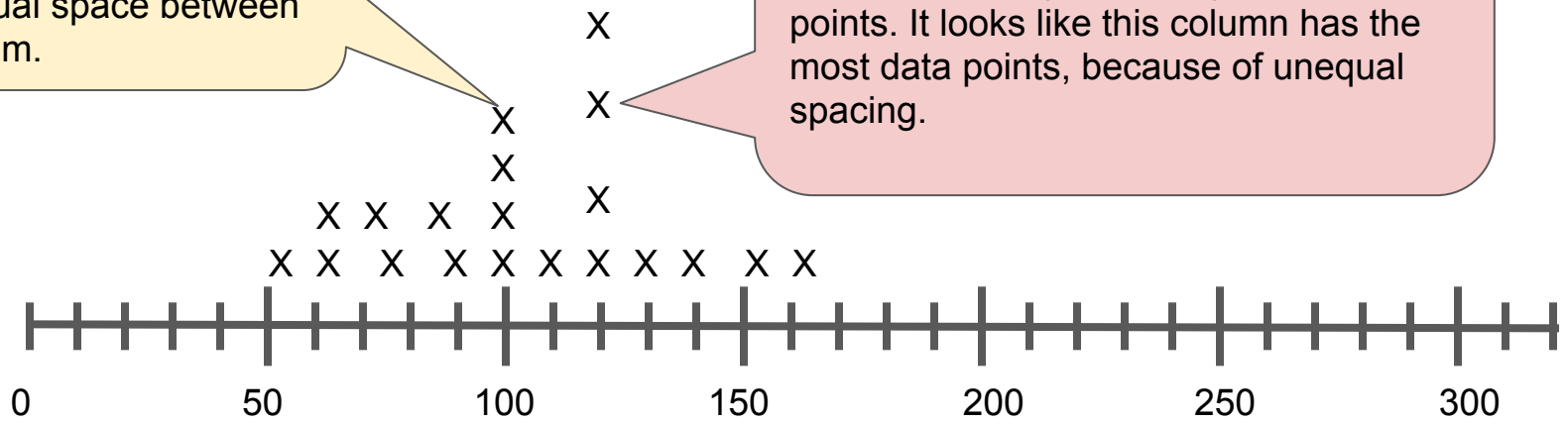
Broad Jump Distance in centimeters

Key Math Concepts: Line Plots

Facilitators Only

Data that have the SAME VALUE are stacked vertically, with equal space between them.

A COMMON ERROR in line plots is unequal spacing / stacking of data points. It looks like this column has the most data points, because of unequal spacing.



Broad Jump Distance in centimeters

Key Math Concepts: Line Plots

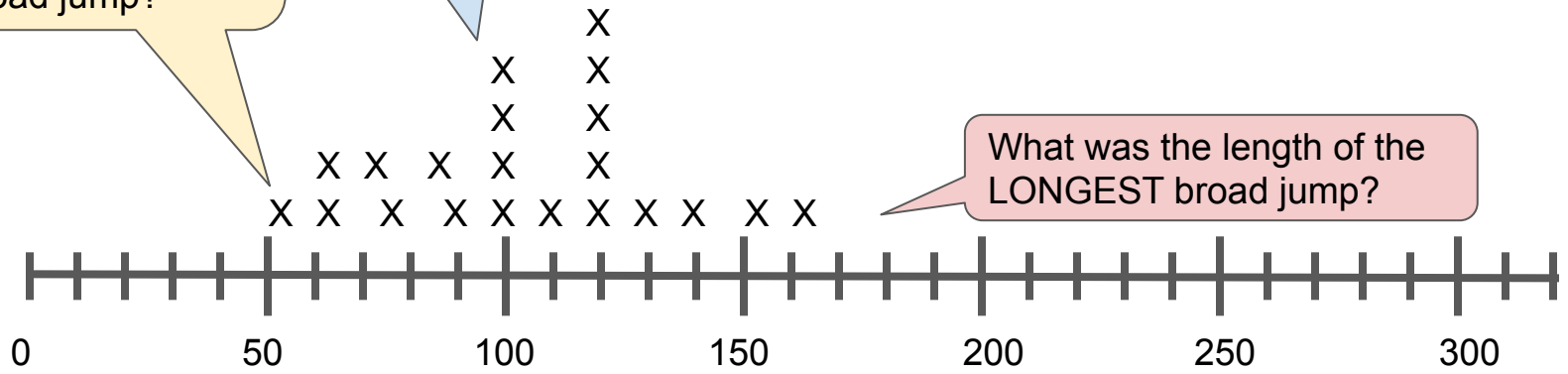
Facilitators Only

What was the length of the SHORTEST broad jump?

How many people jumped 100 centimeters?

What was the MOST COMMON broad jump distance? How many people jumped that far?

What was the length of the LONGEST broad jump?



Broad Jump Distance in centimeters

What was the RANGE of our broad jump distances?

Is there a CLUSTER in our data?

Broad Jump Discussion

- What do you think are the key ideas for this lesson (math, baseball, growth mindset)? How do different parts of this lesson support youth understanding of the key ideas?
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- Do you have any initial thoughts about how you might adapt this lesson for your own club?

Part 2.3b:
Lesson - Wingspan

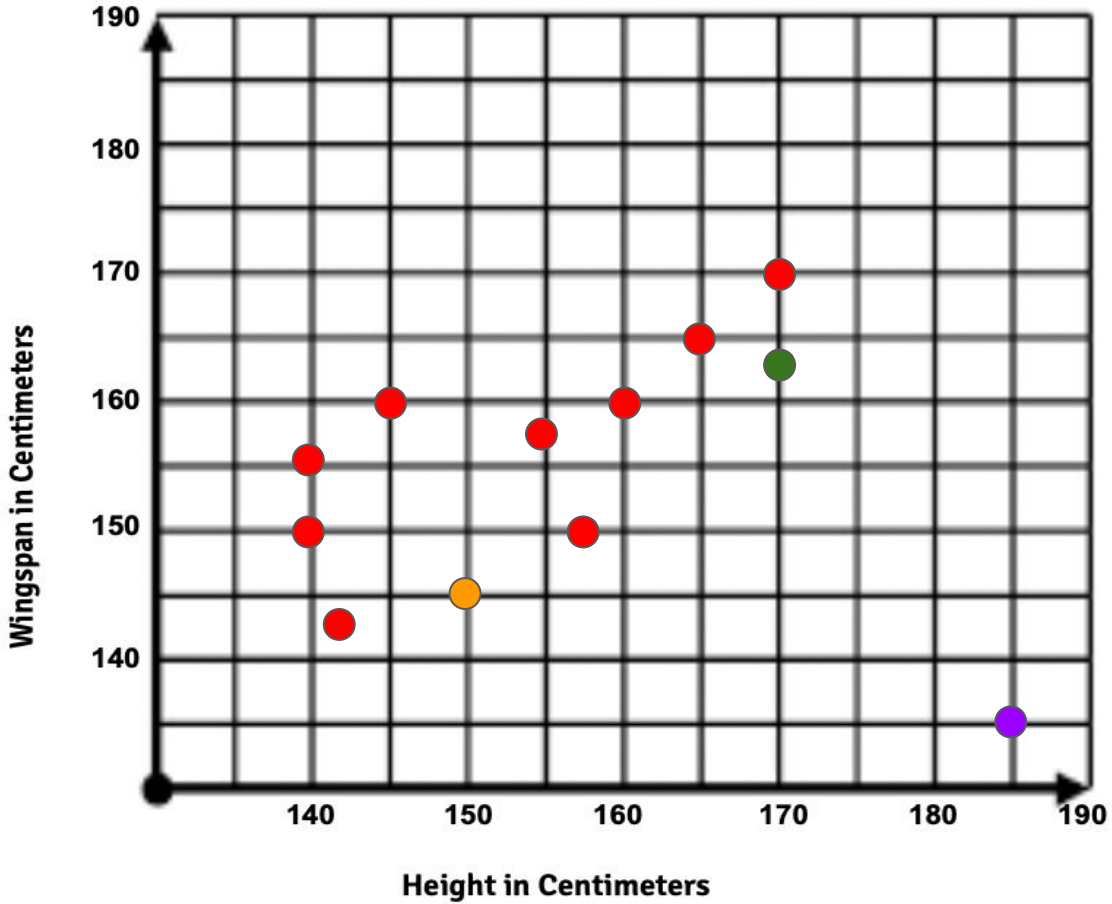
Wingspan and Height

Scatterplots

Key Concepts

Key Math Concepts: Scatter plots

Facilitators Only



How tall is the person represented by the ORANGE dot?How long is their wingspan?

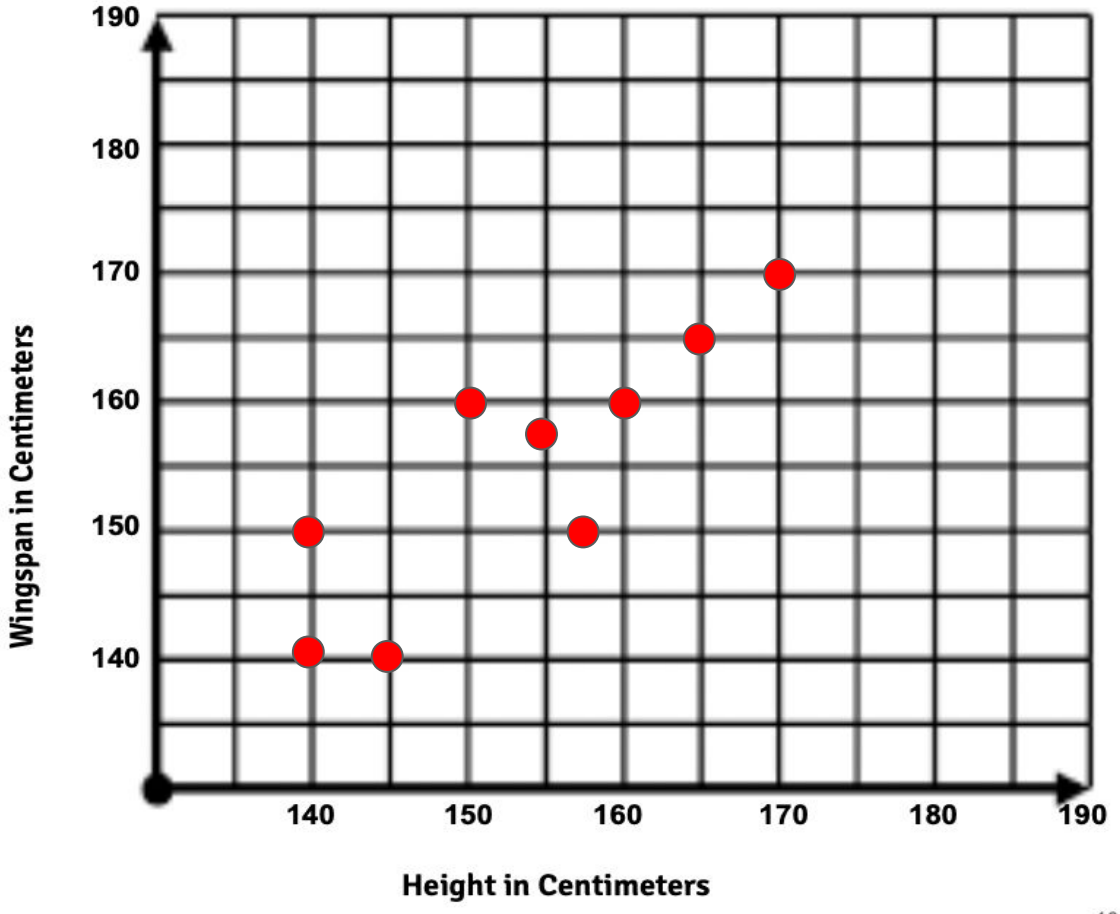
How tall is the person represented by the GREEN dot? Can you estimate the length of their wingspan?

What if someone was 162 cm tall and had a wingspan of 155 cm. Where would their dot go?

Look at the PURPLE dot on the scatter plot. Does that dot make sense?

Key Math Concepts: Scatter plots

Facilitators Only



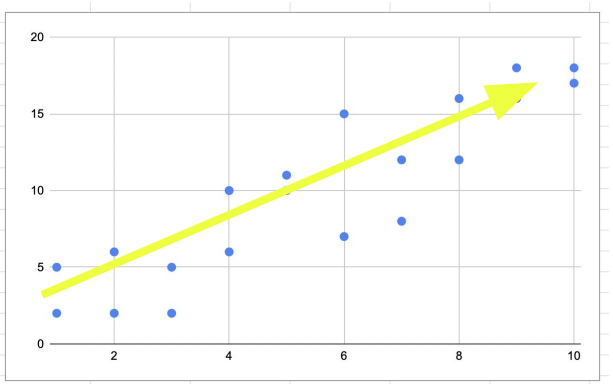
Are any of the people shown on this scatter plot the SAME HEIGHT? How do you know?

Do any of the people shown on this scatter plot have the SAME WINGSPAN? How do you know?

What patterns do you notice on the scatter plot?

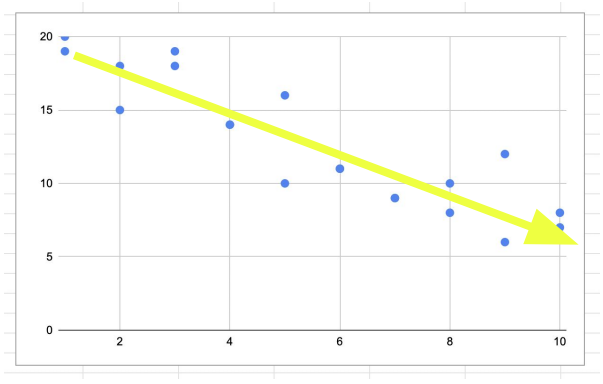
Key Math Concepts: Scatter Plots

Facilitators Only



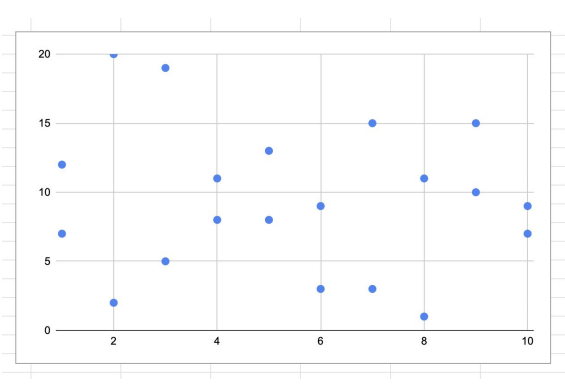
As 1 value increases, the other value also increases.

What are other variables (pair of characteristics) that might show a positive correlation?



As 1 value increases, the other value decreases.

What about variables that might show a negative correlation?



No clear relationship among the two values.

Can you think of pairs of characteristics that are not usually related?

Wingspan Discussion

- What do you think are the key ideas for this lesson (math, baseball, growth mindset)? How do different parts of this lesson support youth understanding of the key ideas?
- What do you expect to be exciting for your youth? What might be challenging or less engaging?
- Do you have any initial thoughts about how you might adapt this lesson for your own club?

LUNCH

REMINDER: Set up for Intro to BA and Modeling BA

Part 2.4a:
Lesson - Introduction to Batting Average

Intro to Batting Average

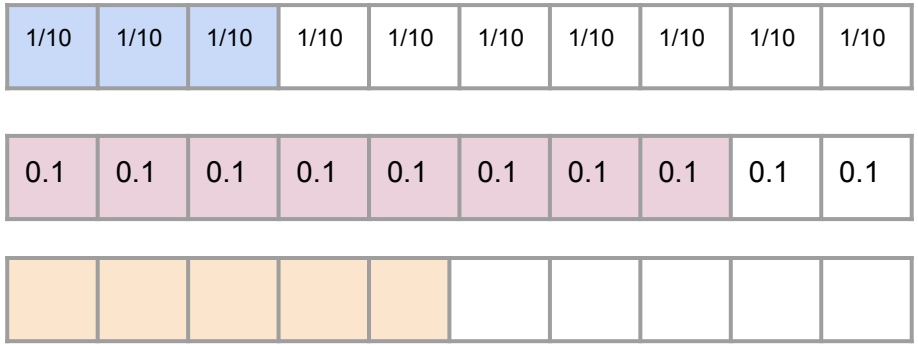
Factions, Decimals, Percents

Key Concepts

Math Strategies for Fractions/Decimals

Facilitators Only

Bar Models divided into 10 equal parts to show 10ths in fraction and decimal form.



5 out of 10 equal parts, or 5/10 of the whole. 5/10 is one-half.

How many equal parts are there? Since there are 10 equal parts, each part is 1/10 or 0.1.

You can use the bar model to show rolling the dice 10 times.
Each square represents 1 roll. Record the outcome of each roll - hit or out.

H	O	O	H	H	O	O	O	H	O
H	H	H	H	O	O	O	O	O	O

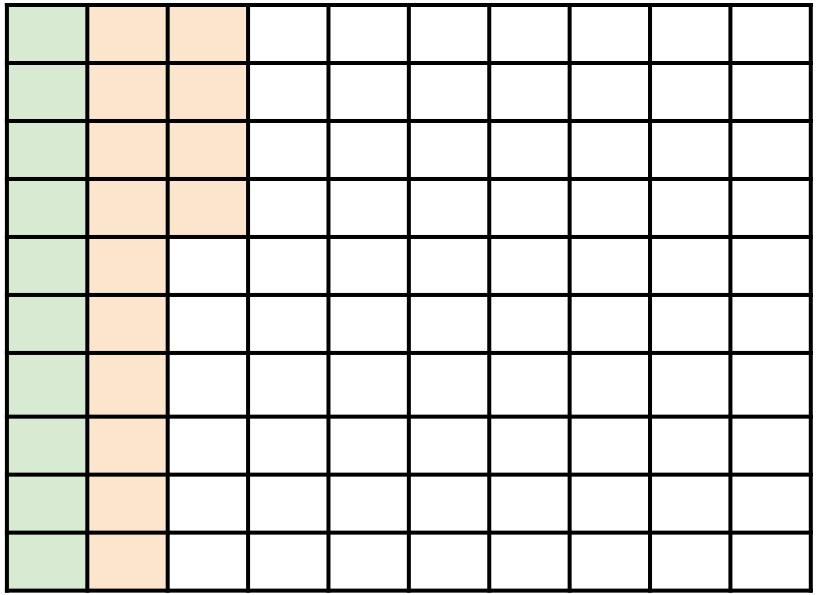
What fraction of your 10 rolls were hits? Place all your hits together to see that 4 of the 10 rolls, or 4/10, were hits!

Math Strategies for Fractions/Decimals

Facilitators Only

This 10 by 10 grid has 100 equal parts. We use this grid to show fractions, decimals and percents.

$$\frac{24}{100} = 0.24 = 24\%$$



Each row and each column has 10 squares. 10 out of 100, or 10/100.

Since there are 10 rows, each row is 1/10 or 0.1. Since there are 10 columns, each column is 1/10 or 0.1.

Since there are 100 squares, each square represents 1 out of 100, or 1/100 or 1% of the grid.

Since there are 10 rows, each row is 10%

Since there are 10 columns, each column is 10%

Intro to Batting Average Discussion

- What do you think are the key ideas for this lesson (math, baseball, growth mindset)? How do different parts of this lesson support youth understanding of the key ideas?
- What do you expect to be exciting for your youth? What might be challenging or less engaging?
- Do you have any initial thoughts about how you might adapt this lesson for your own club?

Part 2.4b: Lesson - Modeling Batting Average

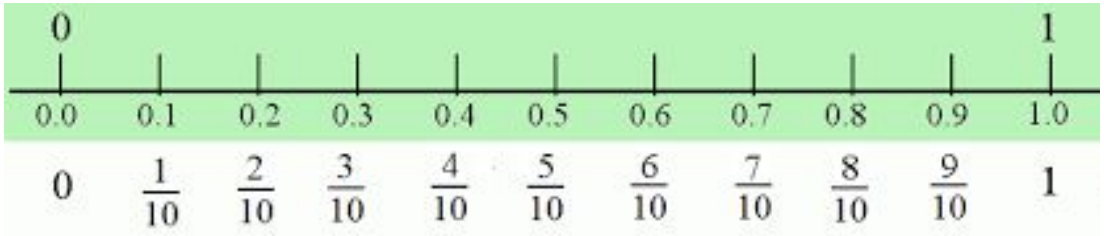
Modeling Batting Average

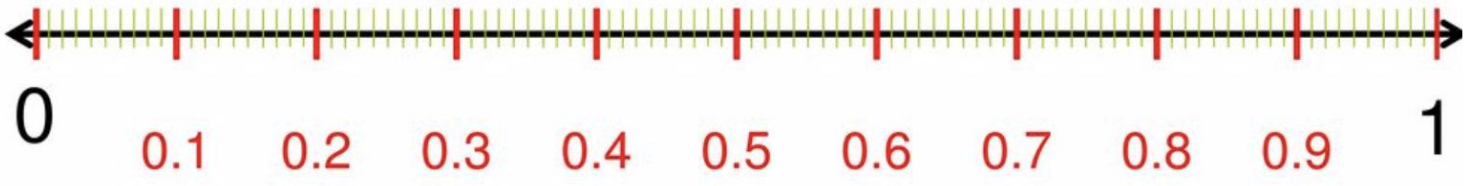
Line Plots

Key Concepts

Facilitators Only

Number Lines as Tools to Represent Fractions and Decimals





Facilitators Only

Creating Line Plots to Represent Outcomes …..

Start with a Blank Number Line

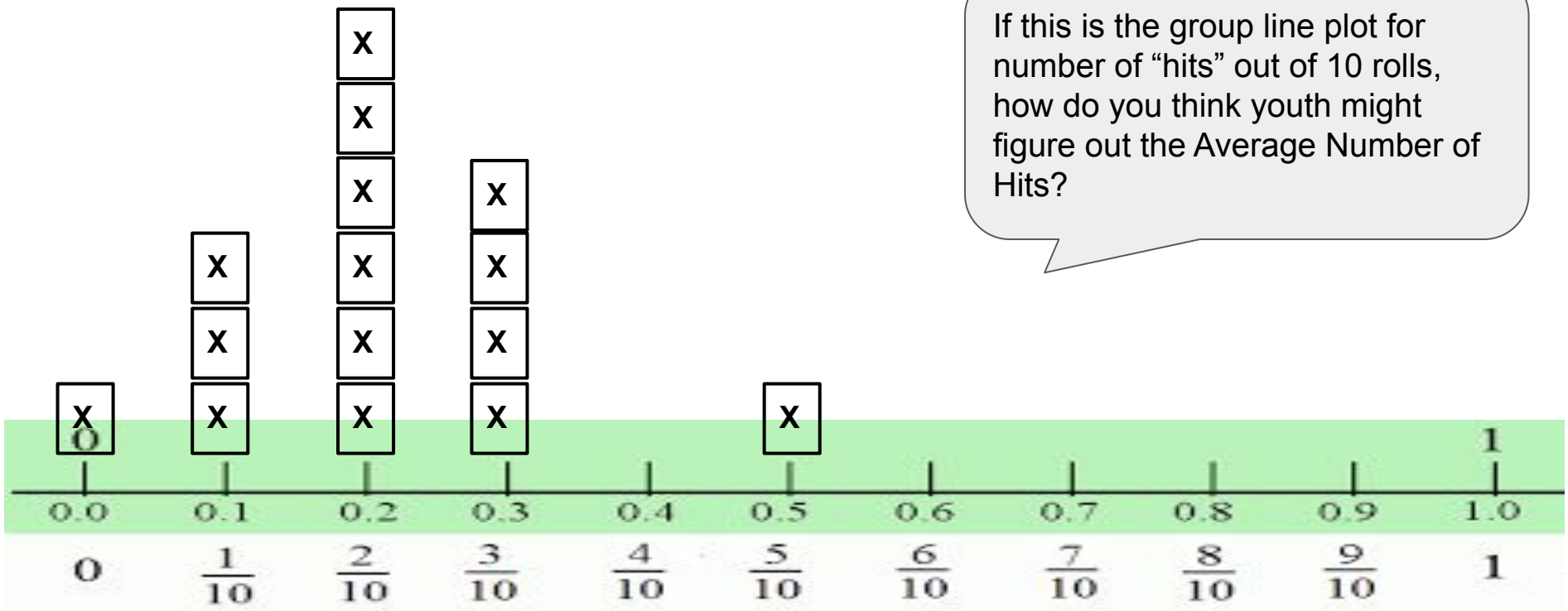
Ask youth to determine the labels.

What is the lowest value?
What is the highest value?

How do we label each tick mark on the number line?

Calculating the AVERAGE Number of Hits

Facilitators Only



Modeling Batting Average Discussion

- What do you think are the key ideas for this lesson (math, baseball, growth mindset)? How do different parts of this lesson support youth understanding of the key ideas?
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- Do you have any initial thoughts about how you might adapt this lesson for your own club?

BREAK

Part 2.5: Workshop Lessons for Thursday of Week 1

Selecting Lessons

- In Pairs, Select 1 Lesson to Plan and Present
  - Option A: Nutrition
    - Facilitator Guide Here
    - Youth Slides Here
  - Option B: Stealing Bases
    - Facilitator Guide Here
    - Youth Slides Here
- Review the Lesson Materials and consider adaptations for youth at your site. Consider engagement, active participation, and ways to support math understanding.
- You will lead us in an abbreviated version of the lesson tomorrow morning. You will have approximately 40 minutes to lead your lesson.


Time for
planning!

Closing

Preview of next training days:

- Day 3 (Thursday, 10 am - 4 pm):
  a. Present your Week 1 workshopped lessons
  b. Review lessons for Week 2
  c. Planning / Workshop Time
- Day 4 (Friday, 10 am - 1 pm):
  a. Present your Week 2 workshopped lessons
  b. Review Final Project
  c. End of training logistics and reflection

To-dos before tomorrow (1-2 hrs of paid time!):

- Finish planning your lesson presentation (Nutrition or Stealing Bases)
- Review Week 1 lessons and make implementation notes / questions

END of Day 2!