

Name: _____

Energy in Baseball

GRADES 3-5

Trial 1 - Sitting/Kneeling Position

Distance: _____

| | Throw 1 | Throw 2 | Throw 3 | Throw 4 | Throw 5 |
|-----------|---------|---------|---------|---------|---------|
| Partner 1 | | | | | |
| Partner 2 | | | | | |

Trial 1 - Speed Calculations (Distance/Time)

| | Throw 1 Speed | Throw 2 Speed | Throw 3 Speed | Throw 4 Speed | Throw 5 Speed |
|-----------|---------------|---------------|---------------|---------------|---------------|
| Partner 1 | | | | | |
| Partner 2 | | | | | |

Trial 2 - Standing Position: Focus on using your lower and upper body to throw.

| | Throw 1 | Throw 2 | Throw 3 | Throw 4 | Throw 5 |
|-----------|---------|---------|---------|---------|---------|
| Partner 1 | | | | | |
| Partner 2 | | | | | |

Trial 2 - Speed Calculations (Distance/Time)

| | Throw 1 Speed | Throw 2 Speed | Throw 3 Speed | Throw 4 Speed | Throw 5 Speed |
|-----------|---------------|---------------|---------------|---------------|---------------|
| Partner 1 | | | | | |
| Partner 2 | | | | | |

Which trial generated the most energy? Please explain using scientific reasoning from each trial.

Name: _____

Composition of a Baseball

GRADES 3-5

Describe how each ball will function as a baseball. Think about the distance and bounce-ability of each ball type.

Tennis ball:

Golf ball:

Softball:

Ping Pong ball:

Using the data collected, identify properties and materials that support a baseball's function.

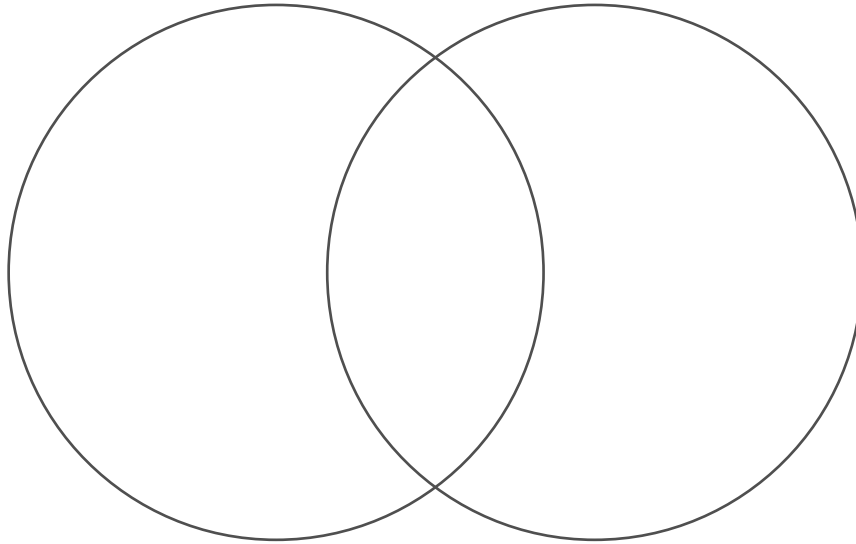
| | Size/Shape | Materials | Weight | Texture | Other Features |
|----------------|------------|-----------|--------|---------|----------------|
| Tennis ball | | | | | |
| Golf ball | | | | | |
| Baseball | | | | | |
| Softball | | | | | |
| Ping Pong ball | | | | | |

Name: _____

Composition of a Baseball

GRADES 3-5

Using the data collected, pick one other ball and fill in the Venn diagram comparing and contrasting, it to a baseball's properties.



Using the data collected, what properties (traits) and materials support a baseball's function (purpose)?

| | |
|----------------------------------------------|-----------------------------------------------------------------------------------|
| <p>The function of a baseball is:</p> | <p>One property that I observe that supports a baseball's function is:</p> |
|----------------------------------------------|-----------------------------------------------------------------------------------|

Extend only:

Hit each ball five (5) times: tennis, golf, baseball, softball, and ping pong. How does each ball function differently when hit? Use descriptive words and details to compare and contrast.

Name: _____

The Field of Play

GRADES 3-5

General Similarities and Differences

| Field 1 | Field 2 | Field 3 | Scaled Field (.5 = 30 feet) |
|---------|---------|---------|----------------------------------------------------------------------------------------|
| | | | Distance from home plate down the foul line: • Measured ____ *30 = Actual ____ |
| | | | Distance from home plate to the pitcher's mound • Measured ____ *30= Actual ____ |
| | | | Distance from home plate to first base • Measured ____ *30= Actual ____ |

1. What are similarities and differences between baseball fields of the past and today's baseball field?
2. Based on your list of similarities and differences, what field would you prefer to play on and why?
3. How has technology changed the field of play? Has it helped or hurt the game? Explain.
4. How would a change in field size impact the game?

Name: _____

The Art of Pitching

GRADES 3-5

| | Fastest (1) to slowest (4) | Observations |
|---------------------------|-------------------------------|--------------|
| The Wind-up | | |
| The Stretch | | |
| Student idea: _____ | | |
| Student idea: _____ | | |

| | Trial 1 | | Trial 2 | | Trial 3 | |
|---------------------------|-------------------------|----------------------------|-------------------------|----------------------------|-------------------------|----------------------------|
| | Speed from radar gun | Distance to the catcher | Speed from radar gun | Distance to the catcher | Speed from radar gun | Distance to the catcher |
| The Wind-up | | | | | | |
| The Stretch | | | | | | |
| Student idea: _____ | | | | | | |
| Student idea: _____ | | | | | | |

Name: _____

The Art of Pitching

GRADES 3-5

Force Diagrams:

How does a larger unbalanced force change motion? Answer using evidence from your experiment.

Name: _____

Success at the Plate

GRADES 3-5

X = Hit O = No Hit

Trial 1

| Swings | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Fraction |
|--------|----|----|----|----|----|----|----|----|----|-----|----------|
| Hitter | | | | | | | | | | | |

Write a mathematical expression using the greater than or less than symbols comparing your prediction to your experimental results.

X = Hit O = No Hit

Trial 2

| Swings | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | Fraction |
|--------|----|----|----|----|----|----|----|----|----|-----|----------|
| Hitter | | | | | | | | | | | |

Based on your data from each trial, put the fractions in order from greatest to smallest using the greater than/less than symbols (< >).

Based on this information, were you more or less successful before or after watching the video and changing your swing? Please explain.

Name: _____

Keeping Score

GRADES 3-5

Option 1: Scoring the Game

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Option 2: Scoring the game

Add a tally mark as needed.

| Innings | Runs | |
|---------|--------|--------|
| | Team 1 | Team 2 |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |

Name: _____

Keeping Score

GRADES 3-5

| Innings | Strikes (3) | | | | Balls (4) | | | |
|---------|-------------|----------|----------|----------|-----------|----------|----------|----------|
| | Hitter 1 | Hitter 2 | Hitter 3 | Hitter 4 | Hitter 1 | Hitter 2 | Hitter 3 | Hitter 4 |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |

Graph your Score:

| | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
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| | | | | | | | | | | | | | | | | | | |

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Keeping Score

GRADES 3-5

Plot your Strikes:

1st Inning:



6th Inning:



2nd Inning:



7th Inning:



3rd Inning:



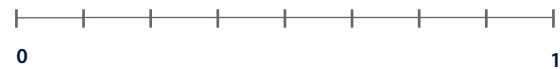
8th Inning:



4th Inning:



9th Inning:



5th Inning:



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Keeping Score

GRADES 3-5

Plot your Balls:

1st Inning:



6th Inning:



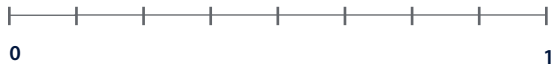
2nd Inning:



7th Inning:



3rd Inning:



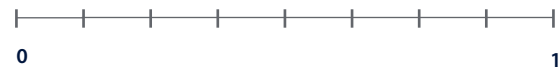
8th Inning:



4th Inning:



9th Inning:



5th Inning:



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Keeping Score

GRADES 3-5

Use your graphs and number lines to answer the following questions:

1. Total your runs from all the innings you played. How many runs would you score if you play the same game three times?

2. Total your runs from all the innings you played. Divide your total by the total number of innings played. What is the average number of runs per inning?

3. Total your runs and your opponent's runs. What is the difference between your totals? Who won the game?

4. Which inning had the greatest difference in runs? Which inning had the least difference in runs?

5. Review your line graphs of strikes: How many times during the game did you strike out the opponent (3/3)?

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Keeping Score

GRADES 3-5

6. Review your line graphs of strikes: How many times was your strike fraction greater than $\frac{1}{2}$?

7. Review your line graphs of strikes: How many times was your strike fraction less than $\frac{1}{2}$?

8. Review your line graphs of balls: How many times during the game did you walk the opponent (4/4)?

9. Review your line graphs of balls: How many times was your ball fraction greater than $\frac{1}{2}$?

10. Review your line graphs of balls: How many times was your ball fraction less than $\frac{1}{2}$?

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Advancements in Baseball

GRADES 3-5

Circle your stance regarding instant replay: For or Against

Brainstorm: What problems do instant replay solve?

OR

What problems do instant replay cause?

| Criteria for Improvements/Changes of Instant Replay | Constraints for Improvements/Changes of Instant Replay |
|-----------------------------------------------------|--------------------------------------------------------|
| | |

Name: _____

Advancements in Baseball

GRADES 3-5

Letter to the Commissioner's Office of Major League Baseball (MLB):
