



## Coast 2 Coast Coaching

27324 Camino Capistrano #203

Laguna Niguel, CA 92677

# STEM & Soccer Boost Workshop

## 1. Games

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| Game                    | STEM Topic      |
|-------------------------|-----------------|
| Number Game             | Math            |
| Race Around the Planets | Solar Systems   |
| Protect the Polar Bears | Weather Systems |
| Body Parts              | Anatomy*        |
| Bad Robots              | Robotics        |
| Slalom DNA              | Genetics        |
| Heart Rate Hero         | Physiology*     |
| Power & Angles          | Forces & Motion |
| Force of Gravity        | Gravity         |

## 2. Coaching Process

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1. Demonstrate
2. Ensure Success
3. Competition
4. Variation

## 3. Homework

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1. Apply games to different sports
2. Topics on NGSS and design 3 games
  - a. <http://www.nextgenscience.org/search-standards>

## BODY PARTS (STEM) - ANATOMY

### STORY

- You use many parts of your body when playing soccer, not just your feet. See what crazy body parts you can use to stop and control the ball. The coach calls out different body parts to stop the ball with. The player who stops the ball with that body part the quickest will get a point.

### OBJECTIVE

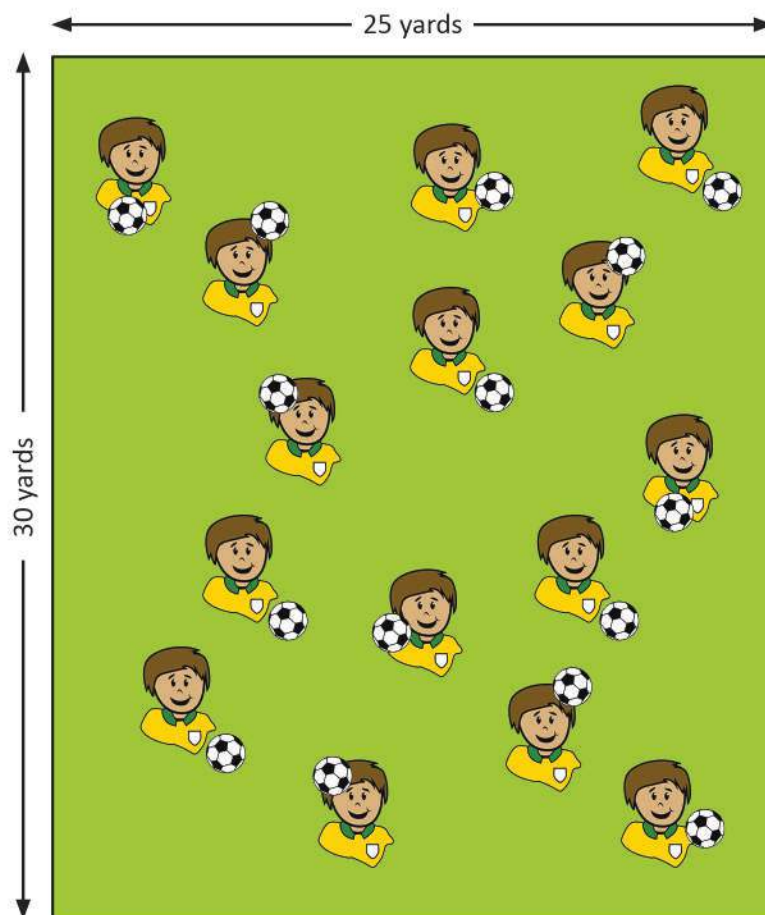
- To stop the ball with a specific body part before every other player.

### WINNER

- Player with the most points wins.

### FYI

- Coach should look to combine body parts and mix up the order (e.g. "Head-Shoulder-Knee-Belly-Stomach-Ear-Nose.")
- Be creative with body parts e.g. both knees, head and foot at the same time, left ear.



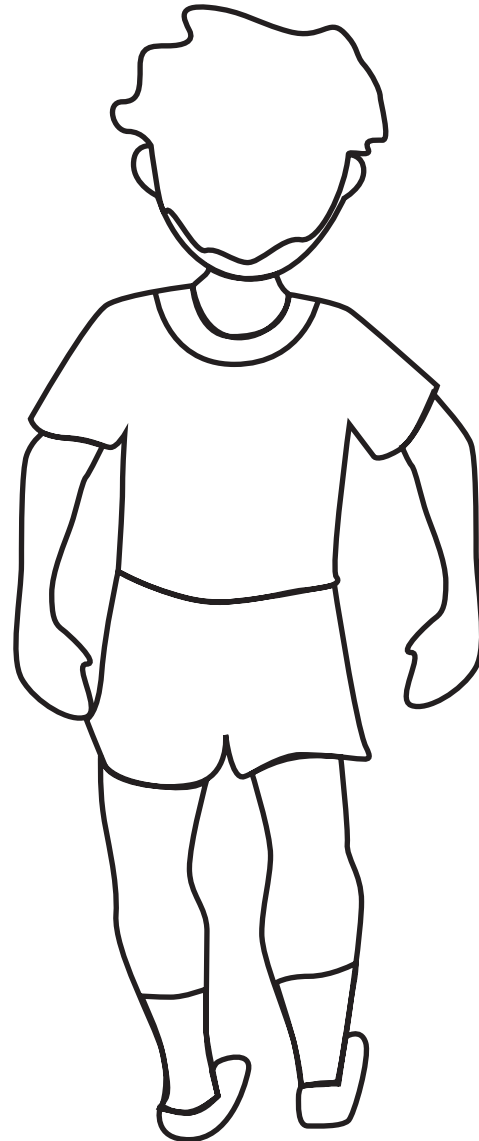
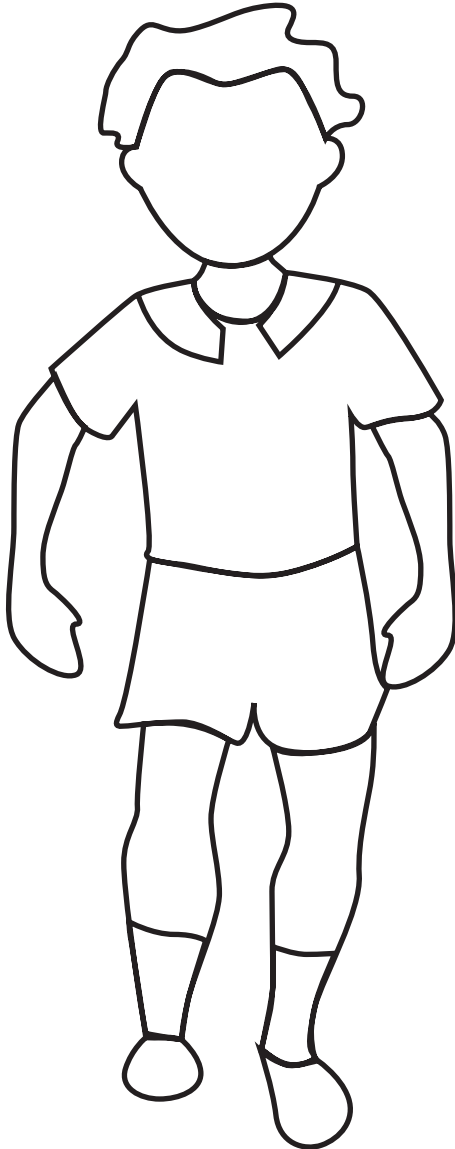
### BODY PARTS

**THEME:** Ball Control  
**ATP:** Control ball with various parts of body after throwing ball in air.

## SCIENCE OF SOCCER TOPIC: ANATOMY

### Game: Body Parts

NAME: \_\_\_\_\_



### SCIENCE OF SOCCER HOMEWORK

How many more body parts can you label? You can label more muscles and organs of the body.

**PARENTS,** finish worksheet with your children.

**WIN!**



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## BODY PARTS (STEM) - ANATOMY

### POINTS SYSTEM

- Give points to two pairs of students that can label the most body parts.

### STEM PERFORMANCE TASK

- Ask students to label as many body parts as they can using the worksheet.
- Prompt different age groups to label specific body parts (Refer to Grade Level Table).
  - Lower grades will label very simple and obvious parts of the body.
  - Older grades should try label muscles and bones.

### GRADE LEVELS

| K-2nd Grades                                                                                                                                                                                            | 3rd-5th Grades                                                                                                                                                                                                                 | 6th-8th Grades                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Eyes</li> <li>• Head</li> <li>• Chin</li> <li>• Elbow (L/R)</li> <li>• Hand (L/R)</li> <li>• Knee (L/R)</li> <li>• Foot (L/R)</li> <li>• Toes (L/R)</li> </ul> | <p>← Begin with examples from lower grades.</p> <ul style="list-style-type: none"> <li>• Forehead</li> <li>• Shin (L/R)</li> <li>• Toe (L/R)</li> <li>• Ankle (L/R)</li> <li>• Heel (L/R)</li> <li>• Shoulder (L/R)</li> </ul> | <p>← Begin with examples from lower grades.</p> <ul style="list-style-type: none"> <li>• Quadriceps (L/R)</li> <li>• Calf muscles (L/R)</li> <li>• Radius (L/R)</li> <li>• Ulna (L/R)</li> <li>• Bicep (L/R)</li> <li>• Hamstring (L/R)</li> </ul> |

\* Radius and Ulna are the two bones that make up the forearm. Radius is on the side of the Thumb and the Ulna is on the opposite side.

### WORKSHEET ANSWERS

- See Table above.

## THE NUMBER GAME (STEM) - MATH

### STORY

- In order to do well in school, it helps to be good at math. It can also help you in sports to be good at math. You are going to test your Math skill in this game. Each player has a #. When a player's # is called out, that number runs around cone and battles with opposite # to score. Coach calls out numbers. Coach will start using basic addition and subtraction rather than call numbers e.g. "2+3" to indicate #5 goes.

### OBJECTIVE

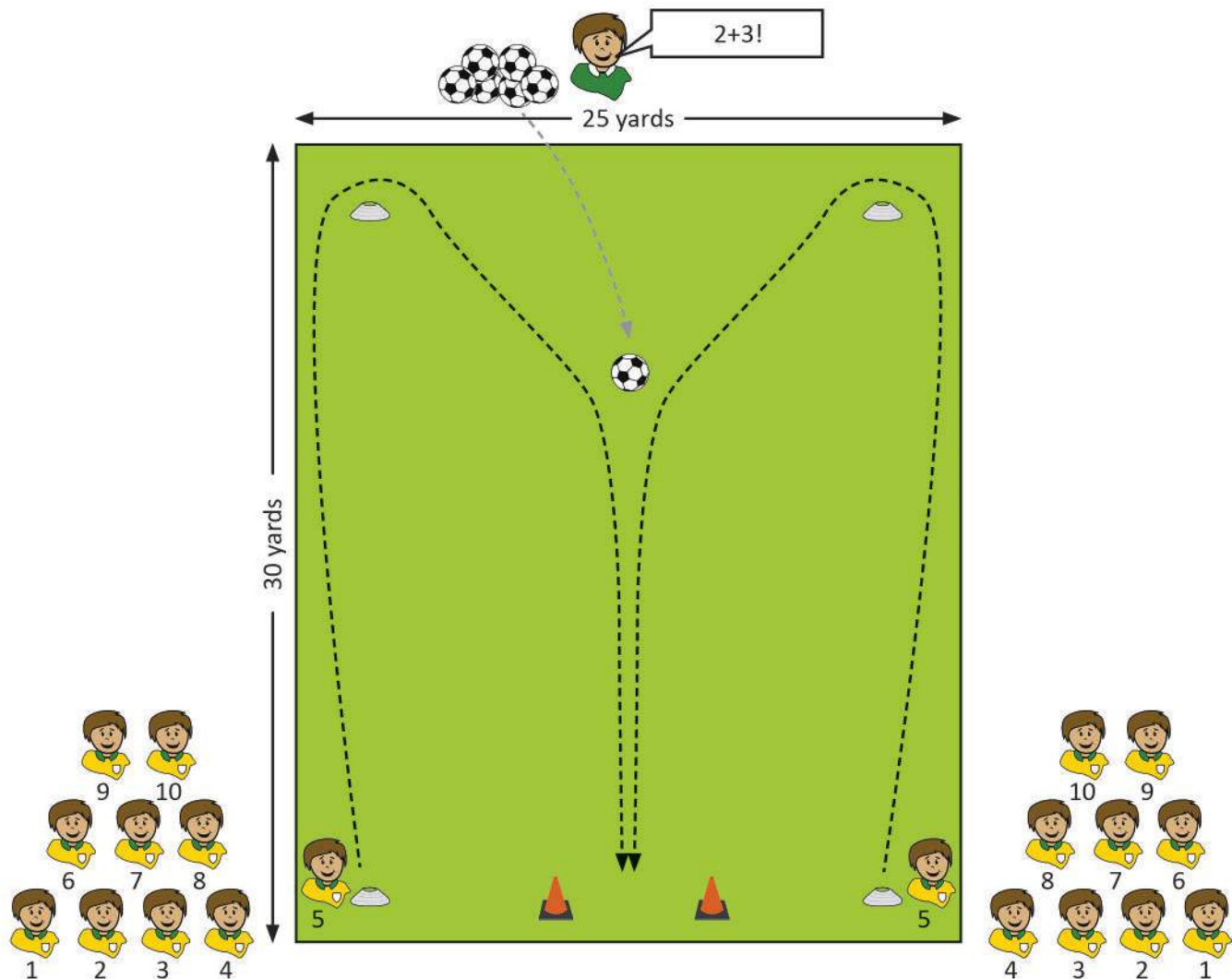
- To score a goal in a 1v1.

### WINNER

- Team that scores the most goals wins.

### FYI

- Coach assigns each player on each team a number.
- Coach should start calling out multiple numbers to allow more players to play after a period of time.
- Coach ensures that the number of each player on each team corresponds with ability.
- Use different starting positions (e.g. laying on ground and running types e.g. skipping).



### THE NUMBER GAME

**THEME:** Both Feet  
**ATP:** Dribble alternating between stronger and weaker foot.



# SCIENCE OF SOCCER TOPIC: MATH

## Game: The Number Game

NAME: \_\_\_\_\_

Answer these following questions.

### K-2ND GRADE

1) Argentina is playing a game against Germany. Argentina beats Germany by a score-line of 4 goals to 2 goals, how many more goals did Argentina score more than Germany?

Answer: \_\_\_\_\_

2) Mexico is playing a game against Brazil. Mexico scores twice in the first half and one goal again in the second half. Brazil only scores one goal all game. What is the final score?

Answer: Mexico \_\_\_\_\_ vs \_\_\_\_\_ Brazil

### 3RD & 5TH GRADE

1) Messi played a total of 82 games last season, but he only played half of these games in Barcelona's stadium. How many games did he play at all the other stadiums?

Answer: \_\_\_\_\_

2) Ronaldo had 22 assists last season, but he had three times as many goals. How many goals did he score last season?

Answer: \_\_\_\_\_

### 6TH & 8TH GRADE

1) Last season, Carli Lloyd (USA Women's team) scored 4 goals with her head. She scored three times that number with her foot. In total, how many goals did the Carli score last season?

Answer: \_\_\_\_\_

2) Robbie Keane (LA Galaxy) played 60 games last season and scored 20 goals. What is his Games to Goal Ratio?

Answer: \_\_\_\_\_

## SCIENCE OF SOCCER HOMEWORK

Can you find some cool statistics on your favorite soccer player?

e.g. # of goals he/she scored last season/ how far does he/she run, on average, per game?

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**PARENTS,** finish worksheet with your children.



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## THE NUMBER GAME (STEM) - MATH

### POINTS SYSTEM

- Give points to two pairs of students who can answer the most questions correctly in the quickest amount of time.

### STEM PERFORMANCE TASK

- The table below is for use in the game and not for the worksheet.
- You can use the table below as a guide on what sums to call out to the students. (Do not use for Worksheet)
- \* **Worksheet:** the older age groups complete the answers for their age group and for the younger age groups.

### GRADE LEVELS (Table for use in game only)

| K-2nd Grades                                                                                                         | 3rd-5th Grades                                                                                                                                        | 6th-8th Grades                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $2 + 2 = 4$<br>$3 + 4 = 7$<br>$0 + 7 = 7$<br>$5 + 0 = 5$<br>$8 + 1 = 9$<br>$0 + 1 = 1$<br>$1 + 1 = 2$<br>$2 + 1 = 3$ | <p>← Begin with examples from lower grades. ←</p> $6 + 3 = 9$<br>$0 + 1 = 1$<br>$9 - 2 = 7$<br>$10 - 5 = 5$<br>$2 + 6 = 8$<br>$2 \times 10 - 10 = 10$ | <p>← Begin with examples from lower grades.</p> $3 \times 5 - 6 = 9$<br>$2 \times 7 - 7 = 7$<br>$14 + 14 - 18 = 10$<br>$9 - 2 + 1 = 8$<br>$50/2 - 20 = 5$<br>$6 \times 10 / 10 = 6$ |

### WORKSHEET ANSWERS

- **K-2:** Q1) 2 goals & Q2) 3-1 to Mexico
- **3rd-5th:** Q1) 41 games & Q2) 66 goals
- **6th-8th:** Q2) 16 goals & Q2) 3:1 games to goals



## GROOVY GRAINS (STEM) - NUTRITION

### STORY

- To be a good soccer player, you need to eat right and stay healthy. We are going to see how many fruits, vegetables and grains that you know about. We know that vegetables and grains are all part of a healthy diet. The Veggies have to get past Groovy Grains that will try and hit the Veggies with their seeds (balls).

### OBJECTIVE

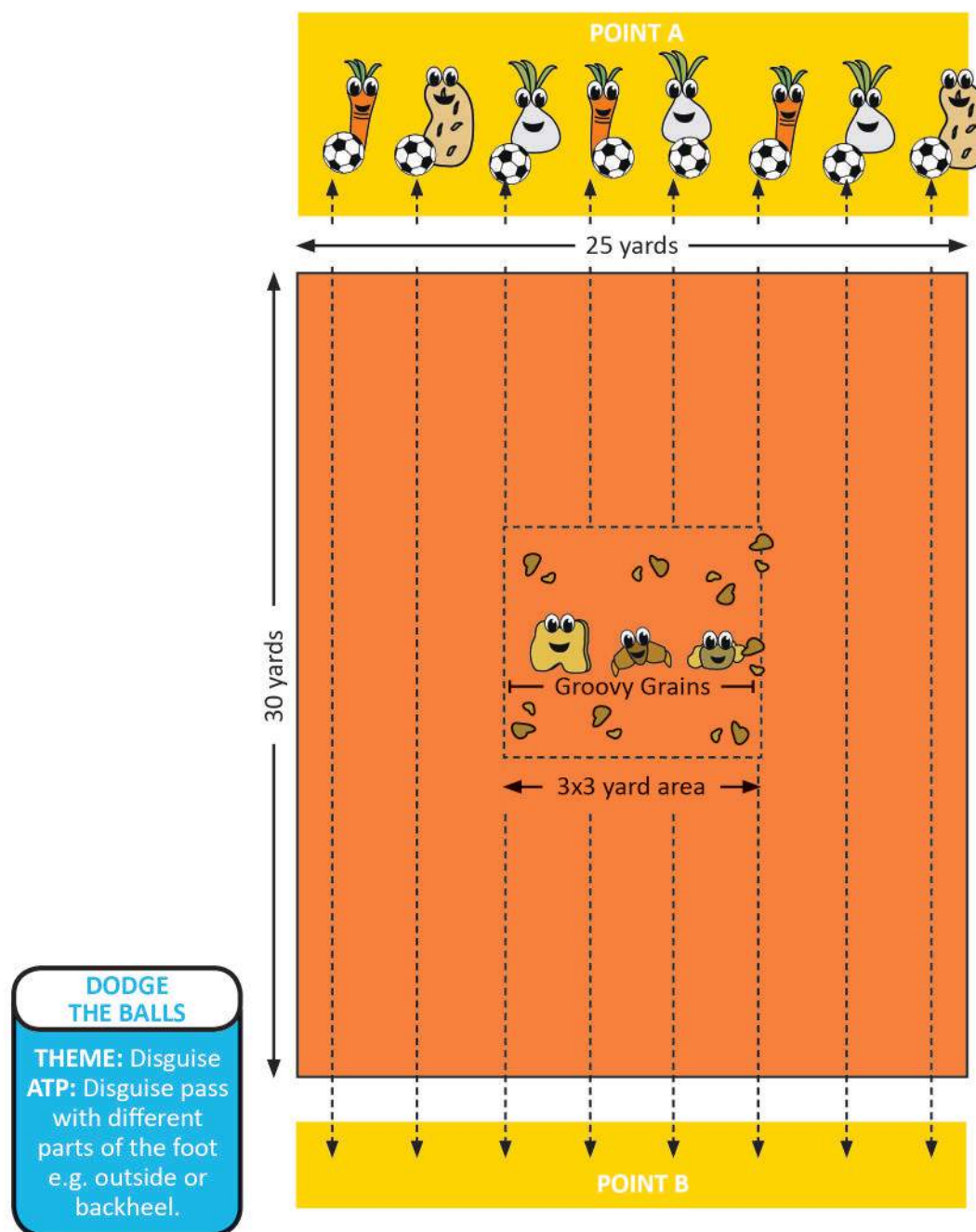
- To dribble from one end of grid to the other without getting hit by the Groovy Grain' seeds.
- If a Veggie gets hit, the Veggie gets turned into a Groovy Grain and joins the Groovy Grains in the center.

### WINNER

- The last Veggie(s) who does not get hit by the Groovy Grains.

### FYI

- Groovy Grains hit Veggies on their legs (below the knees) or they can hit their ball.
- Groovy Grains must stay within their part of the grid at all times.
- Start with 2 or 3 players as the Groovy Grains.







# SCIENCE OF SOCCER TOPIC: NUTRITION

## Game: Groovy Grains

NAME: \_\_\_\_\_

You should have TWO servings of Vegetables and TWO servings of fruit each day.

Write down a list of the vegetables that are:

| GREEN | YELLOW/ORANGE | RED |
|-------|---------------|-----|
|       |               |     |

Write down a list of the fruits that are:

| GREEN | YELLOW/ORANGE | RED |
|-------|---------------|-----|
|       |               |     |

Write down a list of the grains that you know of:

| GRAINS |
|--------|
|        |

## SCIENCE OF SOCCER HOMEWORK

Add to your worksheet all the fruits, vegetable and grains you can think of.  
Have a look around your kitchen for ideas!

**PARENTS**, finish worksheet with your children.



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## GROOVY GRAINS (STEM) - NUTRITION

### POINTS SYSTEM

- Give points to two pairs of students who write down the most amount of Vegetables, Fruits and Grains.

### STEM PERFORMANCE TASK

- \* **Intro Question:** What food would you eat to become a great soccer player and why?
- Students will list as many vegetables as they can by color.
- Older students will also list grains. Some students might not know what a grain is so provide examples.

### GRADE LEVELS

| K-2nd Grades                                                                                                                                                                                                                                                                                                                                              | 3rd-5th Grades                                                                                                                                                                                                                                                                                                                                                                                    | 6th-8th Grades                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>VEGETABLES</b><br><b>Green:</b> Cucumber, spinach, broccoli, green beans, cucumber.<br><b>Red:</b> Tomatoes, red peppers.<br><b>Yellow/Orange:</b> Pumpkin, carrot, corn.<br><br><b>FRUIT</b><br><b>Green:</b> Apple, grapes, pear.<br><b>Red:</b> Strawberries, plums, peaches.<br><b>Yellow/Orange:</b> Lemons, melons, bananas, oranges, pineapple. | ← Begin with examples from lower grades. <b>VEGETABLES</b><br><b>Green:</b> Celery, peas, lettuce, pickles, green peppers, edamame.<br><b>Red:</b> Beets.<br><b>Yellow/Orange:</b> Sweet potato, butternut squash.<br><br><b>FRUIT</b><br><b>Green:</b> Limes, kiwis, grapes, pear.<br><b>Red:</b> Raspberries, strawberries, cherries.<br><b>Yellow/Orange:</b> Apricots, tangerines, pineapple. | ← Begin with examples from lower grades. <b>VEGETABLES</b><br><b>Green:</b> Collard greens, kale, okra, asparagus, Brussels sprouts, zucchini, artichoke.<br><b>Red:</b> Radish.<br><b>Yellow/Orange:</b> Squash, yellow tomatoes.<br><br><b>FRUIT</b><br><b>Green:</b> Avocado.<br><b>Yellow/Orange:</b> Apricots, tangerines.<br><br><b>GRAINS</b><br>Beans, peanuts, lentil, chickpea, garbanzo, rice. |

### WORKSHEET ANSWERS

- See Table above.

## BAD ROBOTS (STEM) - ROBOTICS

### STORY

- Have you noticed that Robots are everywhere these days? They can fly to outer space and even vaccum your carpet. Well the other day something crazy happened... Lots of Robots have escaped from a secret factory and they have minds of their own. They are dangerous and must be recaptured. The officers are trying to capture the Robots.

### OBJECTIVE

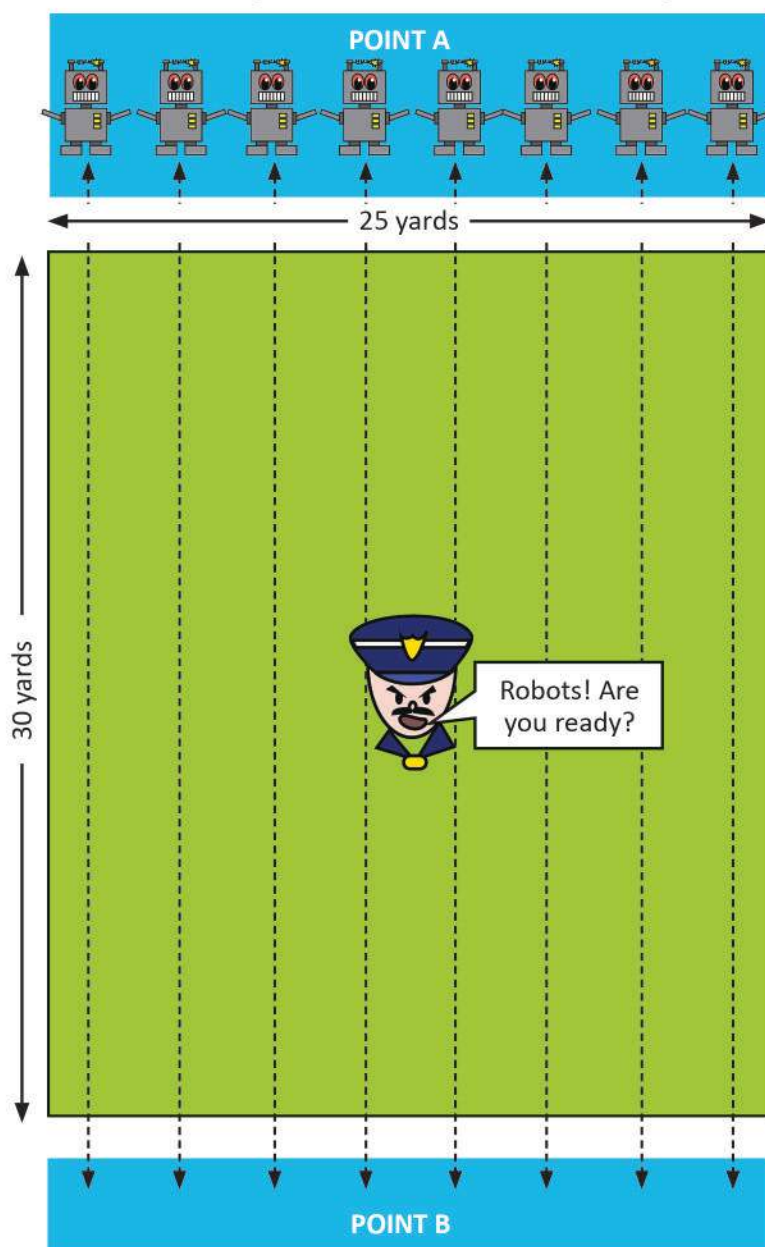
- Dribble from one end of grid to the other without getting tackled/captured by an Officer. If a Robot has his soccer ball kicked out of the grid, he/she has to help the Officers to capture the other Robots.

### WINNER

- The Robot(s) which has not been caught by the Officer at the end of the game.

### FYI

- Coach will start as the lead Officer and will often call out 'Robots! Are your ready?'. Robots respond with Robot noises or movements.
- Officers have to tackle the Robots and kick the ball outside of the grid.
- Officers typically start from the middle of grid and should start from back of grid during final rounds.



#### DRIBBLE PAST DEFENDERS

**THEME:** Ball Control

**ATP:** Dribble fast when you have an open space.

## SCIENCE OF SOCCER TOPIC: ENGINEERING & DESIGN

### Game: Bad Robot

NAME: \_\_\_\_\_

A robot is a piece of hardware with intelligent software inside.

A) Match up these pictures with the name of the robots on the opposite side.

B) Explain what each robot does.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



The Mars Rover

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Riba - The Robot Nurse

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Lego Mindstorm

### SCIENCE OF SOCCER HOMEWORK

Can you find out more examples of what each robot does?  
Add them to your to your worksheet!

**PARENTS**, finish worksheet with your children.



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## BAD ROBOTS (STEM) - ROBOTICS

### POINTS SYSTEM

- Give points to the first pair of students who get the answers correct in the quickest amount of time.
- Give extra points out to one pair of students with the best examples of what these robots do.

### STEM PERFORMANCE TASK

- **Intro Question:** Have you guys noticed that robots are becoming more and more popular!
- Can you name any examples of Robots and can you name a super power that these robots might have?
- Examples of robots will vary significantly depending on grade level. Prompt students using the table below.
- Students will have to match up the robot pictures with the correct robot name.
- Students will then have to write down what they think each robot does.

### GRADE LEVELS

| K-2nd Grades                                                                                                                                                                      | 3rd-5th Grades                                                                                                                                                                                                                     | 6th-8th Grades                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Tickle Me Elmo (Sesame St.)</li> <li>• Big Hero 6</li> <li>• C-3PO (Star Wars)</li> <li>• R2-D2 (Star Wars)</li> <li>• WALL-E</li> </ul> | <p>← Begin with examples from lower grades.</p> <ul style="list-style-type: none"> <li>• The Terminator</li> <li>• Autobots (Transformers)</li> <li>• Decepticons (Transformers)</li> <li>• I, Robot</li> <li>• Robocop</li> </ul> | <p>← Begin with examples from lower grades.</p> <ul style="list-style-type: none"> <li>• LEGO Mindstorm</li> <li>• Predator (Military drone)</li> <li>• Global Hawk (Military drone)</li> <li>• Amazon delivery drone</li> <li>• Roomba- vacuum robot</li> </ul> |

\* Examples of Robots for each age group.

### WORKSHEET ANSWERS

- **Picture #1:** This is The Mars Rover.
  - It is the robot that NASA used to send to Mars.
  - It travels to Space, collects samples and takes pictures of the planet.
- **Picture #2:** This is RIBA - The Robot Nurse.
  - It is a robot used in hospitals to carry patients.
- **Picture #3:** This is LEGO Mindstorm. (Older students should know this from school)
  - It can take different shapes.
  - It has eyes and can see.
  - It can do a lot of movements that a human can do.
  - It is used in schools to promote and teach STEM.

## FORCE OF GRAVITY (STEM) - GRAVITY

### STORY

- Gravity is what keeps our feet on the ground and keeps bringing our soccer ball down to earth. "Can you think of other examples of how Gravity works?" You can see Gravity in action when trying to learn the skill of volleying a soccer ball.

### OBJECTIVE

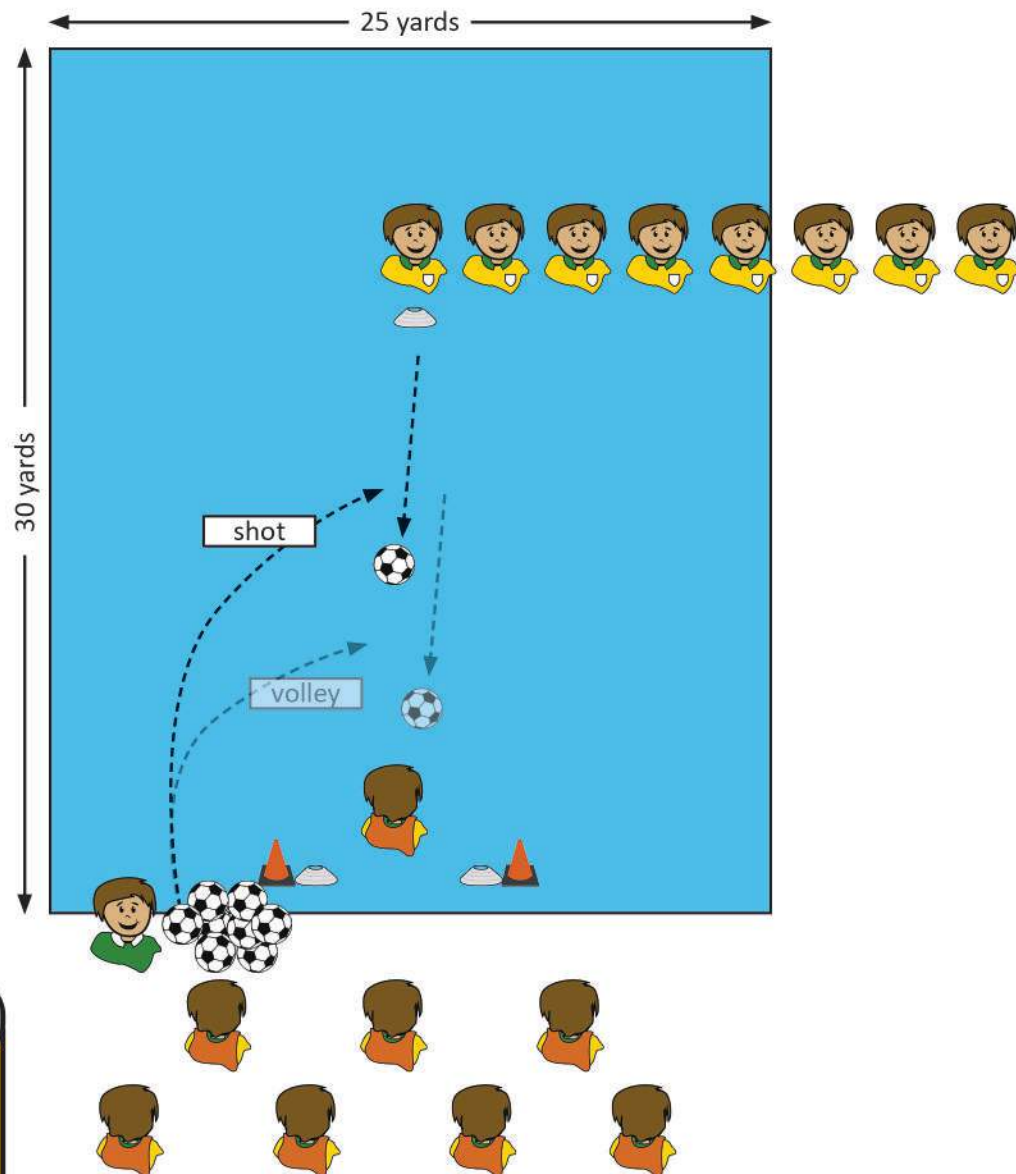
- Coach will roll one ball out for a strike on goal. Coach will then throw a second ball up for a follow up volley. To score as many goals as possible for your team.

### WINNER

- Team that scores the most goals wins.

### FYI

- Penalize shagging team (two goals) every time there is a shortage of soccer balls.
- Teams switch roles after each 2 min round. Every two rounds, elect a winner.
- Make sure that players are not too close to goal when they shoot.
- Challenge experienced players by getting them to volley the ball without a bounce.
- Coach can allow the ball to bounce more than once for weaker players.



### FORCE OF GRAVITY

**THEME:** Ball Control

**ATP:** Strike the ball with control while it is in the air.





# SCIENCE OF SOCCER TOPIC: GRAVITY

## Game: Force of Gravity

NAME: \_\_\_\_\_

**Definition of Gravity:** The force that attracts a body toward the center of the earth.

### BEFORE DEMONSTRATION

- Circle which object will hit the ground first or highlight 'same time' if they will hit the ground at the same time.

|           |                |           |
|-----------|----------------|-----------|
| Ball      | Pen            | Same time |
| Disc Cone | Witch hat cone | Same time |
| Pump      | Clipboard      | Same time |

### AFTER DEMONSTRATION

- Circle which object hit the ground first or highlight 'same time' if they hit the ground at the same time.

|           |                |           |
|-----------|----------------|-----------|
| Ball      | Pen            | Same time |
| Disc Cone | Witch hat cone | Same time |
| Pump      | Clipboard      | Same time |

## SCIENCE OF SOCCER HOMEWORK

What other sporting examples can you give that demonstrates gravity playing a very important role?

| SPORT             | THE ROLE OF GRAVITY                                      |
|-------------------|----------------------------------------------------------|
| Example: Baseball | The ball drops to the ground after it is hit in the air. |
|                   |                                                          |
|                   |                                                          |
|                   |                                                          |
|                   |                                                          |

**PARENTS,** finish worksheet with your children.



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## FORCE OF GRAVITY (STEM) - GRAVITY

### POINTS SYSTEM

- Give points to the students who correctly predict the outcome from the demonstration.

### STEM PERFORMANCE TASK

- Students will observe Gravity.
- Students will be asked to guess which objects will hit the ground when dropped from shoulder height.
- The students will circle which answer they think is correct before the coach carries out the demonstrations.
- The coach will carry out 3 demonstrations. The coach will drop 2 different objects at the same time from shoulder height and see which one hits the ground first.
- Students will observe demonstrations and will circle the correct answers.

### GRADE LEVELS

| K-2nd Grades                                                                                                                       | 3rd-5th Grades                                                                                                                     | 6th-8th Grades                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Write down your guess about items falling at the same time or different times.</li> </ul> | <ul style="list-style-type: none"> <li>• Write down your guess about items falling at the same time or different times.</li> </ul> | <ul style="list-style-type: none"> <li>• Write down your guess about items falling at the same time or different times.</li> </ul> |

### WORKSHEET ANSWERS

- **Demonstration 1:** Same Time
- **Demonstration 2:** Witch Hat Cone
- **Demonstration 3:** Same Time

# THE SOCCER BALL GAME (STEM) - ENGINEERING & DESIGN

## STORY

- Do you know how a soccer ball is made? You are going to find out about that and about balls in other sports too. There are 4 teams. Each team is representing a different sport.
- 1) Tennis 2) Football 3) Baseball & 4) Golf. Because each team knows that the best sport in the world is Soccer, they are all competing against each other to get the most soccer balls back to their base.

## OBJECTIVE

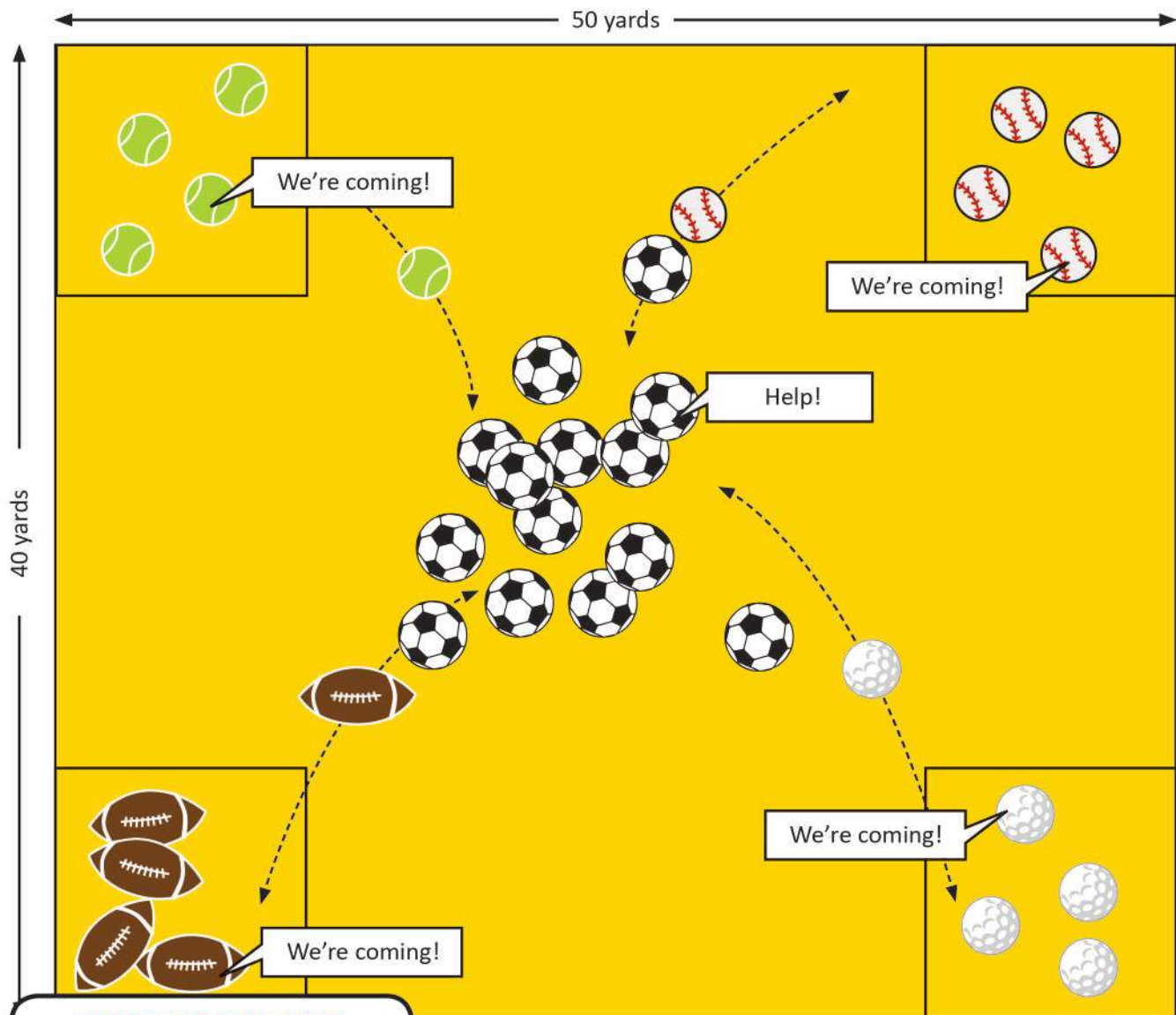
- To get as many soccer balls as you can back to your square.

## WINNER

- Team with the most points wins.

## FYI

- Teams should have an order of rotation so all players get a chance to go get the soccer balls.
- Players are not allowed outside their square.
- Add fun rounds such as players hopping with ball in jersey, jumping with the ball in between knees or passing the ball back to their square.



## THE SOCCER BALL GAME

**THEME:** Both Feet

**ATP:** Dribble alternating between stronger and weaker foot.



# SCIENCE OF SOCCER TOPIC: ENGINEERING & DESIGN

## Game: Soccer Ball Game

NAME: \_\_\_\_\_

The ball design and material is important for the surface (grass) and area of play (field, court).

### FOR EACH OF THESE BALLS:

A) Name the sport; B) State whether they have air inside them or are solid!; C) Name their material.

|                                                                                     | SPORT | AIR or SOLID | MATERIAL<br>Rubber/Leather/Felt/Plastic |
|-------------------------------------------------------------------------------------|-------|--------------|-----------------------------------------|
|    |       |              |                                         |
|    |       |              |                                         |
|   |       |              |                                         |
|  |       |              |                                         |
|  |       |              |                                         |

## SCIENCE OF SOCCER HOMEWORK

How quickly can you finish the worksheet. Ask your parents, brothers, sisters, cousins, friends!

**PARENTS**, finish worksheet with your children.



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## HEART RATE HERO (STEM) - PHYSIOLOGY

### STORY

- When you play soccer, your muscles need more oxygen than usual to work, that's why you breathe harder! The extra oxygen you breath in gets pumped around to your muscles by your heart, which now also has to work harder. This game involves different activities with and without a soccer ball. Coach will ask you once before the game and twice during game to check your pulse by placing your fingers on your artery under your jawbone.

### OBJECTIVE

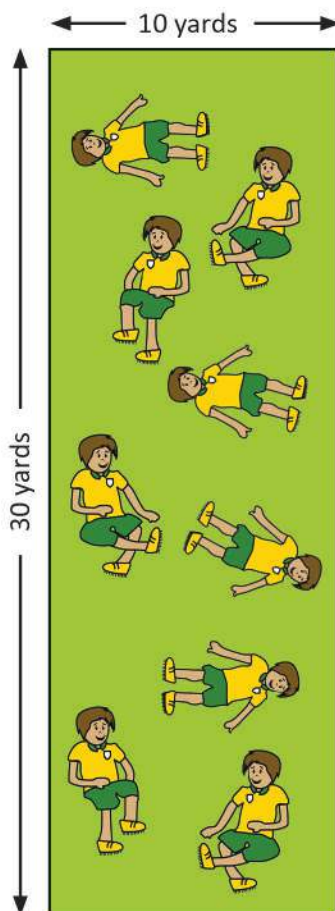
- Players must respond to coaches' instructions quickly and will check their pulse during the game. Coach will give points to players moving the quickest.

### WINNER

- Players with most points win.

### FYI

- Players should try get pulse:
  - 1) At start of game at rest.
  - 2) After dribbling with a soccer ball.
  - 3) After doing sprints without a soccer ball.
- If players cannot find pulse, suggest hand on heart or use index and middle finger on wrist.
- Coach gives out points throughout the game to the players who respond to the coaches instructions the quickest.
- Do not touch players if they cannot find their pulse.
- Refer to every variation type in the manual.
- Add variation: call out numbers: 2;3;4;5. Students have to get together into groups of this size as quickly as possible.



### HEART RATE HERO

**THEME:** Both Feet  
**ATP:** Dribble using creative dribbling moves.

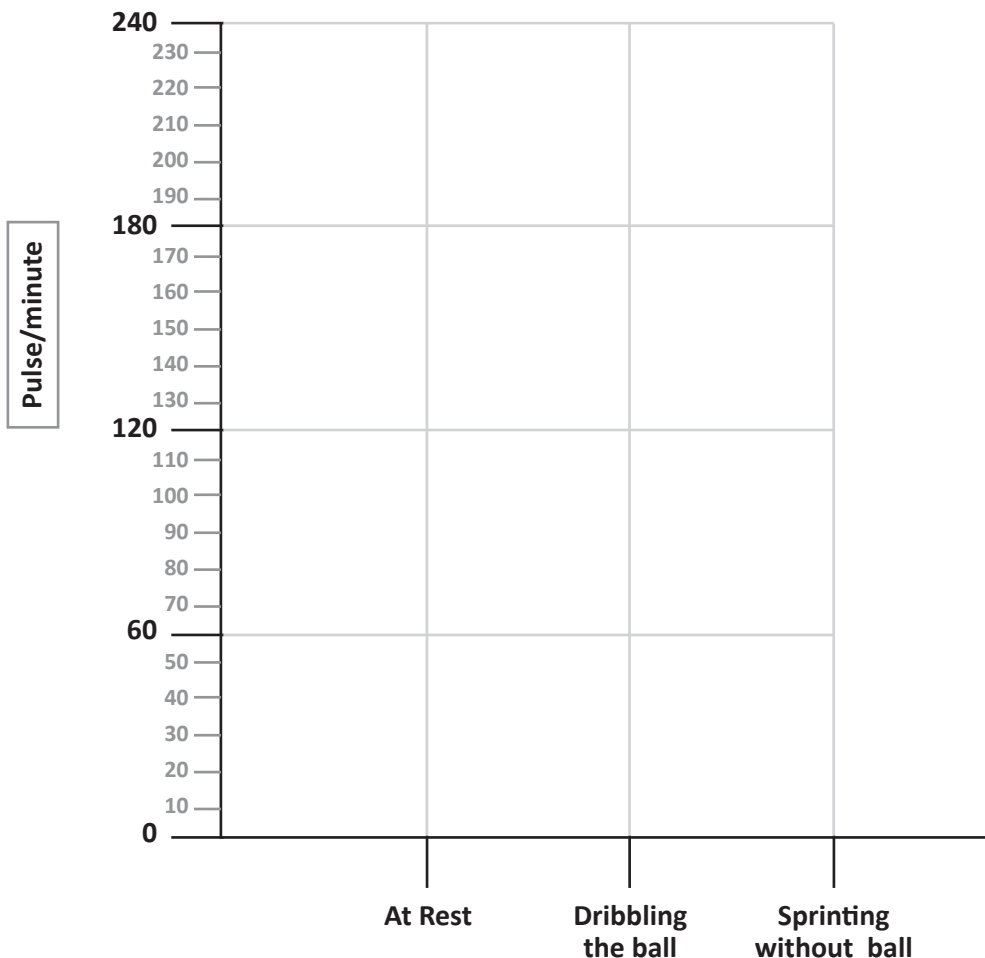


## SCIENCE OF SOCCER TOPIC: PHYSIOLOGY

### Game: Heart Rate Hero

NAME: \_\_\_\_\_

**Definition of a Heart Rate:** The number of times that your Heart beats in one minute.



### SCIENCE OF SOCCER HOMEWORK

Can you get the Heart Rate of one of your family members?

Get your family member to exercise and show them the increase in their heart rate on the graph!

**PARENTS,** finish worksheet with your children.



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# HEART RATE HERO (STEM) - PHYSIOLOGY

**Note:** You need a watch to time 60 seconds.

## POINTS SYSTEM

- Give points for every pair that has a graph that is similar to the thumbnail.

## STEM PERFORMANCE TASK

- Students will take their Heart Rate while:
  - A) At rest.
  - B) Dribbling and practicing skills from previous sessions.
  - C) After high intensity sprints with no ball.
- Tell students to place their two fingers under their jawbone and to count the beats until you say stop (10 seconds for K-2nd grade) and for 60 seconds (3rd-6th grades).
- Coach will ask K-2nd Grade for their Heart Rate over 10 seconds. He/she will multiply this answer by 6 and tell them their Heart Rate per minute
- Ask students to put an 'X' on the graph where their Heart Rate matches the corresponding number on the vertical axis.
- K-2nd grade will simply copy where the coach shows them to show that their heart rate gets faster.
- The student's heart rate will increase with the level of intensity of their exercise.
- The average resting heart rate for a young child is 70 bpm.
- \* **Show students the graph (see below) to help them.**

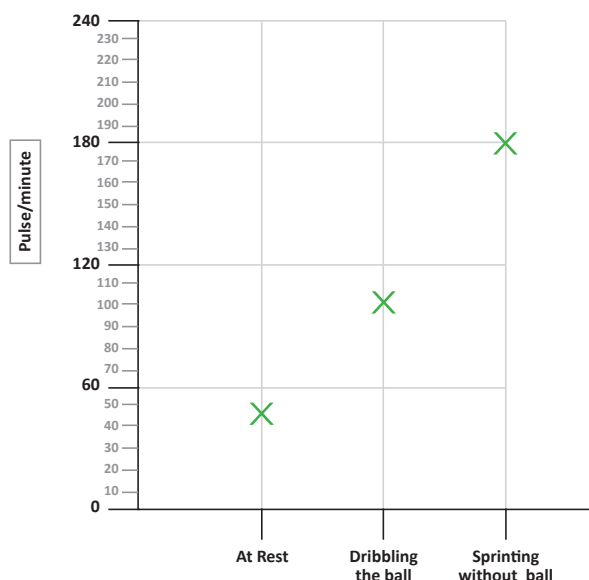
## GRADE LEVELS

| K-2nd Grades                                                                                                                                                                                                                                                   | 3rd-5th Grades                                                                                                                                                                                                                                       | 6th-8th Grades                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• The coach will tell the students what Heart Rate is. Coaches will ask how many times the students felt their pulse over 10 seconds. Students will see if it goes faster at the different intensity levels.</li> </ul> | <ul style="list-style-type: none"> <li>• The coach will ask the students to define Heart Rate. Coaches will ask how many times the students felt their pulse over 60 seconds. Coach will ask the students what is the BPM of their heart.</li> </ul> | <ul style="list-style-type: none"> <li>• The coach will ask the students to define Heart Rate. Coaches will ask how many times the students felt their pulse over 60 seconds. Coach will ask the students what is the BPM of their heart.</li> </ul> |

## WORKSHEET ANSWERS

- Have a look at the Graph below to see what the average heart rate is.

## SAMPLE WORKSHEET GRAPH



## RACE TO OUTER SPACE (STEM) - SOLAR SYSTEM

### STORY

- Who knows how many planets there are in our Solar System? You are going to learn about all the planets and race around them too. Players are in spaceships numbered 1-10. When a coach calls out the planet name and their Spaceship #, the players have to travel around the planet that the coach calls out. Players will battle for the ball and try to score. The planet closest to the Sun is Mercury. The planet furthest away is Neptune and the planet in between is Jupiter.

### OBJECTIVE

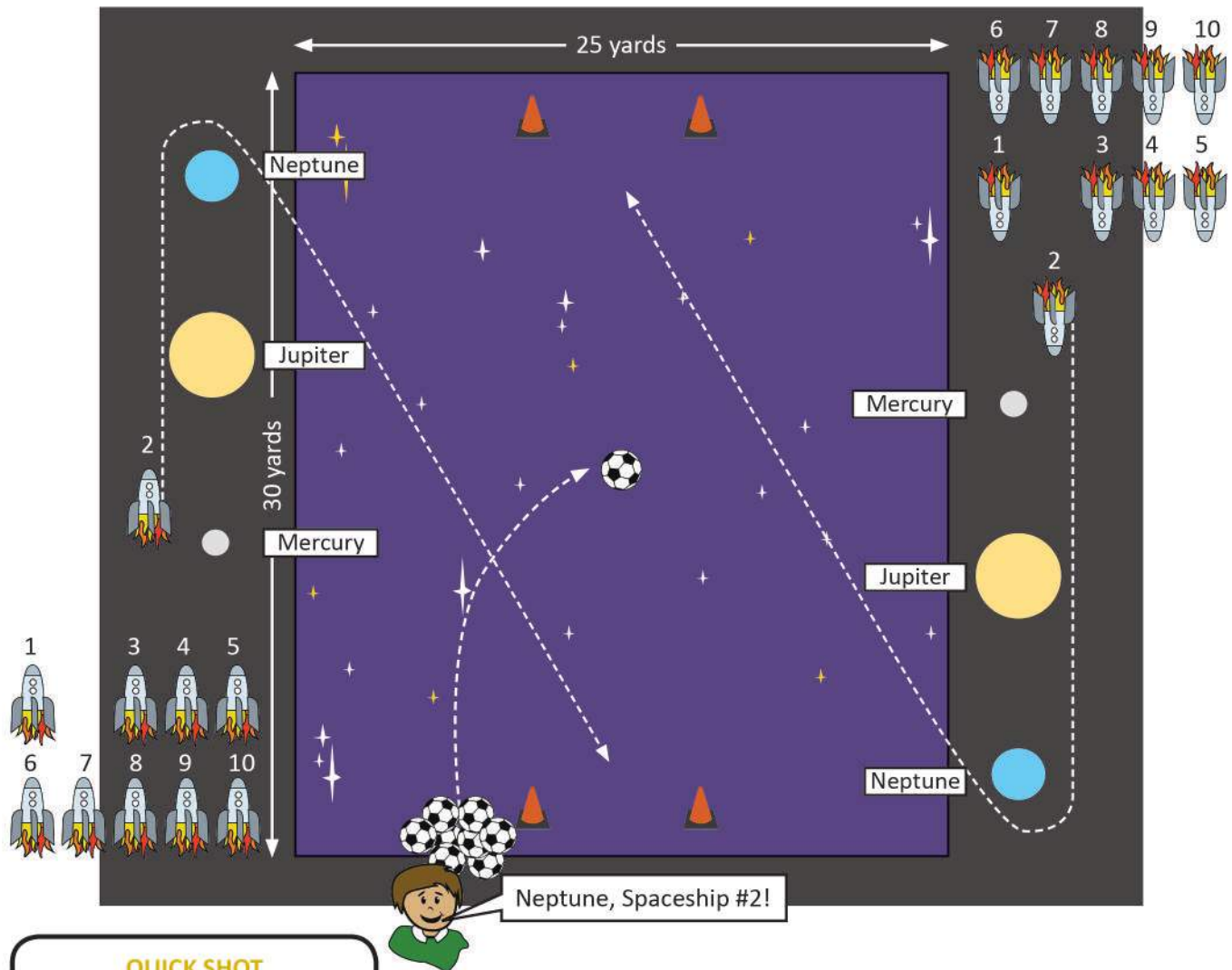
- Players run around planet and challenge each other in order to score a goal when their planet and number are called.

### WINNER

- Team that scores the most goals wins.

### FYI

- Coach assigns each player on each team a number.
- Coach can call out multiple numbers, but only one planet (e.g. Neptune, Spaceship #2&4)
- Ensure players are matched evenly in terms of skill.
- Use several different starting positions (e.g. sitting on ground, laying on back, facing backwards, etc.)



### QUICK SHOT

**THEME:** On The Move Shooting  
**ATP:** Shoot accurately while dribbling.

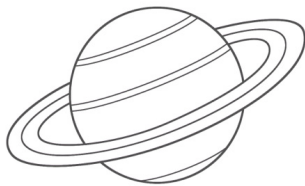
# SCIENCE OF SOCCER TOPIC: EARTH & SOLAR SYSTEM

## Game: Race to Outer Space

NAME: \_\_\_\_\_

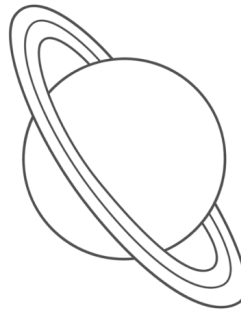
**A Solar system is a number of planets rotating around a common star.**

- Label these 8 planets. Then, number the planets 1 through 8 where #1 is the closest to the Sun and #8 is the furthest from the Sun. **(Hint #1 is Mercury)**



**N** \_ \_ \_ \_ \_

(Hint: This is the furthest planet from the Sun)



**S** \_ \_ \_ \_ \_

(Hint: Known as the most beautiful planet.)



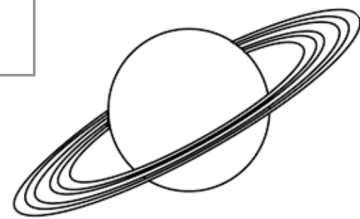
**M** \_ \_ \_ \_

(Hint: The red planet)



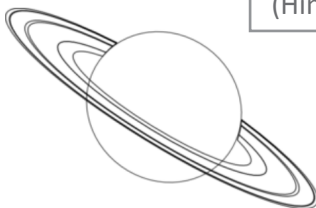
**E** \_ \_ \_ \_ \_

(Hint: You don't need one)



**J** \_ \_ \_ \_ \_

(Hint: The biggest planet in our solar system)



**U** \_ \_ \_ \_ \_

(Hint: U might find it hard to get this one)



**V** \_ \_ \_ \_ \_

(Hint: If men are from Mars, then women are from...)



**M** \_ \_ \_ \_ \_

(Hint: This is the smallest planet in our Solar System)

## SCIENCE OF SOCCER HOMEWORK

Ask somebody at home to help you complete the Worksheet!

**PARENTS**, finish worksheet with your children.



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## RACE TO OUTER SPACE (STEM) - SOLAR SYSTEM

### POINTS SYSTEM

- Give points to the two pairs of students who can:
  - A) Name the planets the quickest (youngsters); Bonus points for labeling a fun fact.
  - B) Correctly number the planets from the distance they lie in relation to the Sun. (Olders)

### STEM PERFORMANCE TASK

- Students will identify the planets by writing in the name on the worksheet.
- Students might know a fun fact about a planet.
- Number the planets from the distance they lie in relation to the Sun from 1-8.

### GRADE LEVELS

| K-2nd Grades                                                                                   | 3rd-5th Grades                                                                                                                                                      | 6th-8th Grades                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Name planets only with a lot of prompting.</li> </ul> | <ul style="list-style-type: none"> <li>• Name planets. (No prompting)</li> <li>• Add a fun fact about any planet. (e.g. Mars is known as the Red planet)</li> </ul> | <ul style="list-style-type: none"> <li>• Name planets and number them from #1-8 in relation to the distance they are from the Sun. (#1 is the closest to the Sun and #8 is the furthest away)</li> </ul> |

### WORKSHEET ANSWERS

(Distance from the Sun - Closest to furthest away).

- 1) Mercury
- 2) Venus
- 3) Earth
- 4) Mars
- 5) Jupiter
- 6) Saturn
- 7) Uranus
- 8) Neptune

# ISLAND SURVIVAL (STEM) - ECOSYSTEMS

## STORY

- In nature, animals and plants rely on each other to survive. Animals usually live in a specific Ecosystem such as Desert, Jungle or grassland. In this game, each team is a group of Animals that have to work together in their ecosystem in order to survive. After the game, you will learn about the characteristics of various animals and where they live.

## OBJECTIVE

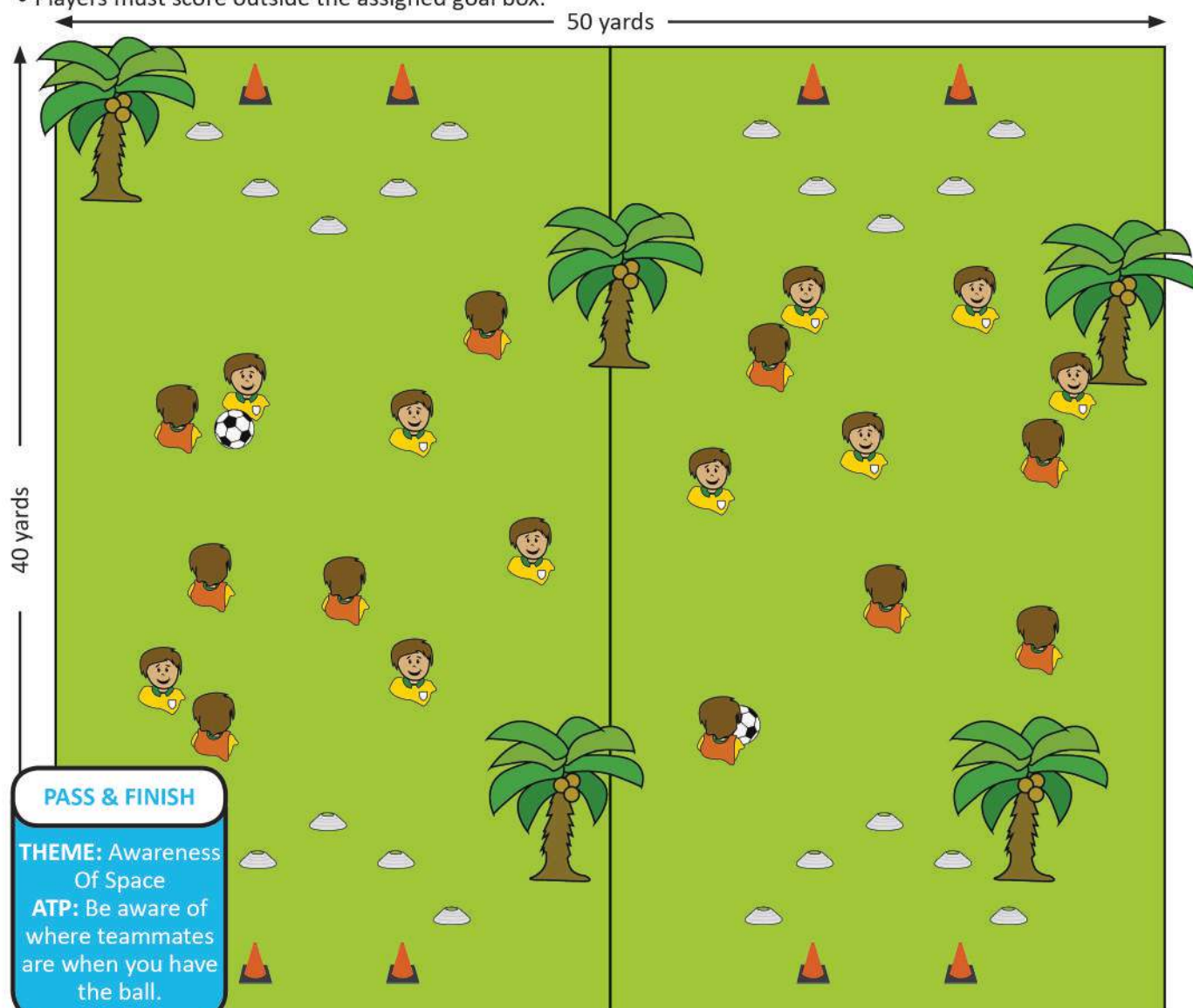
- This is a World Cup scrimmage game. Use two fields. Use passing conditions outlined in the FYI section below.

## WINNER

- Team with the most goals wins.

## FYI

- Conditions (you make use others not listed here)
  - Teams must make 3 passes before a goal is scored.
  - Players cannot dribble the ball forward.
  - You can only score from a pass.
  - Limit to 3 touches on the ball.
- Teams can earn extra points for spreading out and forming the best angles to make themselves available for a pass.
- There will be no goal keepers so that more goals are scored.
- Players must score outside the assigned goal box.





# SCIENCE OF SOCCER TOPIC: ECOSYSTEMS

## Game: Island Survival

NAME: \_\_\_\_\_

For each Animal, write down:

- 1) Animal Name; 2) The unique ability it has to survive in the wild;  
3) What Ecosystem does this animal live in? 4) Science of Soccer Homework



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

## SCIENCE OF SOCCER HOMEWORK

Find out what Continent each animal comes from.

**PARENTS**, finish worksheet with your children.



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## ISLAND SURVIVAL (STEM) - ECOSYSTEMS

### POINTS SYSTEM

- Give points to a pair of students after each round (1, 2 & 3).

### STEM PERFORMANCE TASK

- Students will identify as many animals as possible.
- Students will be asked to identify:
  - 1) Different animals.
  - 2) Unique ability to survive in the wild.
  - 3) What Ecosystem they live in.
  - 4) Science of Soccer Homework

**\* The level of responses will vary significantly by grade level - Examples are provided below.**

### GRADE LEVELS

| K-2nd Grades                                                                                                             | 3rd-5th Grades                                                                                   | 6th-8th Grades                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Label animals and give strong prompts for how these animals survive.</li> </ul> | <ul style="list-style-type: none"> <li>• Label animals and how these animals survive.</li> </ul> | <ul style="list-style-type: none"> <li>• Label animals; how they survive and what Ecosystem they live in.</li> </ul> |

### WORKSHEET ANSWERS

- A)** Giraffe (Africa): Lives in the Desert and has a tall neck for eating high up vegetation.
- B)** Kangaroo (Australia): Lives in Grasslands and can hop quickly from one place to the next.
- C)** Lion (Africa): Lives in the Desert and has sharp teeth for hunting prey.
- D)** Puma (South America): Lives in the Jungle and can climb trees to hunt for food.
- E)** Bear (North America): Lives in the Forests. It can run, swim and climb to hunt for food.
- F)** Asian Elephant (Asia): Lives in the Forests. It can drink water through its long trunk.