

The Laws of Motion: Integrating STEM and Physical Activity



Presented by;

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Pointers and Thumbs: *This is a great brain break to do during a lesson to regain focus.

Take one hand and give me a thumbs up, Take the other hand and point forward with your pointer finger. When I say switch, switch each hand so that the Thumbs up hand is now pointing with the pointer finger and the Pointer finger hand is not giving a thumbs up! See how fast you can do this! (This activity accesses both sides of the brain!)

Rock On & Hang Loose!:

Take one hand and make the “Rock On” sign, take the other hand and make the “Hang Loose” sign. When I say switch, switch each hand so that the “Rock On” hand becomes the “Hang Loose” hand and the “Hang Loose” hand becomes the “Rock On” hand! See how fast you can do this! (This activity accesses both sides of the brain!)

Partner Addition: Two students stand back to back. They will jump three times while saying, “1, 2, 3!” and will then turn around and face each other. As they do this they will have a pre-determined number of fingers sticking up. The partners add the numbers of fingers and shout out the answer. The first student to yell out the correct answer is the winner of that game.

Options:

- Play the best out of three games and then have the students switch partners.
- Difficulty can be increased by doing multiplication, adding additional hands, etc.
- Have the person who answered the answer first become a tagger and chase his/her partner. When he/she tags their partner, they stop and play again.

Playing with a Full Deck *Can be used as a warm-up or an ice-breaker

Using a regular deck of cards, pass out a card to each person that is participating. Each participant must hold their card on their forehead so that the #/suit of the card is facing their forehead. They are to then move around the space (walk, jog, skip, slide, etc.), and tag a person on the shoulder. Once tagged, the two face each other and the tagger say, “Hi, my name is _____. Then the tagged person says hi and tells his or her name as well. After both participants have introduced themselves, they will then exchange cards with the other person (no tag backs). Once this has gone on for a certain amount of time, stop them and have them stand in place. You will then tell them an activity to do, or hold up a Fitness Skillastics Task Card. The participants must do that activity for the number of reps on their playing card. This is also where you can add math problems to their card. Ex: Take your card and multiply times 2!

**Each playing card has a number, face card is 10, ace is 1 or 11 (you make the determination). Once they are done with the activity, they start up the tag/question portion of the game again.

You can also switch it up and have participants ask:

“Favorite fruit”

“Favorite veggie”

“Favorite team”

“Favorite”

Over and Under Math:

Equipment Needed: 10 Animal Bean Bags per team, math problems or word problems

Set Up: Lines of 5 with 10 animal bean bags behind the last person in line.

Start Play: Teams stand in single file lines. Each team has 10 paper balls at the back of its line. The teacher calls out a math problem or work problem (or he/she can write it on the overhead) using addition, subtraction, multiplication or division. (Ex: 50/10 or 2x2) The students need to figure out the answer to the problem. Once they figure out the answer, the students need to pass the balls up the row in an overhead and under the legs style until the correct number of balls are in the front of the line. They may only pass one ball at a time. The first team with the correct number gets one point. Students then pass the balls (in the same manner) to the back of the line in 30 seconds or less to get ready for the next problem. The first student in line will rotate to the end of the line and the process repeats.

**Please note that the answer can be no higher than 10 unless you have more than 10 beanbags in the front of each line.

Options:

- The students may pass the paper balls side to side instead of over and under.
- Have the students preform 30 jumping jacks, marching in place, shoot jump shots, etc., while the teacher gets ready to call out the next math problem.

Active Rock, Paper, Scissors STEM: *Conflict Resolution with STEM

Have the children face each other in pairs. They will jump three time and then land on their feet. Depending on how they land on their feet will determine if they are the Rock, Paper or Scissors. If their feet are together, they are the Rock. If their feet are apart sideways, they are Paper. If their feet are staggered (one in front and one in back) they are Scissors. Have them play the best out of 3 games.

- Adding STEM: Place Skillastics STEM Question Cards in a chosen area by the play area. Whoever wins the Rock, Paper, Scissors game gets to run up to the STEM Skillastics Question Cards and choose any card he/she wants. They then run back to their partner and ask him/her the question. Once finished, they play another game. The winner of that game takes the card back and chooses another question. Repeat this process and switch partners as the game progresses.
- *Conflict Resolution: This is a great brain break, but also great for solving a disagreement. If you use it in this manner, have them play just one game to solve an issue that is going on in the classroom or outside.

Active Rock, Paper, Scissors Olympics!

- Divide the play area into 3 sections with a small space off to the side for a “Fitness Area”. The 3 sections represent a Bronze Section, Silver Section and a Gold Section. To begin the activity have all of the participants in the bronze section. They will then play “Active Rock, Paper, Scissors, Show!” On “Show” they will have their body represent a rock, a paper or a pair of scissors. They do this by using their entire body instead of just their hands. Rock = feet together and hands together hunched over, Paper = feet and hands held out straight from their sides, Scissors = split one foot in front of the other and have one arm in front and one in back. They can stand or they can jump with their feet together while saying rock paper scissors show. If they win at bronze, they move to the silver section (in the middle) and find someone to play again. If they lose, they stay at the bronze section. If they win at the Silver Section, they go to the Gold Section to play again (other side of silver). If they lose at silver, they go back to bronze. Once at gold, they play again. If they win, they get a playing card from the instructor. This playing card represents a Gold Medal. They then go over to the Fitness Area and they must choose one of the 5 fitness task cards and do the activity. They then go back to bronze to work their way back up to the Gold Medal Game. If they lose at gold, they go back to the silver section and play again. At the end of time, stop the game and ask who got at least 1 gold medal, 2 gold medals and so on. Find out who received the most gold medals!

Up Cup/Down Cup- MATH!:

Equipment Needed:

- 26 red solo cups (any type of cup can be used as well) *Use cones if you’re outside.
- 26 Fitness Task Cards
- 26 Math Question Cards

Set Up:

- Scatter the red solo cups around the play area. Half of them must be facing up and half must be faced down.
- Place a Fitness Task Card and a Math Question Card next to each cup.
- Dived your students into two teams; one on one side, and one on the other side.
- Tell one team they are the “Up Cup Team” and the other the “Down Cup Team”.

Start Play:

Each team will be moving around, at the same time, turning the cups depending on what team they are on (up cup or down cup). If they are on the up cup team, they will go around and turn cups that are facing down, up. If they are on the down cup team, they will go around and flip the cups so that they are facing down. Before the students can flip the cup, up or down, they must complete the Fitness Activity on the Task Card next to the cup (Blue # for reps) and answer the Math Question Card.

Once a certain amount of time has passed, have the students stop by turning off the music. Select one child from each team to collect their team's cups. When they return the cups to you, count them and determine who had the most cups, up or down. Whoever had the most cups is the winning team.

- Options:
 - Give the students different movements to do while they move around flipping cups. Ex: Hopping, Skipping, Jumping, etc.

Moving with the Alphabet and Moving with Numbers!

Equipment Needed:

- Laminate the alphabet on 26 pieces of paper (one letter on each paper)
- Laminate numbers on 26 sheets of paper (one number on each paper)
- Skillastics Activity Task Cards
- Assignment Paper Slips (*Examples at the bottom of this handout)

Set Up:

- Scatter all 26 laminated letter cards throughout the playing area.
- Lay a Skillastics Activity Task Card under each of the 26 laminated letter cards.
- Designate an “Activity Area” in the corner of the playing area for children to go to after they have completed the “Moving with the Alphabet” assignment. (*Teaching Tip: This area could include additional Skillastics task cards, balls, beanbags, scarves, anything that will keep the children active*). The children are allowed to choose what activity they’d like to do until the rest of their peers are done with the Alphabet assignment.

Start Play:

- On a signal or music, children scatter around the playing area, going to the first letter that spells their name, spelling word, vocab word, or whatever is given for the assignment.
- When they find the letter, they look at the Skillastics activity associated with that letter.
- The child does the activity the number of repetitions that were determined prior to play. (Blue, Red or Green number that is located at the bottom of the task card).
- When the child completes the repetitions, they will then search for the next letter in their assignment and repeat the process.
- When a child finishes spelling his/her word, they jog to the designated “Activity Area” in the corner. He/She then does an assigned activity in that area until everyone in the class has completed the assignment.

*Moving with Numbers: This game follows the same instructions as above, but instead of working with letters, the children are working with numbers.

*Sample Assignments for these activities are at the bottom of this handout. Make sure that every child has a piece of paper with these assignments.

STEM Skillastics

- Equipment Needed: STEM SKILLASTICS! ([←Click on the link to see a video](#))
 - This is a great way to incorporate active learning in your after school programs!

MATH (Group 1)

Find the number, do the exercise and go to the next number

5

9

13

17

21

Find each number in your phone #

_____ - _____ - _____ - _____ - _____ - _____

Answer the math problem, go to the number, do the exercise, then do the next problem

$1+1= \underline{\hspace{2cm}}$

$13+2= \underline{\hspace{2cm}}$

$10-2= \underline{\hspace{2cm}}$

$26-4= \underline{\hspace{2cm}}$

$5\times 5= \underline{\hspace{2cm}}$

$4\times 1= \underline{\hspace{2cm}}$

$24/2= \underline{\hspace{2cm}}$

$22/2= \underline{\hspace{2cm}}$

MATH (Group 2)

Find the number, do the exercise and go to the next number

6

10

14

18

22

Find each number in your phone #

_____ - _____ - _____ - _____ - _____ - _____

Answer the math problem, go to the number, do the exercise, then do the next problem

$10-2= \underline{\hspace{2cm}}$

$26-4= \underline{\hspace{2cm}}$

$5\times 5= \underline{\hspace{2cm}}$

$4\times 1= \underline{\hspace{2cm}}$

$24/2= \underline{\hspace{2cm}}$

$22/2= \underline{\hspace{2cm}}$

$13+2= \underline{\hspace{2cm}}$

$1+1= \underline{\hspace{2cm}}$

SPELLING (Group 1)

Find the first letter in your name, do the exercise, and then move on to the next letter.

Name: _____

Find each letter in a spelling word

Zebra Snake

Lion Tiger

Find Each Letter in a vocab- can define the word while doing the exercise, and use it in a sentence

Alert Envy

Tidy Vast

SPELLING (Group 2)

Find the first letter in your name, do the exercise, and then move on to the next letter.

Name: _____

Find each letter in a spelling word

Lion Tiger

Snake Zebra

Find Each Letter in a vocab- can define the word while doing the exercise, and use it in a sentence

Envy Tidy

Vast Alert