

LESSON 10

GYMNASTICS - BEAM



Lesson 10: Gymnastics - Beam

Description

Focus is on students testing the connection between their senses and their balance by walking on a simulated balance beam. The concept of proprioception (perception or awareness of the position and movement of the body) will be demonstrated.

California Standards

Math

5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$).

Science

MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

Physical Education

6.1.11 Design and perform smooth, flowing sequences of stunts, tumbling, and rhythmic patterns that combine traveling, rolling, balancing, and transferring weight.

8.1.5 Demonstrate fundamental gymnastic/tumbling skills.

8.1.6 Create and perform a routine using fundamental gymnastic/tumbling skills, locomotor and nonlocomotor movement patterns, and the elements of speed, direction, and level.

Materials

Tape measure, cones, masking tape, stopwatch

Key Concepts

Balance: an even distribution of weight enabling someone or something to remain upright and steady.

Proprioception: perception or awareness of the position and movement of the body.

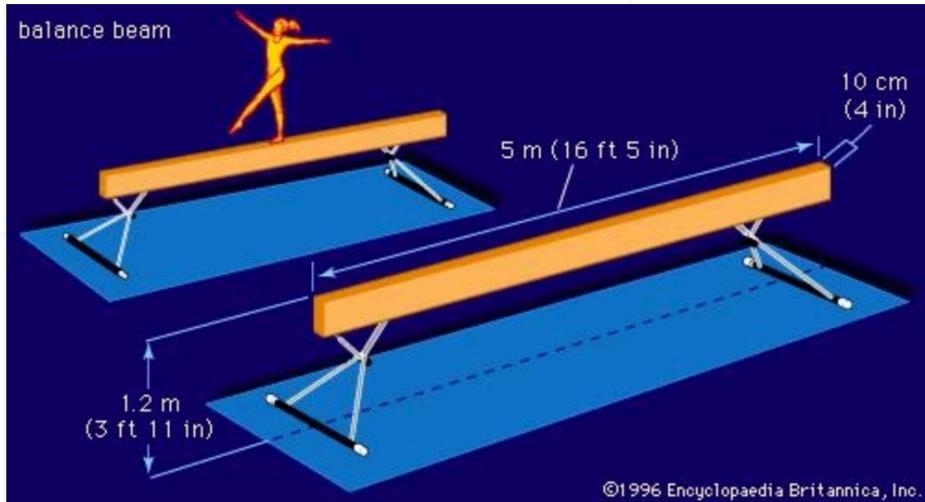
Assessment Questions

- How long is the balance beam?
Answer: 5 meters (16 feet 5 inches)
- How wide is the balance beam?
Answer: 10 cm (4 inches)
- What helps you stay balanced?
Answer: Balance is established by four different body systems: Vestibular system (inner ear), Vision, Proprioceptors (sensors in all of our joints and tendons that communicate with your brain and muscles), and the Hip and Trunk Muscle group.
- How does balance help with other sports?
Answer: It helps athletes move efficiently and maintain control of your body while standing (static balance) and moving (dynamic balance).

Procedure for Classroom Activity

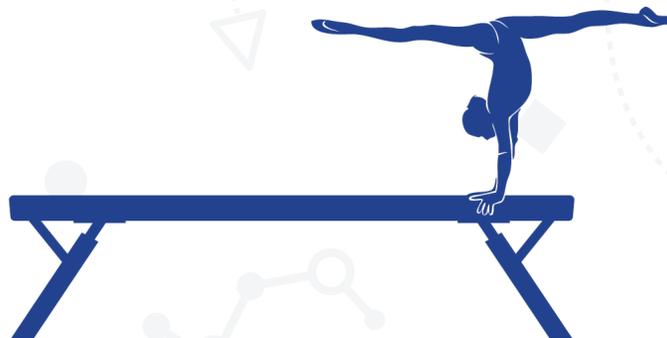
- Show students videos of balance beam event
Video of Simone Biles (beam):
<https://youtu.be/W7LzYjEsu-w>
Video of Simone Biles gravity-defying physics:
<https://youtu.be/9H00zsigh30>
- Discuss principles of physics and math being illustrated in the videos: balance, strength, and concentration.
- Describe the dimensions of the balance beam and ask students to draw the balance beam on the worksheet
5 meters or 16 feet 5 inches long
10 centimeters or 4 inches wide
1.2 meters or 3 feet 11 inches above the ground

4. Working with the length of the balance beam (5 meters or 16 feet 5 inches), have students label the distances of the following fractions on the balance beam (number line) provided on the worksheet .
 Note: to generate additional number lines go to <https://www.helpingwithmath.com/printables/others/NumberLineGenerator01.htm>



Procedure for Athletic Activity

1. The objectives are to practice static balance (the ability to maintain control of a position while not moving) and dynamic balance (the ability to maintain balance and control of the body while moving, like dancing, jumping, or throwing).
2. Make a straight line on the floor with a piece of tape the distance of a balance beam (5 meters/16 feet 5 inches) using the tape measure and plastic cones.
3. Treat the tape as a balance beam. Ask students to pick up one foot and place it in front of the other as they walk across, instead of sliding their feet along tape. Watch their feet to ensure they stay on the beam. Have them walk forward and backward with their arms out to the side to maintain balance.



4. For more challenging balance beam practice, place a bean bag on each student's head or shoulder and have them try not to drop it.
5. Practice dynamic and static balance exercises with one eye closed and discuss the role of vision in balance. The vestibular system (inner ear balance mechanism) works with the visual system (eyes and the muscles and parts of the brain that work together to let us 'see') to stop objects blurring when the head moves. It also helps us maintain awareness of positioning when, for example, walking, running, or riding in a vehicle.
6. Bonus work: Give students the opportunity to design and perform their own balance beam routine.

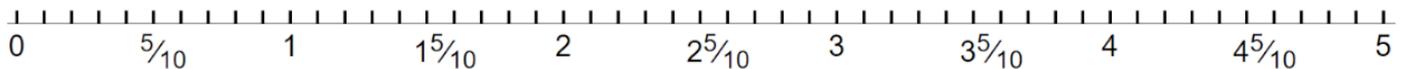
Worksheet 10: Gymnastics - Beam

Draw the balance beam using the dimensions provided by your teacher. Place the gymnast in the middle of the balance beam.



1. How does a gymnast use potential energy on the balance beam?
2. How does a gymnast use kinetic energy on the balance beam?

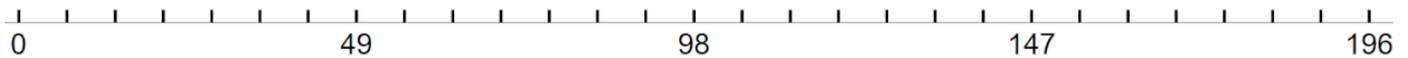
Use the length of the balance beam (5 meters) to answer the following questions



3. If the gymnast walks from one end of the balance beam to $\frac{1}{2}$ the distance, how many meters has she walked? Label this point in the number line above.

4. If the gymnast walks from one end of the balance beam to $\frac{1}{3}$ the distance, how many meters has she walked? Label this point in the number line above.
5. If the gymnast walks from one end of the balance beam to $\frac{1}{4}$ the distance, how many meters has she walked? Label this point in the number line above.
6. If the gymnast walks from one end of the balance beam to $\frac{1}{8}$ the distance, how many meters has she walked? Label this point in the number line above.
7. Show you to convert 5 meters into inches

Use the length of the balance beam (196 inches) to answer the following questions



8. If the gymnast walks from one end of the balance beam to $\frac{1}{2}$ the distance, how many inches has she walked? Label this point in the number line above.
9. If the gymnast walks from one end of the balance beam to $\frac{1}{4}$ the distance, how many inches has she walked? Label this point in the number line above.
10. If the gymnast walks from one end of the balance beam to $\frac{3}{4}$ the distance, how many inches has she walked? Label this point in the number line above.
11. If the gymnast walks from one end of the balance beam to $\frac{1}{8}$ the distance, how many inches has she walked? Label this point in the number line above.
12. If the gymnast walks from one end of the balance beam to $\frac{7}{8}$ the distance, how many inches has she walked? Label this point in the number line above.