



Name: _____

Assessment Questions

Module 1.1: Volleyball - Improving Serving

1. Brooklyn changes her foot placement and her toss during practice, tallying her serve for the next three practices. She improved her serve from 6/10 to 7/10. Did she perform a controlled experiment?
 - a. Yes, because she collected data before and after her change.
 - b. No, because she only collected data on herself.
 - c. Yes, because she collected data for three practices.
 - d. No, because she only changed two things.

2. Put the following in order of how a volleyball player can assess his/her serve to ensure improvement:
 - a. Collecting Data
 - b. Asking a question about how they can improve their serve
 - c. Report out to a coach
 - d. Research
 - e. Changing one variable at a time
 - f. Making a hypothesis
 - g. Analyzing data

1.____ 2.____ 3.____ 4.____ 5.____ 6.____ 7.____

3. When Jaime changed her foot placement while serving at practice, she improved her serves from 5/10 to 7/10. What conclusion can she draw from this evidence?
 - a. She's a better server.
 - b. Her change in foot placement improved her serve.
 - c. She had a better practice then normal.
 - d. She should use a torque serve to improve.



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Module 2.1: Soccer - Probability and Penalty Kicks

1. Juan's penalty kick probability is $\frac{8}{10}$ and David's is $\frac{9}{10}$. Which expression is correct?
 - a. $\text{David} > \text{Juan}$
 - b. $\text{Juan} > \text{David}$
 - c. $\text{Juan} = \text{David}$
 - d. $\text{David} < \text{Juan}$
2. Who would you prefer to take the penalty kick?
 - a. Hope has a probability $\frac{6}{10}$
 - b. Alex has a probability of $\frac{13}{20}$
 - c. Maggie has a probability of $\frac{14}{15}$
 - d. Crystal has a probability of $\frac{4}{5}$

Module 3.1: Football - Properties of a Football and Foam Football

1. True or False: Different materials have the same measurable properties.
2. A youth football behaves differently than a foam football because (multiple answers):
 - a. They are made of different materials
 - b. They have different weights
 - c. Different kids use them
 - d. They are different sizes

Module 4.1: Basketball - Advancements in Shoe Technology

1. True or False: Shoes and clothing are examples of technology.



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2. In analyzing technology, which of the following is the best way to collect information?
 - a. Take measurements and test the equipment
 - b. Record the color and style
 - c. Note how the cost has changed over time.
 - d. Look it up online

Module 5.1: Volleyball - Adaptive Technology

1. Put the steps of the Engineering Design for Adaptive Volleyball in order:
 - a. Plan and build a prototype: Draw diagrams and build a device or implement a support.
 - b. Brainstorming and multiple designs for a solution.
 - c. Identify the problem: Some of the players in adaptive volleyball need assistance to retrieve balls that have gone out-of-play.
 - d. Redesign: Make changes to your design based on the data and interviews.
 - e. Test the prototype: Record data and interview participants on its success.
 - f. Communicate: Present your idea and results to the class.
 - g. Research: Learn more about adaptive sports and who plays.

1.____ 2.____ 3.____ 4.____ 5.____ 6.____ 7.____

2. List 2-3 challenges of adaptive sports.



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3. List 2-3 benefits of adaptive sports.

Module 6.1: Soccer - Calculating Calories and Heart Rate

1. Calculate the number of calories burned when Marlene, who weighs 100 pounds, played soccer for 2 hours using the following equation: $(\text{Weight}/2) \times 8.5 \times \text{number of hours}$.
 - a. 180 calories
 - b. 425 calories
 - c. 850 calories
 - d. 1020 calories
2. Calculate the number of calories burned when Jay, who weighs 120 pounds, played video games for 2 hours using the following equation: $(\text{Weight}/2) \times 1.5 \times \text{number of hours}$.
 - a. 180 calories
 - b. 425 calories
 - c. 850 calories
 - d. 1020 calories

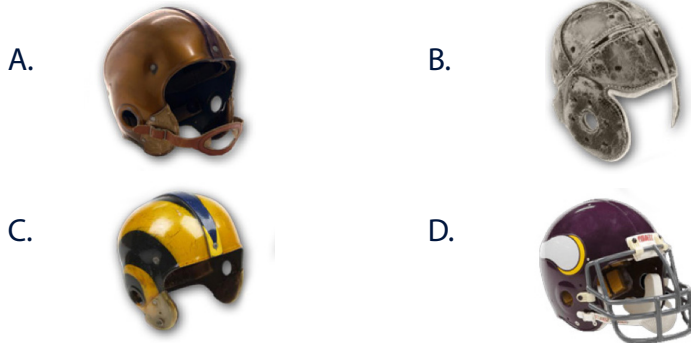
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3. Compare the two equations and select the best answer.
- Soccer: $(\text{Weight}/2) \times 8.5 \times \text{number of hours}$
- Playing Video Games: $(\text{Weight}/2) \times 1.5 \times \text{number of hours}$
- Playing video games for twice as long as playing soccer will burn the same number of calories.
 - Playing soccer burns the same calories as playing video games.
 - Kids who play video games weigh less because weight is divided by two.
 - Kids playing soccer will burn more calories.

Module 7.1: Football - The Evolution of a Football Helmet

1. In football and other sports, players wear helmets and other protective equipment. Which helmet would provide the best protection?



- True or False: The brain controls and collects information from all five senses.
- True or False: The brain cannot be injured because of the skull.



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Module 8.2: Basketball - Shot Tracking

1. Which of the following mathematical statements are correct?
 - a. $3/10 > 1/10$
 - b. $1/10 < 1/20$
 - c. $7/10 = 9/10$
 - d. $8/10 < 4/10$

2. In a basketball game, Player one made three shots; Player two made three 3-point shots; Player three made 2 shots and one 3-point shot. Put their total points in order from smallest to largest:
 - a. $a. 2 > 3 < 4$
 - b. $b. 6 > 7 > 9$
 - c. $c. 2 < 3 < 4$
 - d. $d. 6 < 7 < 9$



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Module 1.1: Volleyball - Improving Serving

1. What is a controlled experiment?
 - a. An experiment controlled by a scientist.
 - b. An experiment where only one variable is changed.
 - c. An experiment where data is collected by technology.

2. Put the following in order of how a volleyball player can test and improve his/her serve:
 - a. Collecting Data
 - b. Asking a question about how they can improve their serve
 - c. Report to a coach
 - d. Research
 - e. Changing one variable at a time
 - f. Making a hypothesis
 - g. Analyzing data

1.____ 2.____ 3.____ 4.____ 5.____ 6.____ 7.____

Module 2.1: Soccer - Probability and Penalty Kicks

1. If Suzie has a probability of making a penalty shot of 0.75, how many shots will she make over her career of 250 penalty shots?
 - a. 106
 - b. 143
 - c. 188
 - d. 231

2. Which of the following is a probability?
 - a. 1.33
 - b. 8
 - c. 2/5
 - d. 0.43



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3. True or False: Rosa has a probability of making a penalty shot of 0.89. She will score the winning goal for her team.

Module 3.1: Football - Properties and Behavior of Footballs

1. What is the equation for density?
 - a. Mass divided by Volume
 - b. Perimeter divided by Mass
 - c. Mass times Volume
 - d. Volume times Perimeter
2. Which of the following equations in relation to volume would be the most useful to calculate the volume of a football (multiple answers)?
 - a. $\text{Cube} = (\text{Length of a side})^3$
 - b. $\text{Prism} = \text{length} \times \text{width} \times \text{height}$
 - c. $\text{Cylinder} = \pi \times \text{radius}^2 \times \text{height}$
 - d. $\text{Cone} = \frac{1}{3} \times \pi \times \text{radius}^2 \times \text{height}$
 - e. $\text{Sphere} = \frac{4}{3} \times \pi \times \text{radius}^3$

Module 4.1: Basketball - Advancements in Shoe Technology

1. In analyzing technology, which of the following is the best way to collect information?
 - a. Take measurements and test the equipment
 - b. Record the color and style
 - c. Note how the cost has changed over time
 - d. Look it up online



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2. What data is most effective to evaluate and improve the performance of shoes?
 - a. Quantitative
 - b. Attribute
 - c. Qualitative
 - d. Discrete

Module 5.1: Volleyball - Adaptive Technology

1. Which of the following is an essential reason to collect data when testing a design?
 - a. To determine the overall success of the design.
 - b. To prove your design was the best.
 - c. To measure how long it will work.
 - d. To compare your initial design and redesign.

2. Put the steps of the Engineering Design for Adaptive Volleyball in order:
 - a. Plan and build a prototype: Draw diagrams and build a device or implement a support.
 - b. Brainstorming and multiple designs for a solution.
 - c. Identify the problem: Some of the players in adaptive volleyball need assistance to retrieve balls that went out-of-play.
 - d. Redesign: Make changes to your design based on the data and interviews.
 - e. Test the prototype: Ask a local adaptive team to test the device or system, or play adaptive volleyball and test it. Record data and interview participants on its success.
 - f. Communicate: Present your idea and results to the class or email your ideas to the adaptive sports league.
 - g. Research: Learn more about adaptive sports and who plays? What kind of disabilities do players have? Interview players about their challenges.

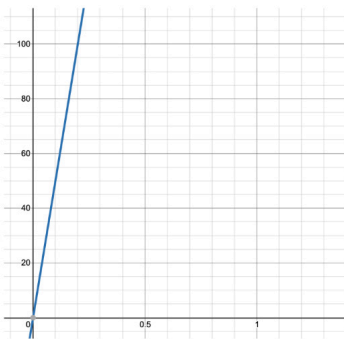
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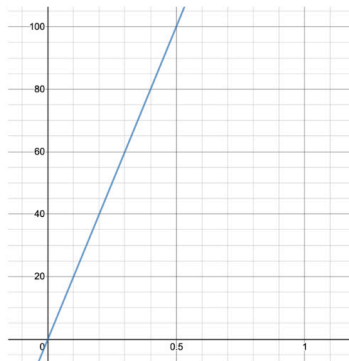
Module 6.1: Soccer - Heart Rate and Calories

- In the equation $C = (\text{MET} \times \text{weight}) \times \text{TIME}$, what happens to the calories burned when you increase time?
 - Decreases
 - Not related
 - Stays the same
 - Increases
- Which of the following graphs best represents the equation $C = (2.5 \times 80) \times \text{TIME}$?

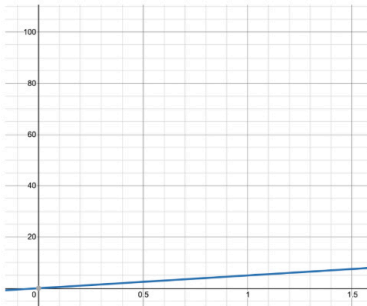
a.



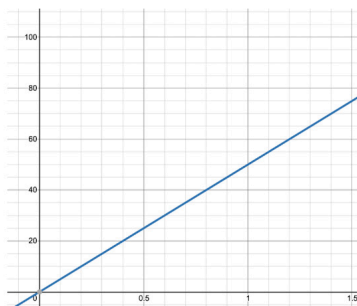
b.



c.



d.



Assessment Questions

Module 7.1: Football - The Evolution of a Football Helmet

1. In football and other sports, players wear helmets and other protective equipment. Which helmet would provide the best protection?



2. Justify your selection from question one.
3. True or False: Risk of concussion can be lowered by new helmet technology.
4. True or False: Concussions or blows to the brain cannot kill neurons; they will heal over time.



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Module 8.2: Basketball - Shot Tracking with Technology

1. If you have a 60% success rate for free throws, how many total points will you score if you attempt 20 shots?
 - a. 10
 - b. 12
 - c. 14
 - d. 16

2. Which of the following has the strongest evidence supporting the claim about a player's free throw ability?
 - a. Player one has a 0.88 probability of making free throws shots. Player one should take the free throw for the team.
 - b. Player two is the tallest and been playing basketball the longest. Player two should take the free throw for the team.
 - c. Player three has a 45% percent chance of making a 3-point shot. Player three should take the free throw for the team.
 - d. Player four makes almost every shot he/she attempts. Player four should take the free throw for the team.