**Average Speed Triathlon**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.: \_\_\_\_\_\_\_**

**Purpose:** To practice measuring and calculating average speed.

**Background:** Record the definition of average speed in the space below, as well as the equation for calculating average speed.

|  |  |
| --- | --- |
| **Materials:**   * 2 meter sticks * 4 distance markers * 3 stopwatches * Clipboard | **Group Roles:**   * Participant * Timer #1 (at 5m mark) * Timer #2 (at 10m mark) * Timer #3 (at 15m mark) |

**Procedure:**

1. Determine 3 events the participants in your triathlon will complete. Each 5m leg of the triathlon needs to have a different event. (Ex: walking, speed walking, hopping, walking backwards, skipping, walking heal-to-toe, etc). Record the actions you choose in the table below, and confirm then with your teacher before moving on to step 2.

|  |  |
| --- | --- |
| **Leg of Triathlon** | **Event** |
| 0-5m |  |
| 5-10m |  |
| 10-15m |  |

1. Use the meter sticks to measure out a 15 meter long track. Place markers at 0m (the start of your track), 5m, 10m, and 15m (the end of your track).
2. Determine who will fill each of the group roles for the first round of data collection and how you will rotate through those roles.
3. Have the first participant stand at the 0m marker. The timers should stand next to the marker for their distance (5, 10, or 15 meters).
4. Timer #1 will count down “(3, 2, 1… go!” or” Ready, set, go!”) and begin timing. When timer #1 says go, the participant will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the start marker to the 5m marker.
5. When the participant reaches the 5m marker, they will stop there. Timer #1 will stop timing and record the time it took for the participant to reach the 5m marker on the participant’s paper and then pass the paper on to timer #2.
6. Timer #2 will count down (“, 2, 1… go!” or “Ready, set, go!”) and begin timing. When timer #2 says go, the participant will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the 5m marker to the 10m marker.
7. When the participant reaches the 10m marker, they will stop there. Timer #2 will stop timing and record the time it took for the participant to reach the 10m marker on the participant’s paper and then pass the paper on to timer #3.
8. Timer #3 will count down (“3, 2, 1… go!” or” Ready, set, go!”) and begin timing. When timer #3 says go, the participant will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the 10m marker to the 15m marker.
9. When the participant reaches the 15m marker, they will stop there. Timer #3 will stop timing and record the time it took for the participant to reach the15m marker and then return the paper to the participant.
10. Group members will switch roles, and repeat steps 4-10 for the new participant until every group member has participated in the triathlon.

**Data:** (Remember – this should be **your** triathlon data, recorded for you by your group members.)

|  |  |  |
| --- | --- | --- |
| **Event** | **Distance Traveled (m)** | **Time (s)** |
|  |  |  |
|  |  |  |
|  |  |  |

**Data Analysis:**

1. Calculate your average speed for each **individual** **event**.

|  |  |  |
| --- | --- | --- |
| **Event** | **Show your work!** | **Average Speed** |
|  |  |  |
|  |  |  |
|  |  |  |

1. Calculate your average speed for the **entire** triathlon. Show your work!

Total triathlon average speed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Conclusion:**

1. Which individual event resulted in your fastest average speed? How does this speed compare to your average speed for the total triathlon?
2. Which individual event resulted in your slowest average speed? How does this speed compare to your average speed for the total triathlon?
3. Why might you see differences between your average speed for individual events and your average speed for the total triathlon?
4. Compare your total triathlon average speed to the total triathlon average speed of one of your group members. Was your average speed faster or slower than your group member’s average speed? Why?
5. How is the average speed of a person related to the total distance covered and the total time taken?
6. If the average speed of a person was 1.2 m/s, does this mean that their speed was exactly 1.2m/s the whole time? Why or why not?
7. Explain how the average speed of a person is related to the person’s slowest speed and fastest speed.

**Fun! With! Math! \o/**

1. Walnut Market is 1km away from Fowler. How long would it take you to get there if you traveled there using the event (hopping, walking, etc.) that resulted in your fastest individual task average speed? (Show your work!)
2. How long would it take you to get to Walnut Market if you traveled there using the event (hopping, walking, etc.) that resulted in your slowest individual task average speed? (Show your work!)
3. Washington Square is 3km away from Fowler. How long would it take you to get there if you traveled there using the event (hopping, walking, etc.) that resulted in your fastest individual task average speed? (Show your work!)
4. How long would it take you to get to Washington Square if you traveled there using the event (hopping, walking, etc.) that resulted in your slowest individual task average speed? (Show your work!)

**Calculating an Unknown Distance**

1. Your teacher will show you an unknown distance. Have a partner time you in the event of your choice over this distance. Record the time here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Use your average speed calculation from the lab for the event you chose to use and the time required to travel the unknown distance to calculate the unknown distance. (Show your work!)
3. Measure and record the unknown distance with a meter stick and record it here: \_\_\_\_\_\_\_\_\_\_\_\_
4. How accurate was your calculation for the unknown distance compared to your measurement of the unknown distance? Why do you think that is?