TIME FOR RACES

Subject

Mathematics

Prepared By

[Instructor Name]

Grade Level

5

Overview

This lesson plan covers teaching content for;

1. Definition of athletics
2. Estimated time

Objectives

Students should be able to;

1. Define athletics.
2. Solve for estimated time.

Activity Starter/Instruction

1. Athletics is a collection of sporting events that involve competitive running, jumping, throwing, and walking.
2. The most common type of athletics competition is track and field, but also includes road running and cross country events.
3. Athletics events are usually relatively simple to run, with the winner determined by who runs or walks an allotted distance the quickest, or who jumps or throws something – such as a shot put or a javelin – the furthest.
4. Events are divided by different disciplines, with races run from anything between 100 meters and the 26.2 miles of a marathon.
5. There are also different variations of jumping events, including long jump, triple jump or pole vault.
6. While events are traditionally run as individual competitions, there are team variations, such as a relay race – which

Teacher Guide

Day 1/ Lesson 1: 20mins

1. Discuss the relation between speed, distance and time. Students will know that speed of a car is usually measured in kilometers per hour (e.g. 60 kph)
2. Discuss speed as a rate, a relationship of two measures (different attributes).
3. "Speed equals distance divided by time."
4. Give students some examples about travelling by car between two cities.
5. Make sure that all three types of problem below are covered, that is one of the measures, speed, time or distance, is unknown.
6. Let the students attempt the problems in small groups and compare strategies. Let students use calculators but expect that they check their answers for reasonableness.
7. If the distance between Dunedin and Christchurch is 360 km and it takes Grandpa 4.5 hours to do the trip, what is his average speed?
8. If the distance between Dunedin and Christchurch is 360 km and Grandpa's average speed is 80 kph, how long does he take to do the trip?
9. If Grandpa's average speed between Dunedin and Christchurch is 95 kph and it takes 3.75 hours to do the trip, how far did he travel?
10. Tell the students that they will need to calculate speed in meters per second rather than kilometers per hour.

Materials Required

- Stopwatch
- Meter stick
- Paper and pencils
- White board
- Marker
- Calculator
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Additional Resources

- https://www.slideshare.net/oerafrica/mathematical-literacy-mathematics-and-mathematical-sciences-illustrative-learning-programme-grade-7-module-2-sport-learners-material
- https://www.mathgoodies.com/Webquests/Olympics
- https://www.iaaf.org/records/by-category/world-records
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Additional Notes

involve passing a baton between team members over the course of a race.

Guided Practice

Day 2/ Lesson 2: 15 Mins

1. Select Olympic track events that you would like to measure.
2. Set up the race courses. Use the 2012 Gold Medal results below, or more recent results if available. Have students mark a starting point and then measure the distance of the event. Label the finishing point (or the relay points) with stakes which identify the distance, the winning results, and the Gold Medal winner's name and country.
3. Have students participate in the events and compare their results to the Gold Medalists'.
4. Assign math problems comparing the student and medalists' results. Potential activities include: calculating the difference between the student and medalists' results, average the students' results, calculate the percent improvement students would need to achieve the results of the medalists.
5. 2012 Men's Gold Medal

100-meter dash	Usain Bolt, Jamaica	9.63 sec
200-meter dash	Usian Bolt, Jamaica	19.32 sec
400-meter dash	Jamaica	36.84 sec

That is because the distances are in meters and the times are in seconds.

11. Let each group choose three women's or men's running events, e.g. 100m, 400m, 5 000m.
12. What was the average speed of the holders of each of these records?
13. Choose three events where the World, Olympic and New Zealand national records are different. Assume these runners were running against each other.
14. Ask by how much would the World record runner be ahead of the other two runners at the finish?
15. Look at the women's or men's national records in the 100m, 400m, 1500m, and 10,000m events.
16. If the 100m runner could keep going at that pace the other distances, what would the records for each of the other events be?
17. If they competed in the same race, how far ahead of the other runners would the 100m runner be at the finish?
18. You might time your students sprinting over 100m.
19. Which world record distance is your speed closest to?
20. For example, the world record for men over 10 000 m is 27 minutes and 1.17 seconds (1621.17 seconds). That is an average speed of 10 000 ÷ 1621.17 ≈ 6.17 meters per second (m/s).
21. A student who runs 100 meters in 15 seconds has an average speed of 100 ÷ 15 ≈ 6.67 m/s which is close.

Guided Practice

Day 3/ Lesson 3: 15mins

1. The students are given time to explore ways to calculate their speed.
2. Allow students to explore different approaches such as: measuring out 100m and timing how long it takes to run the distance; or students running for 10 seconds and measuring how far they travelled.

6. 2012 Women's Gold Medals

100-meter dash	Shelly-Ann Fraser-Pryce, Jamaica	10.75 sec
200-meter dash	Allyson Felix, United States	21.88 sec
400-meter dash	United States	40.82 sec

3. The class returns to the classroom and calculate their speed based on the data collected.
4. The teacher asks, "If someone wants to find out their speed, what rule would help them work it out?"
5. Teacher may encourage students to round their answers to assist in easy calculation.

Summary

1. Teacher asks selected students for strategies they employ to carry out activities.
2. Teacher goes over it with the class if it seems helpful for the remaining students.

Assessment Activity

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Assess if students can;

1.Calculate for estimated time of race correctly.