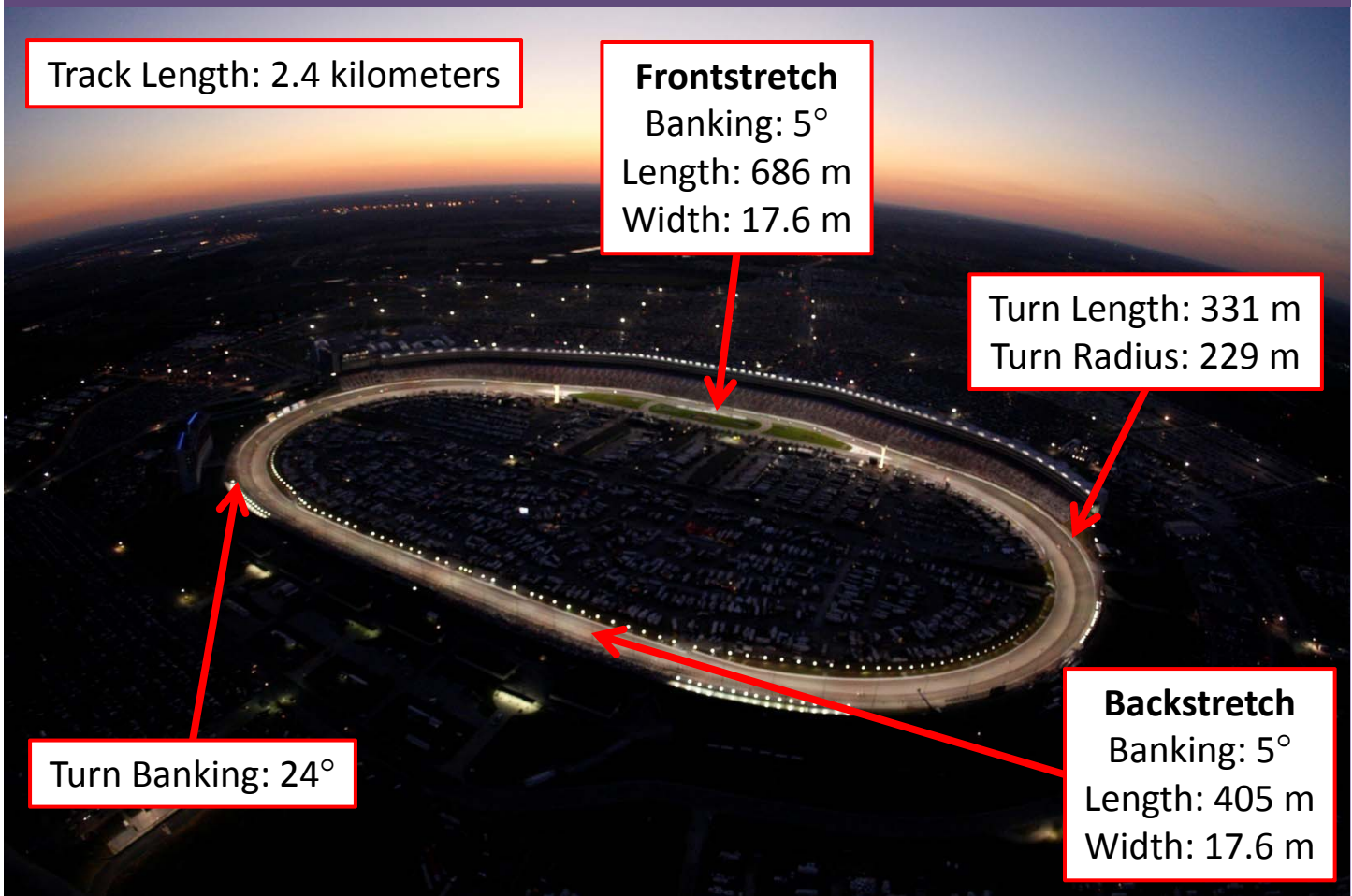


# The Science of ...

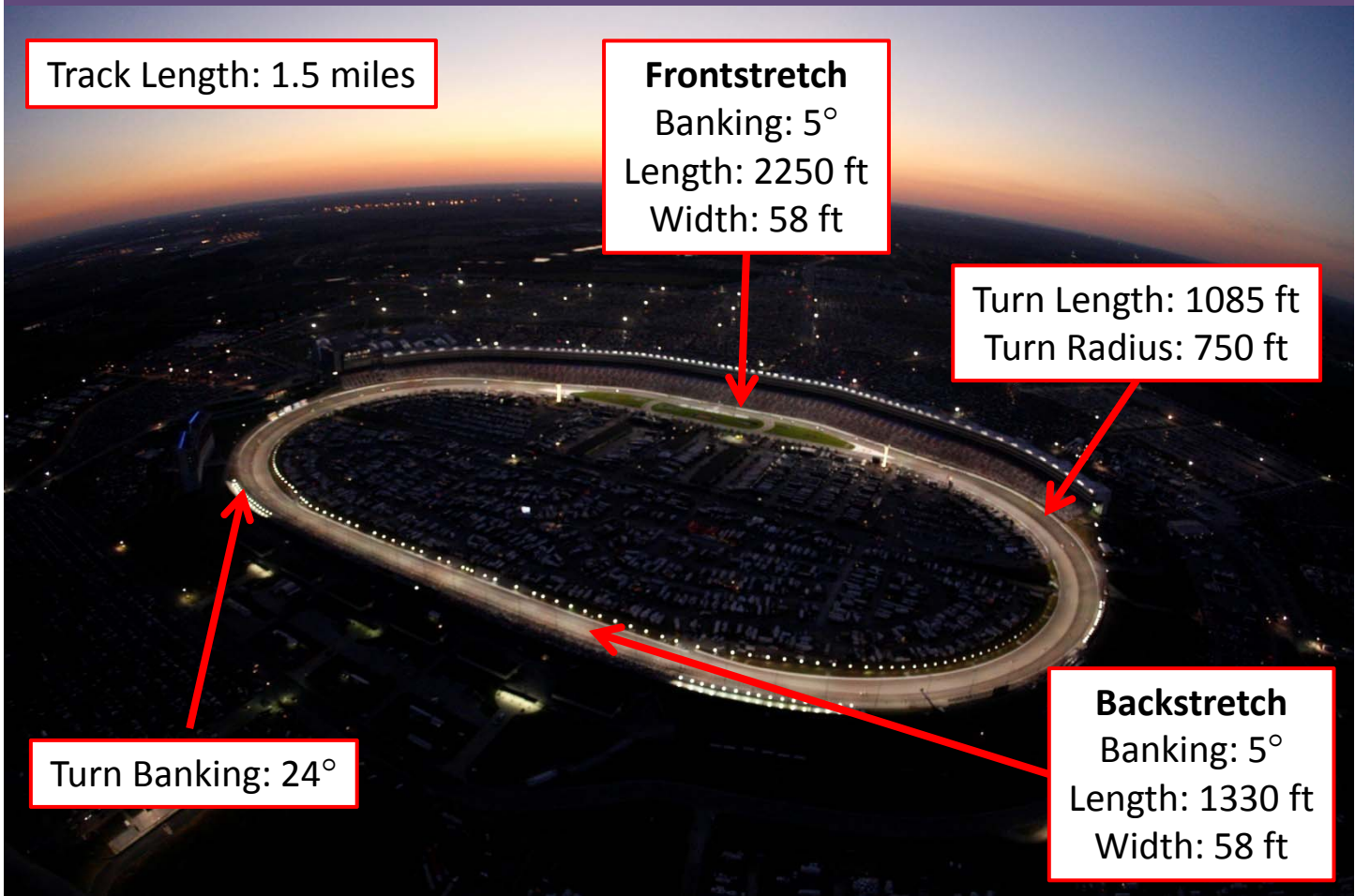
## ... Texas Motor Speedway



- TMS is a quad-oval, which makes the frontstretch (at 686 m) much longer than the 405-meter backstretch.
- A car's tires have to generate 323,000 N of force to take the corners at 67 m/s, which creates an acceleration of about 2 g's.
- Turns are 1323 meters of the 2.4-km speedway. Drivers are turning about 55% of every lap.
- Four-and-a-half Cowboys Stadiums would easily fit inside the Texas Motor Speedway. There are 2.67 million square meters just of parking.
- An estimated 400,000 fans visit during a race weekend, making TMS the seventh largest "city" in Texas.
- The front grandstand contains almost a million kilograms of aluminum and 13.6 million kilograms of steel. The aluminum in the grandstand could produce 61 million Coca-Cola cans.
- Texas Motor Speedway has enough permanent lighting to illuminate 11 NFL stadiums — an average of 2,000,000 watts for a nighttime event.
- If all the hot dogs sold each year were laid end-to-end, they would go around the track six times.
- If all the hamburgers served in one year were stacked, the stack would be taller than a 74-story building.

# The Science of ...

## ... Texas Motor Speedway



- An intermediate track of 1.5 miles, TMS is a quad-oval, which makes the frontstretch (at 2250 ft) much longer than the 1330-foot backstretch.
- A car's tires have to generate 7,260 lbs of force to take the corners at 150 mph, which creates an acceleration of about 2 g's.
- Turns are 4,340 feet of the 1.5-mile speedway. Drivers are turning about 55% of every lap.
- Four-and-a-half Cowboys Stadiums would easily fit inside the Texas Motor Speedway. There are 660 total acres just of parking.
- An estimated 400,000 fans visit during a race weekend, making TMS the seventh largest "city" in Texas.
- The front grandstand contains 2 million pounds of aluminum and 15,000 tons of steel. The aluminum in the grandstand could produce 61 million Coca-Cola cans.
- Texas Motor Speedway has enough permanent lighting to illuminate 11 NFL stadiums — an average of 2,000,000 watts for a nighttime event.
- If all the hot dogs sold each year were laid end-to-end, they would go around the track six times.
- If all the hamburgers served in one year were stacked, the stack would be taller than a 74-story building.

# Teachers' Guide for TMS

- At the Spring race at TMS in 2008, Dale Earnhardt Jr. won the pole with a lap time of 28.286 seconds. What was Dale Jr.'s average speed?
- The current track qualifying record was set by Brian Vickers at the Fall race in 2006 with a lap time of 27.518 seconds. What was Brian's average speed?
- If you were to drive around TMS at an average speed of 65 mph (29 m/s), what would your lap time be?
- How many g's would you feel from centripetal acceleration if you took Turn 3 at TMS going 180 mph (80 m/s)?
- How much aluminum is there in a single Coca-Cola can?
- How many watts of lighting are there at a typical NFL stadium?
- How many 60-watt light bulbs would it take to equal the lighting at a night race at TMS?
- How many hot dogs are sold each year at Texas Motor Speedway?
- How many hamburgers are sold each year at Texas Motor Speedway?
- The banking at TMS is 24 degrees. If the track is 58 feet wide, how high up would you be if you stood next to the outside wall?