

# Pit Stop Speed

NASCAR races are won by fast laps **and** fast pit stops. Use real lap times from 2025 Cup Series qualifying to find speeds in miles per hour, and see how much time a car can gain or lose.

Name \_\_\_\_\_

Date \_\_\_\_\_

## TRACK LENGTHS + TIME TOOLKIT

**Daytona**  
2.5 miles

**Talladega**  
2.66 miles

**Bristol**  
0.533 mile

**Martinsville**  
0.526 mile

**1 hour**  
= 3,600 seconds



**Speed = distance ÷ time**  
EVERY SECOND COUNTS

## 2025 CUP SERIES POLE LAPS • FASTEST QUALIFYING LAP AT EACH TRACK

| TRACK               | LAP LENGTH      | POLE LAP TIME   | SPEED (MPH)          |
|---------------------|-----------------|-----------------|----------------------|
| <b>Daytona</b>      | <b>2.5 mi</b>   | <b>49.249 s</b> | <input type="text"/> |
| <b>Talladega</b>    | <b>2.66 mi</b>  | <b>52.481 s</b> | <input type="text"/> |
| <b>Bristol</b>      | <b>0.533 mi</b> | <b>14.912 s</b> | <input type="text"/> |
| <b>Martinsville</b> | <b>0.526 mi</b> | <b>19.718 s</b> | <input type="text"/> |

Speed in mph = miles ÷ seconds × 3,600 (there are 3,600 seconds in an hour). Fill in the SPEED column as you work. Lap times: official 2025 NASCAR Cup Series qualifying results.

### ROOKIE

- 1** Round the Daytona pole lap to **50 seconds**. At that pace, how many **miles** does the car go in **1 minute** (60 seconds)?

WORK SPACE

\_\_\_\_\_ miles

### ROOKIE

- 2** Use your answer to #1. A car that goes that many miles **every minute** is going how many **miles per hour**?

WORK SPACE

\_\_\_\_\_ mph

### STARTER

- 3** Now use the real Daytona lap: **2.5 miles** in **49.249 seconds**. Find the speed in mph. Round to 1 decimal place.

WORK SPACE

\_\_\_\_\_ mph

### STARTER

- 4** Bristol: **0.533 mile** in **14.912 seconds**. Find the speed in mph. Round to 1 decimal place.

WORK SPACE

\_\_\_\_\_ mph

### PRO

- 5** Martinsville: **0.526 mile** in **19.718 seconds**. Find the speed in mph. Round to 1 decimal place.

WORK SPACE

\_\_\_\_\_ mph

### PRO

- 6** Bristol and Martinsville are almost the same length. Use your **rounded** answers to #4 and #5. How many mph faster is the Bristol lap?

WORK SPACE

\_\_\_\_\_ mph

### ALL-STAR

- 7** Talladega: **2.66 miles** in **52.481 seconds**. Find the speed in mph, rounded to 1 decimal place. Is it faster or slower than your Daytona speed in #3?

WORK SPACE

\_\_\_\_\_ mph

### CHALLENGE ★

- 8** A Martinsville race is **500 laps**. If a car could run every lap in **19.718 seconds**, how many **minutes** would the race take? Round to 1 decimal place.

WORK SPACE

\_\_\_\_\_ minutes

## A Pit Stop Clock

Each number is one four-tire stop, in seconds, by a made-up crew. Real Cup Series four-tire stops take about 9 to 12 seconds.

| CREW        | STOP 1 | STOP 2 | STOP 3 | STOP 4 | STOP 5 | MEAN                 |
|-------------|--------|--------|--------|--------|--------|----------------------|
| Team Comet  | 9.8    | 10.1   | 9.6    | 10.4   | 9.6    | <input type="text"/> |
| Team Blaze  | 10.6   | 9.9    | 11.2   | 10.3   | 10.5   | <input type="text"/> |
| Team Harbor | 9.4    | 12.8   | 9.5    | 9.7    | 9.6    | <input type="text"/> |

- Find each crew's **mean** (average) stop time. Write it in the MEAN column.
- Add up all 5 stops for Team Comet and for Team Blaze. How many **seconds in all** did Team Comet save? \_\_\_\_\_ seconds
- Team Harbor had one slow stop. Find Harbor's **median** stop time. Which describes a typical Harbor stop better, the mean or the median? \_\_\_\_\_ s · \_\_\_\_\_
- Look at all 15 stops. What **percent** of them took less than 10 seconds? Round to 1 decimal place. \_\_\_\_\_ %

WORK SPACE

## B The Cost of a Pit Stop

While a crew works, cars still on the track keep racing. Turn mph into feet per second to see how far they go.

- A car races at **180 mph**. How many **feet per second** is that? (1 mile = 5,280 feet)

WORK SPACE

\_\_\_\_\_ ft per second

- A pit stop takes **10 seconds**. How many **feet** does a car racing at 180 mph go in that time? How many **miles** is that?

WORK SPACE

\_\_\_\_\_ feet · \_\_\_\_\_ mile

- A Cup car is about **16 feet** long. How many **car lengths** is your distance in feet from #2?

WORK SPACE

\_\_\_\_\_ car lengths

- Team Comet's fastest stop and Team Blaze's slowest stop are in the Part A table. How many seconds apart are they? At 264 feet per second, how many **feet** is that gap?

WORK SPACE

\_\_\_\_\_ s · \_\_\_\_\_ feet

## C What If? Pit Road

Multi-step thinking: a pit stop costs the stop time plus the slow drive down pit road.

- At Martinsville the pit road speed limit is **30 mph**. How many **feet per second** is that?

WORK SPACE

\_\_\_\_\_ ft per second

- What if pit road is **1,320 feet** long? How many seconds does it take to drive it at 30 mph?

WORK SPACE

\_\_\_\_\_ seconds

- Cars on the track next to pit road race at **90 mph**. A car pits: it drives pit road (#2) and stops for **9.9 seconds** (Team Comet's mean). How many seconds does the trip cost compared with a car that covers the same 1,320 feet on the track?

WORK SPACE

\_\_\_\_\_ seconds

- Use your answer to #3 and the Martinsville pole lap of **19.718 seconds**. About how many laps is that? Round to 1 decimal place.

WORK SPACE

\_\_\_\_\_ laps

# Answer Key (for teachers & parents)

**Pit Stop Speed:** answers and short steps for every problem. Speed in mph = miles ÷ seconds × 3,600. Lap times are real 2025 Cup Series pole laps; the pit crews are made up.

## Page 1 Problems

- Answer: 3 miles**  
60 seconds is  $50 + 10$ , so  $2.5 + 0.5 = 3$  miles.
- Answer: 180 mph**  
3 miles a minute × 60 minutes = 180 miles.
- Answer: 182.7 mph**  
 $2.5 \times 3,600 = 9,000$ .  $9,000 \div 49.249 = 182.74...$
- Answer: 128.7 mph**  
 $0.533 \times 3,600 = 1,918.8$ , and  $1,918.8 \div 14.912 = 128.67...$
- Answer: 96.0 mph**  
 $0.526 \times 3,600 = 1,893.6$ , and  $1,893.6 \div 19.718 = 96.03...$
- Answer: 32.7 mph**  
 $128.7 - 96.0 = 32.7$ . Bristol has steep banking.
- Answer: 182.5 mph, slower**  
 $2.66 \times 3,600 = 9,576$ .  $9,576 \div 52.481 = 182.46...$   
182.5 is less than 182.7.
- Answer: 164.3 minutes**  
 $500 \times 19.718 = 9,859$  s.  $9,859 \div 60 = 164.31...$

## Quick score

|                            |            |
|----------------------------|------------|
| Page 1 Problems            | _____ / 8  |
| A · Pit Stop Clock         | _____ / 4  |
| B · The Cost of a Pit Stop | _____ / 4  |
| C · What If? Pit Road      | _____ / 4  |
| <b>Total</b>               | _____ / 20 |

## Skills practiced

- Unit rates
- Speed, distance, time
- Unit conversion
- Mean & median
- Percents
- Rounding
- Multi-step problems

**Teaching tip:** Covers 6.RP.A.3 and 7.RP.A.2/A.3.  
Sources: 2025 Cup qualifying results on NASCAR.com (lap times); NASCAR rule book 8.5.1 (30 mph pit road); NASCAR pit stats (9 to 12 s stops); Next Gen spec (car about 193 in).

## A · Pit Stop Clock

- Answer: Comet 9.9 s · Blaze 10.5 s · Harbor 10.2 s**  
Comet:  $49.5 \div 5$ . Blaze:  $52.5 \div 5$ .  
Harbor:  $51 \div 5$ .
- Answer: 3 seconds**  
Blaze  $52.5 - \text{Comet } 49.5 = 3$ .
- Answer: 9.6 seconds, the median**  
In order: 9.4, 9.5, 9.6, 9.7, 12.8.  
The one 12.8 pulls the mean up to 10.2.
- Answer: 53.3%**  
Under 10 s: Comet 3, Blaze 1, Harbor 4 = 8 stops.  
 $8 \div 15 \times 100 = 53.33...$

## B · The Cost of a Pit Stop

- Answer: 264 ft per second**  
 $180 \times 5,280 \div 3,600 = 264$ .
- Answer: 2,640 feet, half a mile**  
 $264 \times 10 = 2,640$  feet.  
 $2,640 \div 5,280 = 0.5$  mile.
- Answer: 165 car lengths**  
 $2,640 \div 16 = 165$ .
- Answer: 1.6 s apart, 422.4 feet**  
Blaze  $11.2 - \text{Comet } 9.6 = 1.6$  s.  
 $1.6 \times 264 = 422.4$  feet.

## C · What If? Pit Road

- Answer: 44 ft per second**  
 $30 \times 5,280 \div 3,600 = 44$ .
- Answer: 30 seconds**  
 $1,320 \div 44 = 30$ .
- Answer: 29.9 seconds**  
Pitting:  $30 + 9.9 = 39.9$  s.  
On track:  $90 \text{ mph} = 132 \text{ ft/s}$ ,  $1,320 \div 132 = 10$  s.  
 $39.9 - 10 = 29.9$ .
- Answer: 1.5 laps**  
 $29.9 \div 19.718 = 1.51...$