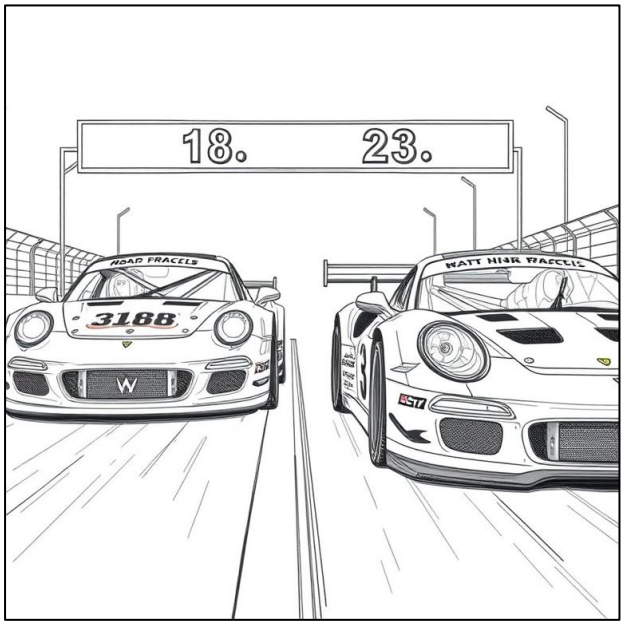
Engage

Calculating Speed and Average Speed

Directions:

1. Look at the cars in the drawing below.
2. Answer the questions.
3. If time allows color the cars two different colors.



Questions:

1. What are the two cars doing? _____

_____

2. Which car is ahead of the other – the one with 18 or 23 over them?_____

3. Why is one car ahead of the other car? _____

_____

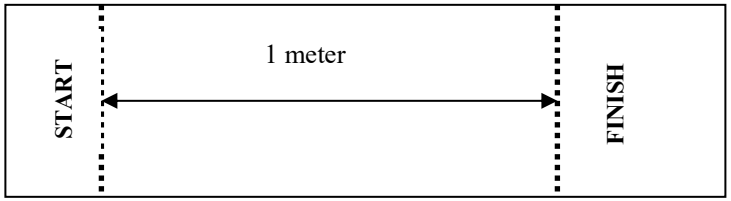
4. What science concept is this illustrating? _____

Explore

Materials: masking tape, marker, motorized or wind up car, meter stick, timer, calculator

What To Do:

1. Make a 1-meter track for your car with a large sheet of paper. Tape it to the table with the masking tape.
2. Use the marker to mark **START** and **FINISH** like shown on the diagram below.



3. Check your timer to make sure it is set at 00:00.
4. Put your notebooks at the end of the table to keep the car from falling off the table.
5. Put the car on the START LINE.
6. Start the timer and start the car.
7. Stop the timer when it reaches the FINISH line.
8. Record the time in the data table below.
9. Repeat the time trials for a total of 3 times.

Observations:

	Trial 1	**Trial 2**	**Trial 3**	**Total**	**Average Time**
Number of seconds					

10. Use the calculator to determine the total and the average time.

Questions:

1. What was the distance the car traveled on each trial?_____
2. What was the average time for the 3 trials? _____

The relationship between speed and distance is written like this:

$$\text{Speed} = \frac{\text{distance moved}}{\text{time}}$$

3. Speed is equal to the distance moved divided by average time. In our investigation we found that

Speed = _____ ÷ _____ = _____
distanced moved / total time

4. When expressing speed, you must use the distance and time units. A car goes 65 mph, which means miles per hour.

What is the unit for speed in this investigation?

_____ per _____.

Calculation Speed Problems:

1. A train traveled 100 kilometers in 2 hours. What was its speed?

_____

2. A bullet traveled 60 kilometers in 60 seconds. What was its speed?

_____

3. A runner traveled 5 kilometers in 25 minutes. What was her speed?

_____

4. A car traveled 60 kilometers in 1 hour. What was its speed?

_____

5. A space craft traveled 35 kilometers in 7 minutes. What was its speed? _____

6. Write a calculating speed problem to share with a classmate.

CALCULATING SPEED

Explain

DISTANCE

TIME

SPEED

Elaborate

What To Do

1.Look at the following problem but don't try to solve it yet.

A family left their home for some shopping. They rode for 5 Km in 10 minutes. They then stopped at the first store and shopped for 20 minutes. They got back in the car and rode for 5 Km for 30 minutes. They shopped for 120 minutes and returned home going 10 Km in 20 minutes. What is their average speed?

2. How is it different from the calculating speed problems you completed in the first part of the lesson?

3. When calculating average speed, you must add up all the distances and add up all the times. Then you must divide the total distance by the total time.

Average speed is calculated

like this:

$$\text{Average Speed} = \frac{\text{Total distance moved}}{\text{Total time}}$$

4. Use a chart like this one. Fill in the information.

5. What is the total time taken?

6. What was the total distance covered?

7. Use the formula above to find the average speed.

	Time	Distance
Total		

Evaluate

Name _____ period _____

EXIT TICKET

Calculating Speed and Average Speed

1. What information do you need to calculate the speed of an object?

A. velocity and time
B. time and distance
C. average speed and time
D. distance and velocity

2. What information do you need to calculate the average speed of an object?

A. time and distance
B. distance and velocity
C. total time and total distance
D. time and total distance

3. A person ran 10 Km in 10 minutes. What was their speed?

A. 100 Km per minute
B. 10 Km per minute
C. 1 Km per minute
D. 0.1 Km per minute

4. A car went 5 Km in 4 minutes then stopped at a light for 1 minute. What was its average speed?

A. 100 Km per minute
B. 10 Km per minute
C. 1 Km per minute
D. 0.1 Km per minute