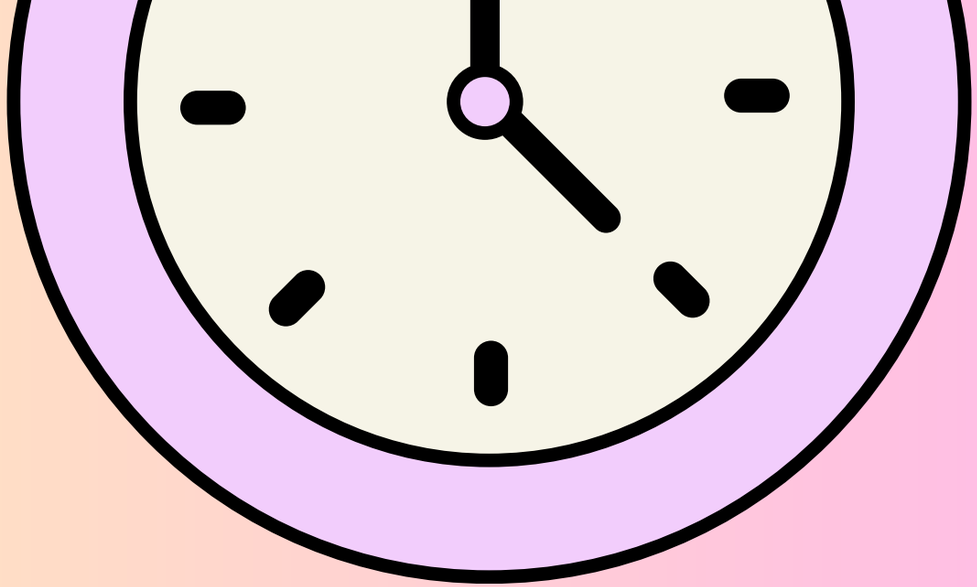
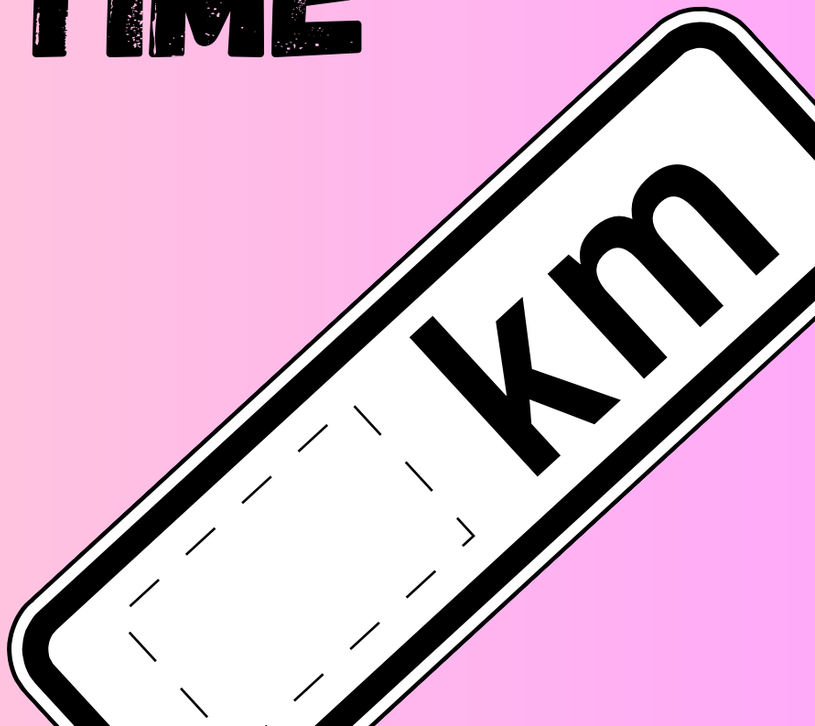


# DISTANCE AND TIME



**Distance** is the total length of space between two points or positions. It tells us how far apart things are.

**Time** is the amount of time that passes during an event, action, or process. It's the period in which something happens or continues to happen.

In simple terms:

- Distance tells you "**how far**".
- Time tells you "**how long**".

The relationship between **Speed**, **Distance**, and **Time** can be expressed in the following equation.

**Formula:**

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

$$Time = \frac{distance}{speed}$$

$$Distance = speed \times time$$

To further understand the relationship between these three terms (speed, distance, and time) in the formula, analyze the following examples.

Example 1:
Drake drives at an average speed of 50 mph on a journey of 400 miles. How long does the journey take?

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Drake drives at an average speed of 50 mph on a journey of 400 miles. How long does the journey take?

**Solution:**

$$Time = \frac{distance}{speed}$$

$$= \frac{400\ miles}{50\ miles\ per\ hour}$$

$$= \textbf{8 hours}$$

Answer: Drake's journey takes **8 hours**.

Example 2:

Jane cycles at an average speed of 10 mph. If he cycles for 4 12 hours. How far does he travel?

Example 2:

Jane cycles at an average speed of 10 mph. If he cycles for $4\frac{1}{2}$ hours. How far does he travel?

**Solution:**

$$Distance = speed \times time$$

$$= 10 \times 4\frac{1}{2}h$$

$$= \textbf{45 miles}$$

Answer: The distance travelled by Jane is **45 miles**.

Example 3:

Janine has to travel a total of 351 km. She travels the first 216 km in 4 hours. (a) Calculate her average speed for the first part of the journey. (b) If her average speed remains the same, calculate the total time for the complete journey.

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Janine has to travel a total of 351 km. She travels the first 216 km in 4 hours. (a) Calculate her average speed for the first part of the journey. (b) If her average speed remains the same, calculate the total time for the complete journey.

**Solution**:

(a) $Average\ speed = \frac{distance}{time} = \frac{216}{4}$ Answer = **54 km/h**

(b) Total time for Janine to complete the journey.

Since the average speed remains the same, we will use our calculated speed in (a) which is 67 km/h.

$$Time = \frac{distance}{speed} = \frac{351}{54}$$

Answer = **6.5 hours** or **6 hours and 30 minutes**