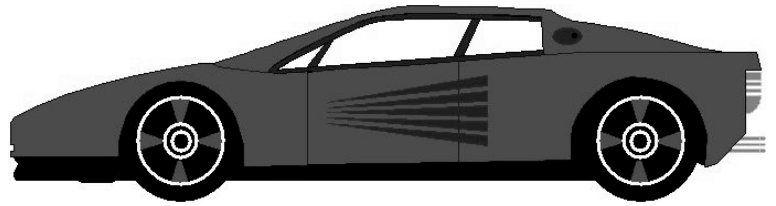


# DISTANCE, SPEED AND TIME



Let's start with the basics:

**A Distance = Speed times Time (  $D = S \times T$  )**

Example: A car travelling at 70 miles per hour (mph) for 3 hours will travel

$$70 \times 3 = \mathbf{210} \text{ miles}$$

**B Speed = Distance divided by Time (  $S = \frac{D}{T}$  )**

Example: A train which travels 400 kilometers (km) in 2 hours is travelling at a speed of

$$\frac{400}{2} = \mathbf{200} \text{ kilometers per hour (kph)}$$

**C Time = Distance divided by Speed (  $T = \frac{D}{S}$  )**

Example: A man who cycles 10 km at 20 kph will take

$$\frac{10}{20} = \frac{1}{2} = \mathbf{\text{half an hour}}$$
 to travel this distance

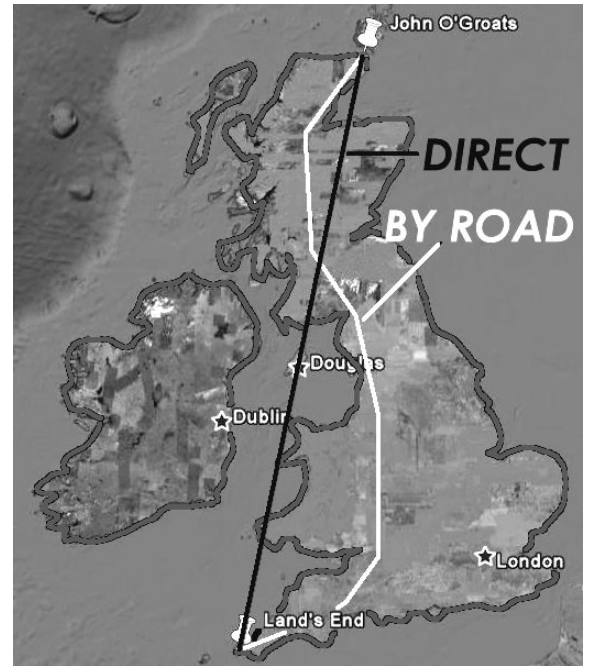
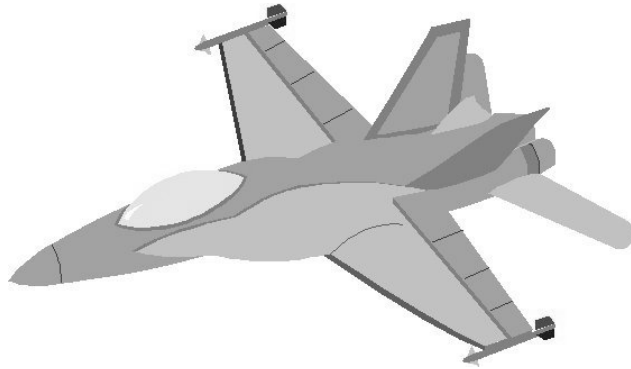
**Note:**  $\frac{1}{2} = \frac{10}{20} = \frac{100}{200} = \frac{1000}{2000} = \frac{10,000}{20,000} = \frac{100,000}{200,000}$  etc

## Questions

- 1 A plane flies from Cardiff to Barcelona at a speed of 800 kph. The flight takes 1 hour and 30 minutes. What is the distance between Cardiff and Barcelona?
- 2 A man walks 9 miles in 3 hours. What is his walking speed? How long would it take him to walk 6 miles?
- 3 A yacht sails at 20 kph. How long will it take to cross from Sydney (Australia) to Auckland (New Zealand), a distance of 2200 km?



- 4 The distance from John O'Groats (Scotland) to Land's End (England) is 900 miles by road or train or 600 miles direct (as the crow flies). How long will the journey take for:



- A man walking at 3 mph
- A man cycling at 15 mph
- A car travelling at 60 mph
- A train travelling at 120 mph
- A plane flying at 500 mph
- A supersonic jet fighter flying at 1500 mph
- The Space Shuttle orbiting at 18,000 mph

- 5 The speed of sound is 350 metres per second. During a thunderstorm you see a flash of lightning. 3 seconds later you hear the thunder caused by the lightning. How far away was the lightning strike?
- 6 Radio signals travel at the speed of light, which is 300,000 kilometres per second. When Neil Armstrong landed the Apollo 11 Lunar Module on the moon in 1969 he spoke the message: 'The Eagle has landed'. The moon is 400,000 km from Earth. After Neil had spoken on the radio, how long was it before Mission Control heard what he said?

**For information:**

There are 60 minutes in an hour and 24 hours in a day.

5 miles = 8 kilometres. In other words, 1 km is just over half a mile. Most of the world uses kilometres, but America uses miles and Britain uses both!

## Answers

1  $D = S \times T$   $D = 800 \times 1\frac{1}{2} = 1200$  **Distance = 1200 km**

2  $S = \frac{D}{T}$   $S = \frac{9}{3} = 3$  **Speed = 3 mph**

$T = \frac{D}{S}$   $T = \frac{6}{3} = 2$  **Time = 2 hours**

3  $T = \frac{D}{S}$   $T = \frac{2200}{20}$  **Time = 110 hours = 4 days 14 hours**

4 **Man walking**  $\frac{900}{3} = 300$  hours = 12½ days

**Man cycling** 60 hours = 2½ days

**Car** 15 hours

**Train** 7½ hours = 7 hours 30 minutes

**Plane** 1.2 hours = 1 hour 12 minutes\*

**Fighter** 0.4 hours = 24 minutes

**Shuttle** 0.0333333333333333 hours = 2 minutes

\*1.2 hours = 1 hour + 0.2 hours  
= 1 hour + 0.2 x 60 minutes  
= 1 hour 12 minutes &c

5 **Approximately 1 km** (3 x 350m)

6  $T = \frac{400000}{300000} = \frac{4}{3}$  **Time = 1 ⅓ seconds**