

## Time, Distance, Speed

### Calculating Distance

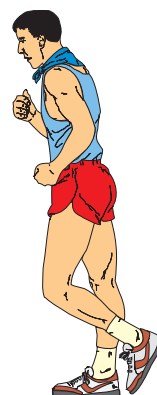
$$D_{\text{istance}} = S_{\text{peed}} \times T_{\text{ime}}$$

### Exercise 3

1. How far, in kilometres, can you travel :-



- walking at 4 km/hr for 2 hours ?
- jogging at 5 km/hr for 4 hours ?
- cycling at 9 km/hr for 3 hours ?
- driving at 32 km/hr for 5 hours ?



2. Calculate the distance travelled by :-



- a car, travelling at 48 m.p.h. for 2 hours.
- a train, travelling at 80 m.p.h. for 6 hours.
- a plane, flying at 360 m.p.h. for 4 hours.
- a yacht, sailing at 14 m.p.h. for 3 hours.

3. What distances are covered by the following :-

- a van, travelling for 30 minutes at an average speed of 50 m.p.h. ?
- a  $1\frac{1}{2}$  hour jog, at an average speed of 8 m.p.h. ?
- a car journey lasting  $2\frac{1}{2}$  hours at an average speed of 40 m.p.h. ?
- a speed boat ride for 3 hours 30 minutes, at an average speed of 40 km/hr ?
- a plane journey of 5 hours 30 minutes, at an average speed of 300 m.p.h. ?

4. What distances are covered by the following :-

- a canoe, going at an average speed of 8 m.p.h., for  $\frac{1}{4}$  of an hour ?
- a lion, going at an average speed of 24 m.p.h., for quarter of an hour ?
- a boat trip, sailing at an average speed of 12 m.p.h. for 1 hour 15 minutes ?
- a lorry, travelling at an average speed of 40 km/hr for 45 minutes ( $\frac{3}{4}$  hour) ?
- an athlete, running at an average speed of 12 km/hr for 1 hour 45 minutes ?



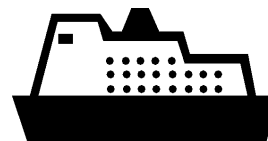
5. (a) A plane left Berlin at 8:45 am and arrived at Prestwick at 11:45 am. The plane flew at an average speed of 320 m.p.h.

How long did the flight take and how many miles did it cover ?



- (b) A ferry left the pier at 2:50 pm and sailed at a steady speed of 16 m.p.h.

How far is the ferry from the pier at 4:50 pm ?



- (c) A jogger leaves Tamley Cross at 0830 and heads for Stratham. She jogs at an average speed of 10 km/hr and arrives at St George's Park in Stratham at 1000.

How far had she travelled ?

### Calculating Speed

$$S_{\text{peed}} = \frac{D_{\text{istance}}}{T_{\text{ime}}}$$

### Exercise 4

1. Use the formula to find the average speed of these journeys :-

- (a) 15 miles in 3 hours.                      (b) 28 km in 7 hours.  
(c) 140 miles in 10 hours.                (d) 350 km in 2 hours.

2. Calculate the average speed of these journeys (watch the units) :-

- (a) 30 km in 2 hours.                      (b) 400 miles in 8 hours.  
(c) 200 metres in 10 seconds.        (d) 30 km in 4 hours.  
(e) 42 000 miles in 7 hours.            (f) 210 000 km in 3 hours.

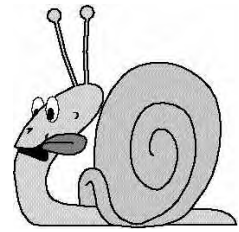
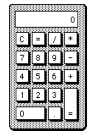
3. Calculate the average speed of these journeys (in miles per hour) :-

- (a) A ship sails 420 miles in only 7 hours !  
(b) A plane flies 6000 miles in 8 hours.  
(c) A train travels 273 miles in 3 hours.  
(d) A marathon runner covers 18 miles in 2 hours.  
(e) A bus travels 549 miles in 9 hours.



4. Find these average speeds :-

- (a) a lorry travelling 78 miles in 2 hours.
- (b) a car travelling 15 miles in 30 minutes. (how far does it travel in 1 hour ?)
- (c) a boat sailing 9 miles in  $\frac{1}{2}$  hour
- (d) an athlete running 12 miles in 1 hour 30 minutes. ( $1\frac{1}{2}$  hours)
- (e) a snail crawling  $\frac{1}{2}$  metre in  $\frac{1}{2}$  hour !

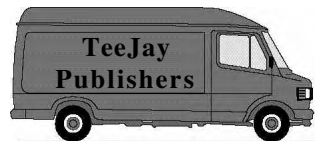


5. Find the average speed of :-



- (a) a runner who averages 2 km in 15 minutes.
- (b) a bus which travels 12 miles in  $\frac{1}{4}$  hour.
- (c) a ferry which sails 18 km in 30 minutes.
- (d) a motor cyclist covers 60 km in 1 hour 30 minutes. ( $1\frac{1}{2}$  hrs)
- (e) a plane flying 1000 miles in 2 hours 30 minutes. ( $2\frac{1}{2}$  hrs)

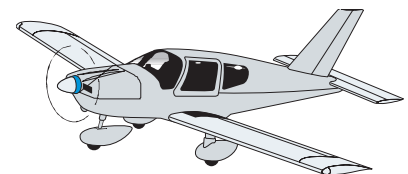
6. A delivery van leaves Brechin at 0845. By 1245 it has covered a distance of 240 kilometres.



Calculate the average speed of the van.

7. A plane left Birmingham Airport at 3:45 pm and flew 300 miles to Glasgow, arriving at 5:15 pm.

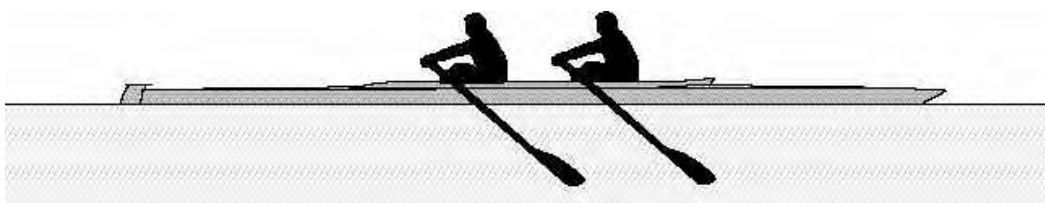
- (a) How long did the journey take ?
- (b) What was the plane's average speed ?



8. Two friends hire a rowing boat and go rowing on the loch. They row to an island, taking two hours to get there, but the return journey takes three hours.

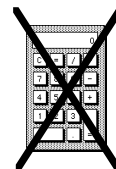
If the island is 6.25 miles from the hiring jetty, calculate the average speed for their round trip.

(hint :- speed = total distance  $\div$  total time)



## Calculating Time

$$T_{\text{ime}} = \frac{D_{\text{istance}}}{S_{\text{peed}}}$$



## Exercise 5

1. Change these times into hours and minutes :-

- (a)  $1\frac{1}{2}$  hours      (b)  $3\frac{1}{2}$  hours      (c)  $5\frac{1}{4}$  hours      (d)  $4\frac{3}{4}$  hours  
 (e)  $6\frac{1}{2}$  hours      (f)  $8\frac{1}{4}$  hours      (g) 3.5 hours      (h) 2.5 hours  
 (i) 4.25 hours      (j) 1.25 hours      (k) 2.75 hours      (l) 0.75 hours

2. 2 hours 30 minutes is 2.5 hours, 1 hour 15 minutes is 1.25 hours

What are these times in hours :-

- (a) 3 hours 30 minutes ?      (b) 2 hours 15 minutes ?  
 (c) 5 hours 45 minutes ?      (d) 1 hour 15 minutes ?  
 (e) 6 hours 30 minutes ?      (f) 4 hours 30 minutes ?  
 (g) 1 hour 45 minutes ?      (h) 7 hours 45 minutes ?

3. Use the formula  $T = \frac{D}{S}$  to calculate the time taken for each of these journeys :-

- (a) walking, 3 km at 3 km/hr.      (b) flying, 3000 miles at 500 m.p.h.  
 (c) running, 200 m at 10 m/sec.      (d) driving, 240 km at 30 km/hr.  
 (e) crawling, 10 cm at 2 cm/hr.      (f) jogging, 16 miles at 8 m.p.h.  
 (g) running at 9 km/hr for 18 km.      (h) driving at 40 m.p.h. for 60 miles.

4. When will these trains arrive at their destinations :-

- (a) **Steam Engine** - departs 11 am - travels 180 miles at 90 m.p.h. ?



- (b) **Electric Train** - departs 3.30 pm - travels 105 km at 70 km/hr. ?




- (c) **Diesel Train** - departs 6.15 am - travels 200 miles at 80 m.p.h. ?

5. How long, in hours and minutes, did the following journeys take :-
- (a) a lorry, travelling 45 km at an average speed of 30 km/hr ?
  - (b) a coach, travelling 150 miles at an average speed of 60 m.p.h. ?
  - (c) a snail, covering 50 centimetres at an average speed of  $\frac{1}{2}$  cm/sec ?  
(answers in minutes and seconds)
  - (d) a bicycle, travelling 40 km at an average speed of 16 km/hr ?

6. Use this mileage chart to find the distance between the towns and find how long each of the journeys would take :-

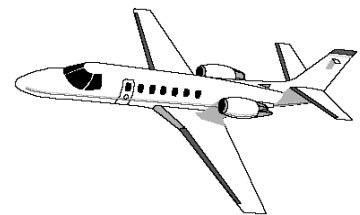
- (a) Duns → Tomley at 40 m.p.h.
- (b) Tomley → Porttown at 50 m.p.h.
- (c) Duns → Porttown at 60 m.p.h.

<i>Duns</i>		
80	<i>Tomley</i>	
90	50	<i>Porttown</i>

7.  A train leaves Carlisle at 6.45 am. It travels the 105 miles to Glasgow at an average speed of 70 m.p.h.

- (a) How long did the journey take ?
- (b) At what time did the train arrive in Glasgow ?

8. An aeroplane leaves Heathrow Airport at 3.30 pm. Its destination is a tropical island 2340 miles away. If it travelled at a steady 520 m.p.h. :-



- (a) How long was the journey ?
- (b) At what time did the plane reach its destination ?

9. The speed of sound is about 340 metres per second. Sally shouts to Harry who is standing 1700 metres away. How many seconds does it take before Harry hears Sally's voice ?



*Sally*