1 Pedro drove from Toulouse to Montpellier in 2 hours 42 minutes.
He drove at an average speed of 90 km/hour.

Janine drove from Toulouse to Montpellier along the same route as Pedro.
The journey took her 3 hours.

Work out Janine's average speed for the journey.

speed = distance / time

2hrs 42 mins = 2·7hrs = 162 mins (1)

$2 + \frac{42}{60} = 2{\cdot}7$ $(2 \times 60) + 42 = 162$

90 km/hr × 2·7 hr = 243 km (1) ← distance from T to M

243 km ÷ 3hrs = 81 km/hr (1)

Janine's speed

81 (1) km/hour

(Total for Question 1 is 4 marks)

2 A rocket travelled 100 km at an average speed of 28 440 km/h.

Work out how long it took the rocket to travel the 100 km.
Give your answer in seconds, correct to the nearest second.

Speed = distance / time

time = distance / speed

= 100 km / 28 440 km/h (1)

= 0.0035 h × 3600 s / 1 h (1) (convert h to s)

= 12.6 s

= 13 s (nearest second) (1)

hour ×60 minute ×60 second; ÷60 ÷60

13 seconds

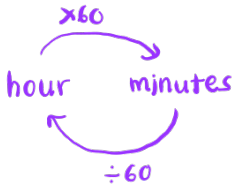
(Total for Question 2 is 3 marks)

3 A plane takes 3 hours 36 minutes to fly from the Cayman Islands to New York.
The plane flies a distance of 2470 km.

Work out the average speed of the plane in km/h.
Give your answer correct to the nearest whole number.

Speed = distance / time

36 minutes × 1 hour / 60 minutes = 0.6 hour (1)



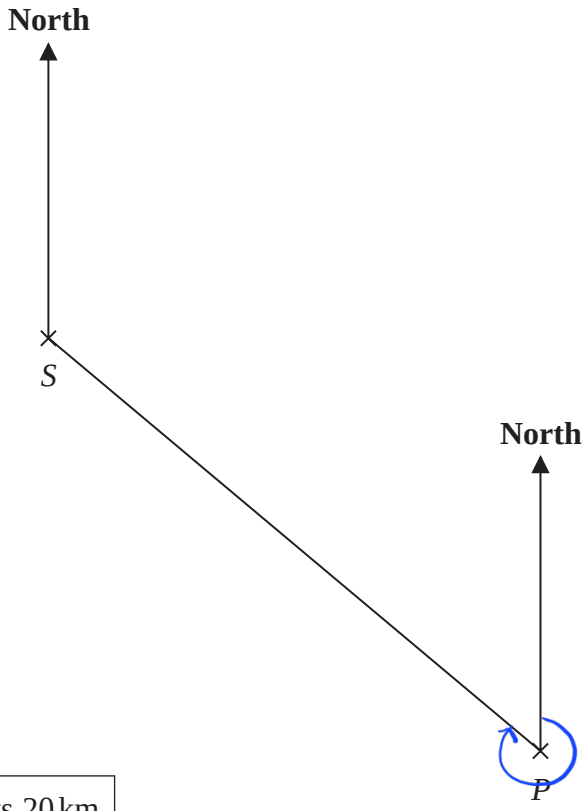
Speed = 2470 km / 3.6 h (1)

= 686 km/h (1)

686 km/h

(Total for Question 3 is 3 marks)

4 The scale drawing shows the positions of a ship, *S*, and a port, *P*.



Scale: 1 cm represents 20 km

The ship *S* now sails directly towards port *P*.
The ship sails at an average speed of 24 km/h.

speed = distance / time

(b) Work out how long it takes the ship to get to *P*.
Give your answer correct to the nearest hour.

SP = 8.5 cm (1) × 20 km / 1 cm = 170 km (1)

time = distance / speed = 170 km / 24 km/h (1)

= 7.08 h

≈ 7 hours (nearest hour) (1)

7 ..... hours

(4)

(Total for Question 4 is 4 marks)

5 A plane flew from Madrid to Dubai.

The distance the plane flew was 5658 km.
The flight time was 8 hours 12 minutes.

Work out the average speed of the plane.

Speed = distance / time

Convert 12 minutes to hours:

$\frac{12}{60} = 0.2$ hours

∴ Flight time is 8.2 hours (1)

Speed = $\frac{5658 \text{ km}}{8.2 \text{ h}}$ (1)

= 690 km/h (1)

690 km/h

(Total for Question 5 is 3 marks)

6 A train journey from Paris to Amsterdam took 3 hours 24 minutes.
The total distance the train travelled was 433.5 km.

Work out the average speed of the train.
Give your answer in kilometres per hour.

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

Convert 24 minutes to hours :

$\frac{24}{60} = 0.4$ hours

time taken $= 3 + 0.4 = 3.4$ hours (1)

$$\text{speed} = \frac{433.5 \text{ km}}{3.4 \text{ hours}}$$ (1)

$= 127.5$ km/h (1)

127.5 ..... km/h

(Total for Question 6 is 3 marks)

7 A train takes 6 hours 39 minutes to travel from New Delhi to Kanpur.
The train travels a distance of 429 km.

Work out the average speed of the train.
Give your answer in km/h correct to one decimal place.

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

1 hour = 60 minutes

$$\text{time} = 6 + \frac{39}{60} \text{ hours}$$

$$= 6 + 0.65 \text{ hours}$$

$$= 6.65 \text{ hours} \quad (1)$$

$$\text{speed} = \frac{429 \text{ km}}{6.65 \text{ hours}} \quad (1)$$

$$= 64.5 \text{ km/h (1dp)}$$

64.5 (1)

..... km/h

(Total for Question 7 is 3 marks)

8 An aeroplane travelled from New York City to Los Angeles.

The aeroplane travelled a distance of 3980 kilometres in 5 hours 24 minutes.

Work out the average speed of the aeroplane.
Give your answer in kilometres per hour correct to the nearest whole number.

$5 \text{ hrs } .(\frac{24}{60}) \text{ hrs} = 5.4 \text{ hrs}$ (1)

$\text{Speed} = \frac{3980 \text{ km}}{5.4 \text{ hr}}$ (1)

$= 737 \text{ km/h}$ (1)

737 ..... kilometres per hour

(Total for Question 8 is 3 marks)

9 Milly went on a car journey.
She travelled from Anesey to Breigh to Clando and then to Duckbridge.

For Anesey to Breigh, Milly drove the 245 km in 2.5 hours.
For Breigh to Clando, Milly drove the 220 km at an average speed of 80 km/h
For Clando to Duckbridge, Milly drove at an average speed of 72 km/h in 50 minutes.

Work out Milly's average speed, in km/h, for the journey from Anesey to Duckbridge.
Give your answer correct to one decimal place.

Breigh to Clando : $\frac{220 \text{ km}}{80 \text{ km/h}} = 2.75 \text{ h}$ (1)

Clando to Duckbridge : $72 \text{ km/h} \times \frac{50}{60} \text{ h}$

$= 60 \text{ km}$ (1)

Total : $\frac{245 + 220 + 60}{2.5 + 2.75 + \frac{50}{60}} = \frac{525}{73/12}$ (1)

$= 86.3$ (1)

86.3 ..... km/h

(Total for Question 9 is 4 marks)

10 Iman walked for 3 hours 15 minutes.
He walked a distance of 18.2 kilometres.

Work out Iman's average speed for his walk.
Give your answer in km/h

$3 \text{ hours} \times \frac{15}{60} \text{ hours}$

$= 3.25 \text{ hours}$ (1)

$\text{Speed} = \frac{18.2 \text{ km}}{3.25 \text{ hr}}$ (1)

$= 5.6$ (1)

5.6 ..... km/h

(Total for Question 10 is 3 marks)

11 Change a speed of 90 kilometres per hour to a speed in metres per second.
Show your working clearly.

$$90 \frac{km}{h} \times \frac{1000\ m}{1\ km} \times \frac{1\ h}{3600\ s} \quad (1)$$

$$= \frac{90 \times 1000}{3600}$$

$$= \frac{90\ 000}{3\ 600} \quad (1)$$

$$= 25 \quad (1)$$

25 ..... m/s

(Total for Question 11 is 3 marks)

12 Anjali travels on the Eurostar train from Paris to Amsterdam.

The distance the train travels between Paris and Amsterdam is 515 km.
The time taken by the train to travel between Paris and Amsterdam is 3 hours 18 minutes.

Work out the average speed of the train.
Give your answer in km/h correct to the nearest whole number.

$\frac{18 \text{ minutes}}{60} = 0.3 \text{ hours}$

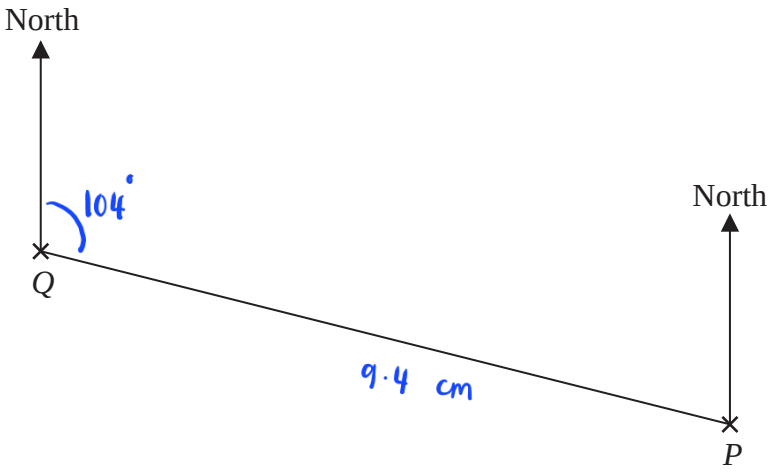
Time taken = 3.3 hours (1)

speed = $\frac{515 \text{ km}}{3.3 \text{ hours}}$ (1) = 156 km/h (1)

156 ..... km/h

(Total for Question 12 is 3 marks)

13 The scale drawing shows the positions of two airports P and Q



scale: 1 cm represents 50 km

A small plane flies directly from P to Q
The plane takes 2 hours to fly from P to Q

(b) Work out the average speed of the plane.
Give your answer in km/h

distance = 9.4 × 50 km = 470 km (1)

speed = $\frac{470 \text{ km}}{2 \text{ h}}$ (1) = 235 km/h (1)

235 km/h

(3)

(Total for Question 13 is 3 marks)