

Exercise 3 - Scalars & Vectors.

1. (a) a scalar quantity is fully described by its magnitude (size) alone.
- (b) a vector quantity requires magnitude and direction for it to be fully described.

(c)

<u>Scalar quantity</u>	<u>Vector quantity.</u>
distance	force
speed	displacement
time	velocity

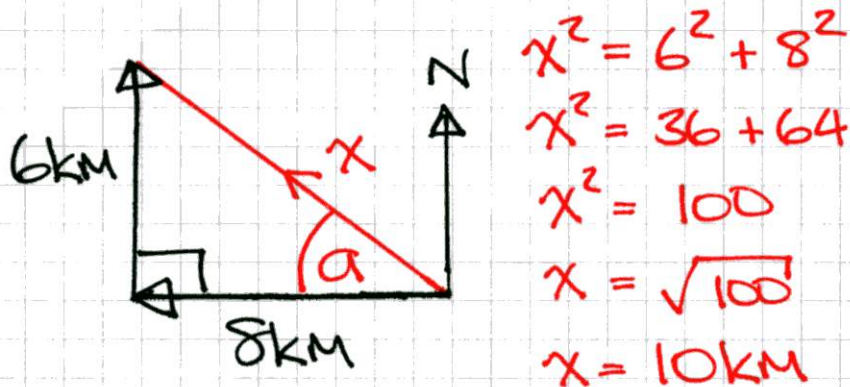
2. (a) distance travelled = 5×25
= 125 km.

(b) displacement = 0
(car has returned to its starting point).

Exercise 4 - Scalars & Vectors.

1. (a) total distance = $8 + 6$
 $= 14 \text{ km}$

(b)



$$\tan a = \frac{6}{8}$$

$$a = \tan^{-1}\left(\frac{6}{8}\right)$$

$$a = 37^\circ$$

compass bearing

$$= \underline{270^\circ + a}$$

$$= \underline{270^\circ + 37^\circ}$$

$$= \underline{307^\circ}$$

displacement is 10 km on bearing 307.

(e) (i) average speed = $\frac{\text{total distance}}{\text{total time}}$

$$\left(\begin{array}{l} 75 \text{ minutes} \\ = 1 \text{ hour} + 15 \text{ minutes} \\ = 1.25 \text{ hours} \end{array} \right)$$

$$= \frac{14}{1.25}$$

$$= \underline{11.2 \text{ kmh}^{-1}}$$

(ii) average velocity = $\frac{\text{displacement}}{\text{time}}$

$$= \frac{10}{1.25}$$

$$= \underline{8 \text{ kmh}^{-1} \text{ on bearing } 307.}$$