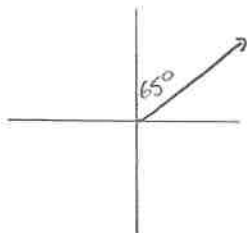
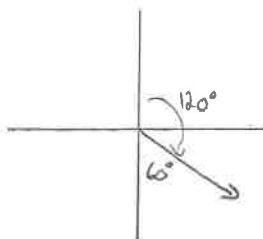


1) Convert each true bearing to its equivalent quadrant bearing.

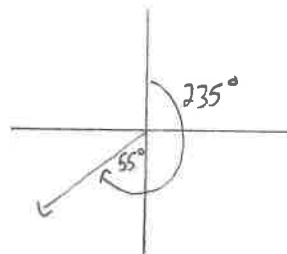
a)  $065^\circ = N65^\circ E$



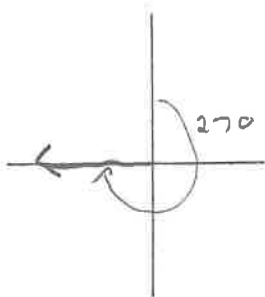
b)  $120^\circ = S60^\circ E$



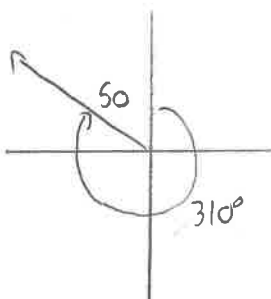
c)  $235^\circ = S55^\circ W$



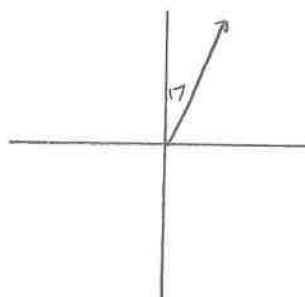
d)  $270^\circ = W$



e)  $310^\circ = N50^\circ W$

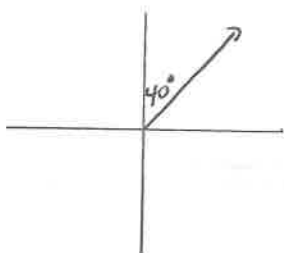


f)  $017^\circ = N17^\circ E$

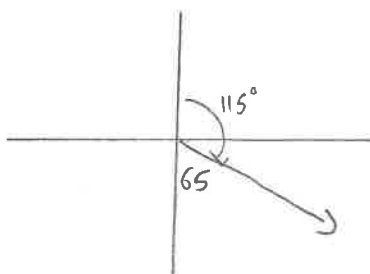


2) Convert each quadrant bearing to its equivalent true bearing.

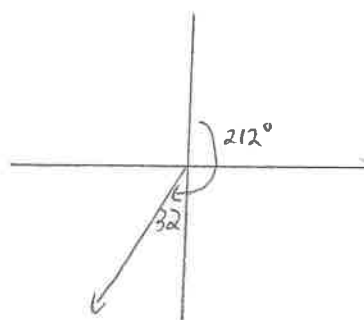
a)  $N40^\circ E = 040^\circ$



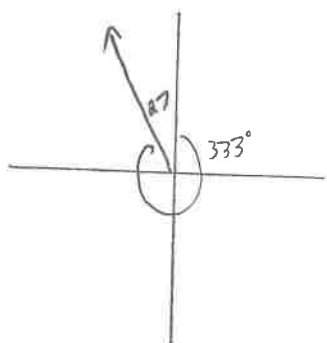
b)  $S65^\circ E = 115^\circ$



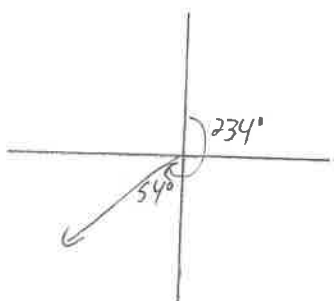
c)  $S32^\circ W = 212^\circ$



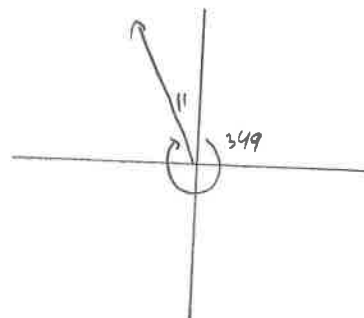
d)  $N27^\circ W = 333^\circ$



e)  $S54^\circ W = 234^\circ$



f)  $N11^\circ W = 349^\circ$

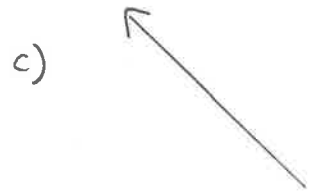


3) In the space to the right, draw and name...

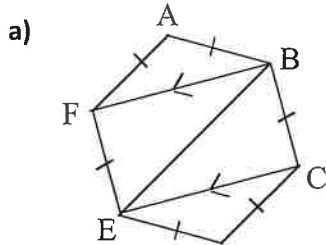
a) a vector parallel to  $\vec{AB}$

b) a vector opposite to  $\vec{AB}$

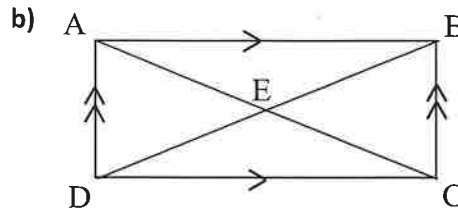
c) a vector equivalent to  $\vec{AB}$



4) Name all the equivalent vectors in each diagram.



$$\begin{aligned} \vec{AB} &= \vec{ED} & \vec{BA} &= \vec{DE} \\ \vec{AF} &= \vec{CD} & \vec{FA} &= \vec{DC} \\ \vec{BC} &= \vec{FE} & \vec{CB} &= \vec{EF} \\ \vec{CE} &= \vec{BF} & \vec{EC} &= \vec{FB} \end{aligned}$$



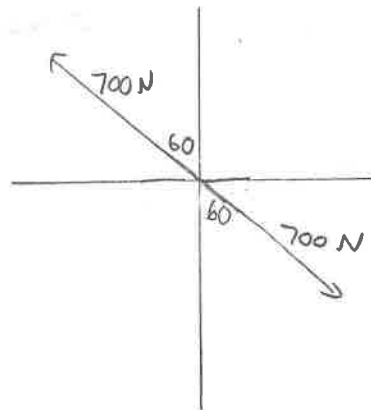
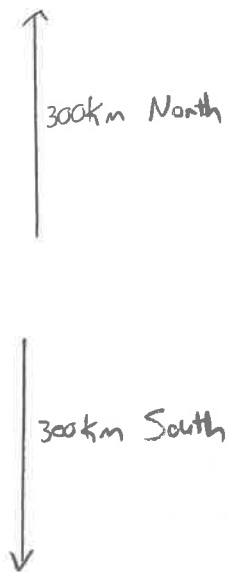
$$\begin{aligned} \vec{AD} &= \vec{BC} & \vec{DA} &= \vec{CB} \\ \vec{AE} &= \vec{EC} & \vec{CE} &= \vec{EA} \\ \vec{DE} &= \vec{EB} & \vec{BE} &= \vec{ED} \\ \vec{AB} &= \vec{DC} & \vec{BA} &= \vec{CD} \end{aligned}$$

5) State the opposite of each vector.

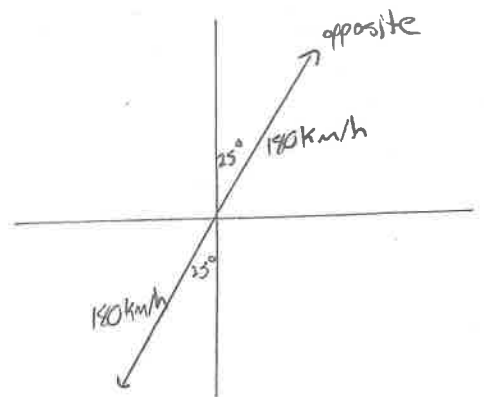
a) 300 km north

b) 700 N on a bearing of  $120^\circ$

c) 180 km/h on a quadrant bearing of  $S25^\circ W$



opposite: 700 N on a bearing of  $300^\circ$

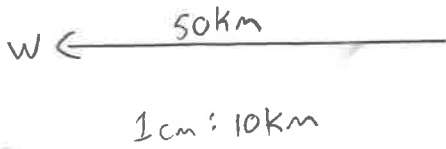


opposite:

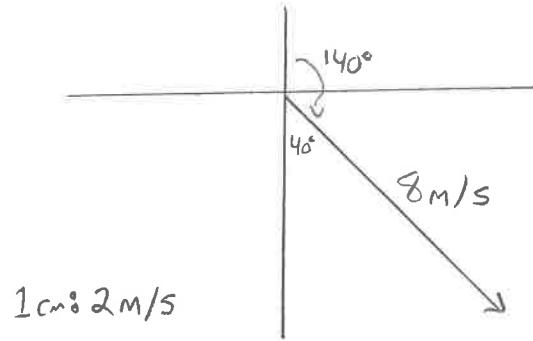
180 km/h on a quadrant bearing of  $N25^\circ E$ .

6) Use an appropriate scale to draw each vector. Label magnitude, direction

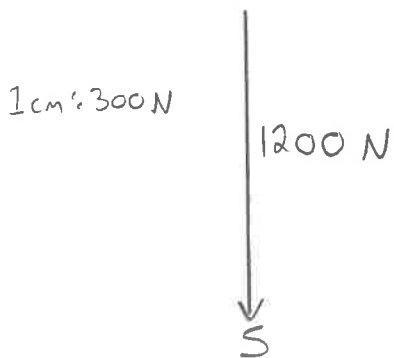
a) displacement of 50 km west



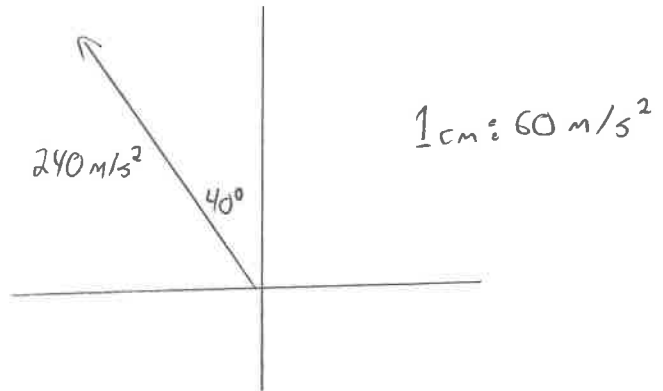
b) velocity of 8 m/s on a true bearing of 140°



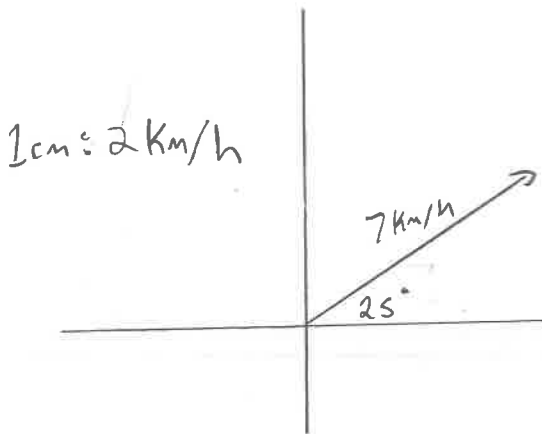
c) force of 1200 N downward



d) acceleration of 240 m/s<sup>2</sup> on a quadrant bearing of N40°W



e) velocity of 7 km/h at 25° to the horizontal



7) State whether the following are vectors or scalars:

- a) A table weighs 80 N VECTOR
- b) A woman's age is 60 years old SCALAR
- 30 km/h SCALAR
- d) An elevator lifts a person 20 m VECTOR

8)a) Which vectors are parallel to  $\overrightarrow{AB}$ ?

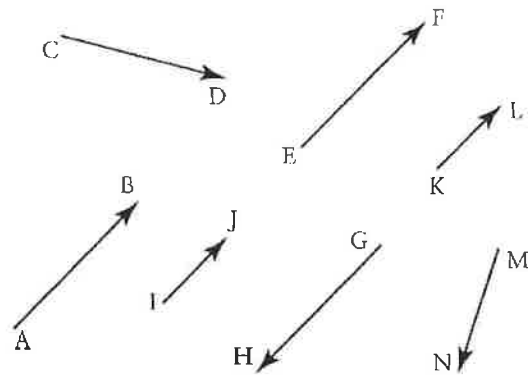
$\vec{IJ}, \vec{GH}, \vec{KL}, \vec{EF}$

b) Which vectors are equivalent to  $\overrightarrow{AB}$ ?

$\vec{EF}$

c) Which vectors are opposite to  $\overrightarrow{AB}$ ?

$\vec{GH}$



**Answer Key:**

1) a) N65°E b) S60°E c) S55°W d) W e) N50°W f) N17°E

2) a) 40° b) 115° c) 212° d) 333° e) 234° f) 349°

3) Diagrams may vary. For example, in the diagram shown,  $\vec{IJ}$  is parallel to  $\overrightarrow{AB}$ ,  $\vec{KL}$  is opposite to  $\overrightarrow{AB}$ , and  $\vec{MN}$  is equivalent to  $\overrightarrow{AB}$ .

$\vec{FA} = \vec{DC}$

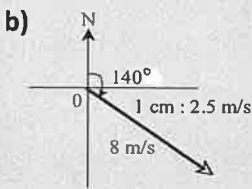
4) a)  $\overrightarrow{AB} = \overrightarrow{ED}, \overrightarrow{BC} = \overrightarrow{FE}, \overrightarrow{CD} = \overrightarrow{AF}, \overrightarrow{DE} = \overrightarrow{BA}, \overrightarrow{EF} = \overrightarrow{CB}, \overrightarrow{FA} = \overrightarrow{DC}, \overrightarrow{FB} = \overrightarrow{EC}, \overrightarrow{BF} = \overrightarrow{CE}$

b)  $\overrightarrow{AB} = \overrightarrow{DC}, \overrightarrow{BA} = \overrightarrow{CD}, \overrightarrow{AD} = \overrightarrow{BC}, \overrightarrow{DA} = \overrightarrow{CB}, \overrightarrow{DE} = \overrightarrow{EB}, \overrightarrow{BE} = \overrightarrow{ED}, \overrightarrow{AE} = \overrightarrow{EC}, \overrightarrow{CE} = \overrightarrow{EA}$

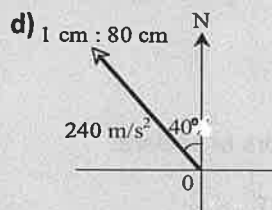
5) a) 300 km south b) 700 N on a bearing of 300° c) 180 km/h on a quadrant bearing of N25°E

6) Diagrams may vary.

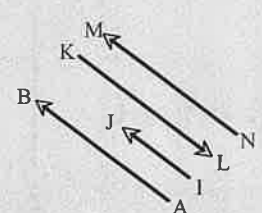
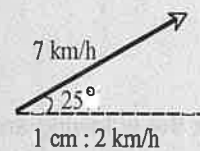
a)



c)



e)



7) a) Vector – weight is due to the force of gravity and therefore has a direction

b) Scalar – this has no direction

c) Scalar – there is no direction so this is just speed

d) Vector – there is magnitude and direction (up)

8)a)  $\overrightarrow{EF}, \overrightarrow{IJ}, \overrightarrow{KL}, \overrightarrow{GH}$  b)  $\overrightarrow{EF}$  c)  $\overrightarrow{GH}$