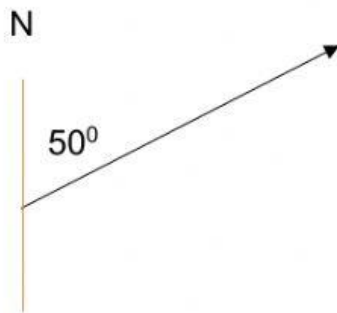


## Motion worksheet 2

### More bearing questions

2 Describe the direction of the following resultant displacements.

The first one has been done for you.



(Here are 5 correct ways to answer the question. The first is the most common method and easiest to use, but all express the same direction.)

- bearing is  $50^{\circ}$
- N  $50^{\circ}$  E
- E  $40^{\circ}$  N
- $50^{\circ}$  E of N
- $40^{\circ}$  N of E



Bearing of \_\_\_\_\_<sup>0</sup>



bearing of \_\_\_\_\_<sup>0</sup>

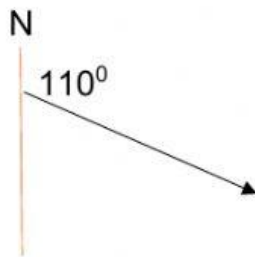
\_\_\_\_\_° W of S

S \_\_\_\_\_° W

\_\_\_\_\_° S of W

W \_\_\_\_\_° S

2.3



bearing of \_\_\_\_\_<sup>0</sup>

\_\_\_\_\_° S of E

E \_\_\_\_\_° S

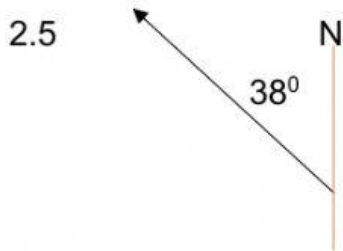
\_\_\_\_\_° E of S

S \_\_\_\_\_° E

2.4



Bearing of \_\_\_\_\_°



Bearing of \_\_\_\_\_°

Eg 6 {leave no spaces between values and units}

Aadil walks 35 m to the left and then he walks 50m downwards.

What is his (a) distance and (b) displacement:

a)  $\Delta x = 35 + 50$   
 $= 85 \text{ m}$

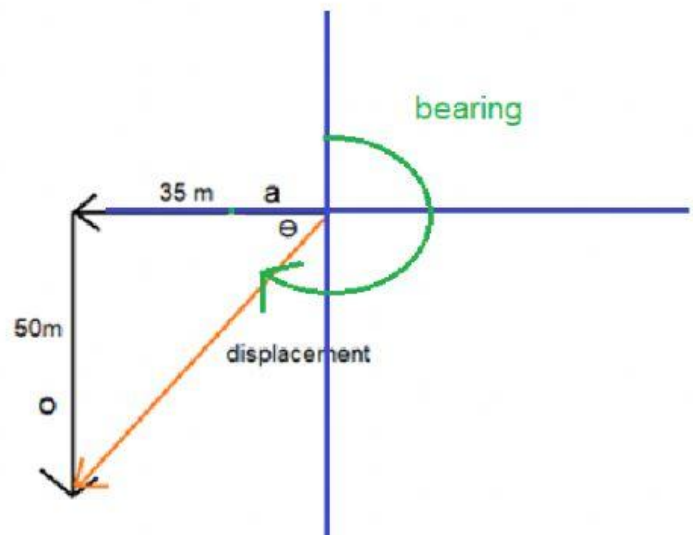
b)  $\Delta x^2 = \text{side}^2 + \text{side}^2$   
 $\Delta x^2 = \text{_____}^2 + \text{_____}^2$   
 $\Delta x = \sqrt{\text{_____}}$   
 $\Delta x = \text{_____ m} \text{ (2 decimals)}$

$\tan \Theta = \frac{o}{a}$

$\tan \Theta = \text{_____}$

$= \text{_____}^\circ$

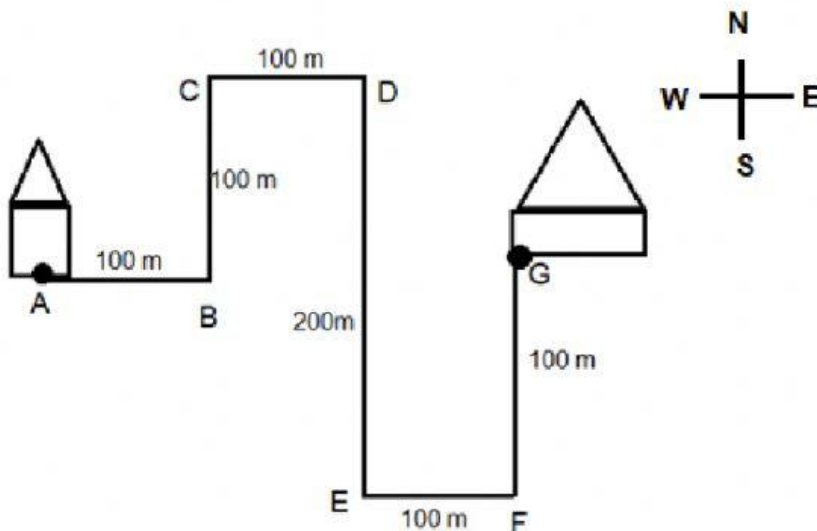
Bearing of \_\_\_\_\_°



### Exercise 3: on distance and displacement

#### QUESTION 1

A boy rides his bike, beginning at his house at A to school at G following the route as shown in the diagram.



**Indicate direction with north, east, south or west**

Calculate **{leave no spaces between values and units}**

1.1 the total distance that he travels to school

1.2 the total displacement that he covers to school.

\_\_\_\_\_ {direction}

After school, he returns home to his house at A at 3.00 p.m

Calculate

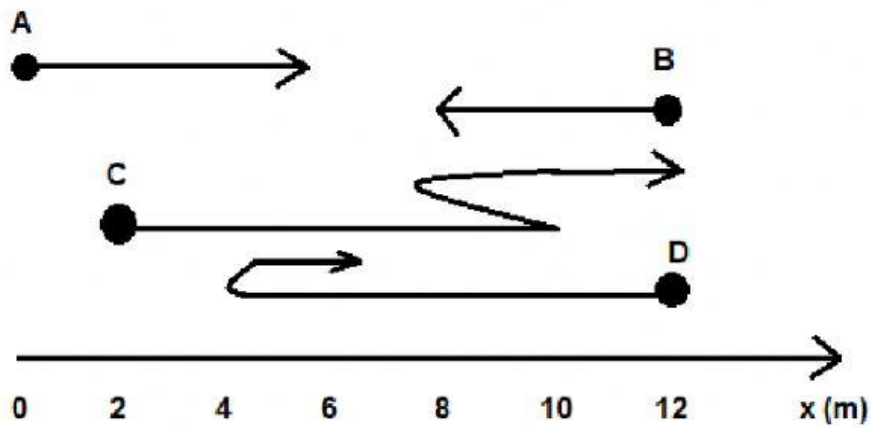
1.3 the total distance that he travelled that day by bicycle

1.4 his total displacement by bicycle as he arrives home at 3.00 p.m.

**QUESTION 2**

Write only the final answer to the questions referring to the paths A – D in the diagram below.

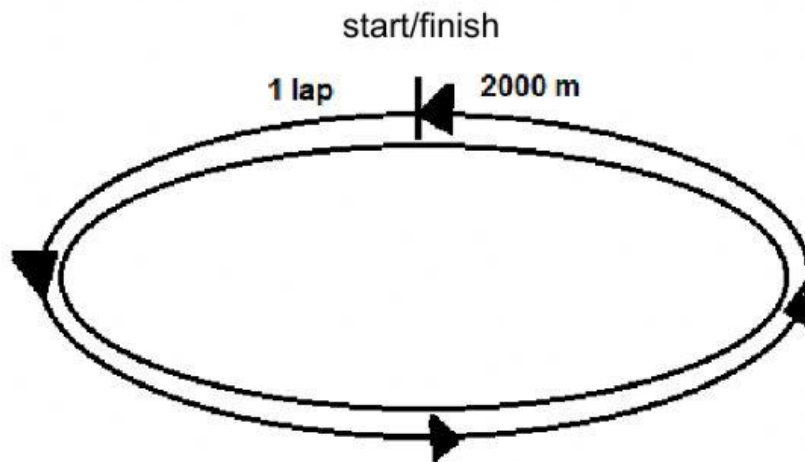
Take all motion as left and right (no object is moving up and down)



|        | displacement ( $\Delta x$ in m) | Distance ( $\Delta x$ in m) |
|--------|---------------------------------|-----------------------------|
| Path A | _____ {direction}               |                             |
| Path B |                                 |                             |
| Path C |                                 |                             |
| Path D |                                 |                             |

### QUESTION 3

Car racing is very popular in South Africa. Many young people want to test the speed of their cars and meet regularly at racetracks.



An oval racetrack has a lap distance of 2 000 m. The car has to complete five laps for the test.

3.1 What distance will the car have covered in 5 laps?

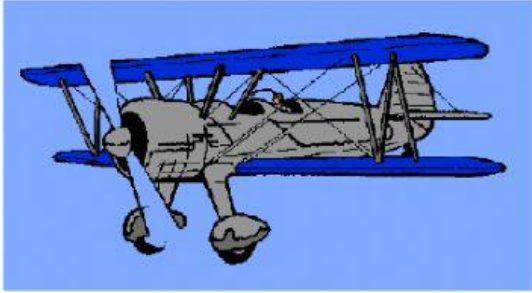
Express your answer in kilometres (Km).

3.2 What will the displacement of the car be after

3.2.1 one lap

3.2.3 five laps

4



A small aeroplane flies due west for a distance of 80 km, and then changes direction and flies due south for another 60 km.

Calculate

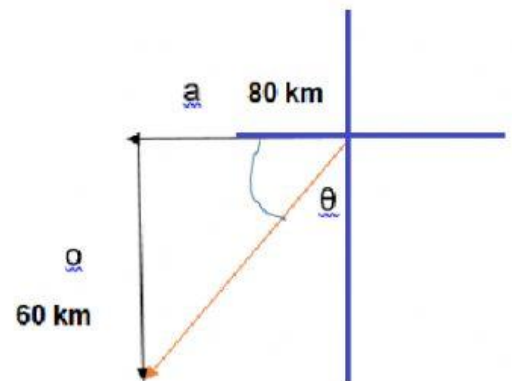
4.1 the total distance covered by the plane {leave your answer in km}

4.2 the displacement of the plane {leave your answer in km}

Displacement size (magnitude) =

$\theta$  (in the triangle) =  $^{\circ}$

Bearing =  $^{\circ}$



5 A cyclist travels 30km North and then continues in an Easterly direction for 40 km.

Calculate the

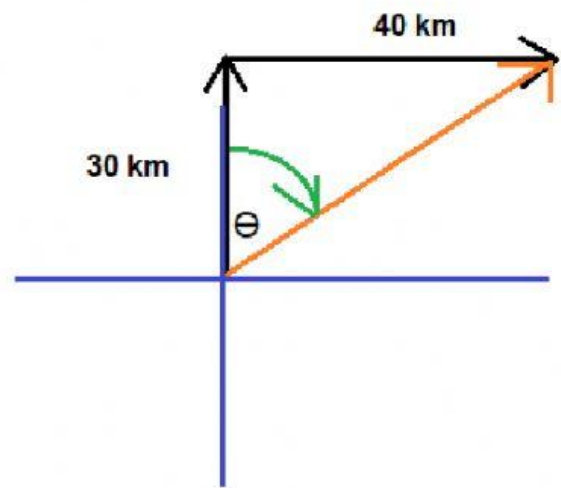
5.1 total distance covered by the cyclist {leave your answer in km}

5.2 total displacement of the cyclist {leave your answer in km}

Displacement size (magnitude) =

$\Theta$  (in the triangle) =  $^{\circ}$

Bearing =  $^{\circ}$



6. A long distance athlete runs 40 m South and then turns to run 30 m west.

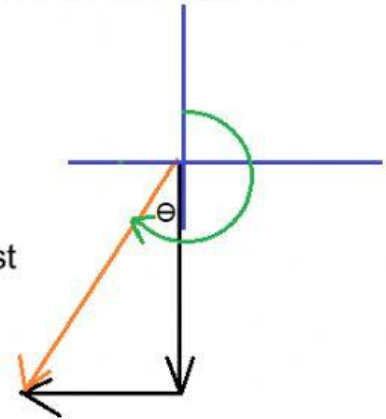
Calculate the

6.1 total distance covered by the cyclist

6.2 total magnitude of the displacement of the cyclist

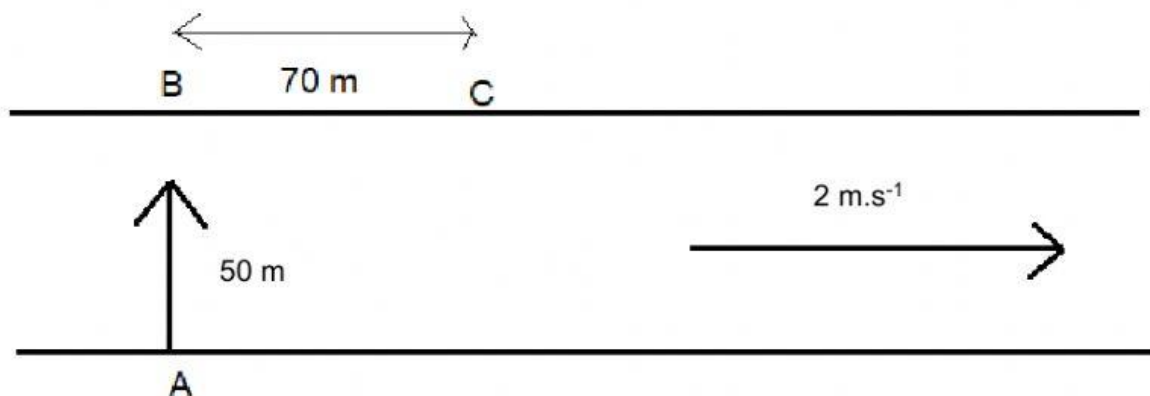
6.3  $\Theta$  =  $^{\circ}$

6.4 bearing =  $^{\circ}$



7. A canoeist is attempting to paddle across a 50 m wide river from point A to B in a northerly direction as shown in the diagram.

A current of  $2 \text{ m.s}^{-1}$  is flowing, and as a result, the canoeist lands on the opposite bank at C, which is 70m downstream from point B.





Calculate both the

7.1 resultant magnitude of the displacement, and

7.2 the direction of the canoeist once he reached point C.  
(Hint : draw a diagram to help you with your triangle of vectors)

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