REVISION OF S1 TRANSPORT MATERIALS

Answer the following questions in full in your jotter as neatly as possible. This material will be used as part of the N4 & 5 course, so it is important to be recorded correctly.

1. When answering calculation questions in Physics what is the acronym (collection of letters, which make up the first word of another word) to help you remember how to lay out questions?

   IESSUU

   Information, Equation, Substitution, Solution, Units & Underline

2. Describe the meaning of average speed.

   Average speed is the speed over a whole journey. It is the distance of the journey divided by the journey time.

3. How would you find your average speed?

   Measure the total journey distance, using a trundle wheel

   Measure the time the person took to travel the whole journey using

   Use the equation $\bar{v} = \frac{d}{t}$

4. What is the formula for average speed, include what the letters mean and the units of each

   $\bar{v} = \frac{d}{t}$ v bar = average speed in metres per second

   $\bar{v} = average\ speed\ for\ the\ whole\ journey\ in\ metres\ per\ second\ (ms^{-1})$

   $t = time\ for\ the\ whole\ journey\ in\ second$

   $d = distance\ for\ the\ whole\ journey$

5. Describe the meaning of instantaneous speed.

   Instantaneous speed is the speed at one particular point in time.

6. What is the formula for instantaneous speed, include what the letters mean and the units of each?

$$v = \frac{l}{t}$$

Where v= instantaneous speed, l=length of the vehicle and t = time to pass a point.

7. Describe the meaning of uniform speed.

Uniform speed is constant speed and it means that your speed is not changing.

8. What is the formula for uniform speed, include what the letters mean and the units of each.

$$v = \frac{d}{t}$$

Where v= uniform speed, d=distance that your speed remains the same and t = time taken.

9. What is the link between thinking distance, braking and stopping distance?

STOPPING DISTANCE = THINKING DISTANCE + BRAKING DISTANCE

10. Describe the meaning of distance

Distance is how far you have travelled in your journey. It is measured in metres

11. Describe the meaning of displacement.

Displacement is how far you have travelled in a straight line since the start of your journey, it is a vector quantity so needs the direction of travel. We use the letter 's' for displacement

12. Describe the meaning of velocity.

Velocity is your displacement divided by time

13. What is the formula for velocity, include what the letters mean and the units of each

$$v = \frac{s}{t}$$

Where s = displacement in metres, v= velocity in metres per second, t= journey time

14. What is the difference between a scalar and vector quantity?

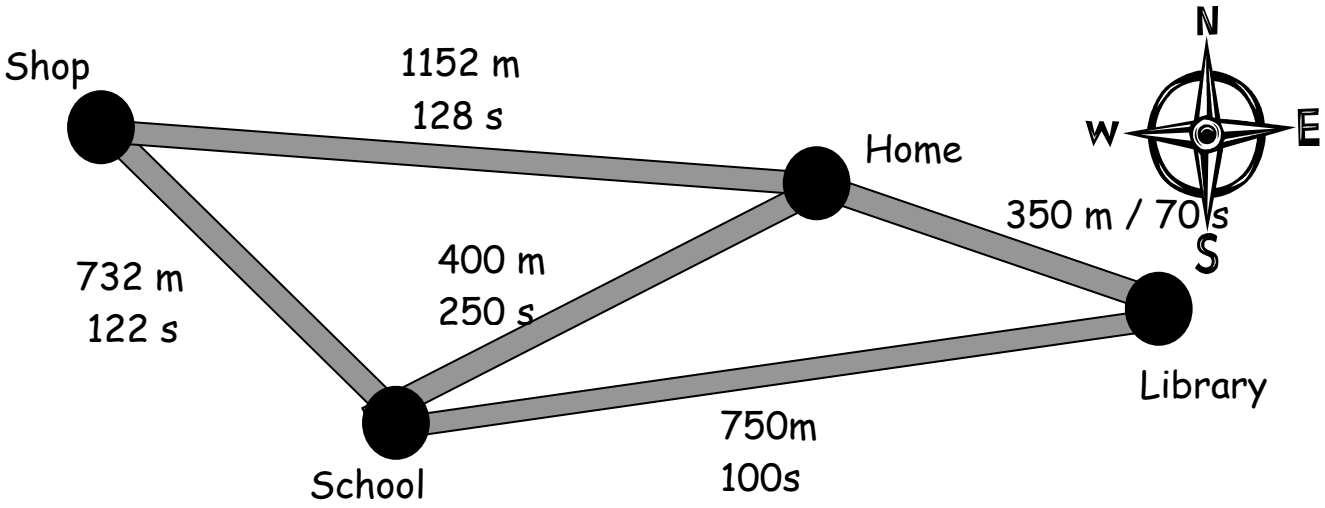
A scalar quantity is fully described by a size and a unit

A vector quantity is fully described by a size, unit **and a direction**

15. List 4 scalar and 4 vector quantities, give your answer in a table with appropriate headings

Scalars	vectors
Distance	Displacement
Speed	Velocity
Time	Acceleration
Resistance, current, voltage etc	Force

16. Find the average speed from the shops to home via the school and library.



You CANNOT find the average speed for the 2 journeys and then average them as the times are not the same. Therefore you need to add the two distances add the two times and then find the average speed

d=732+750 +350 = 1832m

t= 122+100+70=292s

$$\bar{v} = \frac{d}{t}$$

$$\bar{v} = \frac{1832}{292} = 6.3\ ms^{-1}$$

17. Find the average velocity for the journey given above.

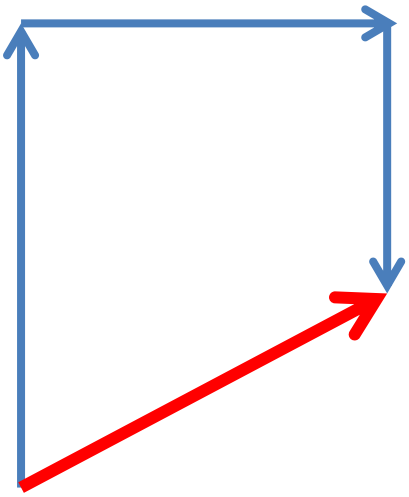
s only 1152 m from start, but the journey took 128s find v

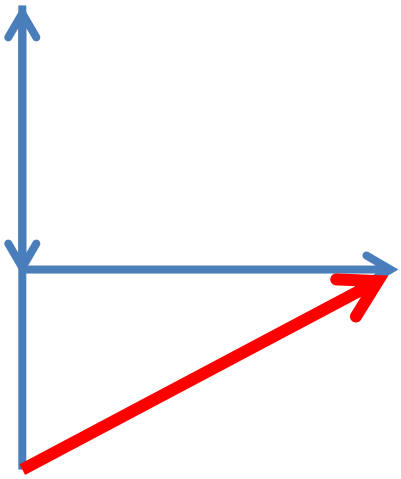
$$\bar{v} = \frac{s}{t}$$

$$\bar{v} = \frac{1152}{292} = 3.9\ ms^{-1}$$

18. A man walks 1000m north and then walks 400m east before going south for 700m, find the final displacement of the man.

Draw a scale diagram to show what is going on, remember to check your N,S, E and W.





This is also the same as

So the equivalent distance is Walks North 1000m and south 700m equivalent of 300m North followed by 400m East. This makes a 3,4 5 triangle, or draw by scale diagram OR use Pythag and SOHCAHTOA

Resultant displacement is 500 m 36° East of North or 036°

19. If the man above has taken 5 minutes to do the journey, calculate

    a. The man's average speed.

The man's average speed is given by

$$\bar{v} = \frac{d}{t}$$

Distance = 1000m + 400 m + 700 m = 2100 m

Time = 5 mins = 5 × 60 = 300s

$$\bar{v} = \frac{2100}{300} = 7.0\ ms^{-1}$$

    b. The man's average velocity.

The man's average velocity is given by

$$\bar{v} = \frac{s}{t}$$

Displacement =500 m @ 036°

Time = 5 mins = 5 × 60 = 300s

$$\bar{v} = \frac{500}{300} = 1.7\ ms^{-1}$$

20. In the back of your book make a table as below and fill in all the quantities that you met in S1 Physics.

Quantity	Symbol	Unit	Unit Symbol
Charge	Q	Coloumb	
Resistance	R	Ohm	
Time	T	Second	
Current	I	Amp	
Voltage	V	Volt	
Speed		metres per second	
Distance	d	Metres	
Displacement	s	Metres	
Average speed		metres per second	
Average velocity		metres per second	
Uniform speed	v	metres per second	
Instantaneous speed	v	metres per second	
length		metres	