DEPARTMENT OF MATHEMATICS
# PROBLEM SOLVING CHALLENGE

Q1. *Junior Cycle*

Driving at an average speed of $100\ km\ per\ hour$ Jack finishes a road race in 15 minutes. Below is a model of the track. Jack drives at an average speed of $25km\ ph$ faster during his first stretch from A to B compared to his final stretch from C to D. Jack drives an average speed of $10km\ ph$ slower while driving through the tunnel compared to his final stretch from C to D. Using this information:

(i) Find how many kilometres long the tunnel is.

(ii) Find out the average speed of Jack's car while he is travelling in the tunnel.

(iii) Find the length of time Jack spends in the tunnel in minutes correct to one decimal place.

A   B   C   D

8 km x km   12 km
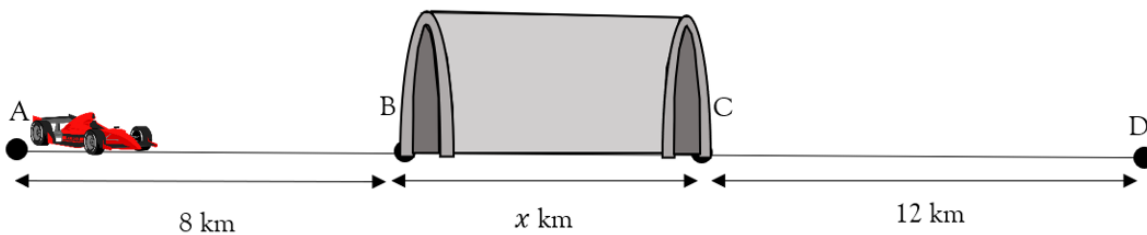
Q2. *Senior Cycle*

The circles on the cartesian plane below represents three cogs in a machine. As cog one rotates anticlockwise it causes cog two to rotate clockwise which in turn causes cog three to rotate anticlockwise. If cog one rotates 10 times how many times will cog three have rotated. Give your answer correct to one decimal place.
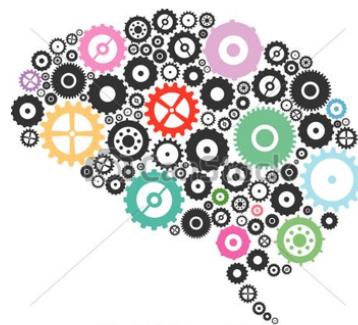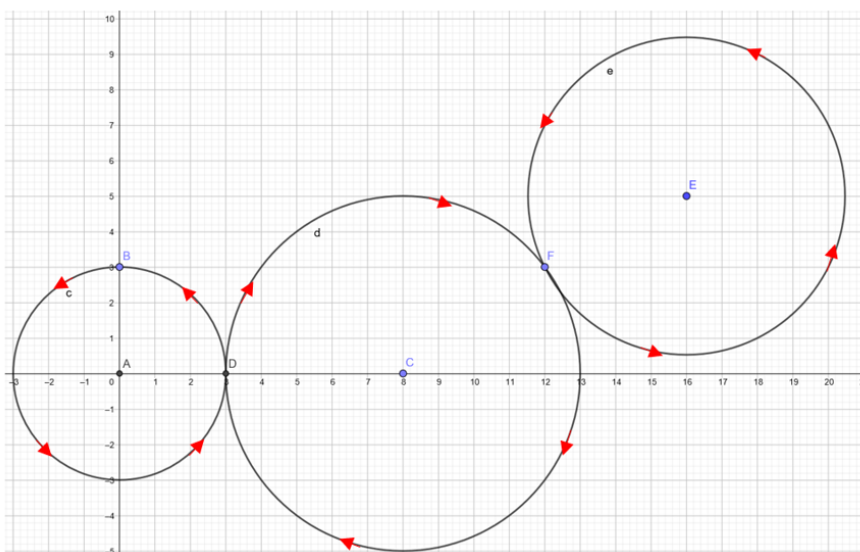
Answers on an A4 sheet with your <u>Name</u>, <u>Year</u> and <u>Class</u> should be given to Mr. McManus or to Mr. McEvoy in room 33 before 4pm on Friday 3rd of May.

Monthly Prize for both Junior and Senior Cycle.*

Good Luck.

Junior Cycle students answer question 1 only.   *Senior Cycle students answer question 2 only*