**Strand 2 Chapter 2 Trigonometry**

1. I know that a radian is the measure of the angle at the centre of a circle subtended by an arc equal in length to the radius.
2. I know that **∏radians = 180° and that 1 radian = 57.3°**
3. I can convert from radians to degrees and from degrees to radians.
   **Example 1 Page 35**

4. I can find the Arc Length (l =rθ) and the Area of Sector (A = ½ $r^2$θ) using formulae.
   **Example 2 Page 35**
   **Ex 2.1 Q1 – Q15 Odd Page 35**

5. I am aware of the trigonometric ratios sin, cos and tan as well as the other ratios **Secant** (secθ = 1/cosθ), **Cosecant** (cosecθ = 1/sinθ) and **Cotangen**t (cot θ = 1/tanθ)
6. Given tan B, I can draw a rough sketch of a right angled triangle to find sin b and cos b
   **Example 1 Page 38**

7. I can use my calculator to find the sin, cos or tan of an angle.
8. I can use the **°’’** button on my calculator to perform calculations in degrees, minutes and seconds.
   **Example 2 Page 39**

9. Given the tan, cos or sin value of an angle θ, I can find the angle θ using the $\sin^{-1}$, $\cos^{-1}$ and $\tan^{-1}$ inverse
10. I know that the sin, cos and tan of the angles 30**°,** 45° and 60**°** are often expressed as fractions or surds which can be found on page 13 of the *Formulae and Tables*.
11. I know that ($\sin^2$θ) = (sinθ)( sinθ)
    **Ex 2.2 Q2 – Q8 Even Page 40**

12. I know that positive angles are measured anticlockwise from the +ve x-axis
13. I know that negative angles are measured in a clockwise direction.
14. I know that the coordinates of any point P on the Unit circle (radius = 1 unit) are **(cosθ sinθ)**
15. I know that a circle has 4 quadrants and that the **CAST Rule** is used to determine if the trig ratio of an angle between 0**°** and 360**°** is positive or negative.
16. I know that reference angles are measured in each quadrant are measured from the x axis and that the **trig ratio of a reference angle is = the trig ratio of its corresponding larger angle**

i.e. t o find sin 120° ... Find the reference angle = 180°-120°=60° and then note the sin of the trig ratio for the reference angle in the $2^{nd}$ quadrant (it is positive)
Therefore sin 120° = sin 60° = √3/2

17. I know that two different angles can have the same sin, cos or tan trig ratio value.
18. I can express in surd form the sin, cos or tan of angles between 90° and 360°
19. Given a value for sin x, I can find 2 values for x if 0°<x<360°
    **Example 1 and 2 Page 42**
    **Ex 2.3 Q1 – Q17 Odd Page 43**

20. I know to use A, B, C to denote angles and a,b and c to denote the sides opposite these angles.

21. Given one side and the angle opp this side and one other side or angle I know how to use the **Sine Rule** to solve a non right angled triangle.
    **Example 1 and 2 Page 45**

22. I know that 2 possible triangles can be drawn (ambiguous case) when given 2 sides and a non included angle. (See page 46)
    **Example 3 Page 47**

23. I know how to find the area of a triangle using **area = half the product of any 2 sides multiplied by the sine of the angle between them**
    **Example 4 Page 47**
    **Ex 2.4 Q2 – Q12 Even Page 48**

24. I know that if I am presented with a triangle of **3 known sides and no angle** that I can solve the non right angled triangle using the **cosine rule**
    **Example 1 and Example 2 Page 51**
    **2.5 Q1 – Q13 Odd Page 52**

25. I know the importance of sketching good 3d diagrams.

26. I know the importance of looking for connected and right angled triangles in 3d diagrams/sketches
    **Example 1 Example 2 Example 3 Page 54**
    **Ex 2.6 Q2 – Q12 Even Page 57**
27. I know that a graph of **y = sin x** for **0°<x<360°** has a **Period (repeats itself) of 360°** (or 2∏radians) and has a **range of [-1,1]**

28. I know that a graph of **y = cos x** for **0°<x<360°** has a **Period (repeats itself) of 360°** (or 2∏radians) and has a **range of [-1,1]**
29. I know that a graph of **y = tan x** for **0°<x<360°** behaves differently to sin and cos and has a **Period (repeats itself) of 180°** (or ∏radians) and has **vertical asymptotes** (lines that the tangent curve approaches but never touches) which are **undefined at x=90° and x=270°**
30. I can draw any of the above graphs and can show the angles which satisfy given equations.
    **Example 1 Page 62**
31. I know that a graph of **y = a sin nx has a period 2∏/n**
32. I know that a graph of **y = a cos nx has a period 2∏/n**
33. I know that a graph of **y = a sin nx has range [-a,a]**
34. I know that a graph of **y = a cos nx has range [-a,a]**
    **Example 2 Page 64**
    **Ex 2.7 Q2 – Q12 Even Page 64**

35. I know that a calculator in degree mode will tell me that for **cos θ = ½ that θ = 60°** but that there are other angles which satisfy this trigonometric equation (from CAST Rule Section) like 300° and 420° and that there is no restriction on the values of θ that are solutions.
36. I know that I can plot y = cos θ and y = ½ to solve cos θ = ½ See Page 67
37. I know that to find the General Solution of an equation like **sin x = k or cos x = k that you find the 2 solutions in the interval 0°<x<360° and then add n360° to each of the solutions**
38. I know that to solve the equation sin 3x = k, to first find the general solution for the angle 3x and then divide both parts by 3 to find the general solution for x
    **See Examples 1, 2 and 3 Pages 68**
39. I know that for tan x = k because the tangent curve has a period of ∏, that we find a value of x in the interval 0 to ∏ and then add n∏ to this to give the general solution.
    **Ex 2.8 Q2 – Q14 Page 70**