L1 GEOMETRIC REASONING
CHEAT SHEET

STUDY TIME

ABOUT THE STANDARD

◆ Geometric reasoning is all about understanding the basic rules of geometry and being able to apply them.
◆ Key topics are:
  ◆ Pythagoras Theorem
  ◆ Trigonometry
  ◆ Similar Shapes
  ◆ Angles of Polygons
  ◆ Angles around intersecting lines
  ◆ Angles around parallel lines
  ◆ Angles within circles
  ◆ Bearings
◆ Background knowledge in algebra will be required.

STRATEGIES FOR SUCCESS

◆ **Memorize the rules!**
  ◆ Unfortunately, Geometric reasoning does require you to memorize lots of rules. In the exam, you will not be given the rules in a formula sheet and it is very difficult to do well if you cannot remember the rules. Getting lots of practice applying these rules in the context of exam questions will help you to remember them and to learn in what kinds of questions certain rules most often pop up.
  ◆ Another helpful method for memorizing rules is to blue-tack a sheet with all the rules on it to your bedroom door. Every time you walk out your door, you have to read through and understand all the rules. Super annoying, but it will really help you memorize them.
◆ **Look for key shapes and lines**
  ◆ As soon as your start questions you should be looking to find situations where you can apply the rules you have learned. Are there parallel lines, Angles at a point, angles inside triangles? Were are the alternate angles at a point? Once you start to identify these things you will begin to get a clearer picture of what you need to do to solve the problem.
◆ **Spot The Right Angle Triangle!**
  ◆ To use Pythagoras theorem or to use trigonometry we need to have a right angle. A great trick for knowing when you could be using these skills is to quickly check when you start the question if there are any right angles triangles. Remember the little square in the angles means that that angle is 90 degrees (A right angle) but be careful, if a question does not state that an angle is a right angle and does not have the little square, you cannot assume its a right angle just because it might look like it!
◆ **Use Colours**
  ◆ Often there are situations where there are many different lines shapes, and angles going on in a single question. The notation the exam is likely to give you will be something like "angle PQR is 60 degrees" Where 'P', 'Q' and 'R' are different points. If you find this confusing you can bring coloured pencils to

help you distinguish between the different elements of a question. Once you understand the rules, your success in Geometric reasoning is really just determined by your ability to see where you can apply them. Some colours can often fo a long way in making this a bit clearer.

◆ Pythagorean Theorem
  ◆ $A^2 + B^2 = C^2$
  ◆ Label the sides of your **right angle triangle** to make sure you are clear which is the Hypotenuse (The 'C' side). **Label the sides 'A' 'B' and 'C'**. Use order of operations, to find C you need to first add $A^2 + B^2$ then square root that answers, in your calculators use brackets to make sure you get this right.

◆ **Trigonometry**
  ◆ Make sure you are clear about which side of the triangle you are working with is the Hypotenuse, which is Adjacent and which is the Opposite, relative the and angle you are working with. Draw a little diagram and write these sides on to make sure you get it right **label the sides 'H' 'O' 'A'**. You also need to be confident rearranging these equations to get the desired side length or angle. Remember you only need to use inverse trig value when you are wanting to find the size of an angle!

◆ **Don't Forget About Similar Shapes**
  ◆ One of the most commonly overlooked rules is about similar shapes, recall these are shapes with the exact same proportions but a different size. The same shape just on a different **scale**:
  ◆ (S1 Large side)/(S2 small side) = (S2 Large side)/(S2 small side) - *memorise this*

◆ **Bearings**
  ◆ Bearings go **clockwise** from North around till you get to the direction you are traveling in.
  ◆ Remember to write your bearing as three numbers event if is less than 100 degrees e.g '90' degrees becomes '090'

◆ **Give Reasoning**
  ◆ Remember, the paper is called Geometric Reasoning; you need to give reasons for your working. One each line write what you did, and then beside it write the rule that allowed you to do this. You don't need to write the rules out in full sentences! But also don't worry too much about remembering the exact same notation your teacher used. As long is your notation is clearly illustrating the rule you used you are getting the marks.

OVERALL

◆ Your success in this paper will largely depend on your ability to apply the rules and skills you have covered in class, take them and apply them to exam style questions.
◆ Remember to give brief but clear reasons for your working!
◆ We've covered some core strategies and things to remember, but we haven't covered everything.
◆ As we said at the start of this video, we really recommend going through the last 3-4 years of exam papers, and also using the StudyTime Walkthrough Guide and Checklist to really check and consolidate your knowledge and feel 100% prepared!