

Chapter 16 Geometry 2 Similar Triangles – Circles - Theorems

1. I know that similar triangles are 'equiangular' in that have 2 angles in one triangle are equal to 2 angles the other.
2. I know that in similar triangles...the corresponding sides are those sides opposite the same angles.

And that ..

Theorem If two triangles are similar then their corresponding sides are proportional. And its converse: if 2 sides of a triangle are proportional, in order, then the triangles are similar.

SEE Formula Page 311 and Example 1 and Example 2 Page 311

3. I know that similar triangles are not necessarily the SAME size.
Q2 Q5 Q7 Q10 Q12 Q14 Q16 Q18 Q20 Q21 Page 311

4. I know that **for transversals....**

Theorem If three parallel lines cut off 2 equal segments on some transversal line, they will cut off 2 equal segments on any other transversal.

Note: that the **RATIO** of the 2 segments cut on the first transversal will be the same as the **RATIO** of the 2 segments cut off on the second transversal

Example 1 Page 317

5. I know that

Theorem A line drawn parallel to one side of a triangle divides the other two sides in the same ratio.

Note diagram and equations Page 318 and converse of this theorem which states that 'if a line cuts two sides of a triangle in the same ratio, then that line is parallel to the third side of the triangle'.

Example 2 Page 318

Q2 Q4 Q6 Q8 Q13 Q15 Q16 Page 319

Circles

6. I know the meanings of all terms associated with circles: centre, diameter, radius, semicircle, chord, tangent, sector and segment.

7. I know that the angle in a semicircle is a right angle...

Example 1 Page 324

8. I know that many of the problems dealing with angles in circles involves identifying isosceles triangles. These isosceles triangles occur when two equal sides consist of radii.

9. **Theorem:** The angle subtended at the centre of a circle is twice the angle at the circumference. (note both angles are 'standing on the arc')

Corollary 1

I know that angles in the same segment are equal.

10. **Corollary 2:** I know that a cyclic quadrilateral has all 4 vertices touching the circle and that the opposite angles in a cyclic quad add up to 180°

11. **Corollary 3:** I know that the angle in a semicircle is a right angle.

12. **Corollary 4:** If the angle standing on a chord [BC] at some point of the circle is a right angle, then [BC] is a diameter.

See Examples 2,3,4 page 327

Q2 Q4 Q6 Q8 Q10 Q12 Q14 Q18

13. I know how to prove Theorems 4, 6, 9, 14 and 19.

14. I know that an **AXIOM** is a statement accepted without proof. (i.e. the angles in a straight line add up to 180°)

15. I know that a **THEOREM** is a statement that can be shown to be true through the use of axioms and logical argument.

16. I know that a **COROLLARY** is a statement attached to a theorem which has been proven and follows obviously from it.

17. I know that the **CONVERSE** of a theorem is the opposite or reverse of the theorem.

18. I know that in maths, the word **IMPLIES** means that when one result is established, another result follows logically from it.