Topic: Loci and Constructions

| Topic/Skill | Definition/Tips | Example |
|----------------|---|----------------|
| 1. Parallel | Parallel lines never meet. | |
| | | |
| | | |
| 2. | Perpendicular lines are at right angles. | |
| Perpendicular | There is a 90° angle between them. | |
| | | |
| 3. Vertex | A corner or a point where two lines meet. | vertex |
| | The second of the property of the second of | A |
| | | |
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| | | |
| 4 4 1 | | В |
| 4. Angle | Angle Bisector: Cuts the angle in half. | |
| Bisector | 1. Place the sharp end of a pair of | × |
| | compasses on the vertex. | |
| | 2. Draw an arc, marking a point on each | |
| | line. | |
| | 3. Without changing the compass put the | Angle Bisector |
| | compass on each point and mark a centre | |
| | point where two arcs cross over. 4. Use a ruler to draw a line through the | |
| | vertex and centre point. | |
| | , or to the control points | |
| 5. | Perpendicular Bisector: Cuts a line in | |
| Perpendicular | half and at right angles. | * |
| Bisector | 1 Det the share wint of a main of | / \ |
| | 1. Put the sharp point of a pair of compasses on A. | Line Bisector |
| | 2. Open the compass over half way on the | A B |
| | line. | |
| | 3. Draw an arc above and below the line. | |
| | 4. Without changing the compass, repeat | X |
| | from point B. 5. Draw a straight line through the two | |
| | intersecting arcs. | |
| 6. | The perpendicular distance from a point | |
| Perpendicular | to a line is the shortest distance to that | P |
| from an | line. | <u> </u> |
| External Point | | |
| | 1. Put the sharp point of a pair of | |
| | compasses on the point. 2. Draw an arc that crosses the line twice. | |
| | 3. Place the sharp point of the compass on | * |
| | one of these points, open over half way and | |
| | draw an arc above and below the line. | |
| | 4. Repeat from the other point on the line. | |

| | 5 Duary a studielt line through the true | |
|-----------------|---|-------------------|
| | 5. Draw a straight line through the two | |
| 7 | intersecting arcs. | |
| 7. | Given line PQ and point R on the line: | X |
| Perpendicular | | |
| from a Point | 1. Put the sharp point of a pair of | |
| on a Line | compasses on point R. | |
| | 2. Draw two arcs either side of the point of | |
| | equal width (giving points S and T) | P S R T Q |
| | 3. Place the compass on point S, open over | |
| | halfway and draw an arc above the line. | |
| | 4. Repeat from the other arc on the line | |
| | (point T). | |
| | 5. Draw a straight line from the intersecting | |
| | arcs to the original point on the line. | |
| 8. Constructing | 1. Draw the base of the triangle using a | 1 — |
| Triangles | ruler. | |
| (Side, Side, | 2. Open a pair of compasses to the width of | |
| Side) | one side of the triangle. | |
| | 3. Place the point on one end of the line and | |
| | draw an arc. | |
| | 4. Repeat for the other side of the triangle | |
| | at the other end of the line. | |
| | 5. Using a ruler, draw lines connecting the | |
| | ends of the base of the triangle to the point | |
| | where the arcs intersect. | |
| 9. Constructing | 1. Draw the base of the triangle using a | A |
| Triangles | ruler. | \sim |
| (Side, Angle, | 2. Measure the angle required using a | |
| Side) | protractor and mark this angle. | 4cm/ |
| | 3. Remove the protractor and draw a line of | |
| | the exact length required in line with the | B 250° |
| | angle mark drawn. | 7cm |
| | 4. Connect the end of this line to the other | |
| | end of the base of the triangle. | |
| 10. | 1. Draw the base of the triangle using a | |
| Constructing | ruler. | × |
| Triangles | 2. Measure one of the angles required using | |
| (Angle, Side, | a protractor and mark this angle. | |
| | _ = | |
| Angle) | 3. Draw a straight line through this point | V 42° 51° 7 |
| | from the same point on the base of the | 8.3cm |
| | triangle. | 2.25.11 |
| | 4. Repeat this for the other angle on the | |
| | other end of the base of the triangle. | |

| 11. Constructing | 1. Draw the base of the triangle using a ruler. | C |
|----------------------------------|--|--|
| an Equilateral Triangle (also | 2. Open the pair of compasses to the exact length of the side of the triangle. | |
| makes a 60° | 3. Place the sharp point on one end of the | |
| angle) | line and draw an arc. | // |
| | 4. Repeat this from the other end of the | // |
| | line. | MathBits.com |
| | 5. Using a ruler, draw lines connecting the | A B |
| | ends of the base of the triangle to the point | |
| | where the arcs intersect. | |
| 12. Loci and | A locus is a path of points that follow a | |
| Regions | rule. | * |
| | | A B |
| | For the locus of points closer to B than A , | ¥ 1 |
| | create a perpendicular bisector between A | |
| | and B and shade the side closer to B. | Points Closer to B than A. |
| | | |
| | Fauthalana daning and Butant Comme | |
| | For the locus of points equidistant from A, | |
| | use a compass to draw a circle , centre A. | 2em 2em |
| | | A A |
| | | |
| | | Points less than Points more than |
| | | Points less than Points more than 2cm from A 2cm from A |
| | | x |
| | For the locus of points equidistant to line | |
| | X and line Y, create an angle bisector. | |
| | | |
| | | Y |
| | For the locus of points a set distance from | |
| | a line, create two semi-circles at either end | |
| | joined by two parallel lines . | |
| | Joined by two parametrizes. | D E |
| | | |
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| 13. Equidistant | A point is equidistant from a set of objects | |
| | if the distances between that point and | |
| | each of the objects is the same. | |
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