GCSE
Mathematics (Non-calculator Paper)

Practice Paper Style Questions
Topic: Loci & Constructions (Higher Tier)

For this paper you must have:
- black pen
- HB pencil
- ruler (with cm & mm)
- rubber
- protractor
- compass
- pencil sharpener

Time allowed
- 1 hour

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the space provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 44.
  - The quality of your written communication is specifically assessed in questions indicated with an asterisk (*)
- You may ask for more answer paper and graph paper.
  - These must be tagged securely to this answer booklet.
- A calculator must NOT be used.

Advice
- Read each question carefully before you answer it.
- In all calculations, show clearly how you work out your answer.
- Check your answers if you have time at the end.
There are no questions printed on this page
1. (a) Draw the locus of all points which are equidistant from the points $X$ and $Y$.

(b) Draw the locus of all points that are exactly 2 cm from the line $AB$. 

\[ A \quad \overbrace{}^{2 \text{ cm}} \quad B \]
2. Draw the locus of all points which are equidistant from the lines $AB$ and $AC$. 

(2 marks)
$DEF$ is a triangle.

Shade the area inside the triangle which is:

- Less than 7cm from the point $E$

AND

- Closer to the line $DF$ than $DE$.

(4 marks)
Here is a map which shows two locations, Cheltenham and Bristol.

Cheltenham

Bristol

Scale: 1cm represents 5 miles

A company is planning to build a new leisure facility.

The facility will be less than 20 miles from Bristol and less than 30 miles from Cheltenham.

Shade the region on the map where the company can build the facility.
This solid is made from 8 identical cubes.

On the grid below, draw the view of the solid from the direction $F$.

(2 marks)
6 These diagrams show the plan and front elevation of a solid shape.

(a) On the grid below, draw the side elevation of the solid shape.

(b) In the space below, draw a sketch of the solid shape.
7 In the space below, use a ruler and compasses to construct an equilateral triangle with side of 8 centimetres.

You must show all your construction lines.

One side of the triangle has already been drawn for you.

(2 marks)
8  Here is a sketch of a quadrilateral.

Diagram NOT accurately drawn

Make an accurate drawing of the quadrilateral $ABCD$ in the space below.

The point $A$, marked with a cross ($\times$), has been drawn for you.

A $\times$
9 (a) On the grid below, draw an isosceles triangle.

(b) On the grid below, draw a rectangle with an area of 30cm².
10  (a) Measure the length of line $XY$.

Give your answer in centimetres.

X  

\[ \text{Answer } \ldots \ldots \text{ cm} \ldots \ldots (1 \text{ mark}) \]

(b) Measure the size of angle $\angle x$.

\[ \angle x \]

\[ \text{Answer } \ldots \ldots \ldots \ldots \text{°} \ldots \ldots (1 \text{ mark}) \]

(c) In the space below, draw accurately a circle of radius 5cm.

Use the point $P$ as the centre of your circle.

\[ P \times \]
11  

(a) Use a ruler and compasses to construct the perpendicular bisector of the line $XY$.
You must show all your construction lines.

\[ X \quad \text{-----------------------} \quad Y \]

(2 marks)

(b) Use a ruler and compasses to construct the perpendicular bisector of the line $MN$.
You must show all your construction lines.

\[ M \quad \]
\[ \quad \]
\[ N \]

(2 marks)
12  (a) Use a ruler and compasses to construct an angle of $42^\circ$ at $X$.
    
    You must show all your construction lines.

    $X$ ________________________________

    (2 marks)

(b) Use a ruler and compasses to bisect the angle formed at $X$.

    You must show all your construction lines.

    $X$ ________________________________

    (2 marks)
Here is a 3D model.

On the grids below, draw the plan, front elevation and a side elevation of the shape.

(6 marks)
There are no questions printed on this page