Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Constructions 3

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

Total Marks :

1) In this question, use ruler and compasses only for your constructions.

(i) Construct a triangle ABC with AC = 10 cm and BC = 8 cm. The line AB has already been drawn for you.

3 marks

(ii) Construct the perpendicular bisector of AB and the bisector of angle CAB. Name the point where these two lines meet as O. **4 marks**

(iii) Draw a circle centre O and radius OC. **1 mark**

(iv) The circle meets the line AB at points P and Q. Show these points on your diagram and measure the distance PQ.

1 mark

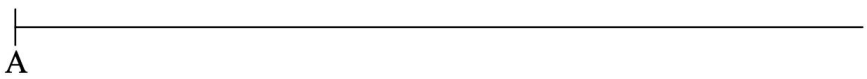
2) ***Use ruler and compasses only. All construction lines and arcs must be clearly shown.***

a) Mark a point B on the given line so that AB is 8·5 cm.

b) Construct a triangle ABC in which ∠ABC is 90^{o} and BC is 4 cm.

c) Construct the perpendicular bisector of the line BC. Let this bisector meet AC at D.

d) Measure and write down the size of ∠BDC.



(5 marks)

Angle BDC .....°

3) **Use ruler and compasses only. All construction lines and arcs must be clearly shown.**

a) Mark a point Y on the given line so that XY is 7·5 cm long.

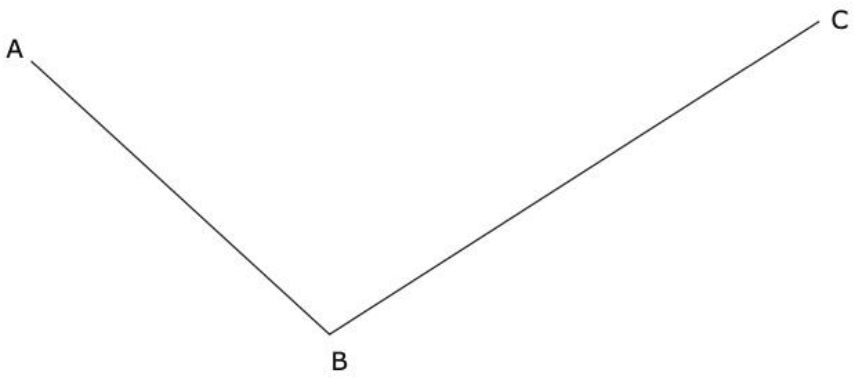
b) Construct the **perpendicular bisector** of the line XY.

c) Mark a point Z on this perpendicular bisector such that XZ is of length 5 cm and Z is **above** XY.

d) Finally construct a circle with centre Z that passes through X and Y.

(5 marks)

4) **In this question use ruler and compasses only.**



(a) Construct the bisector of angle ABC.

(2)

(b) Construct the perpendicular bisector of the line BC.

(2)

(c) Mark the point of intersection of the two bisectors as point D.

(1)

(d) Measure the length of AD.

(1)

Answer.....

(Total: 6 marks)

5) Using ruler and compasses only,

(i) construct triangle XYZ such that XY is 9 cm long, XZ is 11 cm long and angle ZXY is 60^{o}.

(ii) Draw the perpendicular bisector of XY and let it cut XZ at P.

(iii) Measure PZ.

PZ.....cm

(5 marks)

6) In triangle ABC, AB = 4.5 cm, angle A = 90° and angle B = 60°.

(a) **Use ruler and compasses only** to construct triangle ABC.

(b) **Use ruler and compasses only** to **bisect** angle A.
Let the line intersect BC at **X**.
Measure the length **BX**.

Ans: BX = _____ cm

(c) With X as the centre, is it possible to draw a **circle** that passes through the points A, B and C? Give a reason for your answer.

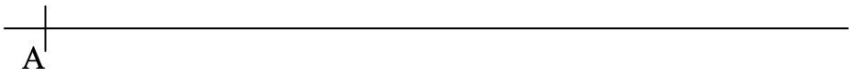
_____ because _____

_____

_____

(7 marks)

7) a) On the given line mark the point B such that AB is 7 cm long.
Use your protractor to draw a triangle ABC in which angle A is 50^{o} and angle B is 65^{o}.



b) Measure and write down the length of BC. BC = _____cm

c) Construct the **perpendicular bisector** of AB.

d) Let this bisector meet AC at D. Mark the point D.

e) Measure and write down the size of angle ABD. Angle ABD = _____

(9 marks)

8) **Use ruler and compasses only. All construction lines and arcs must be clearly shown.**

a) Mark a point Q on the given line such that PQ is 5·5 cm.
b) Construct a triangle PQR in which PR = QR = 7 cm.
c) Construct the perpendicular bisector of PQ.
d) Find, by construction a point **T** such that PQTR is a **parallelogram**.
e) Measure and write down the size of ∠PQT.

Angle PQT .....°[6]

9) Use **a ruler and compass only** to:

a) Construct a triangle ABC with AB = 6 cm, AC = 11 cm and BC = 7 cm

b) Bisect the angle ABC and where this bisector meets AC, label the point D

c) Bisect angle BAC and where it cuts BD, label it E

d) Measure ED

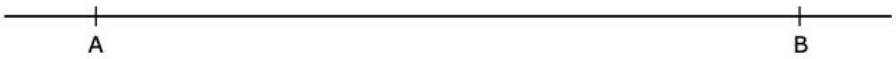
e) **Use a protractor** to measure the angle CBD

ED = ...cm Angle CBD .....°

(8 marks)

10) Use ruler and compasses only in this question.
Do **not** rub off any construction lines or arcs.

(a) On the line AB, given below, construct ∠CAB = 60° with line AC = 10 cm.



(3)

(b) Using B as centre and with a radius of 8.5 cm, draw an arc to cut AC at D and E. Measure DE.

DE .....cm (2)

(c) Bisect ∠DBE and let this bisector cut DE at F. Measure BF and ∠EBF.

BF .....cm and Angle EBF .....° (3)

(Total: 8 marks)

11) **Use ruler and compasses only in this question.**

(a) Using line AB drawn below as base, construct triangle ABC with $\angle CAB = 60°$ and AC = 11 cm.

(3)

(b) Construct the perpendicular bisector of AB.
Name the point where this bisector meets AB as X.

(2)

(c) Construct the bisector of angle CBA.
Name the point where the two bisectors meet as O.

(2)

(d) Draw a circle centre O and radius OX.

(1)

A B

(Total: 8 marks)

12) **(i)** Using ruler and compasses only construct a quadrilateral ABCD with AB = 10 cm, $\angle$ BAD = 60°, AD = 5 cm and BC = CD = 7 cm.

4 marks

(ii) Measure $\angle$ ADC.

Angle ADC .....°

1 mark

(iii) Bisect $\angle$ ABC of the quadrilateral drawn in part (i) of this question.
Mark the point where the bisector meets DC as E.

2 marks

(iv) Measure EC.

EC .....cm

1 mark

13) Use ruler, compasses and pencil to

(a) construct a triangle ABC in which AB = 8 cm, AC = 6 cm and BC = 9 cm.

(b) Construct the **bisector** of ∠ABC.

(c) Construct the line through A, **perpendicular** to BC. Mark the point X where this line meets the bisector of ∠ABC.

(d) **Measure** the length CX.

CX = _____ cm

(9 marks)

14)(a) Using ruler, compasses and pencil only **construct**

(i) a triangle ABC with AB = 7.2 cm, BC = 6.5 cm and AC = 5.5 cm,

(ii) the **perpendicular bisectors** of AB and BC.

(b) Mark the **point of intersection** of the two perpendicular bisectors as P. Measure and write down the **length of AP**.

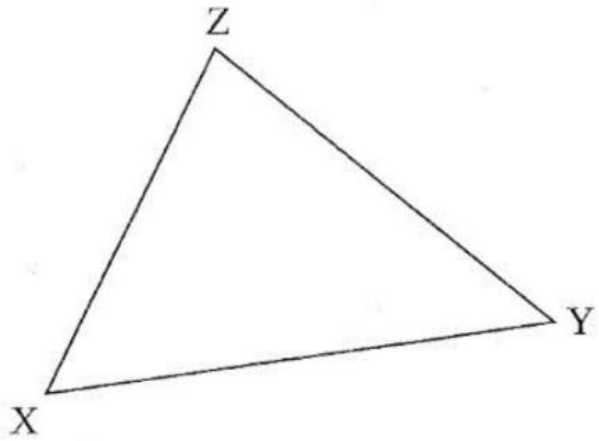
AP = _____ cm

(c) Draw a **circle** with **centre P** and **radius AP**. What do you notice about this circle?

_____

(7 marks)

15) (a) Using a pair of compasses and ruler only, construct an escribed circle to touch side XZ of triangle XYZ drawn below. (3 marks)



(b) Measure the radius of the circle. (1 mark)

radius .....cm