Assignment 5

Instructions	تعليمات
1) This assignment consists of 6 questions: **Section A:** requires numerical answers only. **Section B:** requires full solutions.	1) يتكون هذا الواجب من 6 أسئلة : **القسم A :** يتطلب إجابات عددية فقط. (4 أسئلة) **القسم B :** يتطلب حلولًا كاملة. (2 أسئلة)
2) Each question in Section A is worth 5 points. No partial credit are given, but you must not give more than the number of answers being asked for. For questions asking for several answers, full credit will only be given if all correct answers are found.	2) كل سؤال في **القسم A** يساوي **5 نقاط**. لا تُمنح نقاط جزئية. ويجب ألا تعطي أكثر من عدد الإجابات المطلوب. بالنسبة للأسئلة التي تطلب عدة إجابات، تُمنح الدرجة الكاملة فقط إذا تم العثور على جميع الإجابات الصحيحة.
3) Each question in Section B is worth 20 points. Partial credits may be awarded.	3) كل سؤال في **القسم B** يساوي **20 نقطة**. يمكن منح نقاط جزئية.
4) Diagrams shown may not be drawn to scale.	4) قد لا تكون الرسوم التوضيحية المرفقة مرسومة على مقياس صحيح.
5) You cannot use instruments such as protractors, calculators and electronic devices, smart watches.	5) لا يمكنك استخدام أدوات مثل المنقلة، الآلات الحاسبة، الأجهزة الإلكترونية أو الساعات الذكية

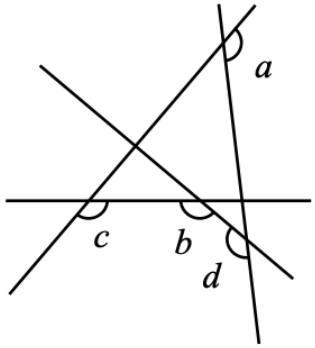
SECTION A

Problem 1 :

Find the remainder when 12233344445555566666677777778888888899999999 is divided by 9.

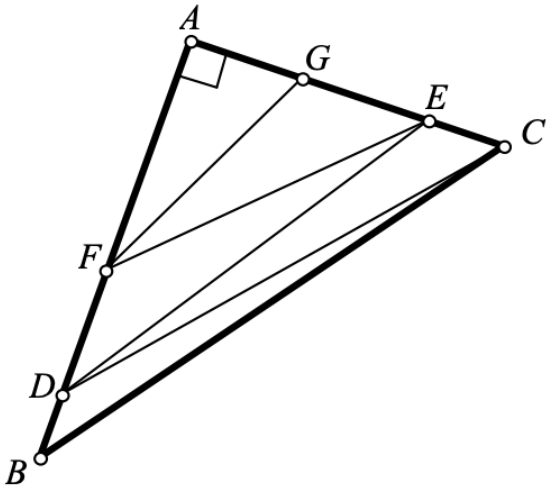
Problem 2 :

Find the sum of the angles a, b, c and d in the following figure.



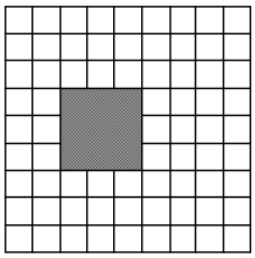
Problem 3 :

The diagram below shows a triangle ABC. The perpendicular sides AB and AC have lengths 15 and 8 respectively. D and F are points on AB. E and G are points on AC. The segments CD, DE, EF and FG divide triangle ABC into five triangles of equal area. The length of only one of these segments is integral. What is that length?



Problem 4 :

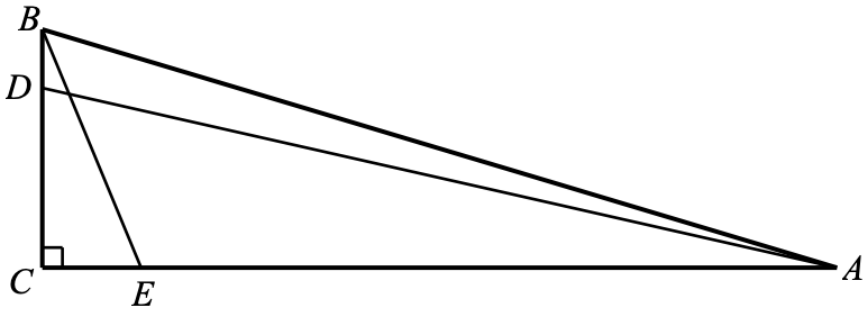
How many squares are formed by the grid lines in the diagram below?



SECTION B

Problem 5 :

In the diagram below, BC is perpendicular to AC. D is a point on BC such that $BC = 4BD$. E is a point on AC such that $AC = 8CE$. If $AD = 164$ and $BE = 52$, determine AB.



Problem 6 :

The diagram below shows a cubical wire framework of side 1. An ant starts from a vertex and crawls along the sides of the framework. If it does not repeat any part of its path and finally returns to the starting vertex, what is the longest possible length of the path it has travelled?