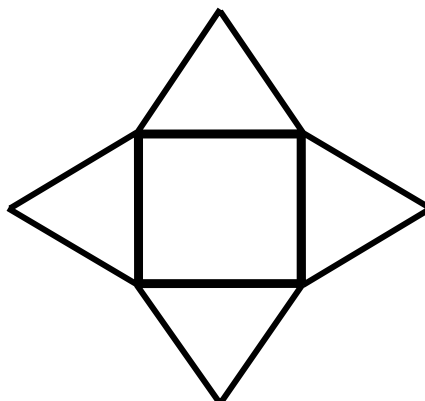


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Round 2 Problem Solving (60 marks)

Task A:



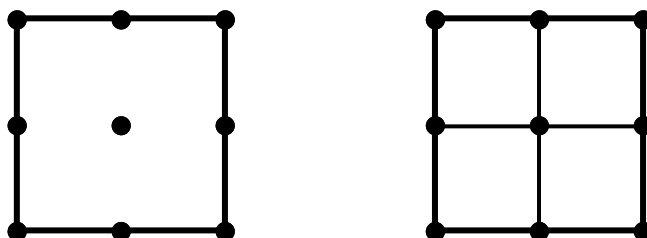
The diagram shows one possible net for a square based pyramid with four equilateral faces. Not counting reflection and rotations, draw all the other possible nets below.

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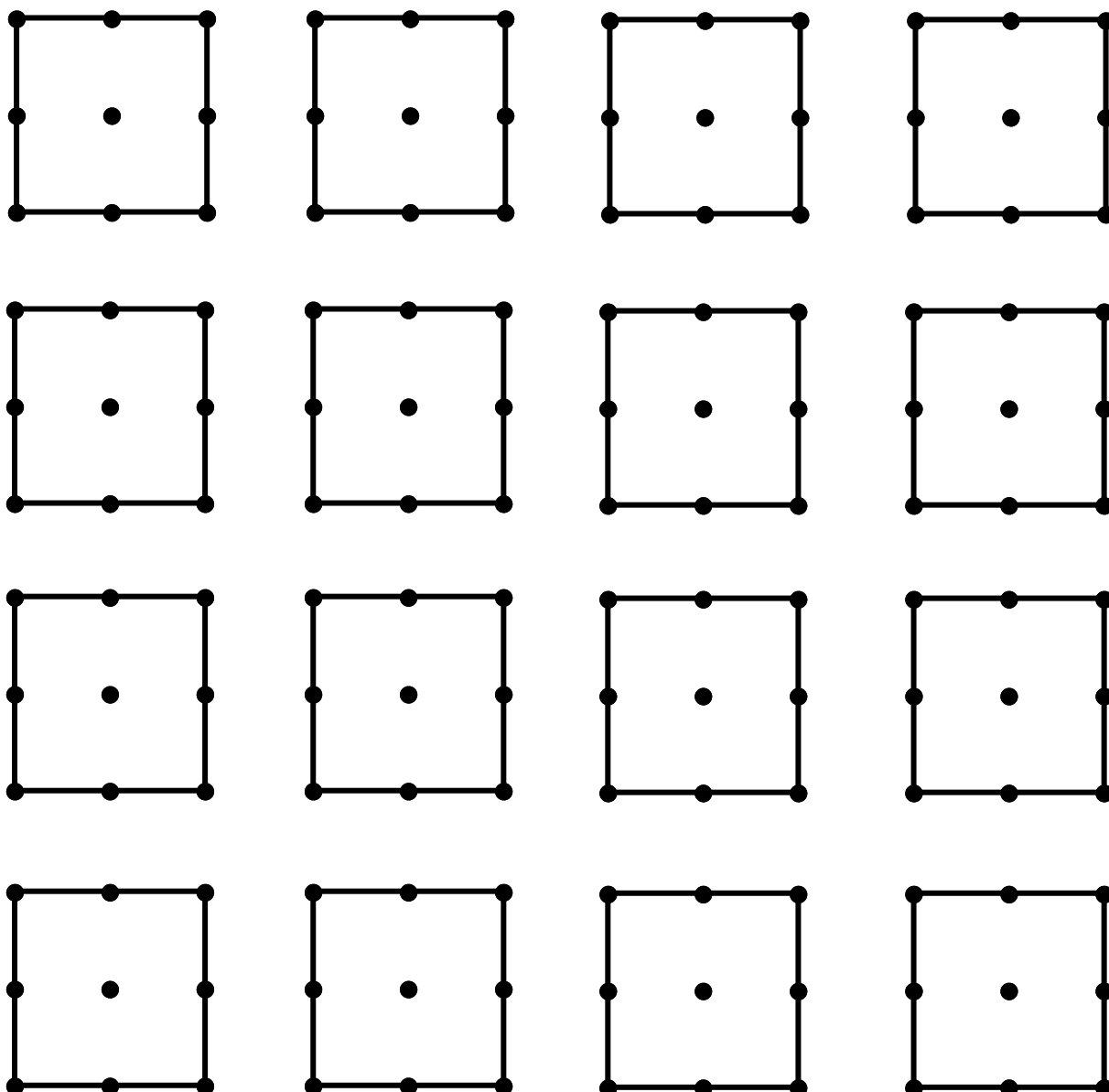
Round 2 Problem Solving (40 marks)

Task B:



The first diagram shows nine equally spaced dots drawn over a square. The second diagram (on the right) shows one way of joining the dots with straight lines to make four equal areas.

Not counting reflections and rotations, find all the other ways the square could be divided into four exactly equal areas by joining the dots with straight lines.



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Round 2 Problem Solving (40 marks)

Task C:

(i)

Gold leaf is very expensive and must not be wasted.

Given a rectangle of gold leaf 5cm by 11cm, what is the maximum number of rectangles 2cm by 3cm that can be cut and what shape and area remains (sketch your solution)?

(ii)

If the sheet is 14cm by 11cm, what is the maximum number of rectangles

5cm by 3cm that can be cut and what shape and area remains (sketch your solution)?

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Round 2 Problem Solving (40 marks)

Task D

(i) John has 60 apples.

On the **first** day he decided to keep $\frac{3}{4}$ of his apples. He gave the rest away. Then he ate one.

On the **second** day he decided to keep $\frac{7}{11}$ of his apples. He gave the rest away. Then he ate one.

On the **third** day he decided to keep $\frac{5}{9}$ of his apples. He gave the rest away. Then he ate one.

On the **fourth** day he decided to keep $\frac{2}{7}$ of his apples. He gave the rest away. Then he ate one.

On the **fifth** day he decided to keep $\frac{2}{3}$ of his apples. He gave the rest away. Then he ate one.

How many did he have left at the end?

(ii) Jane had some apples.

On the **first** day she decided to keep $\frac{1}{2}$ of her apples. She gave the rest away. Then she ate one.

On the **second** day she decided to keep $\frac{1}{2}$ of her apples. She gave the rest away. Then she ate one.

On the **third** day she decided to keep $\frac{1}{2}$ of her apples. She gave the rest away. Then she ate one.

On the **fourth** day she decided to keep $\frac{1}{2}$ of her apples. She gave the rest away. Then she ate one.

On the **fifth** day she found he had only **one** apple left. How many did she have at the beginning?

(iii) Brenda had some apples.

On the **first** day she decided to keep $\frac{1}{2}$ of her apples. She gave the rest away. Then she ate one.

On the **second** day she decided to keep $\frac{1}{3}$ of her apples. She gave the rest away. Then she ate one.

On the **third** day she decided to keep $\frac{1}{4}$ of her apples. She gave the rest away. Then she ate one.

On the **fourth** day she decided to keep $\frac{1}{5}$ of her apples. She gave the rest away. Then she ate one.

On the **fifth** day she decided to keep $\frac{1}{6}$ of her apples. She gave the rest away. Then she ate one.

On the **sixth** day she found he had no apples left. How many did she have at the beginning?