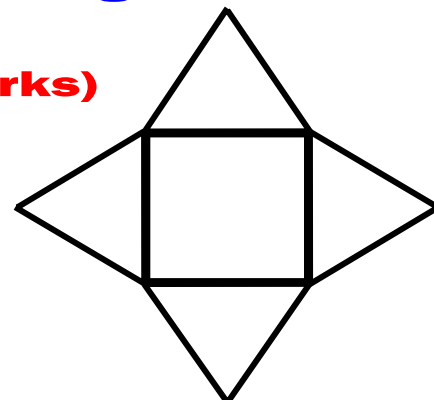


SCHOOL:

Eastern Area Mathematical Challenge 2010

Answers Round 2 Problem Solving (60 marks)

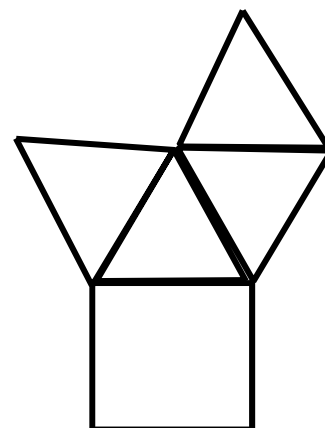
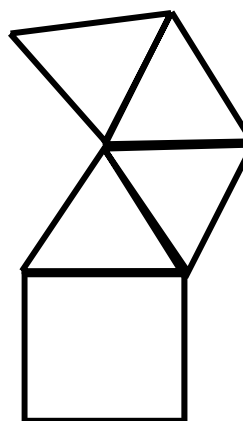
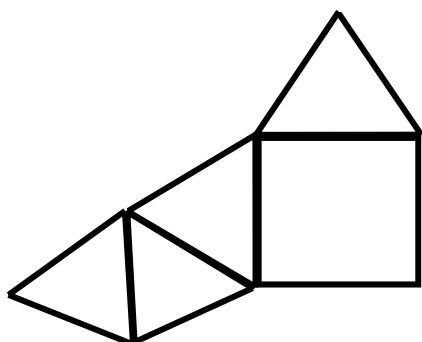
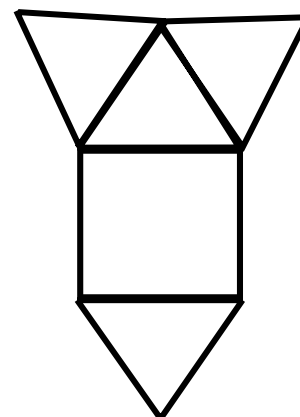
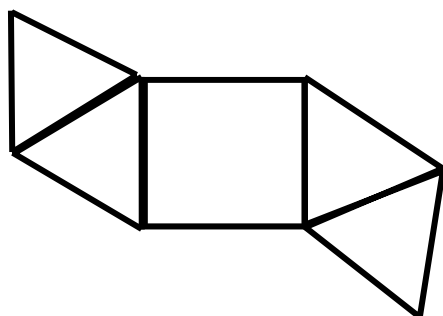
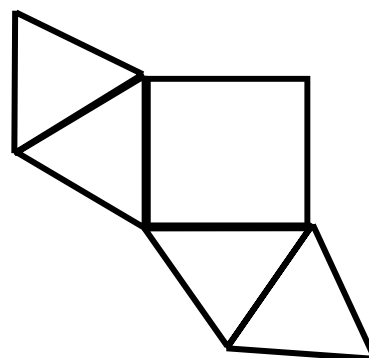
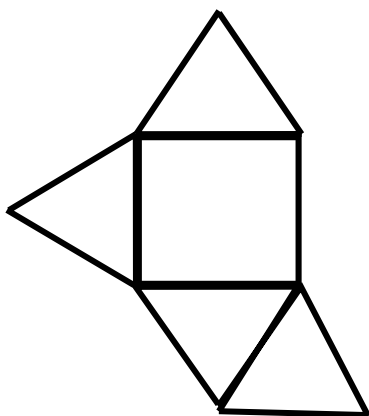
Task A:



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.

Two marks for each correct net. Bonus 2 marks if all correct with no repeats.

Maximum score 16.

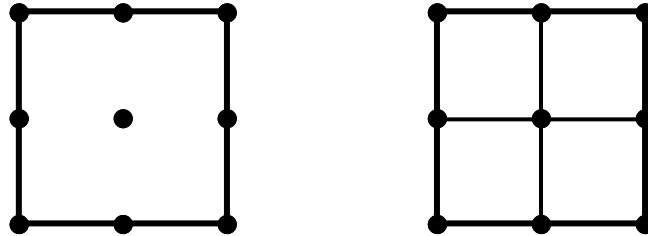


SCHOOL:

Eastern Area Mathematical Challenge 2010

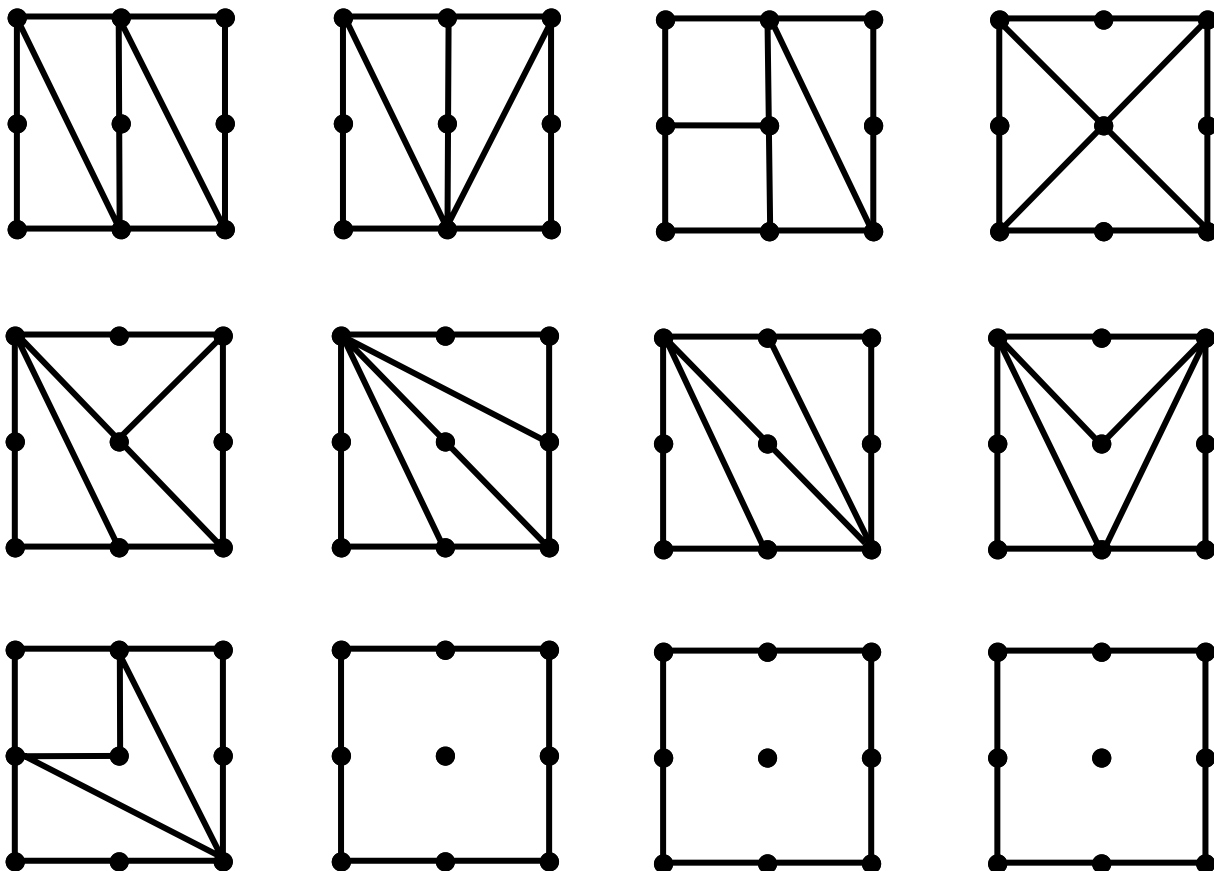
Round 2 Problem Solving (40 marks)

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 equal areas by joining the dots with straight lines.



Two marks for each correct net. Bonus 2 marks if all correct with no repeats.

Maximum score 20.

SCHOOL:

Eastern Area Mathematical Challenge 2010

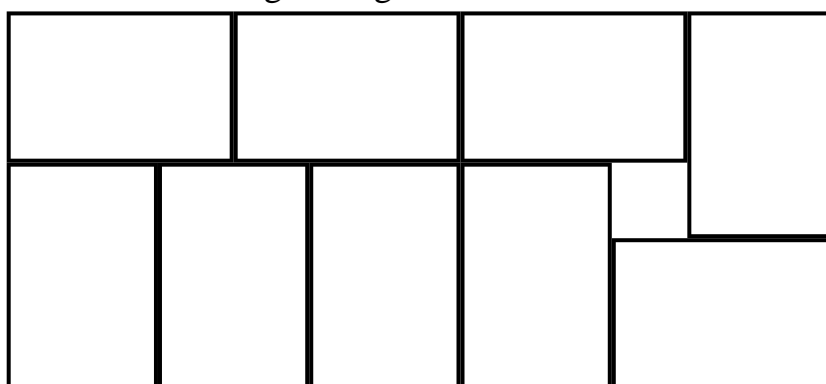
Round 2 Problem Solving (40 marks)

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? Draw a diagram to show how the rectangles of gold leaf are cut.

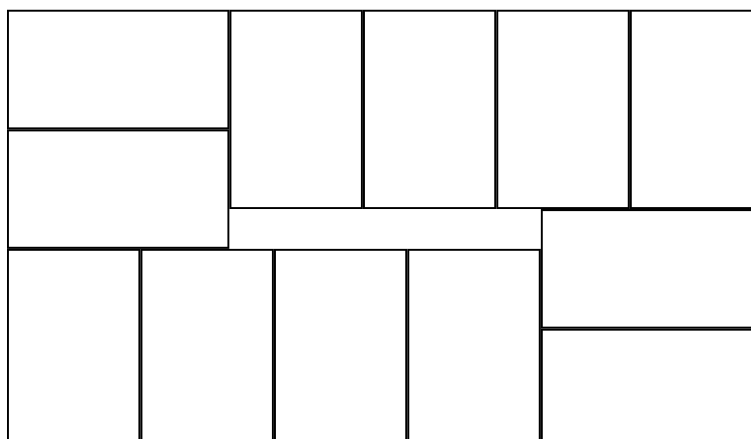


9 rectangles, 1x1 square left over

[4 marks for the diagram, 1 mark number of rectangles, 1 left over shape = Total 6]

(ii)

If the sheet is 14cm by 11cm, what is the maximum number of rectangles 5m by 3cm that can be cut and what shape and area remains? Draw a diagram to show how the rectangles of gold leaf are cut.



10 rectangles, 1x4 rectangle left over

[4 marks for the diagram, 1 mark number of rectangles, 1 left over shape = Total 6]

SCHOOL:

Eastern Area Mathematical Challenge 2010

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?

1 [4 marks]

(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?

46 [4 marks]

(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?

872 [4 marks]