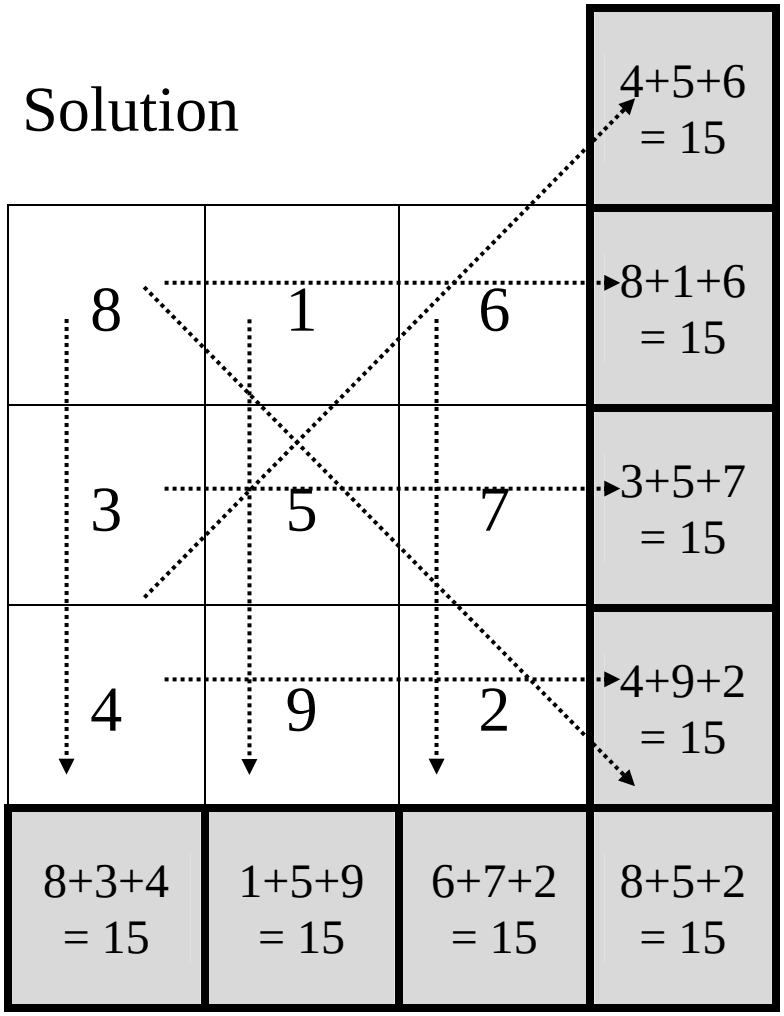
WARM UP #1

Scarborough Teams Math Olympics 2013

Example for Warm Up #1: MAGIC SQUARE

Place the numbers 1 through 9 in the 3 x 3 square so that the sum formed by each row, column and diagonal are equal.
Calculate the sum of each row, column and diagonal to show that they are equal.



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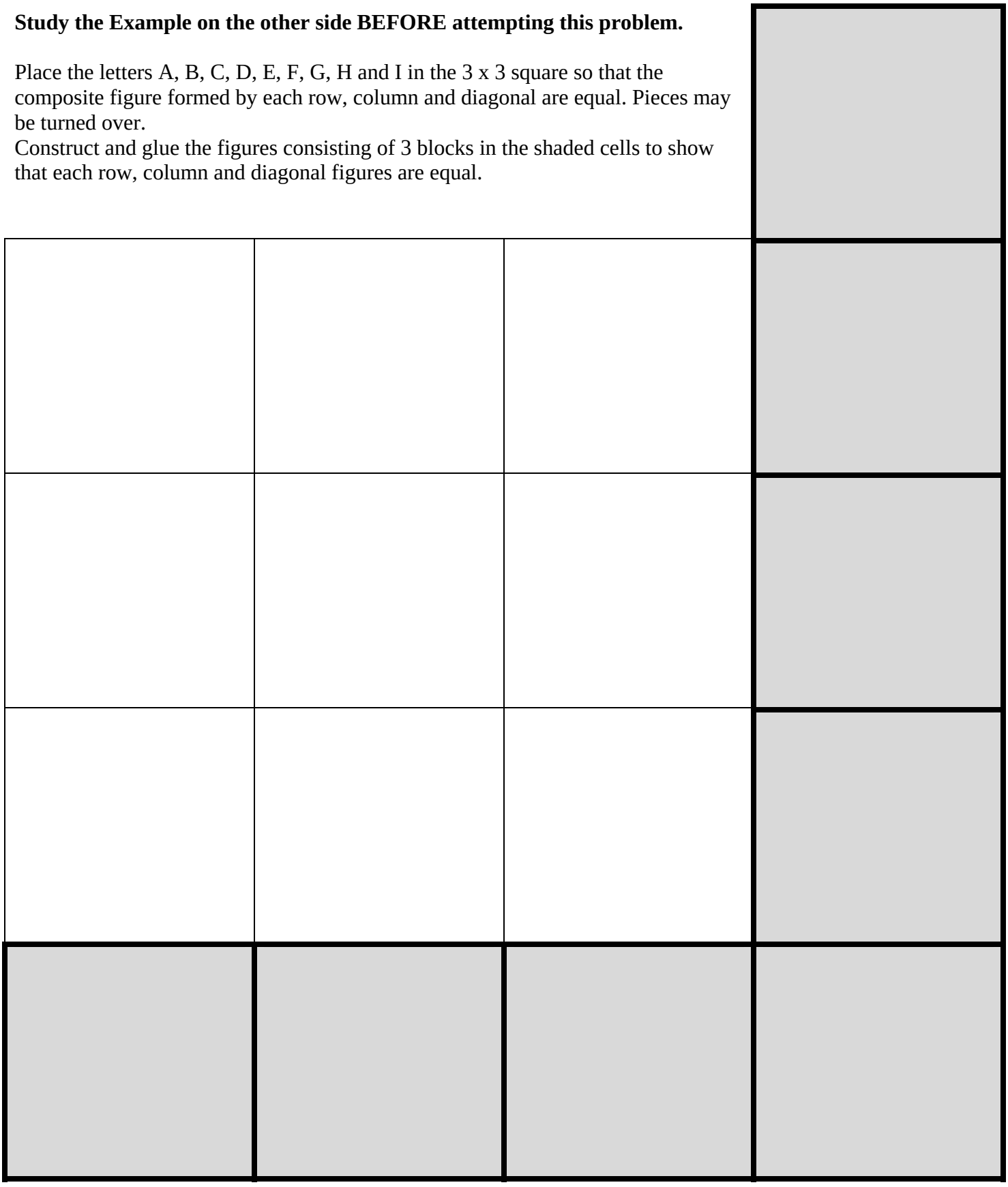
WARM UP #1

Scarborough Teams Math Olympics 2013

Study the Example on the other side BEFORE attempting this problem.

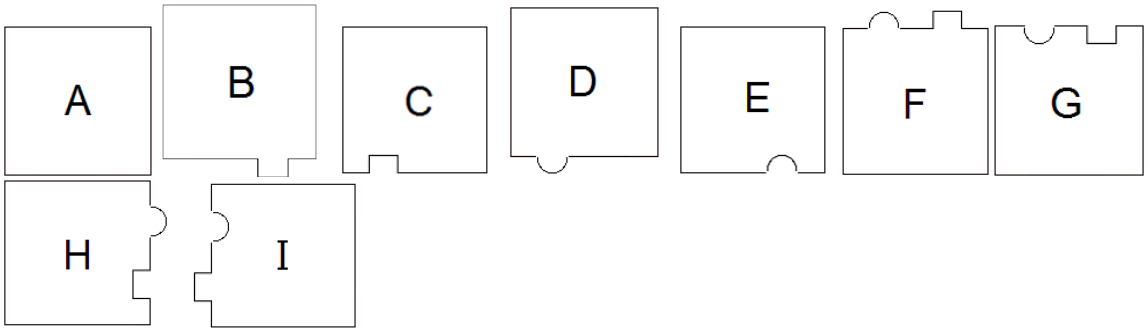
Place the letters A, B, C, D, E, F, G, H and I in the 3 x 3 square so that the composite figure formed by each row, column and diagonal are equal. Pieces may be turned over.
Construct and glue the figures consisting of 3 blocks in the shaded cells to show that each row, column and diagonal figures are equal.

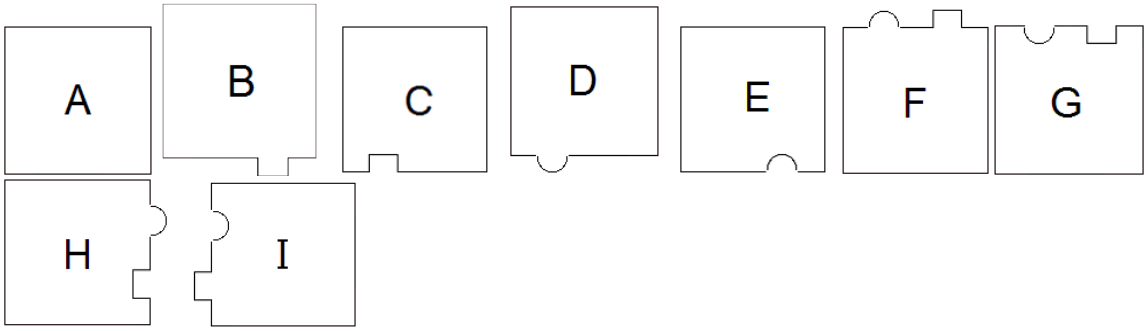


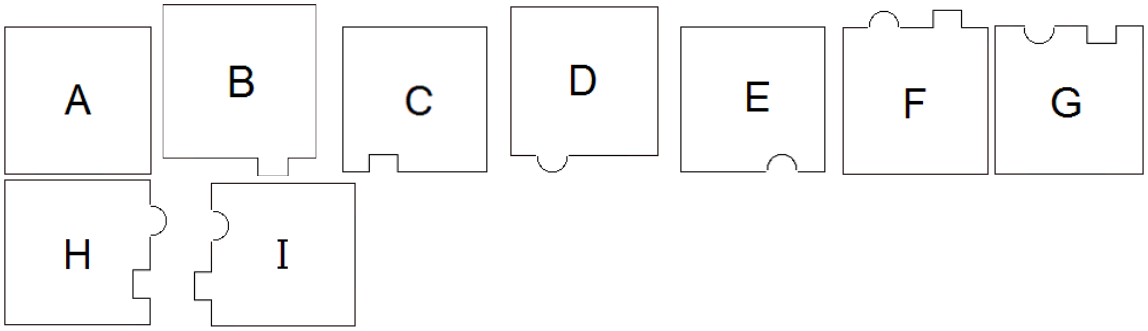
WARM UP #1

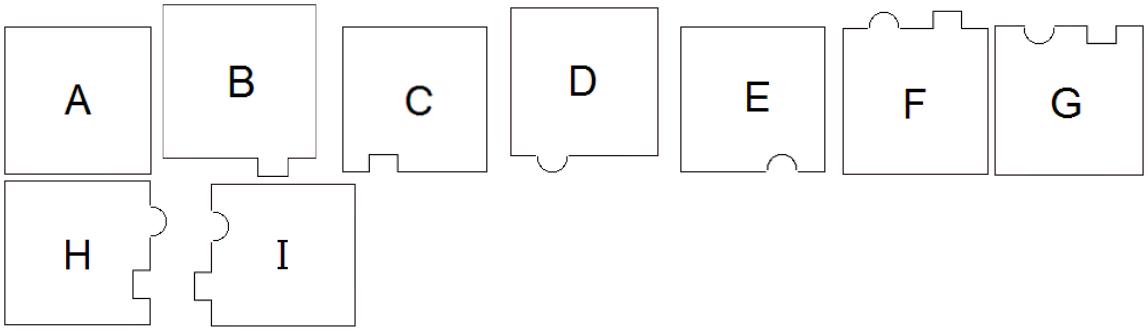
Scarborough Teams Math Olympics 2013

Cut out the pieces below to solve the problem on the next page.







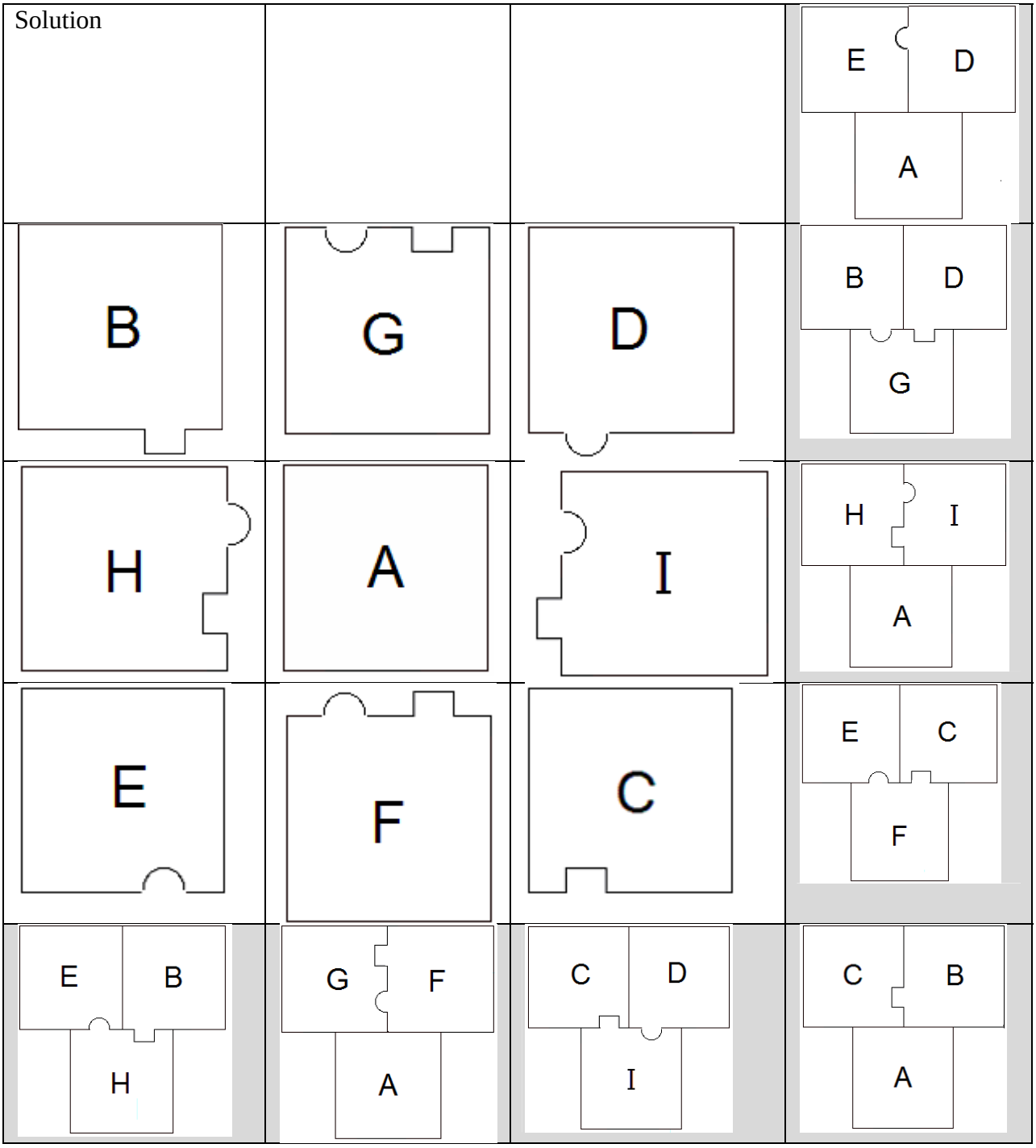


Scarborough Association of Mathematics Educators

WARM UP #1

Scarborough Teams Math Olympics 2013

Solution



WARM UP #2 – PAINTED CUBES

Scarborough Teams Math Olympics 2013

1. Linking cubes are connected to build larger cubes. The larger cube is then dipped in paint. Determine how many **linking cubes** have between 0 and 3 faces painted.

	Number of Linking Cubes With Exactly:			
Dimensions	**No Face Painted**	**1 Face Painted**	**2 Faces Painted**	**3 Faces Painted**
1 × 1 × 1				
2 × 2× 2				
3 × 3 × 3				
4 × 4 × 4				
5 × 5 × 5				
10 × 10 × 10				

2. A cube has dimensions of ***w*** linking cubes wide. Use words or a formula to describe how many linking cubes will have:

a) no face painted.

b) exactly 1 face painted.

c) exactly 2 faces painted.

d) exactly 3 faces painted.

e) exactly 4 faces painted.

WARM UP #2 – PAINTED CUBES

Scarborough Teams Math Olympics 2013

1. Linking cubes are connected to build larger cubes. The larger cube is then dipped in paint. Determine how many **linking cubes** have between 0 and 3 faces painted.

	Number of Linking Cubes With Exactly:			
Dimensions	**No Face Painted**	**1 Face Painted**	**2 Faces Painted**	**3 Faces Painted**
1 × 1 × 1	**0**	**0**	**0**	**0**
2 × 2× 2	**0**	**0**	**0**	**8**
3 × 3 × 3	**1**	**6**	**12**	**8**
4 × 4 × 4	**8**	**24**	**24**	**8**
5 × 5 × 5	**27**	**54**	**36**	**8**
10 × 10 × 10	**512**	**384**	**96**	**8**

2. A cube has dimensions of w linking cubes wide. Use words or a formula to describe how many linking cubes will have:

a) no face painted.

$(w-2)^3$ cubes

b) exactly 1 face painted.

$6(w-2)^2$ cubes

c) exactly 2 faces painted.

$12(w-2)$ cubes

d) exactly 3 faces painted.

8 cubes

e) exactly 4 faces painted.

0 cubes

INDIVIDUAL EVENT QUESTIONS

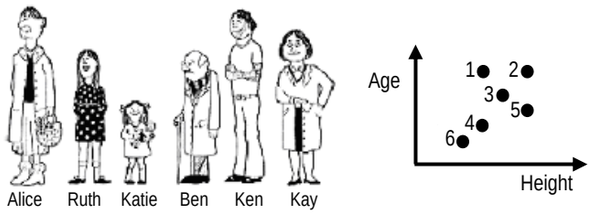
Scarborough Teams Math Olympics 2013

Part A: MULTIPLE CHOICE Each correct answer is worth 3 points.

1. What is a half of one third of a quarter?
   A $\frac{1}{12}$ B $\frac{1}{6}$ C $\frac{1}{24}$ D $\frac{1}{9}$

2. The simplest ratio of 2 seconds to 2 days is
   A 1:1 B 1:86400 C 1:24 D 1:30

3. A point on the graph shows the heights and ages of the family in picture. Which point on the graph represents Ruth's height and age?
   A Point 1 B Point 3
   C Point 4 D Point 5



4. Let A be the sum of seven 7's. Let B be the sum of seven A's. What is B?
   A 49 B 343 C 21 D 98

5. Four hundred gnomes divided a block of gold evenly. What percent of the block of gold did each gnome receive?
   A 0.25% B 25% C 4% D 400%

6. If a is negative number, b is positive number and c equals zero.
   The expression **ab + ac + bc** is:
   A Even B Negative C Odd D Positive

Part B: MULTIPLE CHOICE Each correct answer is worth 4 points.

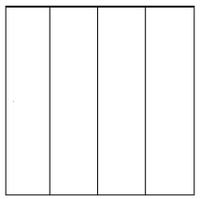
7. During fundraising at his school Jay sold 100 chocolate bars in 5 days. Each day he sold 6 more bars than he had sold the previous day. How many bars did he sell on the first day?
   A 20 B 8 C 6 D 32

INDIVIDUAL EVENT QUESTIONS

Scarborough Teams Math Olympics 2013

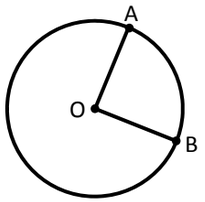
8. There are eleven players on a soccer team. The average age of the players is 22 years. During a game a 32 year old player got injured and left the field. What is the average age of the players left on the field?
   A 32 B 10 C 22 D 21

9. A square is divided into four identical rectangles as shown.
   The perimeter of each of the four rectangles is 30 cm.
   What is the perimeter of the square?
   A 48 cm B 30 cm C 120 cm D 96 cm



10. Andy can paint a fence in 1 hour by himself, and Bobby can paint a fence in 2 hours by himself. How many minutes does it take Andy and Bobby to paint a fence together?
    A 40 minutes B 20 minutes
    C 90 minutes D 30 minutes

11. Points A and B are two points on the circumference of a circle with center O. If AO = x + 60, and BO = 4x, what is x?
    A 15 B 20 C 12 D 56



12. If a + b = 13, b + c = 14, c + a = 15, find the value of c.
    A 7 B 16 C 8 D 1

13. The number of hours that were left in the day was one-third of the number of hours already passed (A day starts at mid-night and lasts 24 hours). What time is it?
    A 4 p.m. B 6 p.m. C 6 a.m. D 9 p.m.

14. An Internet cafe was broken in. After some investigation, Constable Eric narrowed it down to 4 suspects: Abbas, Brandy, Carlos and Dolly.
    Each was questioned privately in a separate room.
    Abbas said: "I know it is Brandy."
    Brandy said: "I saw Dolly break in."
    Carlos said: "I do not care who did it. I didn't do it."
    Dolly said: "Don't believe Brandy. She hated me and she blamed me for no reasons."
    Suppose only one of these four lied to Constable Eric. Who is the culprit?
    A Abbas B Brandy C Carlos D Dolly

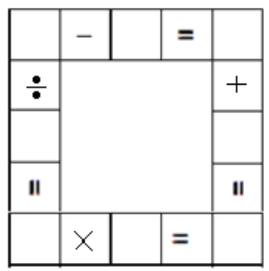
15. Find the sum of:

$$\left(\frac{1}{1}-\frac{1}{2}\right)+\left(\frac{1}{2}-\frac{1}{3}\right)+\left(\frac{1}{3}-\frac{1}{4}\right)+\left(\frac{1}{4}-\frac{1}{5}\right)+.....+\left(\frac{1}{2012}-\frac{1}{2013}\right)$$

A $\frac{2012}{2013}$ B 0 C $\frac{4025}{2013}$ D 1

Part C: SHORT ANSWER Each question is worth 6 points.
Points may be earned for partially correct answers.

16. Assign 1, 2, 3, 4, 5, 6 , 7 and 8 in the square shown so that the four sides form four correct statements.



17. Three brothers (Tiger, Dragon, and Panther) are 9, 10 and 11 years old. Each excels in only one of the following sports: basketball, volleyball and soccer. Tiger is not 9 years old. Dragon is not 10 years old. The one who excels in volleyball is not 11 years old. The one who excels in basketball is 9 years old and he is not Dragon.
Which sport does each brother excel in and how old is each boy?

18. Find x, y, and z if $x+\dfrac{1}{y+\dfrac{1}{z}}=\dfrac{10}{7}$

INDIVIDUAL EVENT QUESTIONS

Scarborough Teams Math Olympics 2013

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{same}
Scarborough Association of Mathematics Educators

Instructions

- **Write your team name and your name in the box provided on the ANSWER SHEET.**
- **You have a maximum of 30 minutes to complete this event. Please wait for the Olympic Official's instruction to begin.**
- **Questions are worth 3, 4, or 6 points as indicated.**
- **Questions can be done in any order.**
- **Calculators, rulers and graph paper are allowed.**
- **Record your answers on the ANSWER SHEET.**
  - **In Parts A and B: MULTIPLE CHOICE**
    Indicate your choices using capital letters:
    A, B, C or D
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    Points may be earned for partially correct answers.
  - **There is NO penalty for incorrect answers.**
- **Hand in the ANSWER SHEET only. You may keep this question sheet.**

INDIVIDUAL EVENT QUESTIONS

Scarborough Teams Math Olympics 2013

Part A: MULTIPLE CHOICE Each correct answer is worth 3 points.

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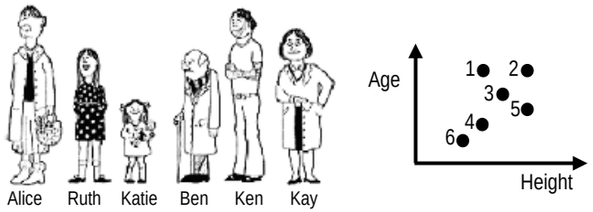

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INDIVIDUAL EVENT QUESTIONS

Scarborough Teams Math Olympics 2013

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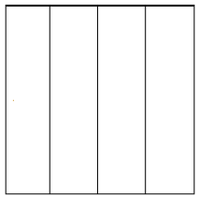

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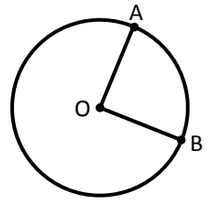

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A $\frac{2012}{2013}$ B 0 C $\frac{4025}{2013}$ D 1

Part C: SHORT ANSWER Each question is worth 6 points.
Points may be earned for partially correct answers.

16. Assign 1, 2, 3, 4, 5, 6 , 7 and 8 in the square shown so that the four sides form four correct statements.

There are two possible answers.

6	−	5	=	1
÷				+
3				7
=				=
2	×	4	=	8

8	−	7	=	1
÷				+
4				5
=				=
2	×	3	=	6

17. Three brothers (Tiger, Dragon, and Panther) are 9, 10 and 11 years old. Each excels in only one of the following sports: basketball, volleyball and soccer. Tiger is not 9 years old. Dragon is not 10 years old. The one who excels in volleyball is not 11 years old. The one who excels in basketball is 9 years old and he is not Dragon.
Which sport does each brother excel in and how old is each boy?

Answer:
Tiger excels at volleyball and is 10 years old.
Dragon excels at soccer and is 11 years old.
Panther excels at basketball and if 9 years old.

18. Find x, y, and z if $x+\dfrac{1}{y+\dfrac{1}{z}}=\dfrac{10}{7}$

Answer: x = 1, y = 2, z = 3

INDIVIDUAL EVENT QUESTIONS
Scarborough Teams Math Olympics 2013
Scarborough Association of Mathematics Educators

Instructions

- **Write your team name and your name in the box provided on the ANSWER SHEET.**
- **You have a maximum of 40 minutes to complete this event. Please wait for the Olympic Official's instruction to begin.**
- **Questions are worth 3, 4, or 6 points as indicated.**
- **Questions can be done in any order.**
- **Calculators, rulers and graph paper are allowed.**
- **Record your answers on the ANSWER SHEET.**
  - **In Parts A and B: MULTIPLE CHOICE**
    Indicate your choices using capital letters:
    A, B, C or D
  - **In Part C: SHORT ANSWER**
    Points may be earned for partially correct answers.
  - **There is NO penalty for incorrect answers.**
- **Hand in the ANSWER SHEET only. You may keep this question sheet.**

PAIRS EVENT #1 – TABLE FOR 17

Scarborough Teams Math **Olympics** 2013

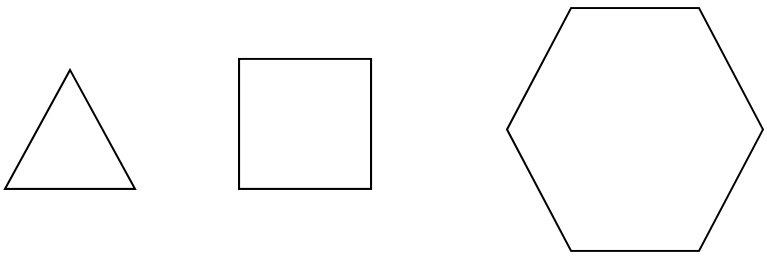
Team:		
Team Members' Names:	**1.**	**ID#**
	2.	**ID#**
Score:	**Triangles**	**/ 6**
	Squares	**/ 6**
	Hexagons	**/ 6**
	Table for 17	
	Total	

Instructions

- **Make sure that you have entered your team name and your names in the box provided above.**
- **You have a maximum of 30 minutes to complete this event. Please wait for the Olympic Official's instruction to begin.**
- **Calculators, rulers and graph paper are allowed.**
- **Be sure to hand in all sheets.**

BACKGROUND INFORMATION

In order to plan for banquets, a banquet hall has triangular tables, square tables and hexagonal tables.



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PAIRS EVENT #1 – TABLE FOR 17

Scarborough Teams Math Olympics 2013

Part A – TRIANGLES (6 points)

Use a **triangular** pattern block to represent a triangular table. Build larger tables by joining triangular tables so that they share only one side. A chair can be placed at any free side of the triangular table.

a) Record how many people can sit at each larger table in the chart below.

NUMBER OF TRIANGULAR TABLES	MAXIMUM NUMBER OF PEOPLE
1	
2	
3	
4	
5	

b) Write a pattern rule to predict how many people can sit at a table made from ***n*** triangular tables.

c) How many people can sit at a table made from 50 triangular tables?

Part B – SQUARES (6 points)

Use a **square** pattern block to represent a square table. Build larger tables by joining square tables so that they share only one side. A chair can be placed at any free side of the square table.

a) Record how many people can sit at each larger table in the chart below.

NUMBER OF SQUARE TABLES	MAXIMUM NUMBER OF PEOPLE
1	
2	
3	
4	
5	

b) Write a pattern rule to predict how many people can sit at a table made from ***n*** square tables.

c) How many people can sit at a table made from 50 square tables?

PAIRS EVENT #1 – TABLE FOR 17

Scarborough Teams Math **Olympics** 2013

Part C – HEXAGONS (6 points)

Use a **hexagonal** pattern block to represent a hexagonal table. Build larger tables by joining hexagonal tables so that they share only one side. A chair can be placed at any free side of the hexagonal table.

a) Record how many people can sit at each larger table in the chart below.

NUMBER OF HEXAGONAL TABLES	MAXIMUM NUMBER OF PEOPLE
1	
2	
3	
4	
5	

b) Write a pattern rule to predict how many people can sit at a table made from ***n*** hexagonal tables.

c) How many people can sit at a table made from 50 hexagonal tables?

Part D – TABLE FOR 17 (2 points per setup)

Find as many combinations of all three types of tables as possible that will allow 17 guests to sit at the perimeter of one large table for dinner.

- You must use all three types in each setup;
- You must not use more than 5 of each type of table;
- No holes are permitted inside the table.

Record your solutions in the chart. Extra sheets are available.

NUMBER OF TRIANGULAR TABLES	NUMBER OF SQUARE TABLES	NUMBER OF HEXAGONAL TABLES	SETUP DIAGRAM

PAIRS EVENT #1 – TABLE FOR 17

Scarborough Teams Math Olympics 2013

NUMBER OF TRIANGULAR TABLES	NUMBER OF SQUARE TABLES	NUMBER OF HEXAGONAL TABLES	SETUP DIAGRAM

PAIRS EVENT #1 – TABLE FOR 17

Scarborough Teams Math Olympics 2013

Part A – TRIANGLES (6 points)

Use a **triangular** pattern block to represent a triangular table. Build larger tables by joining triangular tables so that they share only one side. A chair can be placed at any free side of the triangular table.

a) Record how many people can sit at each larger table in the chart below.

NUMBER OF TRIANGULAR TABLES	MAXIMUM NUMBER OF PEOPLE
1	**3**
2	**4**
3	**5**
4	**6**
5	**7**

b) Write a pattern rule to predict how many people can sit at a table made from ***n*** triangular tables.

***n* + 2**

c) How many people can sit at a table made from 50 triangular tables?

50 + 2 = 52 people

Part B – SQUARES (6 points)

Use a **square** pattern block to represent a square table. Build larger tables by joining square tables so that they share only one side. A chair can be placed at any free side of the square table.

a) Record how many people can sit at each larger table in the chart below.

NUMBER OF SQUARE TABLES	MAXIMUM NUMBER OF PEOPLE
1	**4**
2	**6**
3	**8**
4	**10**
5	**12**

b) Write a pattern rule to predict how many people can sit at a table made from ***n*** square tables.

2*n* + 2

c) How many people can sit at a table made from 50 square tables?

2(50) + 2 = 102 people

PAIRS EVENT #1 – TABLE FOR 17

Scarborough Teams Math **Olympics** 2013

Part C – HEXAGONS (6 points)

Use a **hexagonal** pattern block to represent a hexagonal table. Build larger tables by joining hexagonal tables so that they share only one side. A chair can be placed at any free side of the hexagonal table.

a) Record how many people can sit at each larger table in the chart below.

NUMBER OF HEXAGONAL TABLES	MAXIMUM NUMBER OF PEOPLE
1	**6**
2	**10**
3	**14**
4	**18**
5	**22**

b) Write a pattern rule to predict how many people can sit at a table made from ***n*** hexagonal tables.

$4n + 2$

c) How many people can sit at a table made from 50 hexagonal tables?

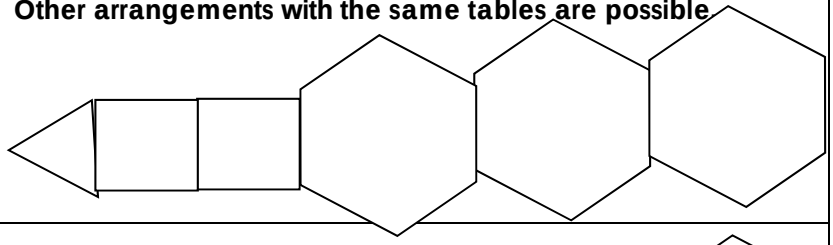
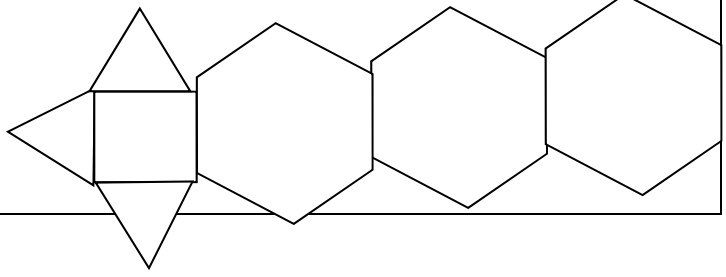
4(50) + 2 = 202 people

Part D – TABLE FOR 17 (2 points per setup)

Find as many combinations of all three types of tables as possible that will allow 17 guests to sit at the perimeter of one large table for dinner.

- You must use all three types in each setup;
- You must not use more than 5 of each type of table;
- No holes are permitted inside the table.

Record your solutions in the chart. Extra sheets are available.

NUMBER OF TRIANGULAR TABLES	NUMBER OF SQUARE TABLES	NUMBER OF HEXAGONAL TABLES	SETUP DIAGRAM
1	**2**	**3**	**Other arrangements with the same tables are possible** 
3	**1**	**3**	

PAIRS EVENT #1 – TABLE FOR 17

Scarborough Teams Math Olympics 2013

NUMBER OF TRIANGULAR TABLES	NUMBER OF SQUARE TABLES	NUMBER OF HEXAGONAL TABLES	SETUP DIAGRAM
1	3	2	
3	2	2	
5	1	2	
1	5	1	
3	4	1	
5	3	1	

PAIRS EVENT #2 – GRIDS

Scarborough Teams Math Olympics 2013

Team:		
Team Members' Names:	**1.**	**ID#**
	2.	**ID#**
Score:	**Squares**	**/ 13**
	Triangles	**/ 16**
	Total	**/ 29**

Instructions

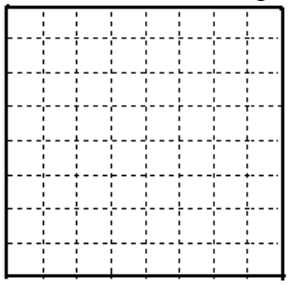
- **Make sure that you have entered your team name and your names in the box provided above.**
- **You have a maximum of 30 minutes to complete this event. Please wait for the Olympic Official's instruction to begin.**
- **Calculators, rulers and graph paper are allowed.**
- **Be sure to hand in all sheets.**

PAIRS EVENT #2 – GRIDS

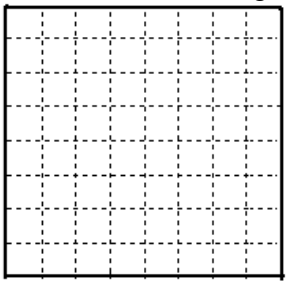
Scarborough Teams Math Olympics 2013

Part A – SQUARES

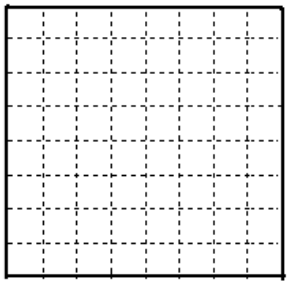
1. How many distinct 8 by 8 squares could be traced on the grid lines of this grid? (1 point)



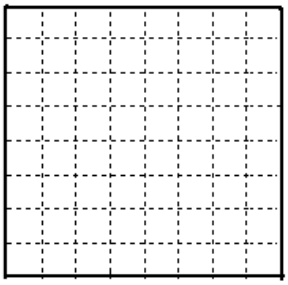
2. How many distinct 7 by 7 squares could be traced on the grid lines of this grid? (1 point)



3. How many distinct 6 by 6 squares could be traced on the grid lines of this grid? (1 point)



4. How many distinct 5 by 5 squares could be traced on the grid lines of this grid? (1 point)



5. Predict, without tracing, how many 3 by 3 squares could be traced on the grid lines on this 8 by 8 grid? How do you know? Explain your reasoning. (2 points)

6. Predict, without tracing, how many 2 by 2 squares could be traced on the grid lines on this 8 by 8 grid? How do you know? Explain your reasoning. (2 points)

7. In total, how many squares of any size, could be traced on the grid lines in the 8 by 8 grid? (1 point)

8. Write the formula (or algebraic expression) or a description for the total number of distinct squares that could be traced on the grid lines of an n by n grid. (2 points)

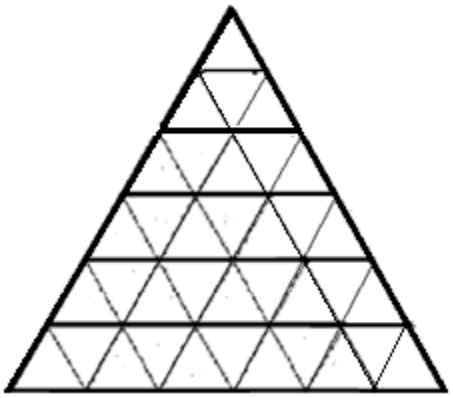
PAIRS EVENT #2 -- GRIDS

Scarborough Teams Math Olympics 2013

Part B - TRIANGLES

1. The figure on the right is 6 x 6 triangular grid.
   Complete the table of the number of triangles of different side lengths. (6 points)

Side Length	Number of triangles pointing upward	Number of triangles pointing downward
1		
2		
3		
4		
5		
6		



2. a) Predict the number of distinct triangles pointing upwards that can be traced on an **8 by 8** triangular grid. (2 points)

2. b) Predict the number of distinct triangles pointing downwards that can be traced on an **8 by 8** triangular grid. (2 points)

3. a) Describe the pattern in determining the sum of the number of triangles pointing upwards in a triangular grid of even side length. (2 points)

3. b) Describe the pattern in determining the sum of the number of triangles pointing downwards in a triangular grid of even side length. (2 points)

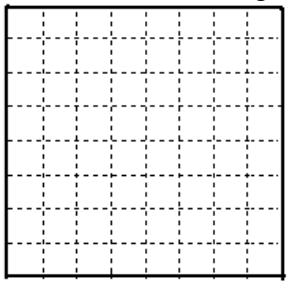
4. Do you think this pattern is applicable to a triangular grid of odd side length? Explain your reasoning. (2 points)

PAIRS EVENT #2 – GRIDS

Scarborough Teams Math Olympics 2013

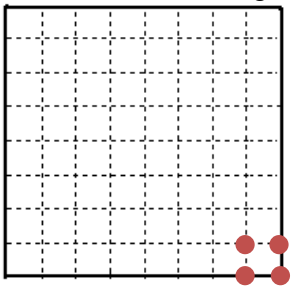
Part A – SQUARES

1. How many distinct 8 by 8 squares could be traced on the grid lines of this grid? (1 point)



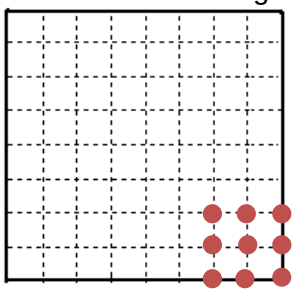
1 square

2. How many distinct 7 by 7 squares could be traced on the grid lines of this grid? (1 point)



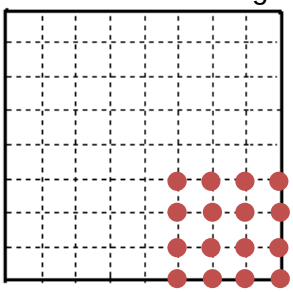
4 squares (position of lower right corners indicated)

3. How many distinct 6 by 6 squares could be traced on the grid lines of this grid? (1 point)



9 squares

4. How many distinct 5 by 5 squares could be traced on the grid lines of this grid? (1 point)



16 squares

5. Predict, without tracing, how many 3 by 3 squares could be traced on the grid lines on this 8 by 8 grid? How do you know? Explain your reasoning. (2 points)

From the pattern so far, the position of the lower right corner of the squares also form a square. There would be 6 x 6 = 36 possible 3 x 3 squares on the grid.

6. Predict, without tracing, how many 2 by 2 squares could be traced on the grid lines on this 8 by 8 grid? How do you know? Explain your reasoning. (2 points)

Using the same pattern as #5, there are 7 x 7 = 49 possible 2 x 2 squares on the grid.

7. In total, how many squares of any size, could be traced on the grid lines in the 8 by 8 grid? (1 point)

1 + 4 + 9 + 16 + 25 + 36 + 49 + 64 = 204

8. Write the formula (or algebraic expression) or a description for the total number of distinct squares that could be traced on the grid lines of an *n* by *n* grid. (2 points)

$1 + 2^2 + 3^2 + \ldots + n^2$ or $\frac{n(n+1)(2n+1)}{6}$

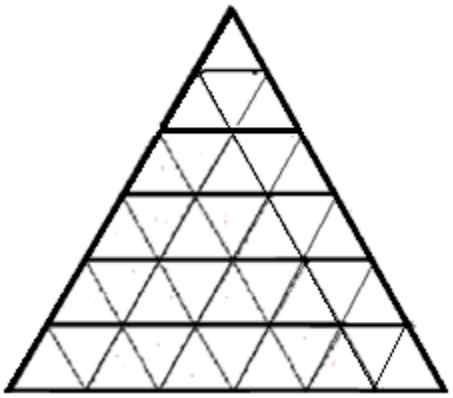
PAIRS EVENT #2 – GRIDS

Scarborough Teams Math Olympics 2013

Part B - TRIANGLES

1. The figure on the right is 6 x 6 triangular grid.
   Complete the table of the number of triangles of different side lengths. (6 points)

Side Length	Number of triangles pointing upward	Number of triangles pointing downward
1	**1 + 2 + 3 + 4 + 5 + 6 = 21**	**1 + 2 + 3 + 4 + 5 = 15**
2	**1 + 2 + 3 + 4 + 5 = 15**	**1 + 2 + 3 = 6**
3	**1 + 2 + 3 + 4 = 10**	**1**
4	**1 + 2 + 3 = 6**	**0**
5	**1 + 2 = 3**	**0**
6	**1**	**0**



2. a) Predict the number of distinct triangles pointing upwards that can be traced on an **8 by 8** triangular grid. (2 points)

Extend pattern above for two more terms (the next term increases by the next natural number)
1 + 3 + 6 + 10 + 15 + 21 + 28 + 36 = 120

2. b) Predict the number of distinct triangles pointing downwards that can be traced on an **8 by 8** triangular grid. (2 points)

Extend the pattern (the next term is the sum of two more natural numbers)
1 + 6 + 15 + 28 = 50

3. a) Describe the pattern in determining the sum of the number of triangles pointing upwards in a triangular grid of even side length. (2 points)

Each term is the sum of one more natural number.

3. b) Describe the pattern in determining the sum of the number of triangles pointing downwards in a triangular grid of even side length. (2 points)

Each term is every other term in the pattern of upward triangles (the next term is the sum of two more natural numbers).

4. Do you think this pattern is applicable to a triangular grid of odd side length? Explain your reasoning. (2 points)

The pattern for the number of upward triangles is the same. The number of downward triangles is the same except that it is every other term beginning with 3 (3 + 10 + 21 +…).

TEAMS EVENT

Scarborough Teams Math Olympics 2013

Team:		
Team Members' Names:	**1.**	**ID#**
	2.	**ID#**
Score:	**Squares**	**/ 25**
	Triangles	**/ 33**
	Total	**/ 58**

Instructions

- **Make sure that you have entered your team name and your names in the box provided above.**
- **You have a maximum of 30 minutes to complete this event. Please wait for the Olympic Official's instruction to begin.**
- **Calculators, rulers and graph paper are allowed.**
- **Be sure to hand in all sheets.**

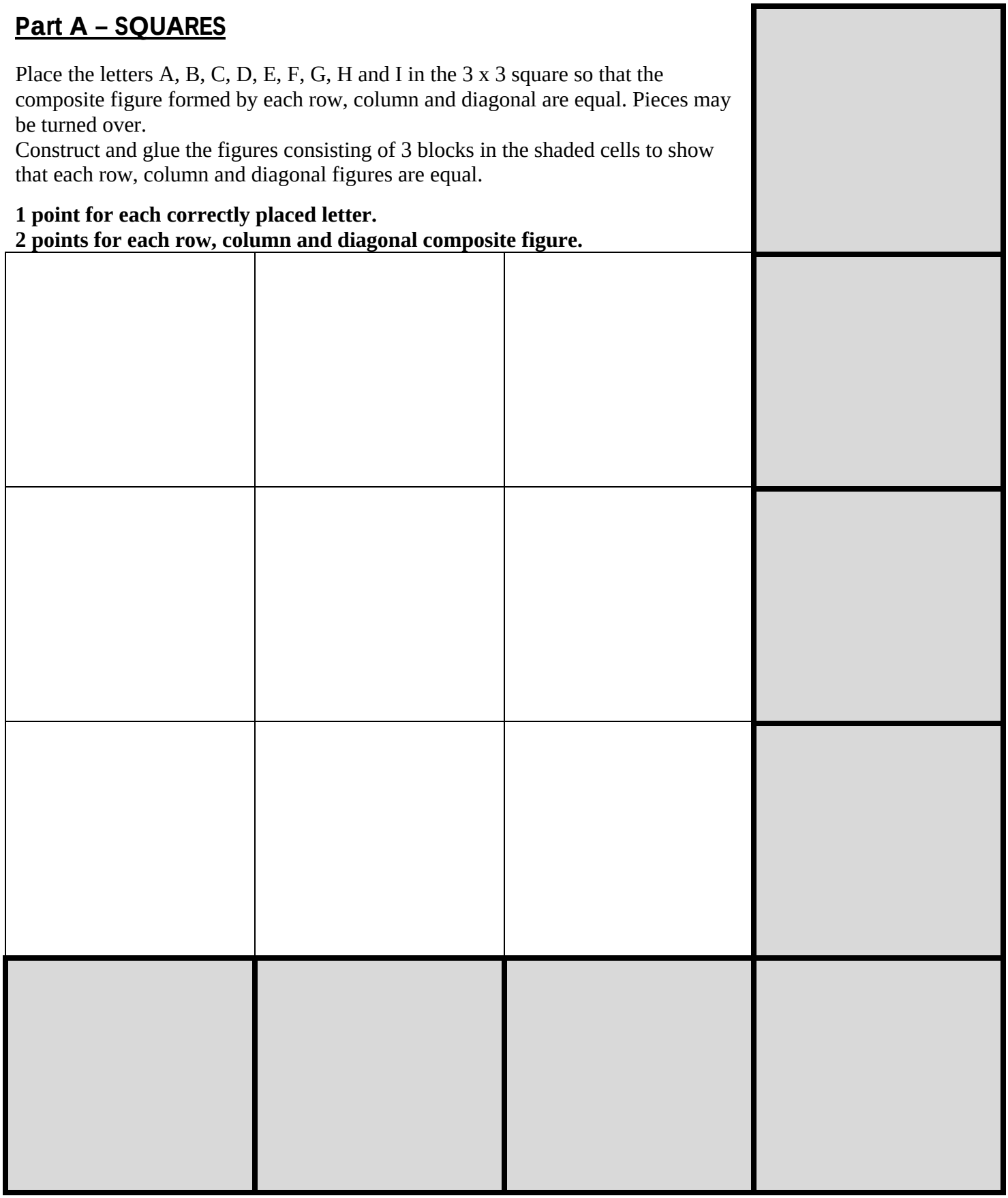
TEAMS EVENT

Scarborough Teams Math Olympics 2013

Part A – SQUARES

Place the letters A, B, C, D, E, F, G, H and I in the 3 x 3 square so that the composite figure formed by each row, column and diagonal are equal. Pieces may be turned over.
Construct and glue the figures consisting of 3 blocks in the shaded cells to show that each row, column and diagonal figures are equal.

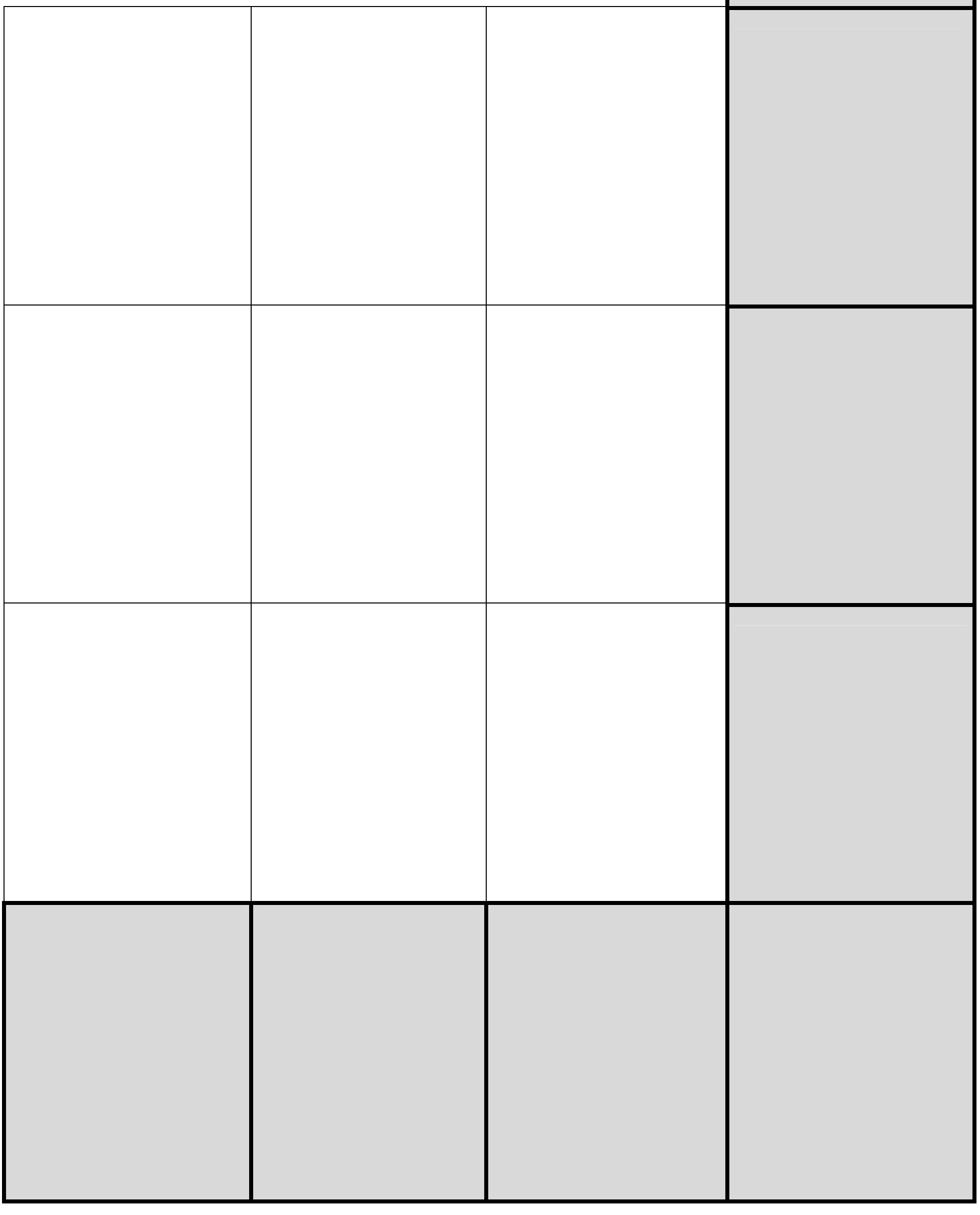
1 point for each correctly placed letter.
2 points for each row, column and diagonal composite figure.

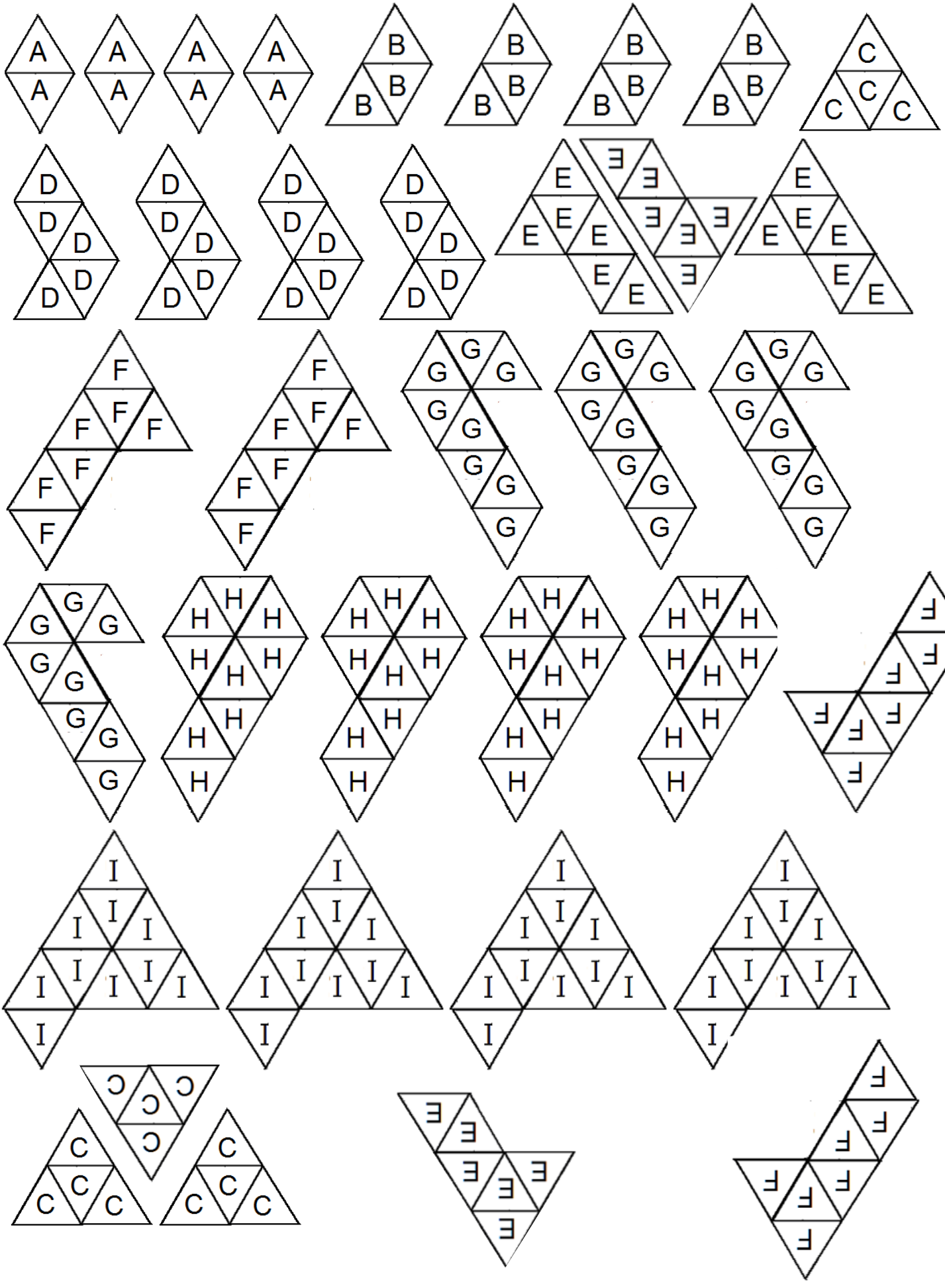


Part B – TRIANGLES

Place the letters A, B, C, D, E, F, G, H and I in the 3 x 3 square so that the composite figure formed by each row, column and diagonal are equal.
Construct and glue the figures consisting of 3 blocks in the shaded cells to show that each row, column and diagonal figures are equal.

1 point for each correctly placed letter.
3 points for each row, column and diagonal composite figure.

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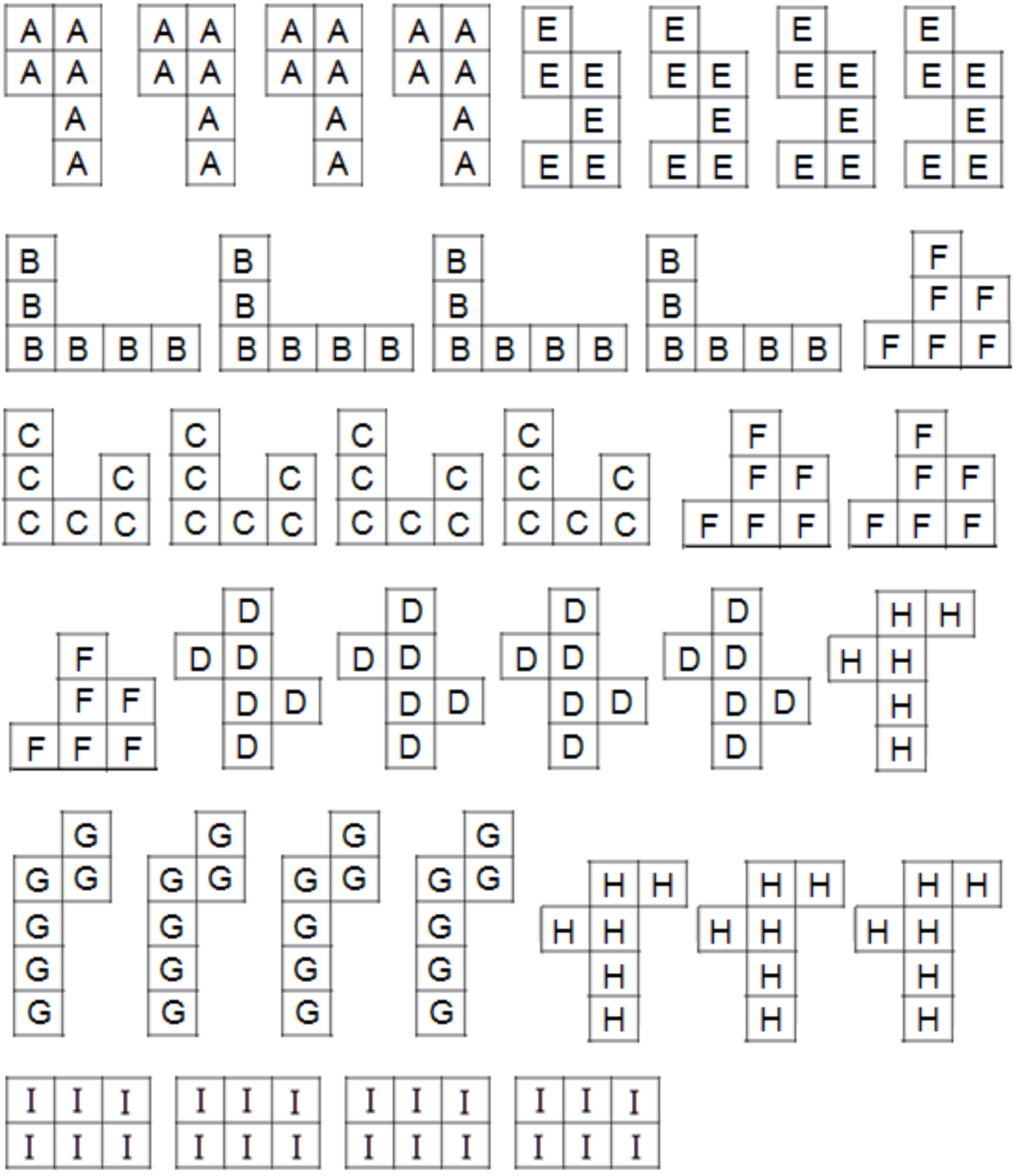
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Solution			F F F F F C B C F C B C C C B B B B
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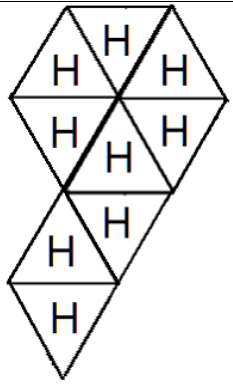
Solution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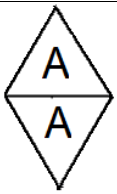
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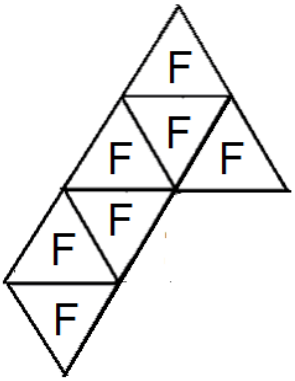
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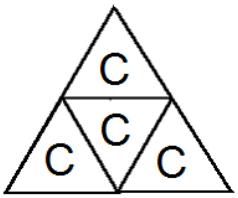
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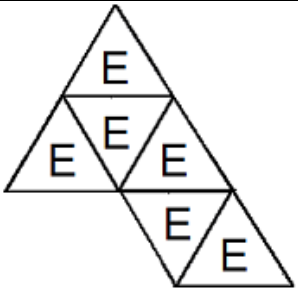
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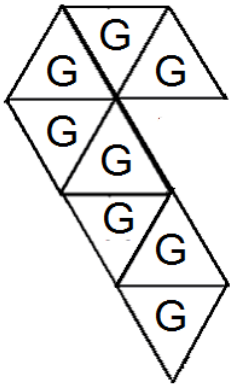
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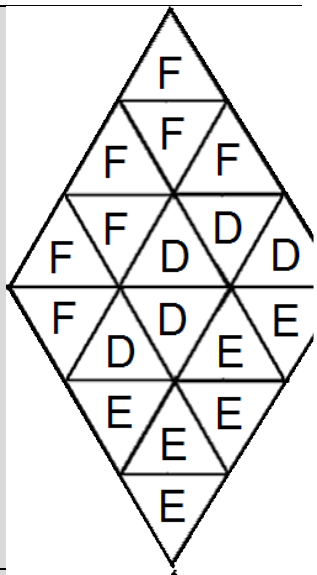
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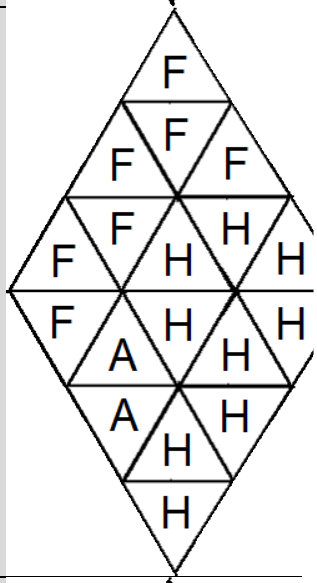
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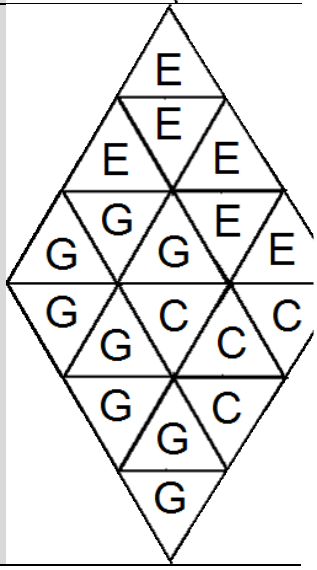
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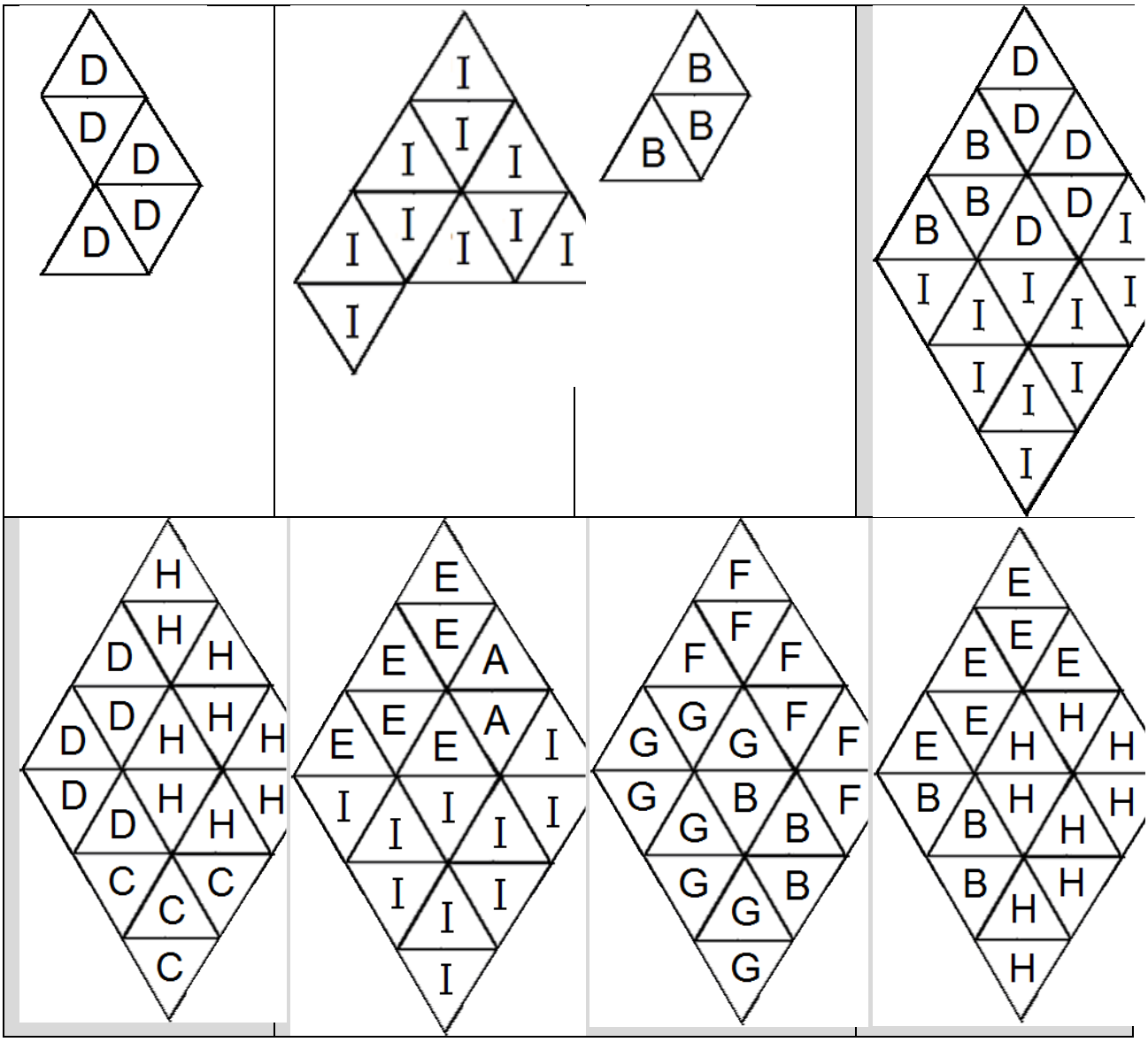
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