

**Eastern Area Mathematical
Challenge 2010**

Relay Round – A1

Find the value of W given that

$$3W - 5 = 12$$

Hint: Give the answer as a fractions

**Eastern Area Mathematical
Challenge 2010**

Relay Round – A2

The number you are handed is W .

Find X if,

$$W + 2X = 9$$

Hint: Give the answer as a fractions

**Eastern Area Mathematical
Challenge 2010**

Relay Round – A3

The numbers you are handed are W and X .

Find the value of Y if,

$$(W + X)(W - X) = Y$$

Hint: Give the answer as a fractions

**Eastern Area Mathematical
Challenge 2010**

Relay Round – A4

The numbers you are handed are W , X and Y .

Given that

$$\frac{Y}{X} - \frac{17}{5W} = Z$$

find the value of Z .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – B1

Find the value of W given that.

$$10 < W < 20$$

$$\text{and } W + 7 = 8 \pmod{9}$$

**Eastern Area Mathematical
Challenge 2010**

Relay Round – B2

The number you are handed is W .

$$\text{Given that } 140 = X \pmod{W}$$

find the value of X .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – B3

The numbers you are handed are W and X .

$$\text{Given that } 2W + X = Y \pmod{X},$$

find the value of Y .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – B4

The numbers you are handed are W , X and Y .

$$\text{Given that } YX + X + YW = Z \pmod{X}$$

find the value of Z .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – C1

A car is bought for £6500 and later sold for £5200.
The percentage loss is $W\%$

Find W .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – C2

The number you are handed is W .

Jane's house is valued at £100 000. The value increases by $W\%$ in the next year and by $(W+5)\%$ in the following year. Overall the value has increased by $X\%$

Find the value of X .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – C3

The numbers you are handed are W and X .

James invests £1000 in gold. In the first year the value of his gold increase by $W\%$. In the second year the value decreases by $X\%$. After two years the value has decreased by $Y\%$.

Find the value of Y .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – C4

The numbers you are handed are W , X and Y .

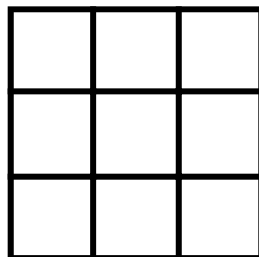
Amy buys a car for £5000 and then sells it for $W\%$ more. Bert buys a motorbike for £2000 and then sells it for $X\%$ more. Carol buys a scooter for £1000 and sells it for $Y\%$ more. Together they make a profit of $Z\%$.

Find the value of Z .

**Eastern Area Mathematical
Challenge 2010**

Relay Round – D1

How many squares are there
in the 3 by 3 grid?

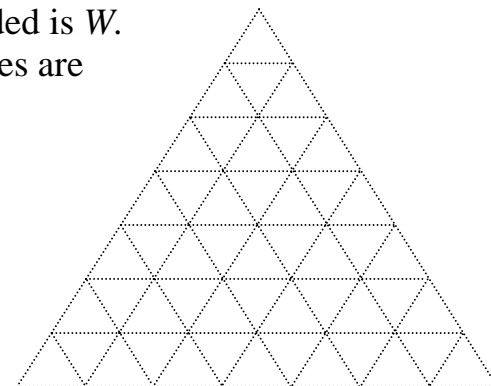


W is the number of squares in the grid plus two.
What is W ?

**Eastern Area Mathematical
Challenge 2010**

Relay Round – D2

The number you are handed is W .
 W unit equilateral triangles are
arranged to form a larger
equilateral triangle.
 X is the total number of
equilateral triangles that
can be found in the
larger triangle.
What is X ?



**Eastern Area Mathematical
Challenge 2010**

Relay Round – D3

The number you are handed is X .

X unit cubes are arranged to form a larger cube.

Y is the number of cubes of different sizes that can
be found in the larger cube.
What is Y ?

**Eastern Area Mathematical
Challenge 2010**

Relay Round – D4

The number you are handed is Y .

Y equilateral triangles are arranged to form a large
equilateral triangle.

Z is the length of the side of the large triangle.
What is Z ?

Relay Round Answer/Marking Sheet (team copy)

		ANSWER	
Question A1	W =		2 / 1 mark
Question A2	X =		2 / 1 mark
Question A3	Y =		2 / 1 mark
Question A4	Z =		2 / 1 mark
A4 correct inside 3 mins			2 marks
		TOTAL (10)	

		ANSWER	
Question B1	W =		2 / 1 mark
Question B2	X =		2 / 1 mark
Question B3	Y =		2 / 1 mark
Question B4	Z =		2 / 1 mark
B4 correct inside 3 mins			2 marks
		TOTAL (10)	

		ANSWER	
Question C1	W =	%	2 / 1 mark
Question C2	X =	%	2 / 1 mark
Question C3	Y =	%	2 / 1 mark
Question C4	Z =	%	2 / 1 mark
C4 correct inside 3 mins			2 marks
		TOTAL (10)	

		ANSWER	
Question D1	W =		2 / 1 mark
Question D2	X =		2 / 1 mark
Question D3	Y =		2 / 1 mark
Question D4	Z =		2 / 1 mark
D4 correct inside 3 mins			2 marks
		TOTAL (10)	

SCHOOL

TOTAL for the Relay Round =