

Maths & Chocolate

ANSWERS

The Ultimate Taste Experience!

Some Fun Maths Activities for
Year 6 / Year 7 Pupils

By Ian Ward

Introduction

On the following pages are mathematical activities created around the subject of "Chocolate". - specifically six bars of different chocolate have been chosen and details of price, weight etc have been given. Pupils will need to have knowledge of area, perimeter and a working knowledge of decimal measurements.

Pupils will need a ruler and a calculator.

On the following pages you will see photographs of 6 bars of chocolate and how they have been divided into smaller sections.

Also there is a chart which tells you the manufacturer's name, cost, weight, length and width of each bar. All this information is true!

Later in the booklet there are Resource pages which show diagrams of how each bar has been divided.

But first a little code question.

$$\begin{array}{r} \text{K I T} \\ + \text{K A T} \\ \hline \text{B A R} \\ \hline \end{array}$$

Each letter represents a number.

How many different solutions can you find for this problem?

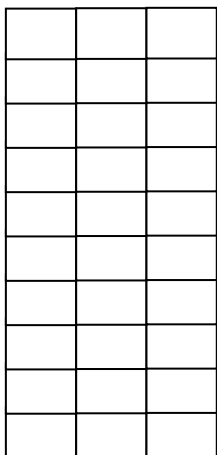
Some Solutions

$\begin{array}{r} 304 \\ + 314 \\ \hline 618 \end{array}$	$\begin{array}{r} 103 \\ + 143 \\ \hline 246 \end{array}$	$\begin{array}{r} 401 \\ + 431 \\ \hline 832 \end{array}$	$\begin{array}{r} 302 \\ + 312 \\ \hline 614 \end{array}$	$\begin{array}{r} 301 \\ + 351 \\ \hline 652 \end{array}$
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Here are photographs and diagrams of 6 different bars of chocolate.

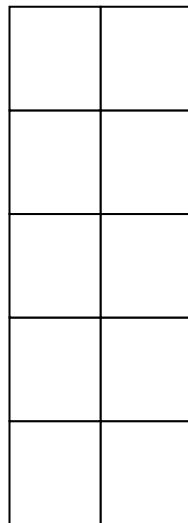


7cm



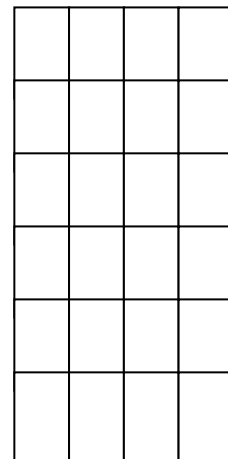
15cm

8.5

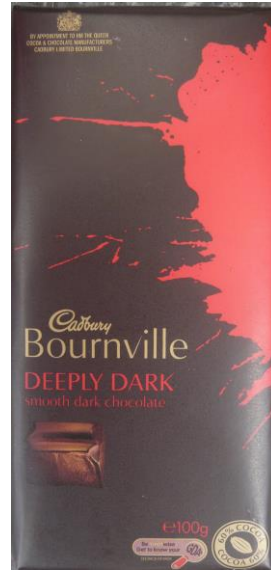


21.5

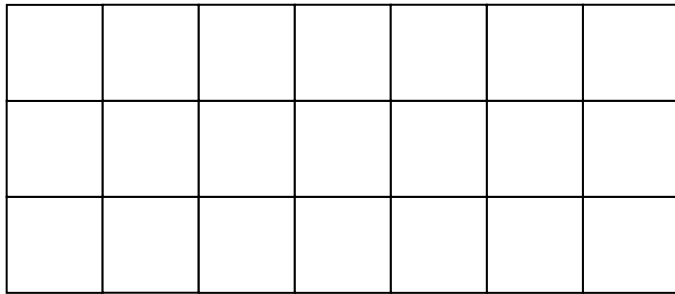
7.2



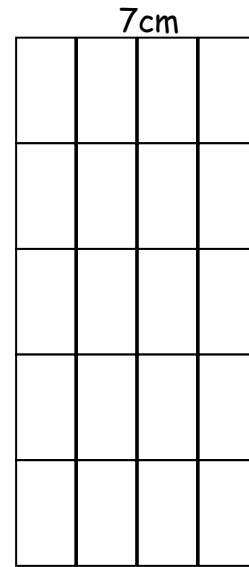
15



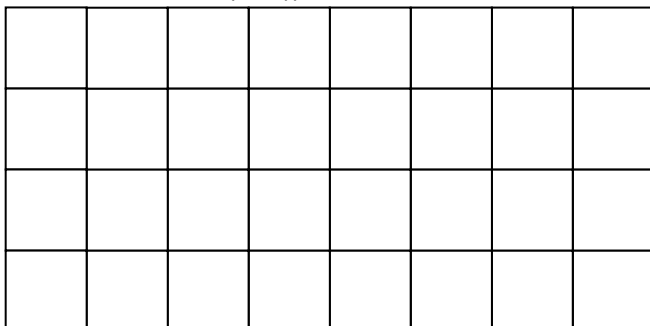
16.4cm



8.3cm



15.5cm



7cm



Here is the information about each bar of chocolate.
The % figures represent the amount of cocoa solids in each bar - the greater the percentage, the more pure the chocolate.

Brand	Cost	Weight	Length(cm)	Width(cm)
Lidl -dark 70%	99p	125g	21.5	8.5
Green & Black - dark 85%	£1.68	100g	15	7
Fairtrade - dark 70%	£1.19	100g	15	7.2
Cadbury - Dairy Milk 20%	99p	150g	16.4	8.3
Tesco - 50%	54p	175g	8.5	18
Bourneville - dark 60%	£1.03	100g	7	15.5

For each bar of chocolate can you.....

1. Work out the area and perimeter.
2. Work out the area and perimeter of one small piece.
3. Work out the weight of just one small piece.
4. Work out how much a square metre of each bar of chocolate would weigh and how much would it cost.
5. Work out what percentage of each bar is not chocolate.
6. List the bars in order of value - the most expensive first, the least expensive last for 1kg of chocolate.
7. Work out how many ways you could share each bar of chocolate between different numbers of people.
8. Work out how many different ways you could divide each bar into two separate pieces whilst using only the lines shown.

My answers

	Lidl	Green & Black	Fairtrade	Cadbury	Tesco	Bourneville
Area of bar	182.75	105	108	136.12	153	108.5
Perimeter of bar	60	44	44.4	49.4	53	45
Area of one piece	18.275	3.5	4.5	6.48	4.78	5.42
Perimeter of one piece	17.2	7.6	8.6	10.2	8.74	8.7
Weight of one piece	12.5	33.3	4.2	7.1	5.47	5
Weight of 1 sq metre	6.875kg	9.5kg	9.3kg	10.95kg	11.43	9.21
Cost of 1 sq metre	£54.45	£159.60	£110.67	£72.27	£35.29	£94.93
% not cocoa solids	30%	15%	30%	80%	50%	40%

Question 6 - value of bars

Most expensive - *Green & Black* £16.80

Fairtrade £ 11.90

Bourneville £10.30

Lidl £7.92

Cadbury's £6.59

Least expensive *Tesco* £3.08

Question 7

Work out how many ways you could share each bar of chocolate between different numbers of people.

Lidl

$$10 \div 1 = 10$$

$$10 \div 2 = 5$$

$$10 \div 5 = 2$$

$$10 \div 10 = 1$$

4 ways

Green & Black

$$30 \div 1 = 30$$

$$30 \div 2 = 15$$

$$30 \div 3 = 10$$

$$30 \div 5 = 6$$

$$30 \div 6 = 5$$

$$30 \div 10 = 3$$

$$30 \div 15 = 2$$

$$30 \div 30 = 1$$

8 ways

Fairtrade

$$24 \div 1 = 24$$

$$24 \div 2 = 12$$

$$24 \div 3 = 8$$

$$24 \div 4 = 6$$

$$24 \div 6 = 4$$

$$24 \div 8 = 3$$

$$24 \div 12 = 2$$

$$24 \div 24 = 1$$

8 ways

Cadbury

$$21 \div 1 = 21$$

$$21 \div 3 = 7$$

$$21 \div 7 = 3$$

$$21 \div 21 = 1$$

4 ways

Tesco

$$32 \div 1 = 32$$

$$32 \div 2 = 16$$

$$32 \div 4 = 8$$

$$32 \div 8 = 4$$

$$32 \div 16 = 2$$

$$32 \div 32 = 1$$

6 ways

Bourneville

$$20 \div 1 = 20$$

$$20 \div 2 = 10$$

$$20 \div 4 = 5$$

$$20 \div 5 = 4$$

$$20 \div 10 = 2$$

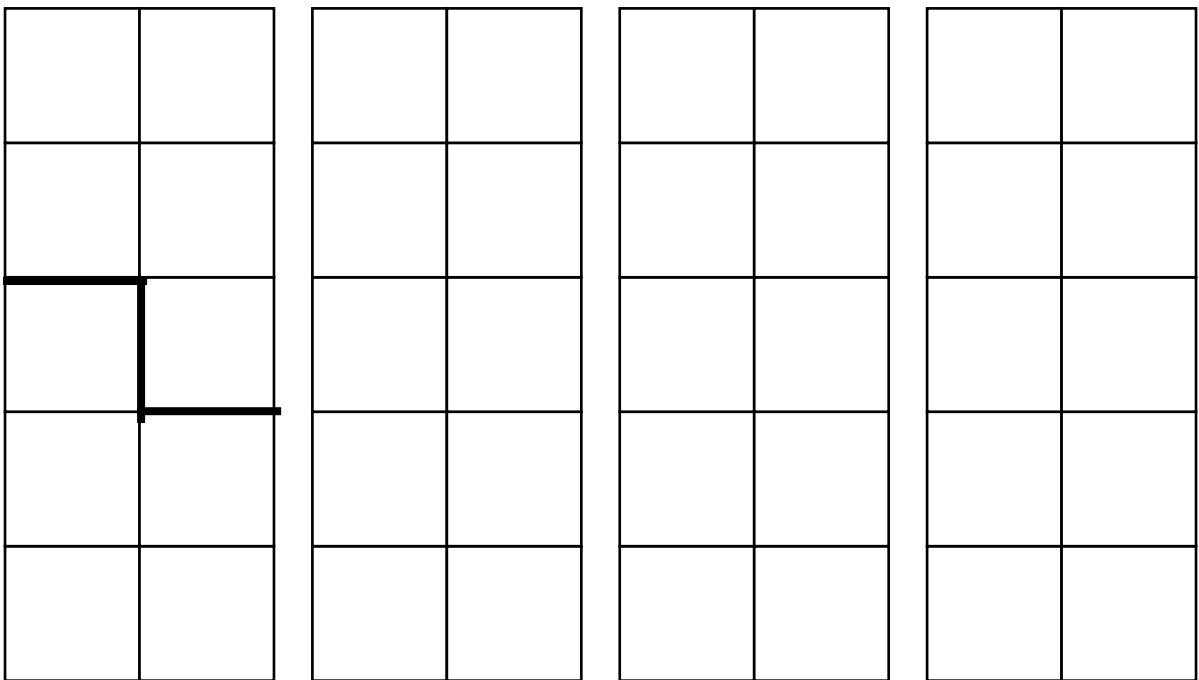
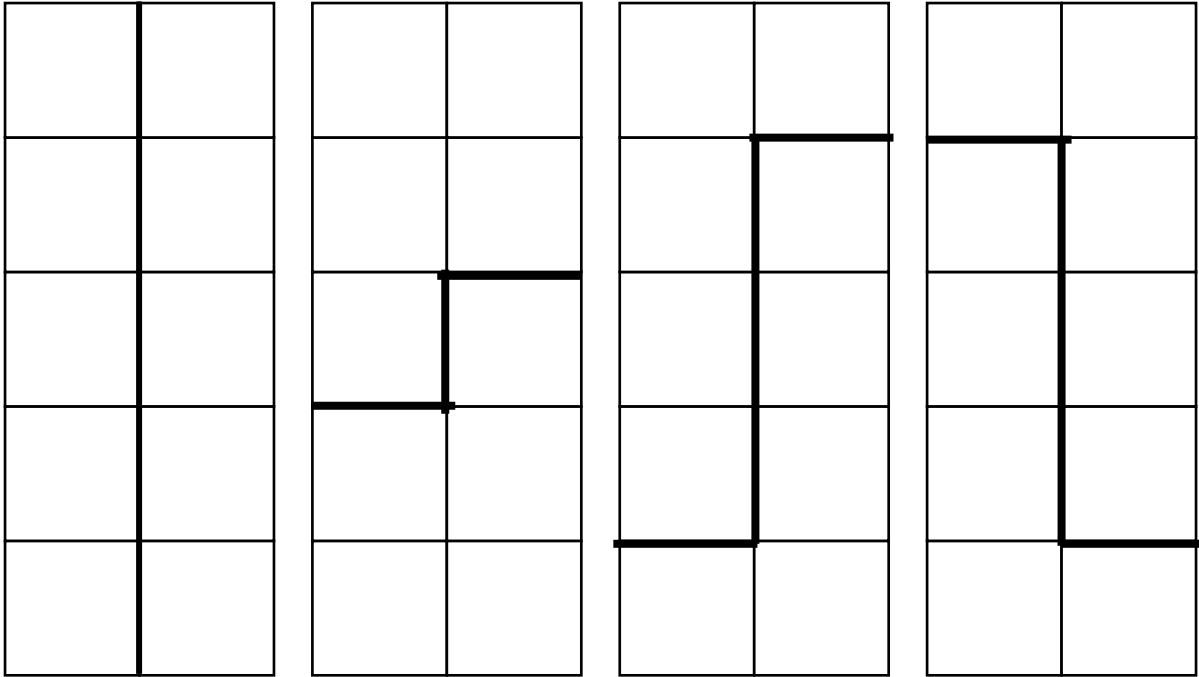
$$20 \div 20 = 1$$

6 ways

8. Work out how many different ways you could divide each bar into two separate pieces whilst using only the lines shown.

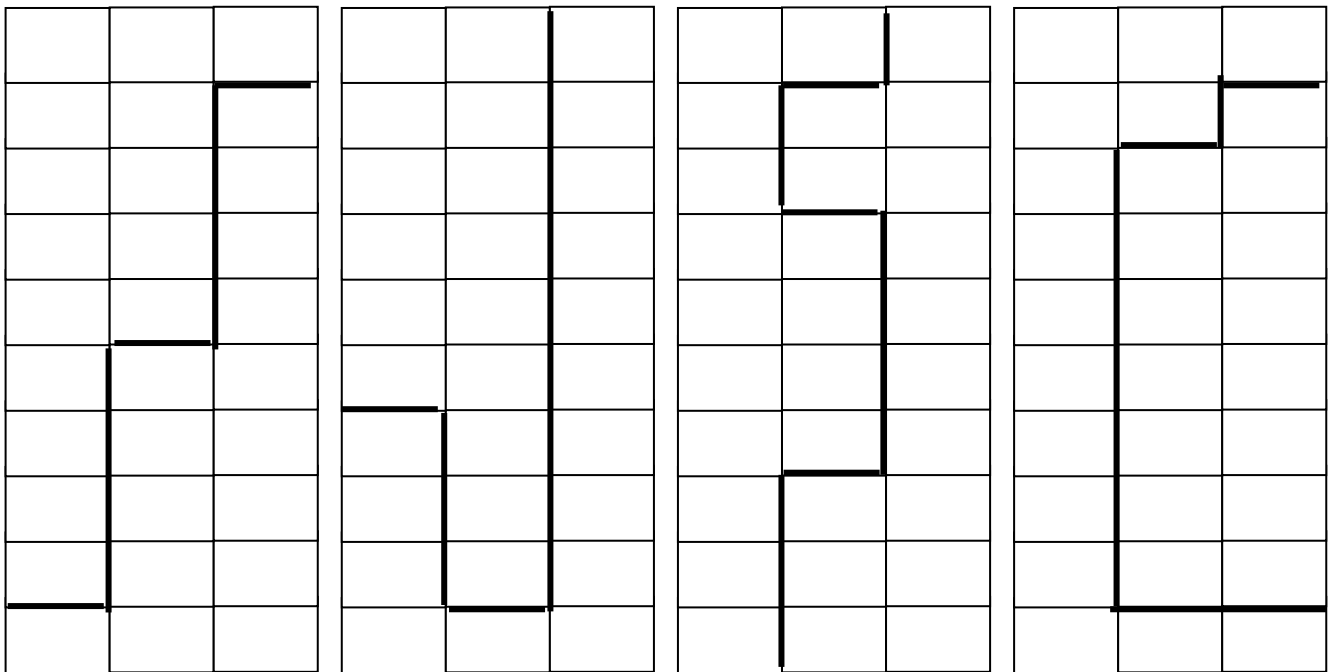
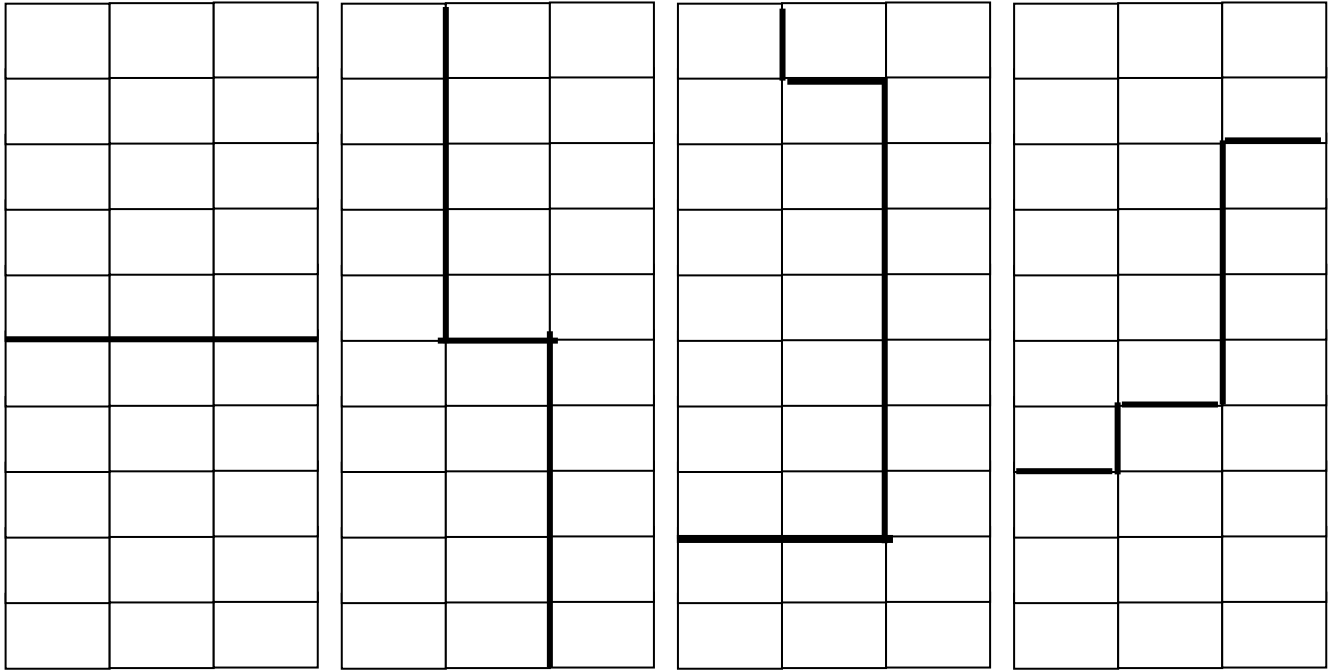
Sample Answers

Lidl



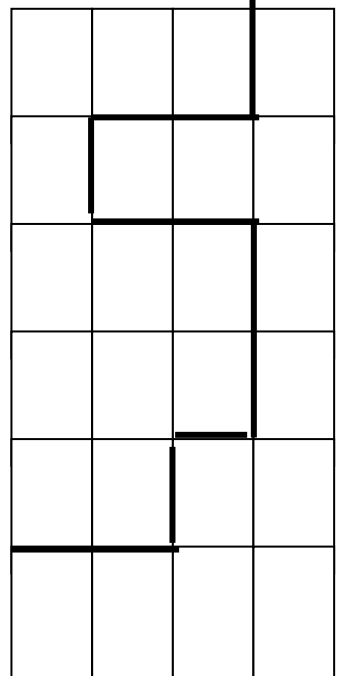
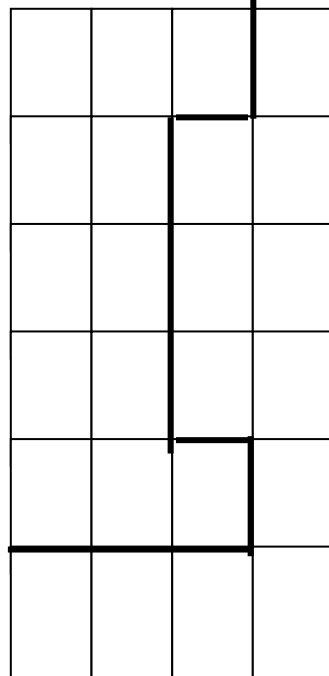
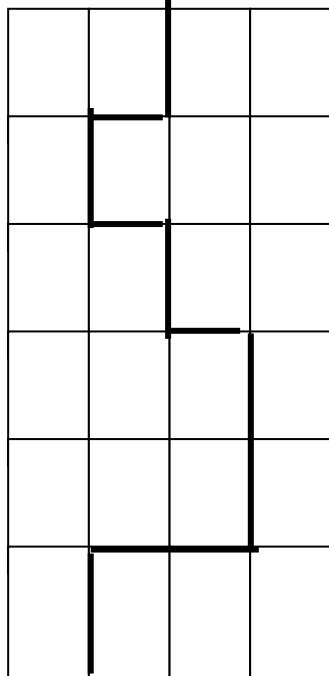
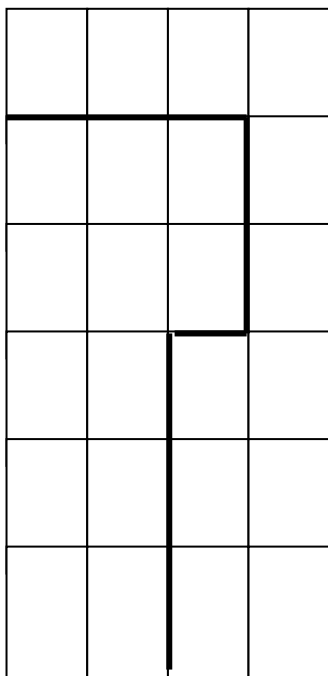
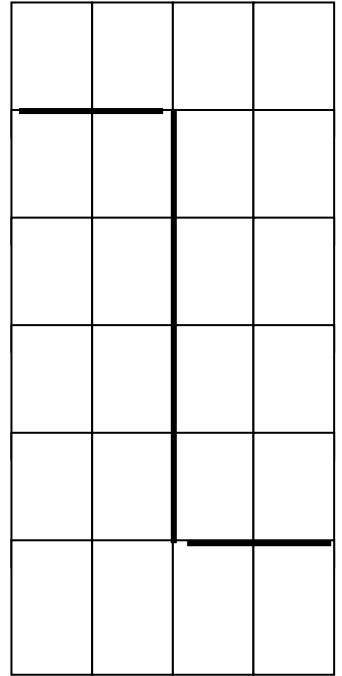
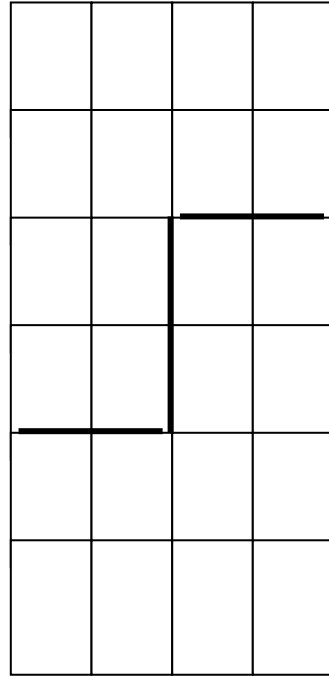
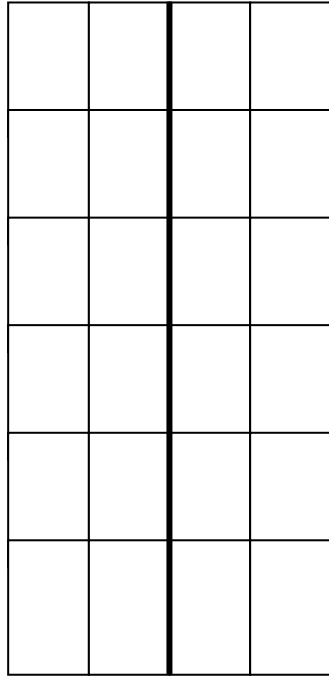
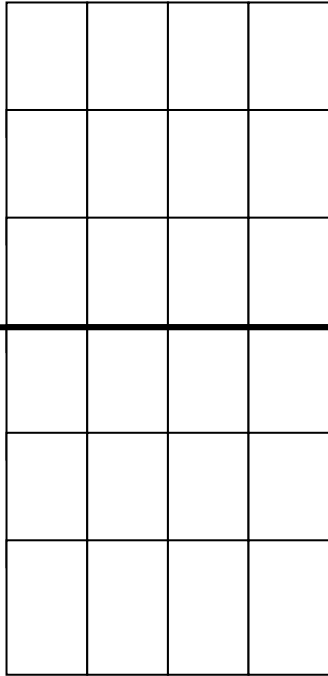
Sample Answers

Green & Black



Sample Answers

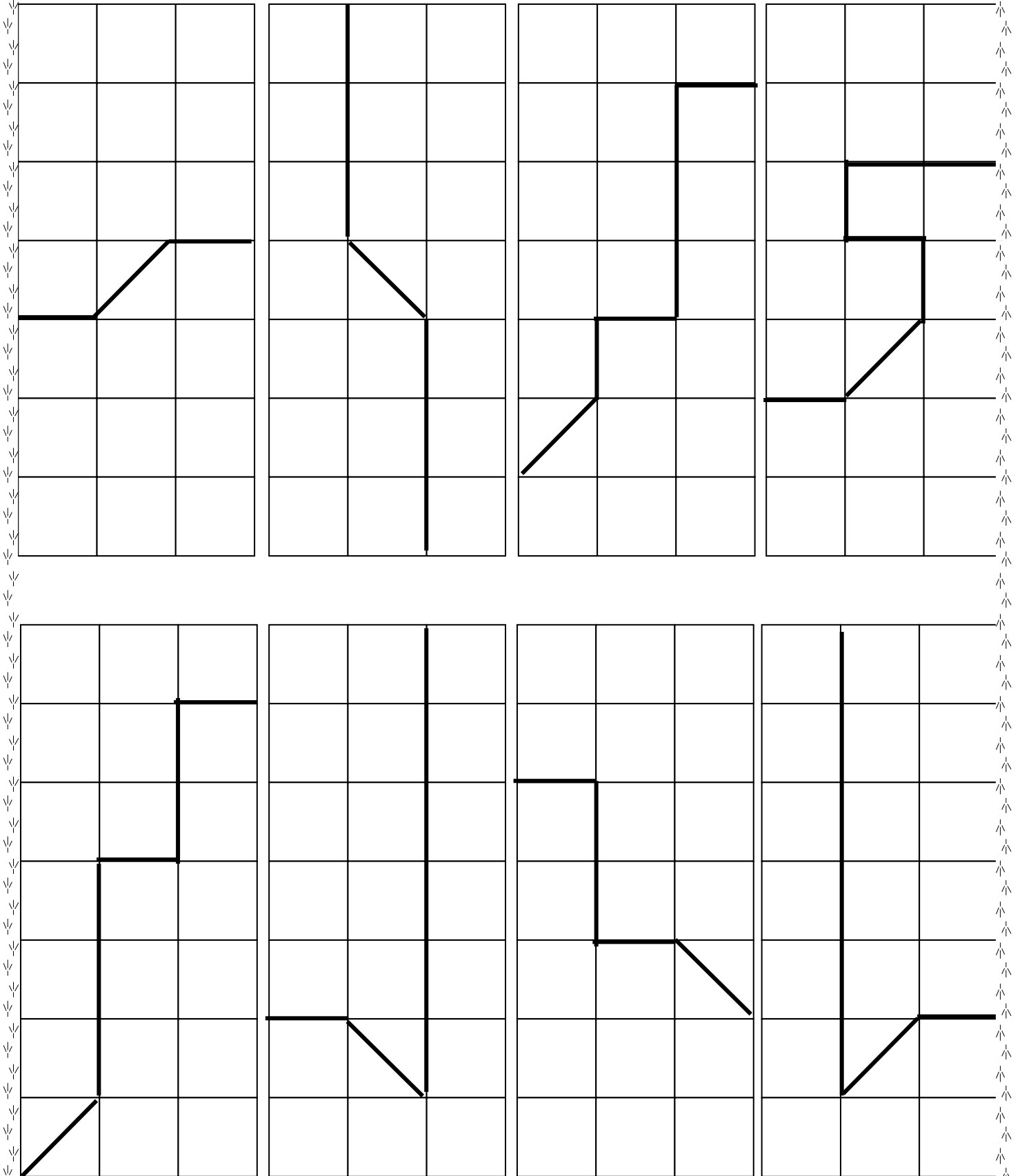
Fairtrade



Sample Answers

Cadbury

Teacher's Note - 21 squares cannot be divided in half UNLESS diagonal cuts are permitted, below are some examples.



Sample Answers

Tesco

