Name	
Form	
Teacher	

Maths
Homework Booklet

Year 9

Autumn

Topic	Hand in date	Score achieved
1: Expanding Brackets and Simplifying Expressions		
2: Straight Line Graphs		
3: Gradient and y-intercept		
4: Finding the equation from a line		
5: 4 operations with fractions		
6: Factors, Multiples and Primes		
7: Conjecture about Numbers		

Year 9 Half Term 1: Homework Booklet

Week 1: Expanding Brackets and Simplifying expressions

Section A: Expand brackets

1) $3(x + 2)$ = ...
2) $2(x + 5)$ = ...
3) $4(x + 3)$ = ...
4) $5(x + 4)$ = ...
5) $3(x - 5)$ = ...
6) $6(x - 4)$ = ...
7) $4(x - 2)$ = ...

Section B: Expand brackets

(1) $2x(x + 3)$ = ...
(2) $3x(x + 4)$ = ...
(3) $4x(2x + 5)$ = ...
(4) $2x(3x + 8)$ = ...
(5) $3x(2y - 5)$ = ...
(6) $4x(2y - 1)$ = ...
(7) $5x(3y - 2)$ = ...

Section C: Simplify the expressions

1. Simplify each of these expressions.

(a) $a + 2a + 3a$ = ...

(b) $3a + 2 + 4 + 6$ = ...

(c) $3a + 2b + 8a + 4b$ = ...

(d) $4x + 2y + 8y + y$ = ...

(e) $5x + 2y + 8x - 3y$ = ...

(f) $6a + 7b + 3b - 4a$ = ...

(g) $4 + 6a - 3a + 2 + b$ = ...

(h) $p + q + 2p - 8q$ = ...

(i) $x + y - 8x + 2y$ = ...

(j) $4x - 3p + 2p - 2x$ = ...

(k) $7x - 4z + 8x - 5z$ = ...

(l) $3z - 4x + 2z - 10x$ = ...

(m) $3q - 4x + 8a - 2x + q$ = ...

(l) $x + y + z - p - q - y$ = ...

Section A: Complete the tables and then draw the lines on the next page

$y = x + 3$

x	0	1	2	3	4
y					

$y = x - 5$

x	0	1	2	3	4
y					

$y = 2x + 3$

x	0	1	2	3	4
y					

$y = 2x - 2$

x	0	1	2	3	4
y					

$y = 3x + 1$

x	0	1	2	3	4
y					

$y = 3x - 4$

x	0	1	2	3	4
y					

$y = 4x - 1$

x	0	1	2	3	4
y					
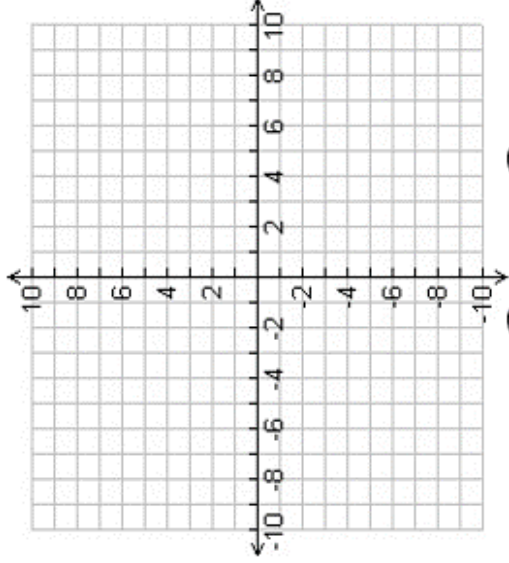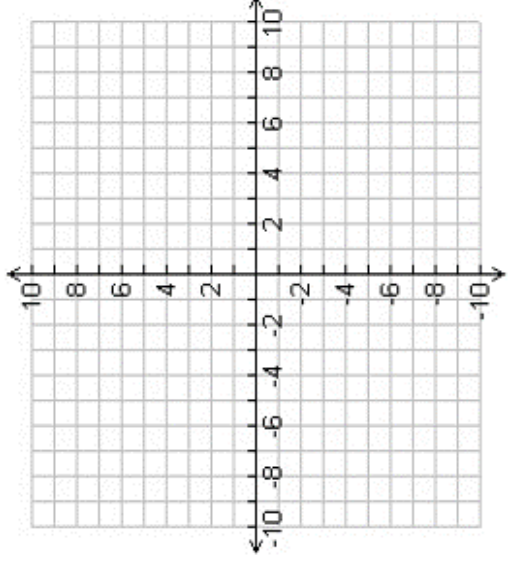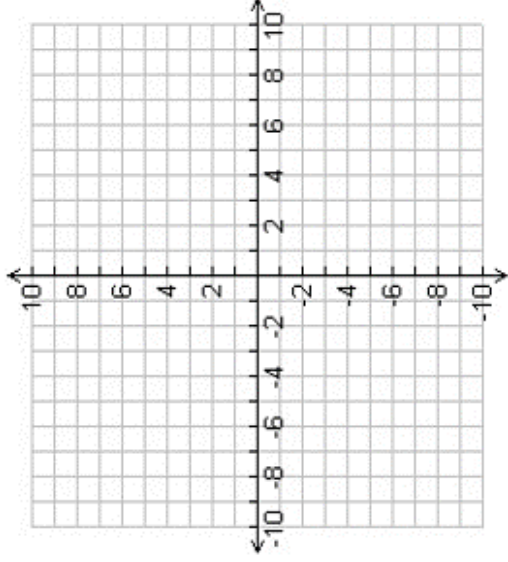
@mrbartonmaths

$y = x + 3$

$y = x - 5$

$y = 2x + 3$

$y = 2x - 2$

$y = 3x + 1$
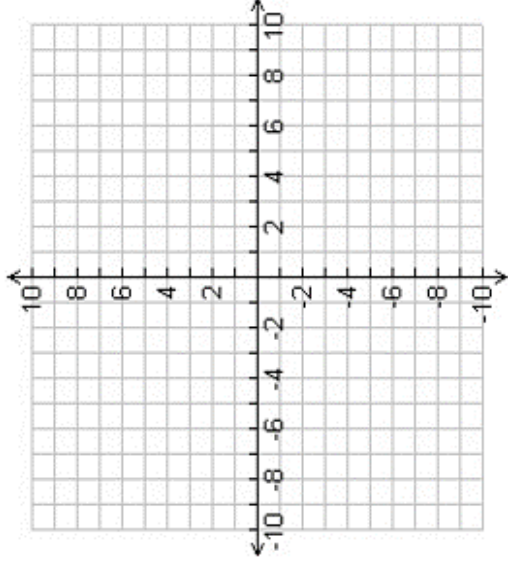
$y = 3x - 4$
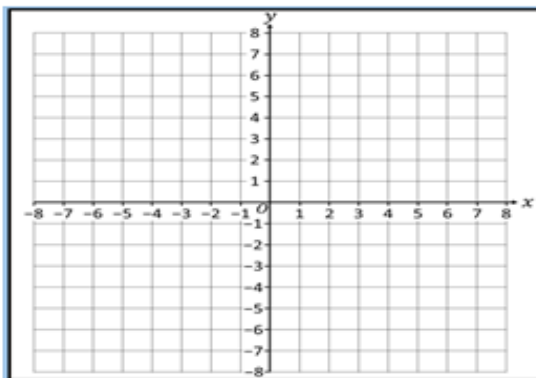$y = 4x - 1$

DEMO   Finding Gradient & y-intercept of a Line

1. Find the gradient and y-intercept of this graph:

$$y = 3x - 5$$
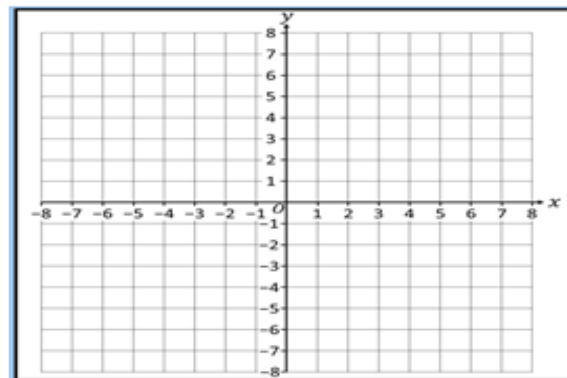
$gradient =$
$y - intercept =$

2. Plot the graph.

2. Find the gradient and y-intercept of this graph:

$$y = 2x - 4$$
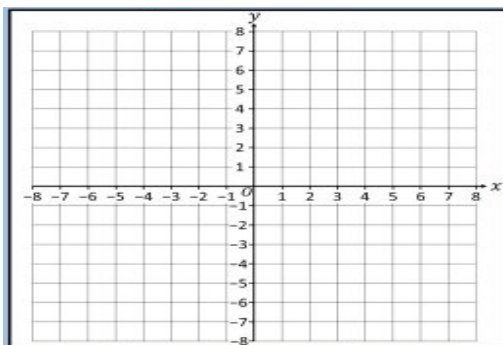
$gradient =$
$y - intercept =$

2. Plot the graph.

DEMO   Finding Gradient & y-intercept of a Line

3. Find the gradient and y-intercept of this graph:

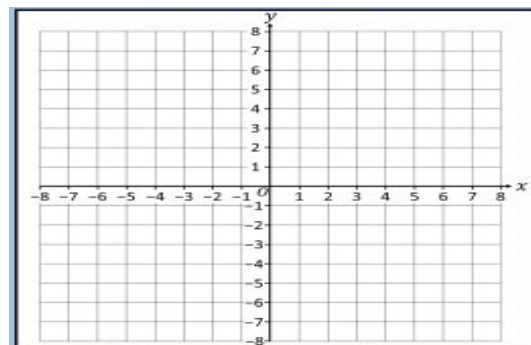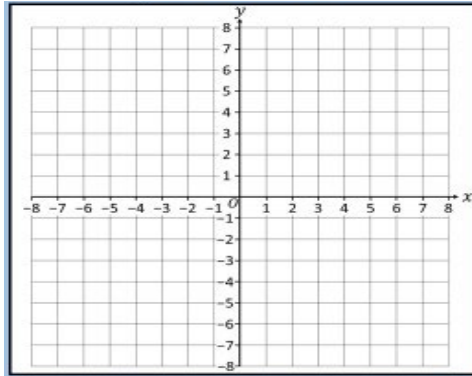$$y = x + 3$$

$gradient =$
$y - intercept =$

Plot the graph.

4. Find the gradient and y-intercept of this graph:

$$y = x - 5$$

$gradient =$
$y - intercept =$

Plot the graph.

5. Find the gradient and y-intercept of this graph:

$$y = 6 - 2x$$

$$gradient =$$
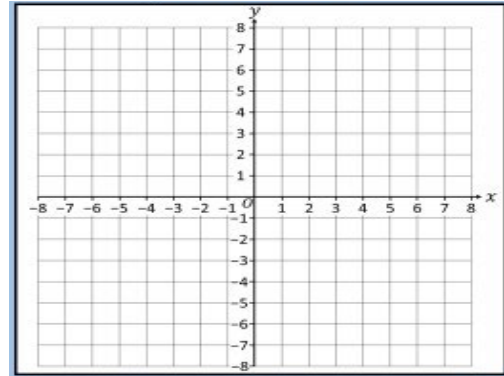$$y - intercept =$$

Plot the graph.

6. Find the gradient and y-intercept of this graph:

$$y = 3 - 4x$$

$$gradient =$$
$$y - intercept =$$

Plot the graph.

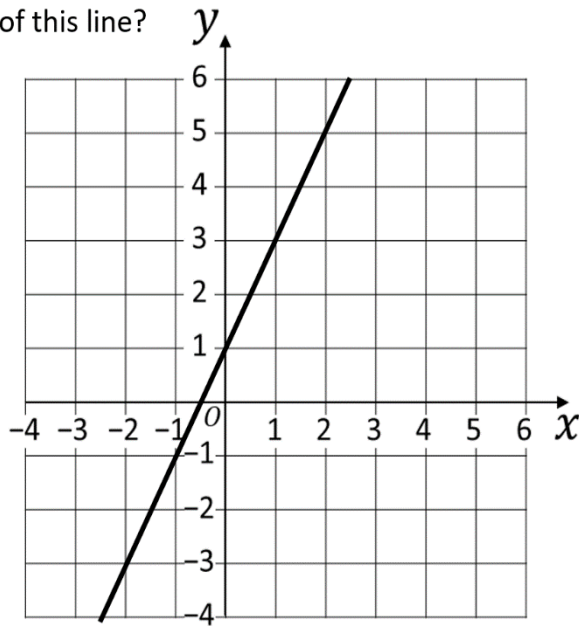| Section C: Fill in the table	Gradient	y-intercept
1) $y = 4x + 5$		
2) $y = x - 2$		
3) $y = -3$		
4) $2y = 4x - 8$		
5) $3x + y = -2$		
6) $3y = 6x - 12$		
7) $x + 2y = 10$		
8) $4x - 6y = -8$		

Week 4: Finding the equation from a line

Section A

What is the equation of this line?

$$y = mx + c$$

m = gradient =

c = y-intercept =
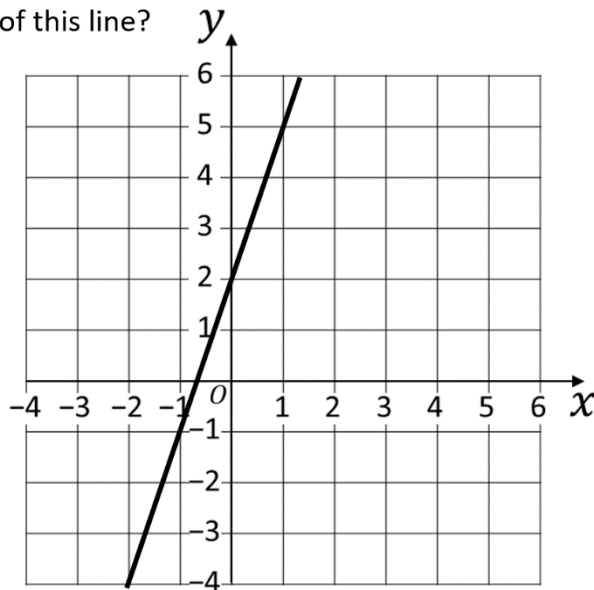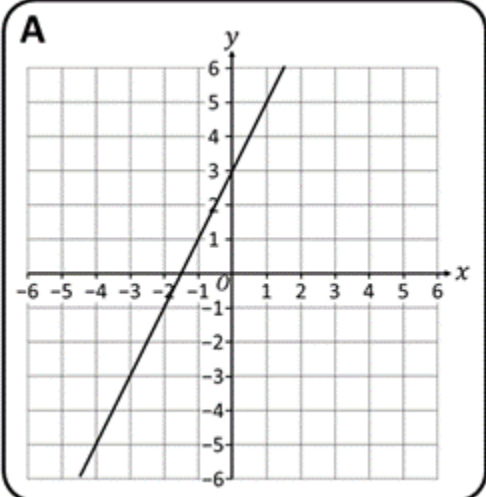

What is the equation of this line?

$$y = \boldsymbol{mx} + \boldsymbol{c}$$

m = gradient =

c = y-intercept =

A

Equation of Line A: ………………………….

B

Equation of Line B: ………………………….

C

Equation of Line C: ………………………….

D
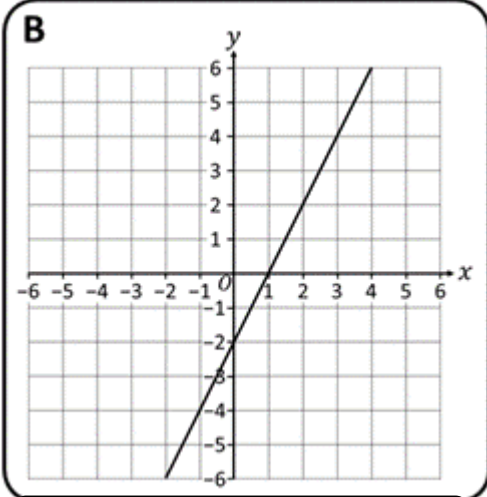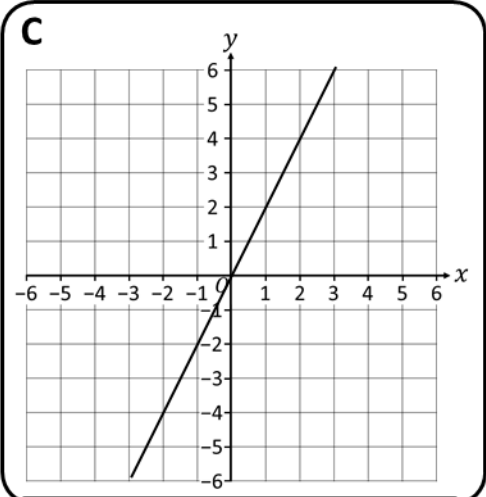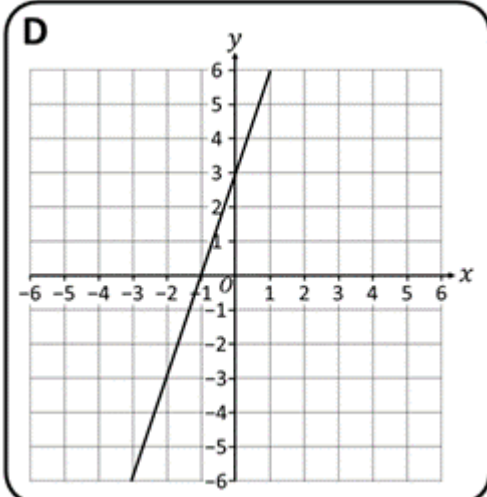
Equation of Line D:

Section C
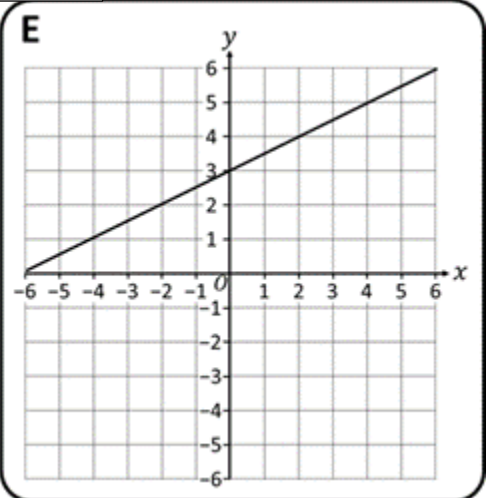
E
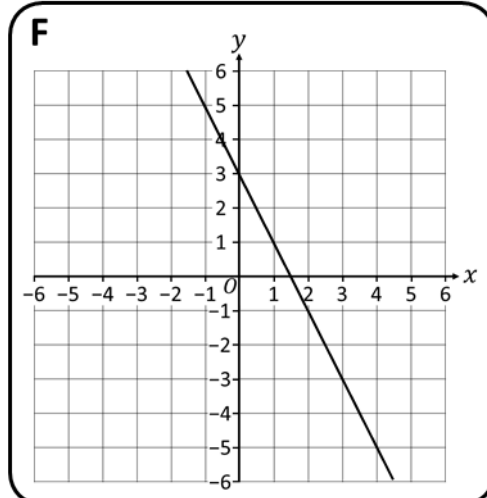
Equation of Line E: ………………………….

F

Equation of Line F: ………………………….

Fractions

1) $\frac{1}{11} + \frac{5}{11}$

2) $\frac{3}{10} + \frac{4}{10}$

3) $\frac{5}{9} - \frac{1}{9}$

4) $\frac{13}{45} - \frac{11}{45}$

5) $\frac{1}{2} + \frac{1}{6}$

6) $\frac{2}{5} + \frac{3}{10}$

7) $\frac{3}{4} - \frac{2}{8}$

8) $\frac{4}{9} - \frac{1}{3}$

Developing – Multiplying Fractions (Simplify where possible)

1) $\frac{1}{3} \times \frac{2}{5} =$

2) $\frac{1}{2} \times \frac{2}{3} =$

3) $\frac{5}{6} \times \frac{2}{3} =$

4) $\frac{12}{15} \times \frac{1}{4} =$

5) $\frac{3}{10} \times \frac{2}{5} =$

6) $\frac{2}{9} \times \frac{3}{2} =$

7) $\frac{3}{2} \times \frac{8}{5} =$

8) $\frac{4}{9} \times \frac{3}{12} =$

Developing – Dividing Fractions (Simplify where possible)

1) $\dfrac{1}{3} \div \dfrac{2}{5} =$

2) $\dfrac{1}{2} \div \dfrac{2}{3} =$

3) $\dfrac{5}{8} \div \dfrac{2}{3} =$

4) $\dfrac{2}{5} \div \dfrac{3}{4} =$

5) $\dfrac{3}{10} \div \dfrac{3}{8} =$

6) $\dfrac{4}{9} \div \dfrac{7}{12} =$

7) $\dfrac{3}{7} \div \dfrac{8}{1} =$

8) $\dfrac{10}{7} \div \dfrac{8}{3} =$

Fractions of amounts

$\dfrac{2}{3}$ of 15

$\dfrac{3}{4}$ of 20

$\dfrac{2}{7}$ of 21

$\dfrac{2}{5}$ of 15

$\dfrac{3}{10}$ of 100

$\dfrac{5}{6}$ of 12

$\dfrac{3}{4}$ of 40

$\dfrac{2}{5}$ of 10

$\dfrac{6}{10}$ of 60

$\dfrac{2}{3}$ of 33

$\dfrac{6}{7}$ of 49

$\dfrac{8}{9}$ of 81

SECTION A:

Factors

1   List all the factors of
    (i)   12   (ii)   20   (iii)   17   (iv)   28

2   Find the highest common factor (HCF) of the following sets of numbers.
    (i)   12 and 18   (ii)   24 and 30   (iii)   40 and 120   (iv)   15, 30 and 45

Multiples

3   Write down the first five multiples of the following numbers.
    (i)   5   (ii)   12   (iii)   40   (iv)   19

Section B:

Do not use a calculator for this part

Write down the square root of each number

a) $\sqrt{9}$ b) $\sqrt{16}$ c) $\sqrt{36}$ d) $\sqrt{100}$ e) $\sqrt{4}$

f) $\sqrt{81}$ g) $\sqrt{1}$ h) $\sqrt{25}$ i) $\sqrt{49}$ j) $\sqrt{144}$

FIND THE HCF and LCM of
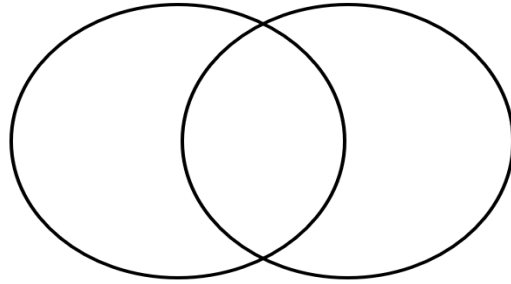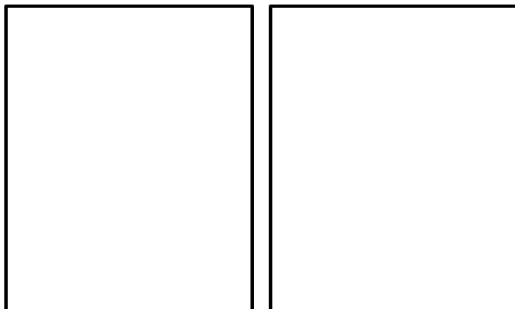
I DO

30 and 70

HCF =
LCM =

PRIME FACTOR TREES

30   70

REMEMBER HCF = all the numbers in the middle multiplied together
LCM = all the numbers in the Venn Diagram multiplied together

Prime numbers: 2, 3, 5, 7, 11, 13, 17, 19,
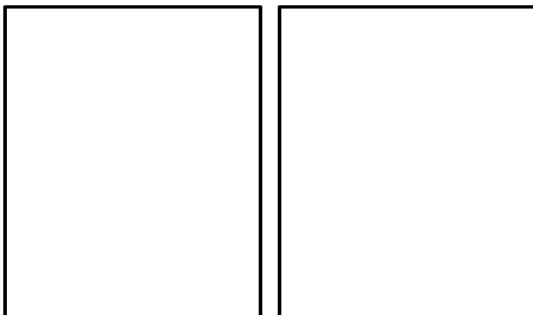

Q2 HERE ARE TWO NUMBERS
30 and 16

HCF =
LCM =

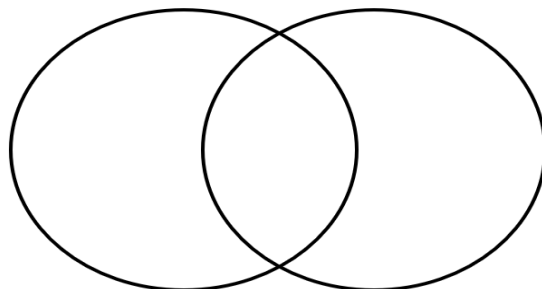FIND THE HCF and LCM

PRIME FACTOR TREES

30=
16 =

30   16

Year 9 Half Term 1: Homework Booklet

Week 7: Conjecture about Numbers

1 Each statement is sometimes true and sometimes false.

For each statement, give an example of when it is true and an example of when it is false.

a)

Fractions are less than one whole.	
Example when true	Example when false

b)

Factors of a number are smaller than the number itself.	
Example when true	Example when false

c)

Multiples of 3 are odd.	
Example when true	Example when false

d)

When you multiply two numbers together, the answer is greater than each number.	
Example when true	Example when false

4 Decide if the statements are always, sometimes or never true.

If always true or never true, explain or prove why this is the case.

If sometimes true, give examples of when it is true and when not.

a)
| To multiply a number by 10, you add a zero. |

    always true   sometimes true   never true

b)
| Square numbers have exactly three factors. |

    always true   sometimes true   never true

c)
| When you square a number, the answer is positive. |

    always true   sometimes true   never true

d)
| Division makes a number smaller. |

    always true   sometimes true   never true

e)
| The sum of two consecutive numbers is even. |

    always true   sometimes true   never true