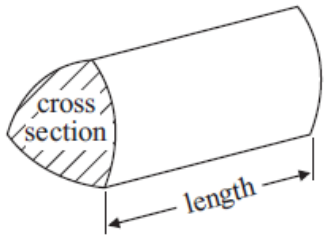
Name _____		Week Number									
	Qn	1	2	3	4	5	6	7	8	9	10
BIDMAS	1.										
Estimations	2.										
Coordinates – Finding the midpoint	3										
Fractions	4a										
	4b										
	4c										
	4d										
Algebra Simplifying	5a										
	5b										
Algebra – Expanding and simplifying linear expressions	6a										
	6b										
	6c										
Algebra – Expanding Quadratic Expressions	7a										
	7b										
Algebra - Factorising	8a										
	8b										
Angles on parallel lines	9										
Angles in polygons	10										
Stratified sampling	11										
Constructions	12										
Prime factor decomposition	13										
Index laws	14a										
	14b										
	14c										
Standard Form	15a										
	15b										
Sequences, nth term.	16a										
	16b										
Circles, area and circumference	17a										
	17b										
Percentages	18a										
	18b										
	18c										
	18d										
	18e										
	18f										
	18g										
Ratio	19a										
	19b										
Proportionality (Variance)	20a										
	20b										
	20c										
Algebra - solving	21a										
	21b										
	21c										
	21d										
Algebra – Quadratic graphs	22										
Rearranging Formulae	23										

GCSE Mathematics 1MA0

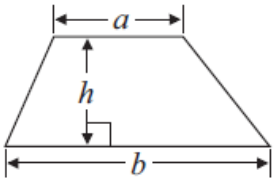
Formulae: Higher Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of prism = area of cross section × length

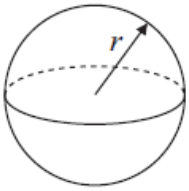


Area of trapezium $= \frac{1}{2}(a+b)h$



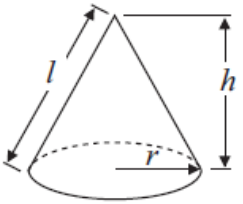
Volume of sphere $= \frac{4}{3}\pi r^3$

Surface area of sphere $= 4\pi r^2$

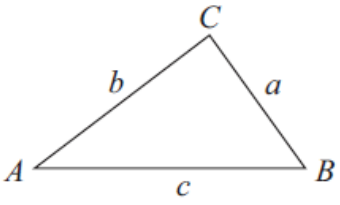


Volume of cone $= \frac{1}{3}\pi r^2 h$

Curved surface area of cone $= \pi r l$



In any triangle *ABC*



The Quadratic Equation
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

Area of triangle $= \frac{1}{2}ab\sin C$

Week 1

1. Work out $2 \times (11 + 9)$

2. Work out an estimate for the value of $\frac{6.8 \times 191}{0.051}$

3. Find the midpoint of (4, 2, 7) and (2, -3, 8)

4.
a. Change $\frac{29}{6}$ to a mixed number.
b. Work out $\frac{2}{5} + \frac{1}{7}$
c. Work out $2\frac{1}{2} \times 1\frac{3}{5}$
d. Work out $\frac{3}{4}$ of 20

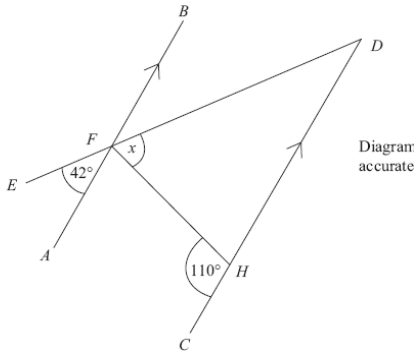
5.
a. Simplify $a + a + a + a$
b. *Simplify* $a \times a \times a \times a$

6.
a. Expand $2(4x + 6)$
b. Expand $7m(m - 2)$
c. Expand and simplify $6(x + 2) - 5(x - 2)$

7. a. Expand $(m + 3)(m - 4)$ b. Expand $(2h + 3)(h - 5)$

8. a. Factorise fully $10x^2 + 15xy$ b. Factorise $r^2 + 4r - 21$

9. *AFB* and *CHD* are parallel lines. *EFD* is a straight line. Work out the size of the angle marked *x*. Explain your reasons



10. Find the interior and exterior angles of a regular 6 sided polygon.

11.

	Y9	Y10	Y11	
Boys	120	130	145	395
Girls	110	140	120	370
	230	270	265	765

How many y 10 girls would be in a stratified sample of 50 pupils?

12. Draw a 6cm line and bisect it using compasses and ruler.

13. Express 98 as a product of its prime factors

14. a. Simplify $(d^3)^4$ b. Simplify $r^2 \times r^3$ c. Simplify $h^4 \div h^9$

15. Work out the following, give your answer in standard form
a. $(3 \times 10^6) \div (5 \times 10^{-4})$. b. $(5 \times 10^8) \times (7 \times 10^7)$.

16. The first four terms of an arithmetic sequence; 10 19 28 37
a. What is the 8th term of this sequence?
b. Write down an expression, in terms of n, for the nth term.

<table>
<tr><th colspan="2">Week 1</th></tr>
<tr><td>17.</td><td>A circle has a radius of 6cm, calculate correct to 3 significant figures;
a. the circumference and
b. the area</td></tr>
<tr><td>18.</td><td>Percentages;
a) Work out £84 as a percentage of £350
b) Calculate 25% of 90
c) Increase £450 by 6%
d) Decrease 80kg by 2%
e) Calculate the value of £25000 invested at 6% pa for 3 years
f) A car depreciates at 15% pa, it was bought for £10 000.
What is its value after 3 years?
g) In a 30% off sale a coat is now £49, what was its original price?</td></tr>
<tr><td>19.</td><td>Ratios;
a) Divide £240 in the ratio 1 : 3 : 4
b) A map has a scale of 4cm to 1km;
i. Express this as a ratio
ii. How long is a road that is 3cm on the map</td></tr>
<tr><td>20.</td><td>A is directly proportional to B^2. When A=50, B=10.
a. Find an equation connecting A and B
b. Find the value of B when A=72</td></tr>
<tr><td>21.</td><td>a. Solve $2(x - 3) = 5$
b. Solve $8x - 3 = 17$
c. Solve $\frac{2y}{3} = 9$
d. $2x^2 = 162$, Find a value of x.</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = x^2 - 5x - 3$
<table>
<tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td></td><td>-3</td><td>-7</td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make q the subject of the formula $5(q + p) = 4 + 8p$</td></tr>
</table>

Week 2

1. Work out $3 \times (2 + 9) - 4$

2. Work out an estimate for the value of $\dfrac{4.3 \times 84}{5.2}$

3. Find the midpoint of (3, -2, -8) and (3, -5, 10)

4.
a. Change $\frac{39}{7}$ to a mixed number.

b. Work out $\frac{2}{7} + \frac{1}{8}$

c. $2\frac{3}{5} \times 3\frac{2}{3}$

d. $\frac{3}{5}$ of 20

5.
a. Simplify $b + b + b + b + b + b$

b. Simplify $b \times b \times b$

6.
a. Expand 3(6b + 1)

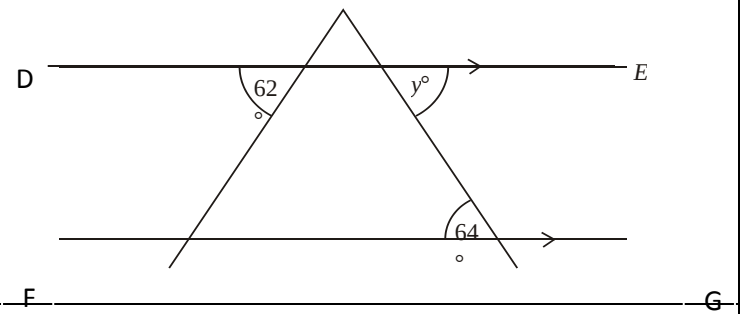
b. Expand 4b(b - 6)

c. Expand and simplify $7(b + 1) - 4(b - 7)$

7. a. Expand (b + 8)(b – 5) b. Expand (3b + 7)(b – 4)

8. a. Factorise fully $16b^2 + 12ab$ b. Factorise $b^2 + 7b - 60$

9. DE is parallel to FG. Find the size of the angle marked y°. Give reasons for your answer



10. Find the interior and exterior angles of a regular 12 sided polygon.

11.

	Y9	Y10	Y11	
Boys	120	130	145	395
Girls	110	140	120	370
	230	270	265	765

How many y 10 boys would be in a stratified sample of 30 pupils?

12. Draw an 8cm line and bisect it using compasses and ruler.

13. Express 84 as a product of its prime factors

14. Simplify a. $(d^5)^4$ b. $r^4 \times r^9$

15. Work out the following, give your answer in standard form

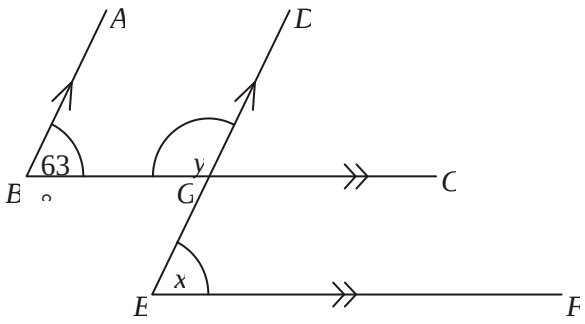
a. $(8 \times 10^{-4}) \div (4 \times 10^{-8})$. b. $(4.5 \times 10^5) \times (3 \times 10^9)$.

16. The first four terms of an arithmetic sequence; 6 10 14 18

c. What is the 6th term of this sequence?

d. Write down an expression, in terms of n, for the nth term.

<table>
<tr><th colspan="2">Week 2</th></tr>
<tr><td>17.</td><td>A circle has a diameter of 15cm, calculate correct to 3 significant figures;
i. the circumference and ii. the area</td></tr>
<tr><td>18.</td><td>Percentages;
a. Work out £67 as a percentage of £250
b. Calculate 23% of 70
c. Increase £250 by 12%
d. Decrease 750kg by 10%
e. Calculate the value of £1500 invested at 5% pa for 3 years
A car depreciates at 15% pa, it was bought for £10 000. What is its value after 3 years?
g. In a 40% off sale a coat is now £36, what was its original price?</td></tr>
<tr><td>19.</td><td>Ratios;
a. Divide 5 hours in the ratio 1 : 2 : 3
b. A map has a scale of 5cm to 1km;
i. Express this as a ratio
ii. How long is a road that is 8cm on the map</td></tr>
<tr><td>20.</td><td>The volume, V cubic metres, of a hot air balloon is proportional to the cube of its height, h metres. A balloon with a height of 10 metres has a volume of 500 cubic metres.
a. Find an equation connecting V and h.
b. Find the volume of a hot air balloon which has a height of 30m
c. Find the height of a balloon which has a volume of 5000 cubic metres.</td></tr>
<tr><td>21.</td><td>a. Solve $3(x - 4) = 9$
b. Solve $9x - 7 = 29$
c. Solve $\frac{3y}{5} = 6$
d. $3x^2 = 75$ Find a value of x</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = x^2 - 2x - 3$
<table>
<tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td></td><td>-3</td><td></td><td></td><td>0</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make a the subject of the formula $v = u + at$</td></tr>
</table>

Week 3	
1.	Work out $12 - 2 \times (3 + 2)$
2.	Work out an estimate for the value of $\frac{7.2 \times 18}{0.47}$
3.	Find the midpoint of (11, -2, 5) and (5, -4, 8)
4.	a. Change $\frac{33}{8}$ to a mixed number. b. Work out $\frac{3}{8} + \frac{2}{9}$ c. Work out $3\frac{2}{3} \times 2\frac{1}{6}$ Work out $\frac{3}{8}$ of 48
5.	a. Simplify $c + c + c + c + c + c + c + c + c + c$ *b.* Simplify $c \times c \times c \times c \times c \times c \times c \times c$
6.	a. Expand $6(4c - 3)$ b. Expand $3c(2c - 7)$ c. Expand and simplify $7(c + 5) - 3(c - 9)$
7.	a. Expand $(c + 2)(c - 9)$ b. Expand $(4c - 7)(c - 2)$
8.	a. Factorise fully $24c^2 + 18bc$ *b.* Factorise $c^2 - 15c + 36$
9.	*BA* is parallel to *EGD*. *BGC* is parallel to *EF*. Angle *ABC* = 63°. Find the size of angles *x* and y, give reasons for your answers 
10.	Find the interior and exterior angles of a regular 15 sided polygon.
11.	<table><tr><td></td><td>Y9</td><td>Y10</td><td>Y11</td><td></td></tr><tr><td>Boys</td><td>120</td><td>130</td><td>145</td><td>395</td></tr><tr><td>Girls</td><td>110</td><td>140</td><td>120</td><td>370</td></tr><tr><td></td><td>230</td><td>270</td><td>265</td><td>765</td></tr></table> How many y 11 girls would be in a stratified sample of 40 pupils?
12.	Draw an acute angle and bisect it using compasses and ruler.
13.	Express 112 as a product of its prime factors
14.	a. Simplify $(d^8)^7$ b. Simplify $r^8 \times r^7$ c. Simplify $t^8 \div t^5$
15.	Work out the following, give your answer in standard form a. $(1 \times 10^5) \div (2.5 \times 10^{-7})$ b. $(4 \times 10^4) \times (6 \times 10^1)$.

<table>
<tr><th colspan="2">Week 3</th></tr>
<tr><td>16.</td><td>The first four terms of an arithmetic sequence are; 5 12 19 26
a. What is the 8th term of this sequence?
b. Write down an expression, in terms of n, for the nth term.</td></tr>
<tr><td>17.</td><td>A circle has a radius of 9cm, calculate correct to 3 significant figures;
a. the circumference and
b. the area</td></tr>
<tr><td>18.</td><td>Percentages;
a. Work out £76 as a percentage of £820Calculate 32% of 140
b. Increase £630 by 9%
c. Decrease 3500kg by 12%
d. Calculate the value of £200 invested at 2% pa for 3 years
e. A car depreciates at 12% pa, it was bought for £10 000. What is its value after 5 years?
f. In a 10% off sale a coat is now £63, what was its original price?</td></tr>
<tr><td>19.</td><td>Ratios;
a. Divide 2m in the ratio 1 : 3 : 4
b. A map has a scale of 8cm to 1km;
i. Express this as a ratio
ii. How long is a road that is 9cm on the map</td></tr>
<tr><td>20.</td><td>y is inversely proportional to the square of x. When y = 50, x=2.
a. Find an equation connecting x and y
b. Find x when y=32</td></tr>
<tr><td>21.</td><td>a. Solve $4(x - 2) = 20$
b. Solve $5x - 7 = 18$
c. Solve $\frac{4y}{6} = 10$
d. $4x^2 = 144$, Find a value of x.</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = x^2 - 5x - 1$
<table>
<tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td></td><td>-1</td><td>-5</td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make q the subject of the formula $p = \frac{4q}{3} + 2$</td></tr>
</table>

Week 4

1. Work out $2 + 5 \times (7 - 9)$

2. Work out an estimate for the value of $\frac{11.8 \times 14.1}{20.7}$

3. Find the midpoint of (6, 3, 4) and (8, -9, -7)

4. a. Change $\frac{39}{5}$ to a mixed number.

   b. Work out $\frac{3}{5} + \frac{4}{7}$

   c. Work out $1\frac{3}{4} \times 1\frac{3}{5}$

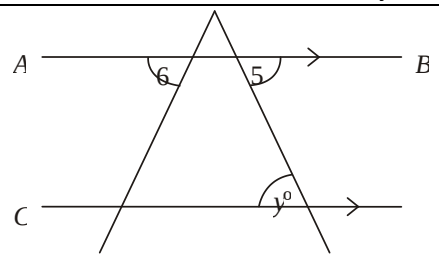
   d. Work out $\frac{7}{8}$ of 48

5. a. Simplify $d + d + d + d + d + d$
   b. Simplify $d \times d \times d \times d \times d$

6. a. Expand $7(2d - 9)$
   b. Expand $3d(6 - 5d)$
   c. Expand and simplify $8(d + 3) - 3(2d - 1)$

7. a. Expand $(d - 6)(d - 5)$ b. Expand $(4d + 3)(2d - 3)$

8. a. Factorise fully $24d^2 + 18de$ *b.* Factorise $d^2 - 14d - 15$

9. 

   AB is parallel to *CD* Find angle y, give reasons for your answer

10. Find the interior and exterior angles of a regular 10 sided polygon.

11.

	Y9	Y10	Y11	
Boys	120	130	145	395
Girls	110	140	120	370
	230	270	265	765

   How many Y9 boys would be in a stratified sample of 50 pupils?

12. Draw an obtuse angle and bisect it using compasses and ruler.

13. Express 126 as a product of its prime factors

14. a. Simplify $(d^5)^9$ b. Simplify $r^5 \times r^9$ c. Simplify $b^{-8} \div b^{-7}$

15. Work out the following, give your answer in standard form
    c. $(3 \times 10^{-5}) \div (6 \times 10^{-7})$. b. $(6 \times 10^4) \times (6 \times 10^{-4})$.

16. The first four terms of an arithmetic sequence are; 9 17 25 33
    a. What is the 10th term of this sequence?
    b. Write down an expression, in terms of n, for the nth term.

<table>
<tr><th colspan="2">Week 4</th></tr>
<tr><td>17.</td><td>A circle has a diameter of 14cm, calculate correct to 3 significant figures;
a. the circumference and
b. the area</td></tr>
<tr><td>18.</td><td>Percentages;
a. Work out £74 as a percentage of £460
b. Calculate 14% of 90
c. Increase £650 by 4%
d. Decrease 20kg by 15%
e. Calculate the value of £5000 invested at 8% pa for 3 years
f. A car depreciates at 11% pa, it was bought for £10 000. What is its valu after 7 years?
g. In a 70% off sale a coat is now £42, what was its original price?</td></tr>
<tr><td>19.</td><td>24. Ratios;
a. Divide £5 in the ratio 2 : 3 : 5
b. A map has a scale of 2cm to 5km;
i. Express this as a ratio
ii. How long is a road that is 6cm on the map</td></tr>
<tr><td>20.</td><td>The area of a television set is A square inches. The length of the diagonal is d inches. A is directly proportional to the square of d. A television set with an area of 90 square inches has a diagonal length of 15 inches.
a. Find an equation connecting A and d.
b. Find the area of a television set with a diagonal length of 20 inches.
c. Find the diagonal length of a set which has an area of 250 square inches</td></tr>
<tr><td>21.</td><td>a. Solve $3(x - 7) = 6$
b. Solve $2x + 3 = 19$
c. Solve $\frac{5y}{6} = 10$
d. Solve $2x^2 = 128$, Find a value of x.</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = x^2 - 6x + 3$
<table>
<tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td>10</td><td></td><td></td><td>-5</td><td></td><td></td><td>-2</td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make s the subject of the formula $t = \frac{3(10-s)}{s}$</td></tr>
</table>

Week 5

1. Work out $3 \times (4 + 9) + 7$

2. Work out an estimate for the value of $\dfrac{8.9 \times 40.3}{17.6}$

3. Find the midpoint of (6, -6, 11) and (4, -2, 4)

4.
a. Change $\frac{34}{5}$ to a mixed number.

b. Work out $\frac{2}{9} + \frac{5}{12}$

c. Work out $4\frac{1}{5} \times \frac{3}{5}$

d. Work out $\frac{5}{6}$ of 24

5.
a. Simplify $e + e + e + e + e + e + e + e + e + e + e + e + e$

b. Simplify $e \times e \times e \times e \times e \times e \times e \times e$

6.
a. Expand 4(3e – 1)

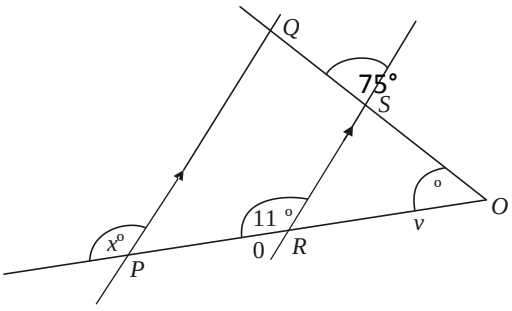
b. Expand 5e(e – 3)

c. Expand and simplify 5(*e* – 6) + 5(*e* – 1)

7. a. Expand (e – 3)(e – 6) b. Expand (e+ 4)(3e– 1)

8. a. Factorise fully $8e^2 – 32ef$ b. Factorise $e^2 – 15e + 54$

9. *PQ* is parallel to *RS*. *OSQ* and *ORP* are straight lines. Find angle x, give reasons for your answer



10. Find the interior and exterior angles of a regular 8 sided polygon.

11.

	Y9	Y10	Y11	
Boys	120	130	145	395
Girls	110	140	120	370
	230	270	265	765

How many Y11 boys would be in a stratified sample of 30 pupils?

12. Draw an 8cm line and bisect it using compasses and ruler

13. Express 64 as a product of its prime factors

14. a. Simplify $(d^4)^8$ b. Simplify $r^4 \times r^8$ c. Simplify $g^{-2} \div g^4$

15. Work out the following, give your answer in standard form

a. $(4 \times 10^{-3}) \div (5 \times 10^{-5})$. b. $(6 \times 10^7) \times (9 \times 10^4)$.

16. The first four terms of an arithmetic sequence are; 2 9 16 23

a. What is the 10th term of this sequence?

b. Write down an expression, in terms of n, for the nth

Week 5

17. A circle has a radius of 24cm, calculate correct to 3 significant figures;
    a. the circumference and
    b. the area

18. Percentages;
    a. Work out £38 as a percentage of £420
    b. Calculate 18% of 160
    c. Increase £430 by 15%
    d. Decrease 400kg by 4%
    e. Calculate the value of £15000 invested at 7% pa for 3 years
    f. A car depreciates at 10% pa, it was bought for £10 000. What is its value after 2 years?
    g. In a 60 % off sale a coat is now £44, what was its original price?

19. Ratios;
    a. Divide 24kg in the ratio 1 : 2 : 3
    b. A map has a scale of 8cm to 5km;
        i. Express this as a ratio
        ii. How long is a road that is 8cm on the map

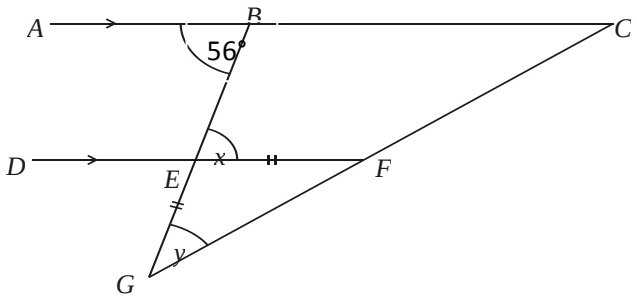
20. The volume, v litres, which a fixed mass of gas occupies, is inversely proportional to its pressure, p pascals. When the pressure is 150 000 pascals, the volume is 5 litres.
    a. Find an equation connecting v and p.
    b. Find the volume when the pressure is 250 000 pascals
    c. Find the pressure when its volume is 300 litres

21. a. Solve $6(x - 2) = 3$
    b. Solve $2x - 4 = 13$
    c. Solve $\frac{3y}{4} = 6$
    d. $3x^2 = 108$, Find a value of x.

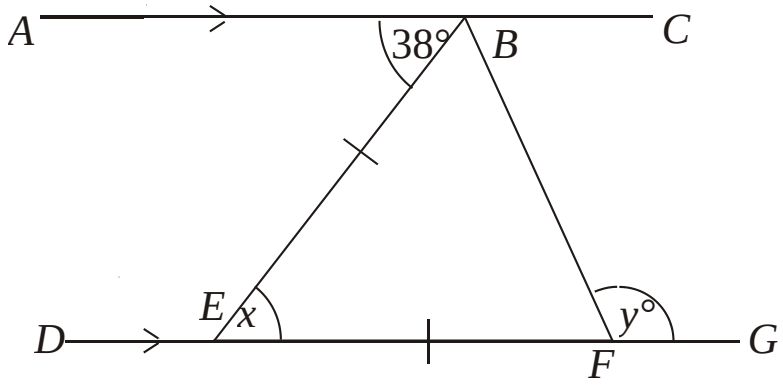
22. Copy and complete the table of values for $y = x^2 - 4x + 4$

x	-1	0	1	2	3	4	5
y	9				1		

23. Make x the subject of the formula $y = \frac{m+x}{x+2}$

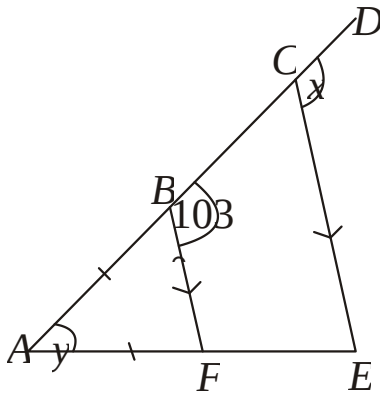
Week 6	
1.	Work out $2 \times 11 + 9 \times 2$
2.	Work out an estimate for the value of $\frac{4.6 \times 159.7}{76.3}$
3.	Find the midpoint of (12, -9, 6) and (8, 5, 7)
4.	a. Change $\frac{43}{11}$ to a mixed number. b. Work out $\frac{3}{5} + \frac{1}{8}$ c. Work out $1\frac{3}{8} \times 1\frac{2}{5}$ Work out $\frac{3}{8}$ of 32
5.	a. Simplify $f + f + f + f + f + f + f + f + f + f$ b. Simplify $f \times f \times f \times f \times f \times f \times f \times f \times f \times f$
6.	a. Expand $7(6f + 5)$ b. Expand $7f(6 - 2f)$ c. Expand and simplify $3(f + 4) + 9(2f - 1)$
7.	a. Expand $(f + 10)(f - 7)$ b. Expand $(3f - 2)(2f + 1)$
8.	a. Factorise fully $6ef + 15f^2$ b. Factorise $f^2 + 10f + 24$
9.	 *BEG* and *CFG* are straight lines. *ABC* is parallel to *DEF*. Angle *ABE* = 56° and *EF* = *EG* Find angles x and y, give reasons for your answers.
10.	Find the interior and exterior angles of a regular 5 sided polygon.
11.	<table><tr><td></td><td>Y9</td><td>Y10</td><td>Y11</td><td></td></tr><tr><td>Boys</td><td>120</td><td>130</td><td>145</td><td>395</td></tr><tr><td>Girls</td><td>110</td><td>140</td><td>120</td><td>370</td></tr><tr><td></td><td>230</td><td>270</td><td>265</td><td>765</td></tr></table> How many boys would be in a stratified sample of 40 pupils?
12.	Draw an acute angle and bisect it using compasses and ruler
13.	Express 144 as a product of its prime factors
14.	Simplify a. $(d^6)^3$ b. $r^7 \times r^{12}$
15.	Work out the following, give your answer in standard form a. $(5 \times 10^2) \div (8 \times 10^{-8})$. b. $(9 \times 10^3) \times (5 \times 10^1)$.
16.	The first four terms of an arithmetic sequence are; 4 15 26 37 b. What is the 10th term of this sequence? c. Write down an expression, in terms of n, for the nth term.

<table>
<tr><th colspan="2">Week 6</th></tr>
<tr><td>17.</td><td>A circle has a diameter of 31cm, calculate correct to 3 significant figures;
a. the circumference and b. the area</td></tr>
<tr><td>18.</td><td>Percentages
a. Work out £56 as a percentage of £440
b. Calculate 71% of 890
c. Increase £ 860 by 2%
d. Decrease 800kg by 11%
e. Calculate the value of £1600 invested at 7% pa for 3 years
f. A car depreciates at 8% pa, it was bought for £10 000. What is its value after 3 years?
g. In a 15% off sale a coat is now £51, what was its original price?</td></tr>
<tr><td>19.</td><td>Ratios;
a. Divide £480 in the ratio 2 : 3 : 5
b. A map has a scale of 4cm to 3km;
i. Express this as a ratio
ii. How long is a road that is 12cm on the map</td></tr>
<tr><td>20.</td><td>The weight of a cheese, W kilograms, is directly proportional to its height, h centimetres. A cheese 12cm high has a weight of 10kg.
a. Find an equation connecting W and h.
b. Find the weight of a cheese that is 6cm high.
c. Find the height of a cheese weighing 20kg</td></tr>
<tr><td>21.</td><td>a. Solve $6(x - 3) = 12$
b. Solve $6x - 4 = 17$
c. Solve $\frac{2y}{3} = 15$
d. $2x^2 = 98$, Find a value of x.</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = x^2 - 2x - 2$
<table>
<tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td></td><td>-2</td><td>-3</td><td></td><td></td><td>6</td><td></td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make d the subject of the formula $c = 5d + 2$</td></tr>
<tr><td></td><td></td></tr>
</table>

Week 7	
1.	Work out $3 + 2 \times (11 + 9)$
2.	Work out an estimate for the value of $\frac{6.8 \times 191}{68}$
3.	Find the midpoint of (7, -8, 11) and (5, 6, 6)
4.	a. Change $\frac{26}{7}$ to a mixed number. b. Work out $\frac{1}{6} + \frac{3}{8}$ c. Work out $4\frac{1}{2} \times 1\frac{3}{4}$ d. Work out $\frac{6}{7}$ of 28
5.	a. Simplify $g + g + g + g + g + g + g$ b. Simplify $g \times g$
6.	a. Expand $8(3g + 1)$ b. Expand $5g(g - 2)$ c. Expand and simplify $3(4g + 1) - 2(g - 2)$
7.	a. Expand $(g - 4)(g + 8)$ b. Expand $(3g + 1)(3g + 7)$
8.	a. Factorise fully $12g^2 - 18gh$ b. Factorise $g^2 + 18g + 81$
9.	 *ABC* is parallel to *DEFG*. *BE* = *EF*. Angle *ABE* = 38°. Find the values of x and y, give reasons for yours answers
10.	Find the interior and exterior angles of a regular 20 sided polygon.
11.	How many Y9 pupils would be in a stratified sample of 50 pupils?
12.	Draw an 8cm line and bisect it using compasses and ruler
13.	Express 168 as a product of its prime factors
14.	Simplify a. $(d^5)^3$ b. $r^{10} \times r^5$ c. $m^3 \div m^{-3}$
15.	Work out the following, give your answer in standard form a. $(5.4 \times 10^7) \div (9 \times 10^{-2})$. b. $(4 \times 10^3) \times (8 \times 10^{11})$.

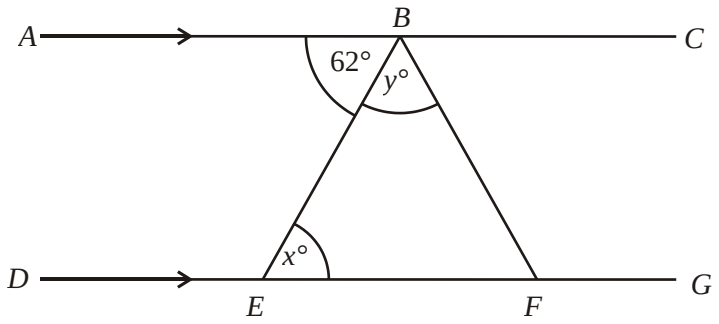
	Y9	Y10	Y11	
Boys	120	130	145	395
Girls	110	140	120	370
	230	270	265	765

<table>
<tr><th colspan="2">Week 7</th></tr>
<tr><td>16.</td><td>e. The first four terms of an arithmetic sequence are; 11 15 19 23
a. What is the 10th term of this sequence?
b. Write down an expression, in terms of n, for the nth term.</td></tr>
<tr><td>17.</td><td>A circle has a radius of 26cm, calculate correct to 3 significant figures;
a. the circumference and b. the area</td></tr>
<tr><td>18.</td><td>Percentages;
a. Work out £72 as a percentage of £350
b. Calculate 36% of 390
c. Increase £1100 by 9%
d. Decrease 700kg by 12%
e. Calculate the value of £700 invested at 6% pa for 3 years
f. A car depreciates at 7% pa, it was bought for £10 000. What is its value after 8 years?
g. In a 35% off sale a coat is now £143, what was its original price?</td></tr>
<tr><td>19.</td><td>Ratios;
a. Divide 4 hours in the ratio 1 : 4 : 7
b. A map has a scale of 2cm to 1km;
i. Express this as a ratio
ii. How long is a road that is 6cm on the map</td></tr>
<tr><td>20.</td><td>The price, £P, of a rug is directly proportional to the square of its width w centimetres. A rug 80 cm wide costs £32.
a. Find an equation connecting P and w.
b. What is the cost of a rug of width 100cm?
c. A rug costs £18, what is its width?</td></tr>
<tr><td>21.</td><td>a. Solve $2(x - 3) = 14$
b. $4x - 7 = 15$
c. $\frac{2y}{3} = 18$
d. $2x^2 = 242$, Find a value of x.</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = x^2 - 3x + 5$
<table>
<tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td></td><td>5</td><td>3</td><td></td><td></td><td>9</td><td></td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make P the subject of the formula $A = P + \frac{PRT}{100}$</td></tr>
</table>

Week 8	
1.	Work out $6 \times (13 - 7)$
2.	Work out an estimate for the value of $\frac{26.4 \times 6.3}{8.6}$
3.	Find the midpoint of (7, 8, 10) and (9, -14, 3)
4.	a. Change $\frac{37}{8}$ to a mixed number. a. Work out $\frac{3}{8} - \frac{1}{6}$ b. Work out $1\frac{1}{3} \times 2\frac{1}{5}$ Work out $\frac{5}{12}$ of 48
5.	a. Simplify $h + h + h + h + h + h + h + h + h + h + h + h + h + h$ *b.* Simplify $h \times h \times h \times h \times h \times h \times h \times h \times h \times h \times h \times h \times h \times h$
6.	a. Expand $5(2h + 3)$ b. Expand $5h(h - 5)$ c. Expand and simplify $2(h + 3) - 5(h - 3)$
7.	b. Expand $(h + 7)(h - 6)$ b. Expand $(2h - 5)(h - 2)$
8.	a. Factorise fully $28h^2 + 12gh$ b. Factorise $h^2 + 6r - 27$
9.	*ABCD* and *AFE* are straight lines. *BF* is parallel to *CE.* Angle *CBF* = 103°. *AB = AF.* Find the values of x and y, give reasons for your answers 
10.	Find the interior and exterior angles of a regular 9 sided polygon.
11.	How many Y10 girls would be in a stratified sample of 30 pupils?
12.	Draw an obtuse angle and bisect it using compasses and ruler
13.	Express 104 as a product of its prime factors
14.	Simplify a. $(d^2)^5$ b. $r^7 \times r^6$
15.	Work out the following, give your answer in standard form a. $(3.8 \times 10^{-5}) \div (1.9 \times 10^{-9})$. b. $(3.8 \times 10^4) \times (3 \times 10^6)$.
16.	The first four terms of an arithmetic sequence are; 7 9 11 13 a. What is the 10th term of this sequence? b. Write down an expression, in terms of n, for the nth term.

	Y9	Y10	Y11	
Boys	120	130	145	395
Girls	110	140	120	370
	230	270	265	765

<table>
<tr><th colspan="2">Week 8</th></tr>
<tr><td>17.</td><td>A circle has a diameter of 4cm, calculate correct to 3 significant figures;
a. the circumference and b. the area</td></tr>
<tr><td>18.</td><td>Percentages
a. Work out £74 as a percentage of £250
b. Calculate 21% of 50
c. Increase £350 by 5%
d. Decrease 6500kg by 24%
e. Calculate the value of £2500 invested at 8% pa for 3 years
f. A car depreciates at 15% pa, it was bought for £10 000. What is its value after 5 years?
g. In a 20% off sale a coat is now £64, what was its original price?</td></tr>
<tr><td>19.</td><td>Ratios;
a. Divide £70 in the ratio 1 : 5 : 8
b. A map has a scale of 5cm to 1km;
i. Express this as a ratio
ii. How long is a road that is 4cm on the map</td></tr>
<tr><td>20.</td><td>A is proportional to the square of d. When A = 20 000, d = 200.
a. Find an equation connecting A and d.
b. Find A when d = 1400.</td></tr>
<tr><td>21.</td><td>a. Solve $3(x - 2) = 9$
b. Solve $6x - 3 = 12$
c. Solve $\frac{2y}{5} = 4$
d. $3x^2 = 48$, Find a value of x.</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = x^2 - 4x - 2$
<table>
<tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td></td><td>-2</td><td>-5</td><td></td><td></td><td>-2</td><td>3</td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make x the subject of the formula $x^2 + k = 16$</td></tr>
<tr><td></td><td></td></tr>
</table>

Week 9	
1.	Work out $3 + 4 \times (6 + 1)$
2.	Work out an estimate for the value of $\frac{7.2 \times 121}{0.48}$
3.	Find the midpoint of (11, 13, 9) and (7, -5, 2)
4.	a. Change $\frac{26}{3}$ to a mixed number. b. Work out $\frac{2}{3} + \frac{1}{9}$ c. Work out $1\frac{5}{8} \times 1\frac{4}{5}$ d. Work out $\frac{4}{9}$ of 45
5.	a. Simplify $a + a$ *b.* Simplify $b \times b \times b \times b \times b$
6.	a. Expand $7(3c + 8)$ b. Expand $3d(5d - 4)$ c. Expand and simplify $3(5e + 1) – 6(e – 2)$
7.	a. Expand $(f – 4)(f – 7)$ b. Expand $(3g + 2)(4g – 3)$
8.	a. Factorise fully $16h^2 – 20hj$ b. Factorise $k^2 – 4k – 32$
9.	*ABC* and *DEFG* are straight lines. *AC* is parallel to *DG*. *BE* = *BF*. Angle *ABE* = 62°. Find the values of x and y giving reasons for your answers 
10.	Find the interior and exterior angles of a regular 12 sided polygon.
11.	<table><tr><td></td><td>Y9</td><td>Y10</td><td>Y11</td><td></td></tr><tr><td>Boys</td><td>120</td><td>130</td><td>145</td><td>395</td></tr><tr><td>Girls</td><td>110</td><td>140</td><td>120</td><td>370</td></tr><tr><td></td><td>230</td><td>270</td><td>265</td><td>765</td></tr></table> How many Y11 boys would be in a stratified sample of 20 pupils?
12.	Draw an 8cm line and bisect it using compasses and ruler
13.	Express 120 as a product of its prime factors
14.	Simplify a. $(d^3)^6$ b. $r^{14} \times r^7$ c. $d^6 \div d^4$
15.	Work out the following, give your answer in standard form a. $(4.8 \times 10^4) \div (1.2 \times 10^{-9})$. b. $(7.8 \times 10^6) \times (2 \times 10^4)$.
16.	The first four terms of an arithmetic sequence are; 4 12 20 28 a. What is the 10th term of this sequence? b. Write down an expression, in terms of n, for the nth

<table>
<tr><th colspan="2">Week 9</th></tr>
<tr><td>17.</td><td>A circle has a radius of 70cm, calculate correct to 3 significant figures;
a. the circumference and b. the area</td></tr>
<tr><td>18.</td><td>Percentages
a. Work out £96 as a percentage of £350
b. Calculate 80% of 950
c. Increase £720 by 6.5%
d. Decrease 7000kg by 35%
e. Calculate the value of £10000 invested at 9% pa for 3 years
f. A car depreciates at 6 % pa, it was bought for £10 000.
What is its value after 6 years?
g. In a 25% off sale a coat is now £90, what was its original price?</td></tr>
<tr><td>19.</td><td>Ratios;
a. Divide 4 hours in the ratio 1 : 2 : 3
b. A map has a scale of 8cm to 1km;
i. Express this as a ratio
ii. How long is a road that is 2cm on the map</td></tr>
<tr><td>20.</td><td>In a circuit the resistance, R ohms, is inversely proportional to the current I amps. When the resistance is 12 ohms, the current in the circuit is 8 amps.
a. Find an equation connecting R and I.
b. Find the current in a circuit when the resistance is 6.4 ohms.</td></tr>
<tr><td>21.</td><td>a. Solve $2(x - 6) = 4$
b. Solve $4x - 3 = 19$
c. Solve $\frac{2y}{5} = 5$
d. $2x^2 = 128$, Find a value of x.</td></tr>
<tr><td>22.</td><td>Copy and complete the table of values for $y = 2x^2 - 2x + 1$
<table>
<tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>y</td><td></td><td></td><td>1</td><td></td><td></td><td></td><td>25</td></tr>
</table></td></tr>
<tr><td>23.</td><td>Make v the subject of the formula $f = \frac{uv}{u+v}$</td></tr>
<tr><td></td><td></td></tr>
</table>

Week 10

1. Work out $12 - 3 \times (11 - 9)$

2. Work out an estimate for the value of $\frac{62 \times 226}{0.31}$

3. Find the midpoint of (6, 7, 1) and (10, 12, 10)

4.
a. Change $\frac{19}{4}$ to a mixed number.

b. Work out $\frac{1}{4} + \frac{3}{10}$

c. Work out $4\frac{1}{2} \times 1\frac{2}{3}$

d. Work out $\frac{5}{8}$ of 56

5.
a. Simplify $a + a + a + a + a + a + a + a$

b. Simplify $b \times b \times b \times b \times b \times b$

6.
a. Expand $2(4c + 7)$

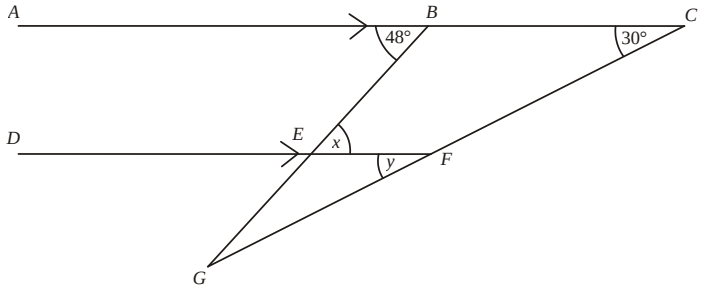
b. Expand $5d(d - 9)$

c. Expand and simplify $4(e + 3) - 3(e - 6)$

7. a. Expand $(f + 7)(f - 4)$ b. Expand $(g - 4)(2g + 3)$

8. a. Factorise fully $12h^2 + 15hj$ b. Factorise $k^2 + 7k - 18$

9. *BEG* and *CFG* are straight lines. *ABC* is parallel to *DEF*. Angle *ABE* = 48°. Angle *BCF* = 30°. Find x and y, give reasons for your answers



10. Find the interior and exterior angles of a regular 18 sided polygon.

11.

	Y9	Y10	Y11	
Boys	120	130	145	395
Girls	110	140	120	370
	230	270	265	765

How many girls would be in a stratified sample of 30 pupils?

12. Draw an acute angle and bisect it using compasses and ruler

13. Express 154 as a product of its prime factors

14. Simplify a. $(d^7)^6$ b. $r^{14} \times r^7$ c. $K^{11} \div k^{-6}$

15. c. Give your answer to the following in standard form

a. $(4 \times 10^8) \div (8 \times 10^{-4})$. b. $(3.4 \times 10^2) \times (3 \times 10^3)$.

16. d. The first four terms of an arithmetic sequence; 1 10 19 28

a. What is the 10th term of this sequence?

b. Write down an expression, in terms of n, for the nth term.

Week 10

17. A circle has a diameter of 40cm, calculate correct to 3 significant figures;
    a. the circumference and b. the area

18. Percentages;
    b. Work out £66 as a percentage of £350
    c. Calculate 15% of 80
    d. Increase £300 by 6%
    e. Decrease 400kg by 22%
    f. Calculate the value of £500 invested at 6% pa for 3 years
    g. A car depreciates at 15% pa, it was bought for £10 000.
       What is its value after 3 years?
    h. In a 25% off sale a coat is now £30, what was its original price?

19. Ratios;
    a. Divide £240 in the ratio 2 : 3 : 7
    b. A map has a scale of 3cm to 1km;
       i. Express this as a ratio
       ii. How long is a road that is 6cm on the map

20. The number of days, D, to complete a project is inversely proportional to the number of people, P, who work on the project. It takes 18 days for 150 people to complete the project.
    a. Find an equation connecting D and P.
    b. How many people are needed to complete the project in 10 days?

21. a. Solve $6(x - 3) = 9$
    b. Solve $5x - 4 = 11$
    c. Solve $\frac{2y}{3} = 24$
    d. $4x^2 = 36$, Find a value of x.

22. Copy and complete the table of values for $y = x^2 - 3x - 3$

x	-1	0	1	2	3	4	5
y		-3	-5			1	

23. Make t the subject of the formula $2(t-5) = y$