Name	
Form	
Teacher	

Maths Homework Booklet Year 9e Autumn

Section	Hand in by	Score
Straight line graphs		
Equations and inequalities		
Testing conjectures		
3-D shapes		
Constructions and congruency		
Mixed A		
Mixed B		
Mixed C		
Mixed D		
Mixed E		
Mixed F		
Mixed G		

Yoar 9	White Rose Maths	2 Complete the table of values for $y = 3x + 2$
Straight Line Graphs	Ŭ	x -2 -1 0 1 2 y 2 mar
Name	-	On the grid, draw the graph of $y = 3x + 2$ for values of x from -2 to 2
Two straight lines l ₁ and l ₂ are shown on the grid. Image: line line line line line line line line	I mark	3 Write down the gradient of each line segment. $1 + \frac{3}{2} + \frac{3}{4} + \frac$
Which of these graphs will go through the point (0, 4)? Circle your answers. $y = 4x$ $y = x + 4$ $y = 4 - x$ $y = x - 4$ $y = \frac{x}{4}$ Write down the gradient and the coordinates of the <i>y</i> -intercept of the line $y = 7 - 2x$ Gradient y -intercept Work out the equation of the line. $y^{y} = \frac{x}{4} + \frac{y}{4} + $	2 marks 2 marks	 Sami earns £4000 a month. She spends £x and sues £y as shown on the graph.
	2 marks	Total marks



Year 9 Testing Conjectures	White Rose Maths	 3 Are the statements always true, sometimes true or never true? Circle your answers and explain your reasoning. Multiples of 3 are odd Always True Sometimes True Never True 	
 Circle the prime numbers. I 2 3 II 21 35 Decide if each statement is true or false. Explain your answers. All the factors of 20 are less than 20 	2 marks	When you add two prime numbers, the answer is even Always True Sometimes True Never True	l mark
Multiples of 4 are also multiples of 2 x = 5 is the solution to the equation $12 - x = 7$	I mark	4 Show that 10% of 50 = $\frac{1}{3}$ of 15	l mark
	l mark		2 marks
Expand 4(x + 3) Expand x(x + 4)	I mark	The shapes highlighted on the grid are L_8 and L_{27} 123456789101112131415161718192021222324The total of the numbers in L_8 is 533132333435373839404142434445464748	
 6 Nijah is investigating the sequence given by the rule 4n + 1. She makes two conjectures. 	2 marks	$\begin{array}{ c c c c c c c c c }\hline & 49 & 50 & 51 & 52 & 53 & 54 \\ \hline & 55 & 56 & 57 & 58 & 59 & 60 \\ \hline & 61 & 62 & 63 & 64 & 65 & 66 \\ \hline & 67 & 68 & 69 & 70 & 71 & 72 \\ \hline & & & & & & \\ \hline & & & & & & & \\ \hline & & & &$	l mark
Iest the two conjectures to see if she is correct. All the terms in the sequence are odd 203 is not a term in the sequence.	L mark	If the grid were continued, which <i>L</i> -shape would have total 533?	2 marks
	l mark	Total marks	





Straight line graphs

1 Write down the gradient (m) and *y*-intercept (c) of the lines with equations

-	a $y = 4x + 7$ Gradient = y-intercept =
	b $y = -2x$ Gradient = y-intercept =
	c $y = 1 - \frac{1}{3}x$ Gradient = y-intercept =
2	Write down the equation of the line that has gradient 3 and y-intercept -10 .
3	Find the gradient of the lines a $2y = x$ Gradient =

- **b** 2*x* + *y* = 8 Gradient =
- **4** Find the coordinates of the *y*-intercept of the lines in question 3.
 - a *y*-intercept = (.....)
 - **b** *y*-intercept = (.....)
- **5** Write down the equation of the line which has gradient $-\frac{1}{2}$ and passes through the point (0, 4).
- **6** Find the gradient and coordinates of the *y*-intercept for each line.



Equations and inequalities

1. Solve these equations.

a $2(x + 1) = 10$	b $2(x + 1) = 5$
c $13 = 2(x + 3)$	d 2(1 − 2 <i>z</i>) = −3
2 Solve these inequalities	
a $2r + 5 > 11$	b $3r - 1 > 14$
c 4r + 13 < 1	$d_{5r} = 9 < 4$
	\mathbf{u} $\mathbf{o}_{\mathbf{A}} = \mathbf{o} \leq \mathbf{v}$
3 Solve	
a $5x + 1 = 6 + 4x$	b $3x - 7 = 5x - 9$
c $1 - 6x = 8 - 7x$	d $2(x-1) = x + 9$

Testing conjectures

1 Here are the first five terms of an arithmetic sequence.

2 9 16 23 30

Joanna says that 344 is a term in this sequence.

Is Joanna right or wrong? You must fully explain your answer.

2 He	ere are t	he first	five ter	ms of two	arithmeti	ic sequ	ences.								
3	11	19	27	35											
0	3	6	9	12											
Salm expla	an says anation.	s that th	ne num	ber 315 is	a term in	both s	equence	es. Is he	e right c	or wro	ng? Y	ou mus	st show	/ a full	
3 To Give	m says a full ex	that y = xplanat	= 5x + 2 ion.	is paralle	el to y = 3x	k + 2. Is	s he cor	rect?							
4 ls y	/ = 4 - >	k paralle	el to y =	= 4 + x? E	xplain you	ur decis	sion.								
5 Wr	ien you	add tog	gether 1	wo odd n	umbers, y	you get	t an odd	number	. True	or fals	se?				

Try to explain why.

6 When you **multiply** an odd number by another odd number, you get an odd number. True or false? Try to explain your reasoning.

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3-D shapes

1. Complete the following table

Shape	Name	Number of Faces	Number of Edges	Number of Vertices
	Triangular Pyramid			
	Square Pyramid			
	Cube			
	Cuboid			
	Triangular Prism			
	Pentagonal Prism			
	Hexagonal Prism			

2. Find the volume and surface area of each of these shapes. Show your working.



- 4 V= SA=
- 5 V= SA=

Constructions and congruency

1 Circle the shape on the right which is congruent to the shape on the left



2 In the space at the side, draw the net of this cuboid.

Its dimensions are 1cm x 2cm x 3cm



3 Adam draws a plan of his bedroom using a scale of 1:200. Find the actual lengths of the walls in his bedroom. You can assume each square is a 1 cm square. Put the answers on the diagram.

$^{\prime}$		

4 On a plan, an actual length of 5m is represented by a length of 25cm. What is the scale of the plan?

Mixed A

6.1	6.6
1 Which is bigger: $3 \text{ or } 2$	11. If x = 2, calculate the value of:
7 5	x ³ + x
6.1	
0.1	
2. Which is bigger: 0.45 or $\frac{2}{5}$?	12. If x = -2, calculate the value of:
5	x ³ + x
6.2	6.7
3. Increase £30 by 15%	13. Solve: 2x – 5 = 7
6.2	6.7
4. Decrease £40 by 15%	14. Solve: 3x + 1 = 10
6.3	6.8
5. Divide £300 in a ratio of 3:7	15. Find the nth term of this sequence
	1 3 5 7 9
6.3	16. Work out the area of a parallelogram
6. Divide 30 in a ratio of 3:2	of base 6cm and height 8cm.
6.4	6.9
7. If 60 marks is 40%, what is full	17. If $y=3x + 2$, find the value of y
marks?	when x = -2
6.4	18.
8. If 400ml of milk is used for 8 pancakes,	Three of the angles of a quadrilateral are
how much is used for 6?	120° , 48° and 92° .
	What is the size of the 4 th angle?
6.5	19.
9. Add: $\frac{1}{2}$ and $\frac{1}{2}$	Work out the area of a triangle of
3 4	base 6cm and height 8cm.
6.5	20.
10. Work out: $\frac{2}{2}$ of 8	Work out the volume of a cuboid
5	5cm by 3cm by 6cm.

Mixed B

6.1	6.6
1 Which is higger: $\frac{3}{2}$ or $\frac{2}{2}$?	11. If x = 3, calculate the value of:
4 3	x ³ + x
6.1	6.6
2. Which is higger: 20% or $\frac{1}{2}$	12. If $x = -3$, calculate the value of:
2. Which is bigger: 30% or $-r$	x ³ + x
6.2	6.7
3. Increase £60 by 15%	13. Solve: 2x – 3 = 6
6.2	6.7
4. Decrease £20 by 15%	14. Solve: 3x + 5 = 14
6.3	6.8
5. Divide £500 in a ratio of 3:7	15. Find the nth term of this sequence
	5 7 9 11 13
63	16
6. Divide 80 in a ratio of 3.2	Work out the area of a parallelogram of
	base 10cm and height 4cm.
6.4	6.9
7. If 120 marks is 60%, what is full	17. If y=3x + 2, find the value of y
marks?	when x = -3
6.4	18.
8. If 200g of fat is used for 8 cakes,	Three of the angles of a quadrilateral are
how much is used for 3 cakes?	53 [°] , 127 [°] and 72 [°] .
	What is the size of the 4 th angle?
6.5	19.
9. Add: $\frac{1}{2}$ and $\frac{1}{2}$	Work out the area of a triangle of
5 2	base 5cm and height 6cm.
6.5	20.
10. Work out: $\frac{2}{2}$ of 8	Work out the volume of a cuboid
3	10cm by 3cm by 2cm.

Mixed C

6.1	6.6
1 Which is higger: $3 - 4$	11. If x = 2, calculate the value of:
$\frac{1}{4} \frac{1}{5}$	x ³ - x
6.1	6.6
2. Which is bigger: 0.3 or $\frac{1}{2}$?	12. If $x = -2$, calculate the value of:
3	x ³ - x
6.2	6.7
3. Increase £60 by 10%	13. Solve: 2x – 1 = 10
6.2	6.7
4. Decrease £40 by 10%	14. Solve: 3x + 17 = 14
6.3	6.8
5. Divide £56 in a ratio of 5:3	15. Find the nth term of this sequence
	2 5 8 11 14
6.3	16.
6. Divide 28 in a ratio of 3:4	Work out the area of a parallelogram of
	base 7cm and height 3cm.
6.4	6.9
7. If 30 marks is 40%, what is full	17. If y=2x - 3, find the value of y
marks?	when x = 2
6.4	18.
8. If 150g of sugar is used for 5 cakes,	Three of the angles of a quadrilateral are
how much is used for 7 cakes?	148 [°] , 104 [°] and 36 [°] .
	What is the size of the 4 th angle?
6.5	19.
9. Work out: $4 1$	Work out the area of a triangle of
5 2	base 9cm and height 4cm.
6.5	20.
10. Work out: $\frac{3}{2}$ of 7	Work out the volume of a cuboid
5	6cm by 4cm by 2.5cm.

Mixed D

61	6.6
1. Which is bigger: $\frac{2}{3}$ or $\frac{4}{5}$?	11. If x = 3, calculate the value of: $x^3 - x$
6.1	6.6
2. Which is bigger: 67% or $\frac{2}{3}$?	12. If x = -3, calculate the value of: $x^3 - x$
6.2	6.7
3. Increase £42 by 10%	13. Solve: 4x – 5 = 9
6.2	6.7
4. Decrease £64 by 10%	14. Solve: 2x + 7 = 3
6.3	6.8
5. Divide £56 in a ratio of 4:3	15. Find the nth term of this sequence
	7 10 13 16 19
6.3	16.
6. Divide 72 in a ratio of 3:5	Work out the area of a parallelogram of base 10cm and height 7cm.
6.4	6.9
7. If 80% is 60 marks, what is full	17. If y=5x - 3, find the value of y
marks?	when x = 0
6.4	18.
8. If 450g of flour is used for 3 pies, how much is used for 4 pies?	Three of the angles of a quadrilateral are 100°, 104° and 44°. What is the size of the 4 th angle?
6.5	19.
9. Work out: $\frac{4}{5} - \frac{2}{2}$	Work out the area of a triangle of
5 3	base 12cm and height 7cm.
6.5	20.
10. Work out: $\frac{4}{7}$ of 5	Work out the volume of a cube of edge 5cm.

Mixed E

6.1	6.6
1 Which is bigger: 5 or 0.582	11. If x = 3, calculate the value of:
8 8	$x^2 + x$
6.1	
0.1	0.0
2. Which is bigger: 15% or $\frac{1}{5}$?	12. If x = -3, calculate the value of:
5	$x^2 + x$
6.2	6.7
3. Increase £40 by 20%	13. Solve: 2(x – 1) = 4
6.2	6.7
4. Decrease £60 by 20%	14. Solve: 2x + 7 = - 3
6.3	6.8
5. Divide 180° in a ratio of 4:5:9	15. Find the nth term of this sequence
	1 5 9 13 17
6.3	16.
6. Divide 42 in a ratio of 1:2:3	Work out the area of a parallelogram of
	base 10cm and height 7cm.
6.4	6.9
7. If 80% is 72 marks, what is full	17. If $y=4x + 5$, find the value of y
marks?	when x = 0
6.4	18.
8. If a litre of water is provided for 5	Three of the angles of a quadrilateral are
people, how much for 7 people?	90 [°] , 156 [°] and 28 [°] .
	What is the size of the 4 th angle?
6.5	19.
9. Work out: $\frac{4}{4} + \frac{3}{4}$	Work out the area of a triangle of
5 4	base 7.5m and height 6cm.
6.5	20.
10 Work out: 5 x ⁵	Work out the volume of a cube of edge
$\frac{10.}{6}$	3cm.

Mixed F

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6.1	6.6
1. Which is bigger: $\frac{3}{2}$ or 0.38?	11. If x = 3, calculate the value of:
8	x ² - x
6.1	6.6
2. Which is bigger: 0.6 or 0.58?	12. If $x = -3$, calculate the value of:
	x ² - x
6.2	6.7
3. Increase £80 by 20%	13. Solve: $2(x - 2) = 6$
6.2	6.7
4. Decrease £600 by 20%	14. Solve: 2x + 3 = - 1
6.3	6.8
5. Divide 25kg in a ratio of 2:3:5	15. Find the nth term of this sequence
	8 12 16 20 24
6.3	16.
6. Divide £42 in a ratio of 4:6	Work out the area of a parallelogram of base 5m and height 3m.
6.4	6.9
7. If 80% is 8km, what is the full	17. If y=3x - 5, find the value of y
distance?	when x = -1
6.4	18.
8. If a litre of water is provided for 20	Three of the angles of a quadrilateral are
people, how much for 50 people?	82°, 114° and 95°.
	What is the size of the 4 th angle?
6.5	19.
9. Work out: $\frac{4}{2} - \frac{1}{2}$	Work out the area of a triangle of
5 4	base 8.2m and height 5m.
6.5	20.
10. Work out: 5 x $\frac{3}{-}$	Work out the volume of a cube of edge
4	2m.

Mixed G

6.1	6.6
1. Which is bigger: $\frac{7}{8}$ or 0.78?	11. If $x = 2$, calculate the value of:
	$x^2 - x$
6.1	6.6
2. Which is bigger: 0.125 or 0.15?	12. If $x = -2$, calculate the value of:
	x ² - x
6.2	6.7
3. Increase £40 by 5%	13. Solve: 2(x + 3) = 8
6.2	6.7
4. Decrease £900 by 5%	14. Solve: 2x - 2 = - 5
6.3	6.8
5. Divide 72kg in a ratio of 1:3:5	15. Find the nth term of this sequence
	3 8 13 18 23
6.3	16.
6. Divide £360 in a ratio of 1:4	Work out the height of a parallelogram of
	base 10m and area 60m ² .
6.4	6.9
7. If 75% is £66, what is the full	17. If $y=4x - 1$, find the value of y
cost?	when x = -2
6.4	18.
8. I used 8bags of sand for 12m ² , how	Three of the angles of a quadrilateral are
much will I need for 15m ² ?	132° , 14° and 105° .
	What is the size of the 4 th angle?
6.5	19.
0 Work out: 3 3	Work out the area of a triangle of
9. Work out: $$	base 12m and height 2.4m.
6.5	20.
3 . 7	Work out the volume of a cube of edge
10. Work out: $\frac{5}{5}$ of l kg	4m.