

<b>Name</b>	
<b>Form</b>	
<b>Teacher</b>	

# Maths

## Homework Booklet

# Year 7

# Autumn

Topic	Hand in date	Score achieved
1: Function Machines		
2: Substitution		
3: Solving Equations		
4: Simplifying		
5: Adding and Subtracting (Column)		
6: Multiplication and Division		
7: Directed Numbers and BIDMAS		



# Year 7 Half Term 1: Homework Booklet

## Week 1: Function Machines

### Section A

Complete the input/output tables for these function machines.



Input	Output
0	
1	
2	
3	
4	



Input	Output
0	
1	
2	
3	
4	



Input	Output
0	
1	
2	
3	
4	

Think about patterns in the outputs.

### Section B

Here is a function machine



- (a) Work out the output when the input is 12
- (b) Work out the output when the input is 35
- (c) Work out the input when the output is 14
- (d) Work out the input when the output is 10.5

(a) ..... (b) ..... (c) ..... (d) .....

### Section C

Here is a function machine



- (a) Work out the output when the input is 27
- (b) Work out the output when the input is -6
- (c) Work out the input when the output is 9
- (d) Work out the input when the output is 0

(a) ..... (b) ..... (c) ..... (d) .....



# Year 7 Half Term 1: Homework Booklet

## Week 2: Substitution

### Substitution

So far we have talked about how a letter (or symbol) represented any number. What we mean by 'substitution' is giving each letter in an expression a specific value.

**Example** If  $a = 2$ ,  $b = 3$  and  $c = 5$ , work out the value of

(a) $a + b$	(b) $2c$	(c) $2a + 3c$	(d) $b^2$
$a + b = 2 + 3$	$2c = 2 \times 5$	$2a + 3c = 2 \times 2 + 3 \times 5$	$b^2 = 3^2$
$= 5$	$= 10$	$= 4 + 15$	$= 9$
		$= 19$	

**Exercise** If  $a = 2$ ,  $b = 4$ ,  $c = 1$  and  $d = 3$ , work out the following

Section A

1. $a + b$	2. $b + c$	3. $c - d$	4. $b - a$	5. $c - b$
6. $2a$	7. $3b$	8. $4c$	9. $5a$	10. $4d$
11. $2a + b$	12. $3b + d$	13. $2a + 4c$	14. $2b + 3c$	15. $2b + 2c$
16. $3a - c$	17. $2b - 3c$	18. $6a - 3b$	19. $3c - 2d$	20. $4d - 2c$

Section B

21. $a^2$	22. $c^2$	23. $b^2$	24. $d^2$	25. $a^3$
26. $b(a - c)$	27. $3(a + c)$	28. $2(b + d)$	29. $4(c + d)$	30. $3(c + b)$
31. $2(b - a)$	32. $3(b - c)$	33. $5(c - d)$	34. $4(d - c)$	35. $5(a - c)$
36. $ab$	37. $bc$	38. $cd$	39. $abc$	40. $ac$

Section C

41. $2ab$	42. $2ad$	43. $3bc$	44. $4ab$	45. $2a^2$
1. $2b^2$	2. $2a^2 + 5$	3. $2c^2 + 2d$	4. $4c^2$	5. $3d^2$
46. $a(b - c)$	47. $c(a + c)$	48. $d(a + b)$	49. $c(d - c)$	50. $b(a - c)$



## Year 7 Half Term 1: Homework Booklet

### Week 3: Solving Equations

#### Section A

1)  $x + 3 = 11$

2)  $x + 2 = 8$

3)  $x + 5 = 7$

4)  $x + 7 = 13$

5)  $x + 4 = 14$

6)  $x + 7 = 9$

1)  $x - 4 = 7$

2)  $x - 6 = 4$

3)  $x - 1 = 6$

4)  $x - 7 = 13$

5)  $x - 10 = 2$

6)  $x - 7 = 18$

#### Section B

1)  $4x - 1 = 31$

2)  $3x - 4 = 29$

3)  $6x - 5 = 31$

4)  $8x - 2 = 46$

5)  $2x - 7 = 21$

6)  $7x - 3 = 18$

#### Section C

1)  $\frac{x}{2} + 11 = 19$

2)  $\frac{x}{7} - 6 = 1$

3)  $12 + \frac{x}{5} = 20$

4)  $3 = \frac{x}{4} - 3$

5)  $7 = \frac{x}{2} - 4$

6)  $-2 = \frac{x}{8} - 5$



## Year 7 Half Term 1: Homework Booklet

### Week 4: Simplifying expressions

#### Section A

Simplify:

Q1)  $2t + 8r + 2t + 9r$

---

Q2)  $6q + 3s + 6q + 7s$

---

Q3)  $5b + 4p + 3b + 5p$

---

Q4)  $5b + 5h + 8b + 6h$

---

Q5)  $6w + 6y + 9w + 2y$

---

Q6)  $4t + 6l + 9t + 7l$

---

Q7)  $8z + 4t + 8z + 3t$

---

Q8)  $7s + 6u + 5s + 6u$

#### Section B

Simplify:

Q1)  $2z + 7l + 2z - 2l$

---

Q2)  $9u - 7s + 2u - 3s$

---

Q3)  $3l + 8e + 7l - 3e$

---

Q4)  $2m + 2u + 5m - 4u$

---

Q5)  $4s - 9d + 9s + 4d$

---

Q6)  $6b + 6s + 6b - 8s$

---

Q7)  $6z - 8u + 3z - 8u$

---

Q8)  $4g + 7i + 3g - 9i$

#### Section C

(a)  $2x^2 + 3x + 4x^2 + 5x$

(c)  $x^2 + 6x + 4x + x^2$

(e)  $5x^2 - x - 6x^2 + 8x$

(g)  $x^2 + y^2 - x - y + x^2$

(b)  $x^2 + 8x + 5x + 10$

(d)  $x^2 + x + 10 + x + 4x^2$

(f)  $4x^2 - 3y^2 - x^2 + y^2$

(h)  $4x^2 - 7x + 1 + x^2 + 4x - 11$



## Year 7 Half Term 1: Homework Booklet

### Week 5: Adding (No Calculator)

Question 1: Work out the answers to the following additions

(a)  $51 + 37$

(b)  $27 + 21$

(c)  $37 + 44$

(d)  $84 + 19$

(e)  $48 + 48$

(f)  $39 + 21 + 43$

(g)  $75 + 56$

(h)  $93 + 84$

You must show working here

(a) .....

(b) .....

(c) .....

(d) .....

(e) .....

(f) .....

(g) .....

(h) .....

Complete these additions

(a)  $4854 + 1162$

(b)  $4611 + 3270$

(c)  $5792 + 4437$

(d)  $4780 + 1590$

(e)  $939 + 1103$

(f)  $2385 + 5584$

(g)  $8888 + 4424$

(h)  $5118 + 3054 + 1112$

You must show working here

(a) .....

(b) .....

(c) .....

(d) .....

(e) .....

(f) .....

(g) .....

(h) .....



## Year 7 Half Term 1: Homework Booklet

### Subtracting

Question 1: Work out the answers to the following subtractions

(a)  $68 - 32$

(b)  $98 - 21$

(c)  $51 - 24$

(d)  $70 - 38$

(e)  $46 - 28$

(f)  $81 - 43$

(g)  $94 - 67$

(h)  $85 - 56$

You must show working here

(a) .....

(b) .....

(c) .....

(d) .....

(e) .....

(f) .....

(g) .....

(h) .....

Question 3: Complete these subtractions

(a)  $4854 - 1132$

(b)  $4811 - 1570$

(c)  $5792 - 4437$

(d)  $4781 - 1952$

(e)  $7925 - 1176$

(f)  $8080 - 3131$

(g)  $8132 - 7569$

(h)  $9000 - 3941$

You must show working here

(a) .....

(b) .....

(c) .....

(d) .....

(e) .....

(f) .....

(g) .....

(h) .....



## Year 7 Half Term 1: Homework Booklet

### Week 6: Multiplication and Division

#### Section A

$$\text{Q1) } 34 \times 4 = \dots\dots\dots$$

$$\text{Q2) } 34 \times 6 = \dots\dots\dots$$

$$\text{Q3) } 20 \times 5 = \dots\dots\dots$$

$$\text{Q4) } 66 \times 8 = \dots\dots\dots$$

$$\text{Q5) } 65 \times 1 = \dots\dots\dots$$

$$\text{Q6) } 31 \times 2 = \dots\dots\dots$$

$$\text{Q7) } 49 \times 2 = \dots\dots\dots$$

#### Section B

$$1) \quad 62 \times 89 = \quad 2) \quad 74 \times 32 =$$

$$3) \quad 27 \times 22 = \quad 4) \quad 21 \times 74 =$$

$$5) \quad 85 \times 35 = \quad 6) \quad 98 \times 90 =$$

$$7) \quad 76 \times 89 = \quad 8) \quad 92 \times 62 =$$

$$9) \quad 47 \times 30 = \quad 10) \quad 70 \times 17 =$$

#### Section C

$$\text{Q1) } 122 \times 21 = \dots\dots\dots$$

$$\text{Q2) } 352 \times 50 = \dots\dots\dots$$

$$\text{Q3) } 874 \times 95 = \dots\dots\dots$$

$$\text{Q4) } 208 \times 77 = \dots\dots\dots$$

$$\text{Q5) } 680 \times 75 = \dots\dots\dots$$

$$\text{Q6) } 545 \times 29 = \dots\dots\dots$$

$$\text{Q7) } 988 \times 36 = \dots\dots\dots$$

You must show working here

You must show working here





## Year 7 Half Term 1: Homework Booklet

### Multiplication and Division

#### Section A

1).  $\checkmark$   $4 \overline{) 92}$     2).  $6 \overline{) 84}$     3).  $3 \overline{) 93}$     4).  $5 \overline{) 80}$

5).  $8 \overline{) 96}$     6).  $4 \overline{) 76}$     7).  $7 \overline{) 98}$     8).  $6 \overline{) 90}$

#### Section B

13).  $5 \overline{) 820}$     14).  $4 \overline{) 852}$     15).  $3 \overline{) 618}$     16).  $9 \overline{) 936}$

17).  $6 \overline{) 642}$     18).  $3 \overline{) 948}$     19).  $7 \overline{) 980}$     20).  $4 \overline{) 948}$

#### Section C

37).  $9530 \div 5$     38).  $7476 \div 7$     39).  $9981 \div 9$     40).  $8472 \div 12$

41).  $7896 \div 8$     42).  $9482 \div 11$     43).  $6276 \div 12$     44).  $6120 \div 6$

You must show working here for Section C



## Year 7 Half Term 1: Homework Booklet

### Week 7: Directed Numbers and BIDMAS

#### Section A

(a)  $2 - 3$

(b)  $3 - 5$

(c)  $4 - 9$

(d)  $1 - 5$

(e)  $5 - 7$

(f)  $6 - 7$

(g)  $8 - 11$

(h)  $2 - 10$

(i)  $-2 + 4$

(j)  $-3 + 9$

(k)  $-7 + 10$

(l)  $-6 + 1$

#### Section B

(a)  $4 + -1$

(b)  $6 + -2$

(c)  $8 + -7$

(d)  $3 + -5$

(e)  $1 + -7$

(f)  $3 + -10$

(g)  $-2 + -1$

(h)  $-1 + -6$

(a)  $1 - -2$

(b)  $3 - -1$

(c)  $3 - -5$

(d)  $6 - -4$

(e)  $9 - -2$

(f)  $-1 - -4$

(g)  $-2 - -1$

(h)  $-8 - -3$

#### Section C

(q)  $-9 - -15$

(r)  $-8 + 25$

(s)  $31 - 50$

(t)  $-30 - -16$

(u)  $-41 - 14$

(v)  $-5 - +23$

(w)  $-16 + -15$

(x)  $40 - -40$

Question 7: Below are seven cards, each with a number written on it.

(a) Choose two suitable cards to make the calculation correct.

+  = 2

(b) Choose two cards that will give the smallest possible answer

+

(c) Choose two cards that will give an answer of zero

+  = 0

(d) Choose two cards that will give the greatest possible answer

-



## Year 7 Half Term 1: Homework Booklet

### Week 7: Directed Numbers and BIDMAS

#### Section A

(a)  $7 + 2 \times 3$

(b)  $9 + 4 \times 2$

(c)  $10 + 2 \times 2$

(d)  $18 + 4 \div 2$

(e)  $20 - 5 \times 2$

(f)  $8 - 2 \times 3$

(g)  $21 - 9 \div 3$

(h)  $100 - 40 \times 2$

#### Section B

(i)  $16 \div 1 - 3$

(j)  $5 + 5 \times 5$

(k)  $13 - 7 \div 1$

(l)  $7 \times 6 - 4$

(m)  $9 + 3 - 2$

(n)  $20 - 5 + 6$

(o)  $21 - 17 + 4$

(p)  $30 \times 4 \div 2$

(q)  $(7 + 7) \div 2$

(r)  $35 - (9 + 3)$

(s)  $40 \times (2 + 3)$

(t)  $60 \div (1 + 5)$

(u)  $15 \div (3 + 2)$

(v)  $9 \times (7 + 4)$

(w)  $90 \div (52 - 7)$

(x)  $(8 + 9) \times 3$

#### Section C

(a)  $5 \times 3 + 2 \times 6$

(b)  $9 \div 3 + 15 \times 2$

(c)  $10 \div 2 - 2 \times 1$

(d)  $5 \times (2 + 1) + 4$

(e)  $8 + (5 - 1) \times 3$

(f)  $50 - (1 + 4) \times 4$

(g)  $19 \times 2 + 5^2$

(h)  $8^2 + 2 \times 3^2$

You may show working here