Name: _____

GCSE (1 – 9)

Substitution

Instructions

- Use **black** ink or ball-point pen.
- Answer all Questions.
- Answer the Questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The marks for each Question are shown in brackets
– *use this as a guide as to how much time to spend on each Question.*

Advice

- Read each Question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every Question.
- Check your answers if you have time at the end

1 $f = 7$
$g = 5$

Work out the value of $3f + 2g$

$3(7) + 2(5)$
$21 + 10$

31

(Total for Question 1 is 2 marks)

---

2 $c = 4d - 7$

Find the value of c when $d = 6$

$c = 4(6) - 7$
$= 24 - 7$
$= 17$

17

(Total for Question 2 is 2 marks)

---

3 $v = u + at$

$u = 3$
$a = 10$
$t = 6$

Work out the value of v.

$v = 3 + 10(6)$
$= 3 + 60$
$= 63$

$v =$ 63

(Total for Question 3 is 2 marks)

---

4 $x = 4$
$y = 6$

Work out the value of $3x - y$

$3(4) - 6$
$12 - 6$
6

6

(Total for Question 4 is 2 marks)

5 $L = 9m + 2n$

Work out the value of L when $m = 3$ and $n = -6$

$L = 9(3) + 2(-6)$

$= 27 - 12$

$= 15$

15

(Total for Question 5 is 2 marks)

---

6 $q = 5p + 3r$

$p = 6$
$r = -4$

Work out the value of q.

$q = 5(6) + 3(-4)$

$= 30 - 12$

$= 18$

18

(Total for Question 6 is 2 marks)

---

7 $H = 4f + g$

Work out the value of H when $f = 5$ and $g = -2$

$H = 4(5) - 2$

$= 20 - 2$

$= 18$

18

(Total for Question 7 is 2 marks)

---

8 $A = 4p + 5q$

$p = 3$
$q = -2$

Work out the value of A.

$A = 4(3) + 5(-2)$

$= 12 - 10$

$= 2$

2

(Total for Question 8 is 2 marks)

9 $L = 9m + 2n$

Work out the value of L when $m = -3$ and $n = 4$

$L = 9(-3) + 2(4)$

$= -27 + 8$

$= -19$

-19

(Total for Question 9 is 2 marks)

10 $q = 6p - r$

$p = -4$
$r = 5$

Work out the value of q.

$q = 6(-4) - 5$

$= -24 - 5$

$= -29$

-29

(Total for Question 10 is 2 marks)

11 $H = f - 2g$

Work out the value of H when $f = 12$ and $g = -6$

$H = 12 - 2(-6)$

$= 12 + 12$

$= 24$

24

(Total for Question 11 is 2 marks)

12 $A = 5p + 6q$

$p = 10$
$q = -2$

Work out the value of A.

$A = 5(10) + 6(-2)$

$= 50 - 12$

$= 38$

38

(Total for Question 12 is 2 marks)

13 $L = m(n - 2)$

Work out the value of L when $m = 9$ and $n = 5$

$L = 9(5 - 2)$
$= 9(3)$
$= 27$

27

(Total for Question 13 is 2 marks)

---

14 $a = 5bc$

$b = -4$
$c = -3$

Work out the value of a.

$a = 5(-4)(-3)$
$= -20(-3)$
$= 60$

60

(Total for Question 14 is 2 marks)

---

15 $x = 4y^2 - 12$

Work out the value of x when $y = 5$

$x = 4(5)^2 - 12$
$= 4(25) - 12$
$= 100 - 12$
$= 88$

88

(Total for Question 15 is 2 marks)

---

16 $A = p - 2q$

$p = -4$
$q = -7$

Work out the value of A.

$A = -4 - 2(-7)$
$= -4 + 14$
$= 10$

10

(Total for Question 16 is 2 marks)

17 $a = 8$
$b = -5$
$c = 2$

Work out the value of $b^2 - 4ac$

$(-5)^2 - 4(8)(2)$

$25 - 32(2)$

$25 - 64$

-39

-39

(Total for Question 17 is 2 marks)

---

18 $d = \frac{m}{v}$

Work out the value of d when $m = 32$ and $v = 8$

$d = \frac{32}{8} = 4$

4

(Total for Question 18 is 2 marks)

---

19 $A = 2j - jk$

Work out the value of A when $j = 7$ and $k = 3$

$A = 2(7) - 7(3)$

$= 14 - 21$

$= -7$

-7

(Total for Question 19 is 2 marks)

---

20 $w = 5x^2 + 3$

$x = -3$

Work out the value of w.

$w = 5(-3)^2 + 3$

$= 5(9) + 3$

$= 45 + 3$

$= 48$

48

(Total for Question 20 is 2 marks)

21 $A=\frac{1}{2}bh$

Work out the value of A when $b = 3$ and $h = 8$

$A = \frac{1}{2}(3)(8)$

$= \frac{1}{2}(24)$

$= 12$

12

(Total for Question 21 is 2 marks)

22 $A=\frac{1}{2}(a+b)h$

Work out the value of A when $a = 7$, $b = 6$ and $h = 10$

$A = \frac{1}{2}(7+6)(10)$

$= \frac{1}{2}(13)(10)$

$= \frac{1}{2}(130) = 65$

65

(Total for Question 22 is 2 marks)

23 $v=u+at$

Work out the value of v when $u = 12$, $a = -6$ and $t = 5$

$v = 12 + (-6)(5)$

$= 12 - 30$

$= -18$

-18

(Total for Question 23 is 2 marks)

24 $y=mx+c$

$m = -2$
$x = 12$
$c = -7$

Work out the value of y.

$y = -2(12) + (-7)$

$= -24 - 7$

$= -31$

-31

(Total for Question 24 is 2 marks)

25 $s = ut + \frac{1}{2}at^2$

$u = 3$
$a = 2$
$t = 4$

Work out the value of s.

$s = 3(4) + \frac{1}{2}(2)(4)^2$

$= 12 + \frac{1}{2}(2)(16)$

$= 12 + 16$

$= 28$

$s =$ 28

(Total for Question 25 is 2 marks)

---

26 $s = ut + \frac{1}{2}at^2$

$u = -5$
$a = 4$
$t = 3$

Work out the value of s.

$s = (-5)(3) + \frac{1}{2}(4)(3)^2$

$= -15 + \frac{1}{2}(4)(9)$

$= -15 + 2(9)$

$= -15 + 18$

$= 3$

$s =$ 3

(Total for Question 26 is 2 marks)

---

27 $s = \frac{v^2 - u^2}{2a}$

$v = 7$
$u = 5$
$a = 3$

Work out the value of s.

$s = \frac{(7)^2 - (5)^2}{2(3)}$

$= \frac{49 - 25}{6}$

$= \frac{24}{6}$

$= 4$

$s =$ 4

(Total for Question 27 is 2 marks)