

# Varied Fluency

## Step 3: Use An Algebraic Rule

### National Curriculum Objectives:

Mathematics Year 6: (6A2) [Use simple formulae](#)

### Differentiation:

**Developing** Questions to support using algebraic rules. Using up to 2 steps, addition and subtraction, and multiplication by 2.

**Expected** Questions to support using algebraic rules. Using up to 2 steps and all 4 operations.

**Greater Depth** Questions to support using algebraic rules. Using 2 steps and all 4 operations where some answers may include decimals and negative numbers.

More [Year 6 Algebra](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

## Use An Algebraic Rule

1a. Calculate the output for the following rules where  $a = 12$ .

$$(a + 10) \times 2$$

$$2a - 4$$

$$(a - 3) \times 2$$



VF

## Use An Algebraic Rule

1b. Calculate the output for the following rules where  $a = 7$ .

$$(2a + a) - 2$$

$$(56 + 10) - a$$

$$35 + a$$



VF

2a. Match the output to the correct expression, where  $a = 10$ .

$$45 - 2a$$

$$62$$

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

$$25$$

$$72 - a$$

$$30$$



VF

2b. Match the output to the correct expression, where  $a = 2$ .

$$9 + (a - 1)$$

$$10$$

$$100 - 2a$$

$$14$$

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

$$96$$



VF

3a. True or false?

$$11$$

$$2a + (15 - a)$$

$$26$$



VF

3b. True or false?

$$15$$

$$(50 - a) - 10$$

$$40$$



VF

4a. Toby is using the expression  $5 + 2a$ .

Calculate the value of  $a$  when his outputs are;

$$5 + 2a$$

$$17$$

$$27$$

$$11$$



VF

4b. Tim is using the expression  $(a - 2) \times 2$ .

Calculate the value of  $a$  when his outputs are;

$$(a - 2) \times 2$$

$$16$$

$$24$$

$$10$$



VF

## Use An Algebraic Rule

5a. Calculate the output for the following rules where  $a = 5$ .

$2a + 5$

$(a + 3) \div 4$

$4a - 15$



VF

## Use An Algebraic Rule

5b. Calculate the output for the following rules where  $a = 9$ .

$a^2 - 7$

$(10a - 6) \div 2$

$12 + 3a$



VF

6a. Match the output to the correct expression, where  $a = 10$ .

$3a - 5$

3

$(a - 4) \div 2$

23

$2a + 3$

25



VF

6b. Match the output to the correct expression, where  $a = 7$ .

$25 + 5a$

18

$(a \div 7) + 8$

9

$(a - 4) \times 6$

60



VF

7a. True or false?

12

$(a - 8) \times 10$

40



VF

7b. True or false?

5

$a^2 - 10$

0



VF

8a. Ivy is using the expression  $(a - 1) \div 3$ .

Calculate the value of  $a$  when her outputs are;

$(a - 1) \div 3$

3

5

10



VF

8b. Jo is using the expression  $(a + 4) \div 4$ .

Calculate the value of  $a$  when her outputs are;

$(a + 4) \div 4$

8

5

12



VF

## Use An Algebraic Rule

9a. Calculate the output for the following rules where  $a = 12$ .

$$\frac{1}{2}a + (25 - a)$$

$$(a^2 - 10) \div 10$$

$$3a - (2a + 20)$$



VF

## Use An Algebraic Rule

9b. Calculate the output for the following rules where  $a = 5$ .

$$a^2 + (10a - 100)$$

$$(5a - 6) \div 10$$

$$9a - (10a + 7)$$



VF

10a. Match the output to the correct expression, where  $a = 2.5$ .

$$3a - (5 + 2a)$$

0

$$\frac{1}{2}(4a \times 2)$$

10

$$10a - (5a \times 2)$$

- 2.5



VF

10b. Match the output to the correct expression, where  $a = 12$ .

$$5a \div (a - 2)$$

6

$$(2a \div 4) - 12$$

63

$$(2a + 7.5) \times 2$$

- 6



VF

11a. True or false?

0.5

$$(10a \times 12) - 70$$

0



VF

11b. True or false?

2

$$(a^3 - 5) - 12$$

- 10



VF

12a. Will is using the expression  $(a^2 + 10) \div 10$ .

Calculate the value of  $a$  when his outputs are;

$$(a^2 + 10) \div 10$$

1

9.1

4.6



VF

12b. Harry is using the expression  $(\frac{1}{2}a + a) \times 2$ .

Calculate the value of  $a$  when his outputs are;

$$(\frac{1}{2}a + a) \times 2$$

27

60

9



VF

**Varied Fluency**  
**Use An Algebraic Rule**

**Developing**

1a. 44, 20, 18

2a.  $45 - 2a = 25$ ;  $(a + 5) \times 2 = 30$ ;  $72 - a = 62$

3a. True

4a. 6, 11, 3

**Expected**

5a. 15, 2, 5

6a.  $3a - 5 = 25$ ;  $(a - 4) \div 2 = 3$ ;  $2a + 3 = 23$

7a. True

8a. 10, 16, 31

**Greater Depth**

9a. 19, 13.4, -8

10a.  $3a - (5 + 2a) = -2.5$ ;  $\frac{1}{2}(4a \times 2) = 10$ ;

$10a - (5a \times 2) = 0$

11a. False, the correct answer is -10.

12a. 0, 9, 6

**Varied Fluency**  
**Use An Algebraic Rule**

**Developing**

1b. 19, 59, 42

2b.  $9 + (a - 1) = 10$ ;  $100 - 2a = 96$ ;  $(a + 5) \times 2 = 14$

3b. False, the correct answer is 25.

4b. 10, 14, 7

**Expected**

5b. 74, 42, 39

6b.  $25 + 5a = 60$ ;  $(a \div 7) + 8 = 9$ ;  $(a - 4) \times 6 = 18$ .

7b. False, the correct answer is 15.

8b. 28, 16, 44

**Greater Depth**

9b. -25, 1.9, -12

10b.  $5a \div (a - 2) = 6$ ;  $(2a \div 4) - 12 = -6$ ;

$(2a + 7.5) \times 2 = 63$

11b. False, the correct answer is -9.

12b. 9, 20, 3