

### Substitution into formulas and expressions

1. Use  $a = 3$ ,  $b = 2$  and  $c = 7$  to work out the value of

- (a)  $a + b + c$                       (b)  $abc$                       (c)  $bc - a$                       (d)  $a^2 + b$

2. Use  $a = 6$ ,  $b = 2$  and  $c = 5$  to work out the value of

- (a)  $\frac{3a+b}{c}$                       (b)  $\frac{ac}{b}$                       (c)  $\frac{a+2b+c}{3}$                       (d)  $\frac{a^2+b^2}{c}$

3. Use  $a = 1$ ,  $b = 4$  and  $c = 6$  to work out the value of  $P$  if

- (a)  $P = 2(a + b)$                       (b)  $P = \frac{1}{2}bc$                       (c)  $P = b(c - a)$                       (d)  $P = a^2 - b$

4. Use  $a = 2$ ,  $b = -3$  and  $c = 8$  to work out the value of

- (a)  $a + b + c$                       (b)  $ab$                       (c)  $ac - b$                       (d)  $a^2 + b^2$

5. Use  $a = 5$ ,  $b = -2$  and  $c = -7$  to work out the value of

- (a)  $a + b + c$                       (b)  $abc$                       (c)  $a + b - c$                       (d)  $ab - c$

6. Use  $a = 6$ ,  $b = 3$  and  $c = -2$  to work out the value of  $P$  if

- (a)  $P = 2(ab + c)$                       (b)  $P = \frac{1}{3}bc^2$                       (c)  $P = \frac{b-c}{ab-c}$                       (d)  $P = a^2 - c^3$

7. Use  $a = 4$ ,  $b = -1$  and  $c = -9$  to work out the value of

- (a)  $ab^2c$                       (b)  $(a + b)c$                       (c)  $a(c - b)$                       (d)  $\frac{c^2-b^2}{a}$

8. In each part use  $a = 4$ ,  $b = -1$  and  $c = -9$  to work out the value of each expression.

The values in each part are terms of a sequence – use the pattern to write down the next term of the sequence.

(a)

|         |         |          |      |          |           |
|---------|---------|----------|------|----------|-----------|
| $a + b$ | $a - b$ | $2a + b$ | $bc$ | $3a + b$ | Next term |
|         |         |          |      |          |           |

(b)

|      |         |                  |          |             |           |
|------|---------|------------------|----------|-------------|-----------|
| $2a$ | $a - c$ | $\frac{1}{2}abc$ | $6a + b$ | $a(2b - c)$ | Next term |
|      |         |                  |          |             |           |

(c)

|       |            |            |               |                        |           |
|-------|------------|------------|---------------|------------------------|-----------|
| $abc$ | $a(b - c)$ | $b^2 - 3c$ | $a^2 + b - c$ | $\frac{1}{5}(b + c)^2$ | Next term |
|       |            |            |               |                        |           |

(d)

|       |         |            |            |              |           |
|-------|---------|------------|------------|--------------|-----------|
| $b^2$ | $a + b$ | $b(c + 3)$ | $b^2 + bc$ | $a - 2b - c$ | Next term |
|       |         |            |            |              |           |

(e)

|        |                    |            |            |              |           |
|--------|--------------------|------------|------------|--------------|-----------|
| $2b^2$ | $\frac{bc}{a + b}$ | $b(a + c)$ | $b(c - b)$ | $b^2(a - c)$ | Next term |
|        |                    |            |            |              |           |