

## Stage Assessment 6

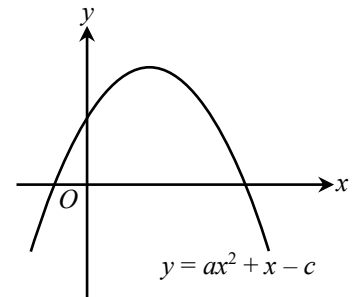
- If  $3p - 2q = 2q - 5p = 4$ , then  $p =$ 
  - 8.
  - 4.
  - 4.
  - 8.
- The price of 3 files and 4 notebooks is \$50 while the price of 5 files and 6 notebooks is \$78. Find the price of a notebook.
  - \$5
  - \$6
  - \$7
  - \$8
- If  $(x, y) = (-3, 1)$  is a solution of the simultaneous equations  $\begin{cases} ax - by - 9 = 0 \\ bx + ay + 13 = 0 \end{cases}$ , then  $a =$ 
  - 4.
  - $\frac{2}{3}$ .
  - 3.
  - 4.
- If  $\alpha$  is a root of the equation  $5x^2 - 4x - 2 = 0$ , then  $9 + 8\alpha - 10\alpha^2 =$ 
  - 5.
  - 9.
  - 13.
  - 17.
- Let  $a$  be a constant. If the quadratic equation  $x^2 + ax + 3a = 9$  has equal roots, then  $a =$ 
  - 3.
  - 6.
  - 0 or -12.
  - 0 or 12.
- Let  $k$  be a constant. Find the range of values of  $k$  such that the quadratic equation  $x^2 - 10x = 6 - k$  has no real roots.
  - $k > -19$
  - $k < -19$
  - $k > 31$
  - $k < 31$

7. Which of the following statement about the graph of  $y = 10 - (x - 5)^2$  is true?

- A. The graph does not cut the  $x$ -axis.
- B. The graph opens upwards.
- C. The  $y$ -intercept of the graph is 10.
- D. The graph does not pass through the origin.

8. The figure shows the graph of  $y = ax^2 + x - c$ , where  $a$  and  $c$  are constants. Which of the following is true?

- A.  $a < 0$  and  $c < 0$
- B.  $a < 0$  and  $c > 0$
- C.  $a > 0$  and  $c < 0$
- D.  $a > 0$  and  $c > 0$



9. Let  $x$  and  $y$  be non-zero numbers. If  $(9x - 2y) : (2x + 9y) = 3 : 4$ , then  $x : y =$

- A. 6 : 7.
- B. 7 : 6.
- C. 11 : 30.
- D. 30 : 11.

10. If  $a$ ,  $b$  and  $c$  are non-zero numbers such that  $3a = 4c$  and  $2b = c$ , then  $(a + c) : (b + c) =$

- A. 7 : 3.
- B. 7 : 12.
- C. 10 : 9.
- D. 14 : 9.

11. If  $p$ ,  $q$  and  $r$  are non-zero constants such that  $x(x + p) + 3q \equiv x^2 + 2(qx + 2r)$ , then  $p : q : r =$

- A. 2 : 4 : 3.
- B. 3 : 6 : 8.
- C. 6 : 3 : 4.
- D. 8 : 4 : 3.

12. The actual area of a piece of land is  $750 \text{ m}^2$ . If the area of the piece of land on a map is  $30 \text{ cm}^2$ , then the scale of the map is

- A. 1 : 25.
- B. 1 : 50.
- C. 1 : 500.
- D. 1 : 250 000.

13. The scale of a map is 1 : 40 000. If the area of a lake on the map is  $2 \text{ cm}^2$ , then the actual area of the lake is
- A.  $8 \times 10^4 \text{ m}^2$ .
  - B.  $3.2 \times 10^5 \text{ m}^2$ .
  - C.  $6.4 \times 10^5 \text{ m}^2$ .
  - D.  $1.25 \times 10^7 \text{ m}^2$ .
14. The solution of  $6x > 18 - 3x$  and  $2x - 10 < 0$  is
- A.  $x > 2$ .
  - B.  $x < 5$ .
  - C.  $2 < x < 5$ .
  - D.  $x < 2$  or  $x > 5$ .
15. The solution of  $-5x \leq 16 - x$  or  $14 - 7x \leq 0$  is
- A.  $x \geq -4$ .
  - B.  $x \geq 2$ .
  - C.  $-4 \leq x \leq 2$ .
  - D.  $x \leq -4$  or  $x \geq 2$ .
16. The solution of  $x - \frac{x-2}{3} > 6$  or  $10 > 3x - 2$  is
- A.  $x < 4$ .
  - B.  $x < 8$ .
  - C.  $4 < x < 8$ .
  - D.  $x < 4$  or  $x > 8$ .
17. The solution of  $-3x < 12 < 4x$  is
- A.  $x > -4$ .
  - B.  $x > 0$ .
  - C.  $x > 3$ .
  - D.  $-4 < x < 3$ .