

IGCSE1 math worksheet: **Functions**

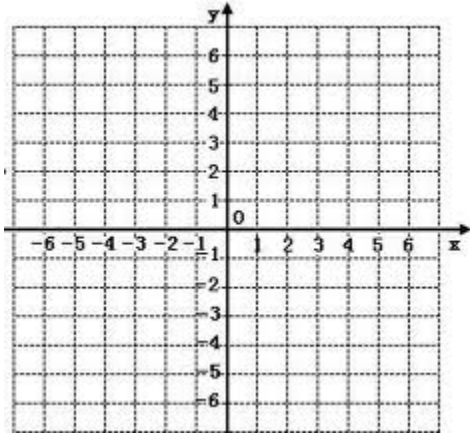
Name: _____ Score: _____

1. For each of the following equation
 a) rewrite the equation in explicit form

(1) $y - x = 2$ (2) $2y - x = 6$

b) draw the graph in the coordinate system

(3) $0 = y + x + 1$



2. Get the line equation passing through the two points

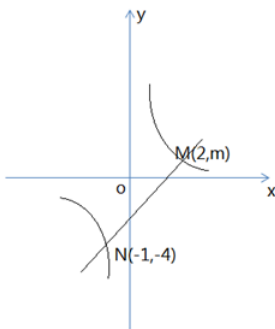
(a) (5,4) and (2,1) (b) (2,4) and (-1,-2) (c) (7,2) and (0,2) (d) (2,0) and (2,7)

3. As in the diagram, a linear function $y = kx + b$ intersect with an inverse proportional $y = \frac{a}{x}$ at point M and N

(1) Get the equations for the linear function and inverse proportional function

(2) The inverse functions of the above two functions

(3) Find the area of the triangle OMN



4. Given that $y = (m + 3)x^{(m^2 - 8)} + 2m$ is a linear function

(1) Find the value for m and the gradient of this line

(2) Find the inverse function

5. The maximal value for a quadratic function $y = ax^2 + bx + c$ is 2 and satisfies $f(-1) = f(5)$. If point $A(0, 1)$ lies on the graph of the function.

(1) Find the symmetric line and turning point of the quadratic function

(2) Find the function equation

(3) Find the image of 4, and find the value of a such that $f(a) = f(4)$

(4) Draw the graph of this function, indicate the key points

6. Complete the square, i.e., find the vertex form for each of the following. Then give the symmetry axis and the turning point.

(1) $y = 2x^2 - 4x$

(2) $y = x^2 - 6x + 10$

(3) $y = 2x^2 - 3x + 1$

(4) $y = 2x^2 - 8x - 6$

(5) $y = 4x^2 + x - 8$

7. The minimal value for $y = x^2 + (2m - 1)x + m^2 + 2$ is 2.

(1) calculate the value of m (2) turning point and symmetry axis

8. A parabola $y = ax^2 + bx + c$ intersect with x -axis at $A(-2, 0)$, $B(1, 0)$ and pass through point $C(2, 8)$. (1) find a, b, c (2) find the turning point and symmetry axis

9. A quadratic function $y = x^2 + (k - 5)x - (k + 4)$ intersect with x -axis at points $A(x_1, 0)$, $B(x_2, 0)$, if $(x_1 + 1)(x_2 + 1) = -8$.

(1) find the function expression

(2) if the turning point is P , find the area of $\triangle PAB$