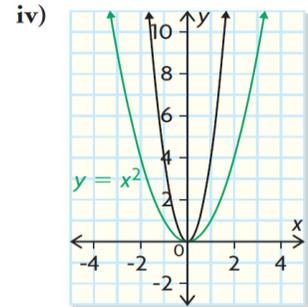Name: _____

Transformations of Quadratics
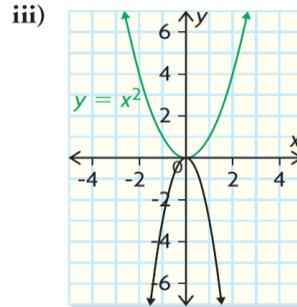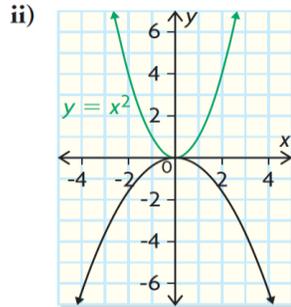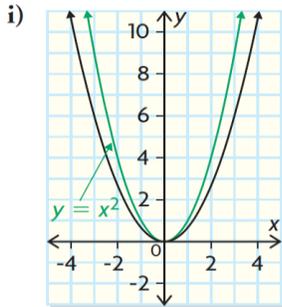
1. Match each graph with the correct equation. The graph of $y = x^2$ is labelled.

   a) $y = 4x^2$ b) $y = -3x^2$ c) $y = \dfrac{2}{3}x^2$ d) $y = -0.4x^2$

i)   ii)   iii)   iv)

2. Write the equations of two different quadratic relations that match each description.

   a) The graph is narrower than the graph of $y = x^2$ near its vertex.

   b) The graph is wider than the graph of $y = -x^2$ near its vertex.
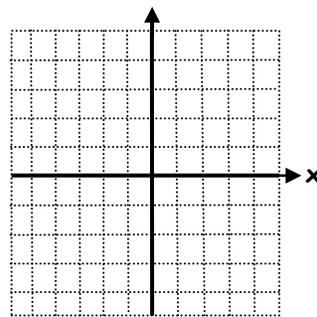
   c) The graph opens downward and is narrower than $y = 3x^2$ the graph of near its vertex.

3. Sketch each of the following.
   a) $y = x^2$

   b) $y = -0.5x^2$

   c) $y = -2x^2$

4. Complete the table.

Equation	Direction of Opening	Stretch/Compress	Wider/Narrower
$y = 5x^2$			
$y = 0.25x^2$			
$y = -\dfrac{1}{3}x^2$			
$y = -8x^2$			

5. The following transformations are applied to a parabola with the equation $y = x^2$. Determine the values of h and k, and write the equation in the form $y = (x - h)^2 + k$.

a) The parabola moves 3 units right.
b) The parabola moves 4 units down.
c) The parabola moves 2 units left.
d) The parabola moves 5 units up.
e) The parabola moves 7 units down and 6 units left.
f) The parabola moves 2 units right and 5 units up.

6. Match each equation with the correct graph.

a) $y = (x - 2)^2 + 3$
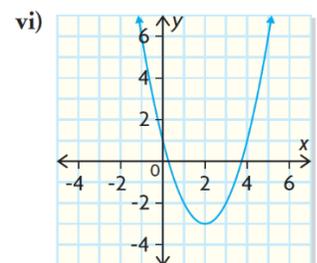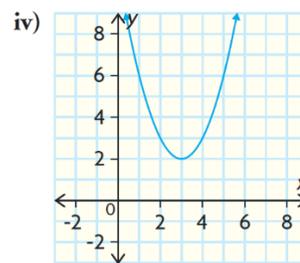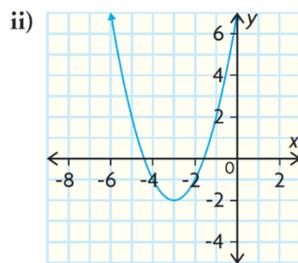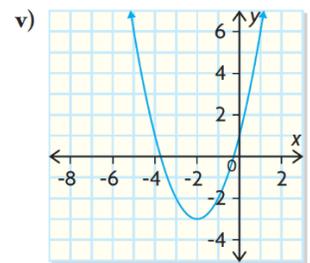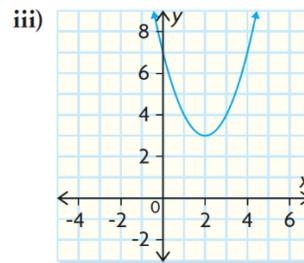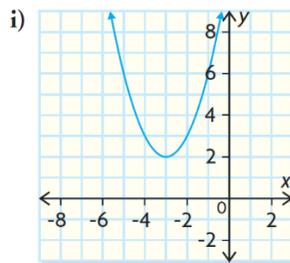
b) $y = (x + 2)^2 - 3$

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

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

e) $y = (x + 3)^2 + 2$

f) $y = (x - 2)^2 - 3$

7. Describe the transformations that are applied to the graph of $y = x^2$ to obtain the graph of each quadratic relation.

a) $y = x^2 + 5$ b) $y = (x - 3)^2$ c) $y = -3x^2$

d) $y = (x + 7)^2$ e) $y = (x + 6)^2 + 12$