	Expanded	Factorised	Completed	Roots	y-intercept	Vertex	Sketch
a	$y = x^2 - 6x - 16$	$y = (x + 2)(x - 8)$	$y = (x - 3)^2 - 25$	$x = -2, x = 8$	$(0, -16)$	$(3, -25)$	☑
b			$y = (x - 5)^2 - 4$				
c		$y = (x + 13)(x - 1)$					
d							☑
e	$y = x^2 - 8x + 16$						
f				$x = -3, x = 5$	$(0, -15)$		
g		$y = 3(x + 3)(x - 5)$					
h					$(0, 24)$	$(7, -25)$	
i							☑
j							☑
k	$y = -2x^2 + 20x + 22$						
l				$x = -1, x = 10$	$(0, 20)$		

Sketches
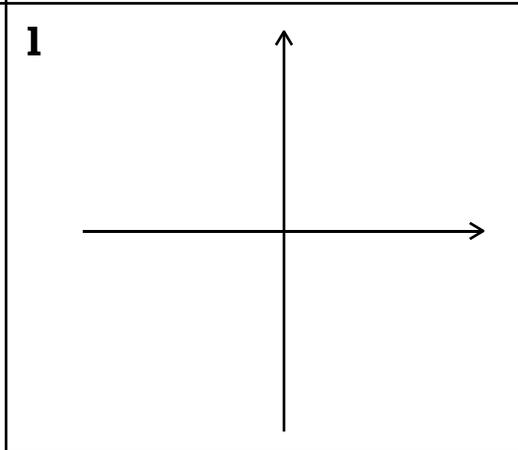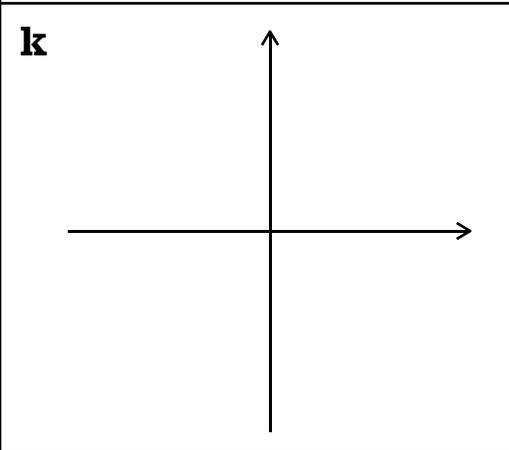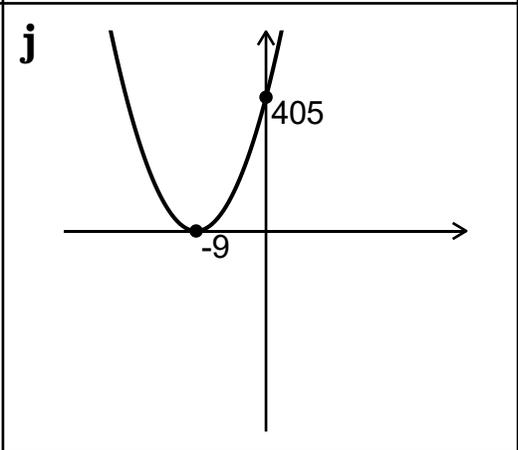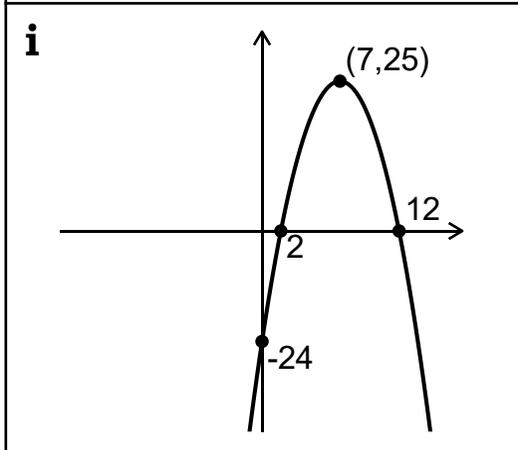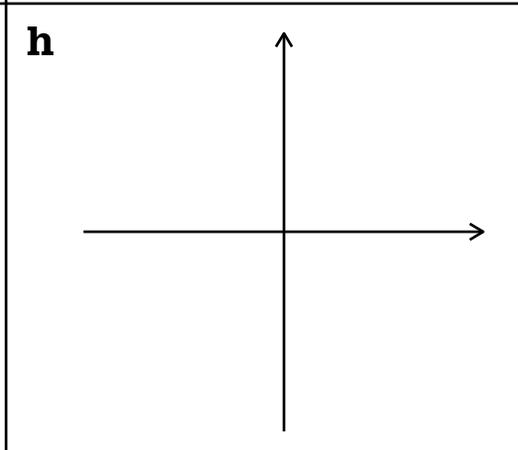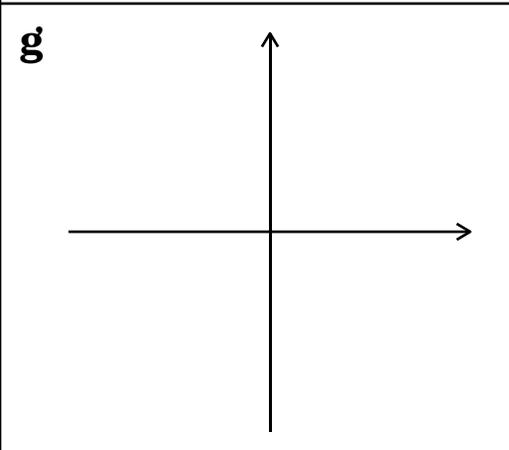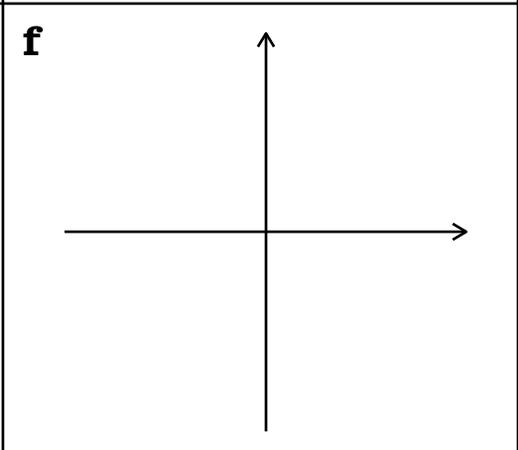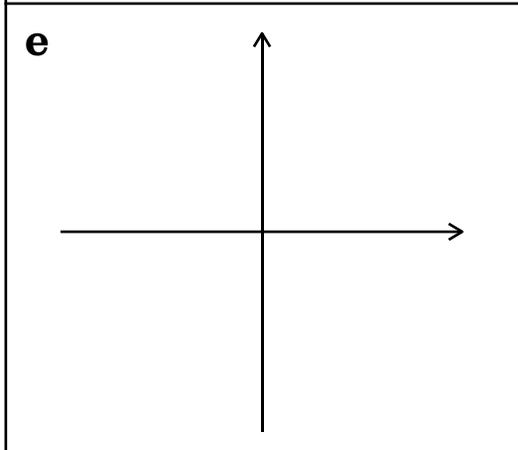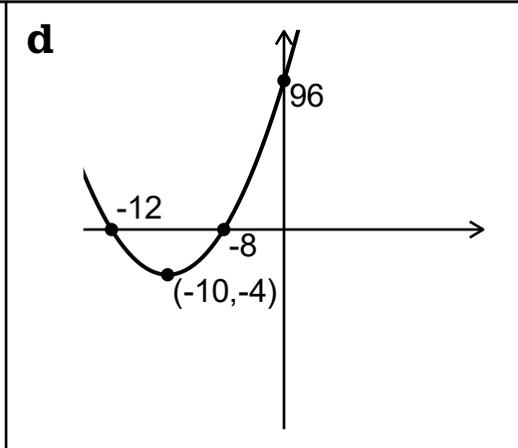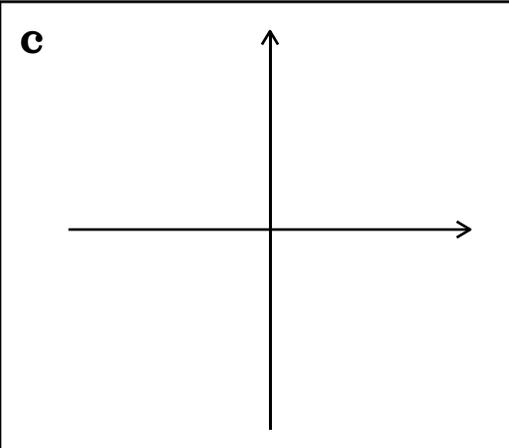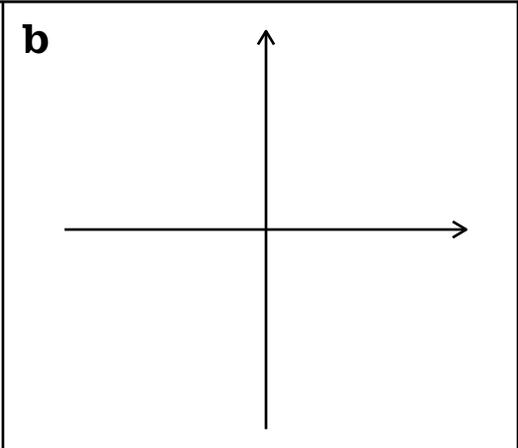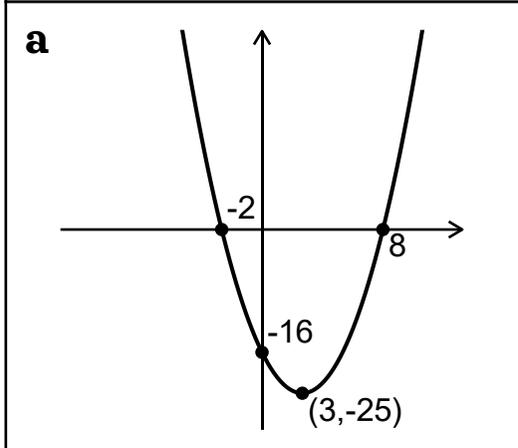
a

Parabola with x-intercepts at -2 and 8, y-intercept at -16, vertex at (3,-25).

b

c

d

Parabola with point 96, x-intercepts at -12 and -8, vertex at (-10,-4).

e

f

g

h

i

Downward parabola with vertex at (7,25), x-intercepts at 2 and 12, y-intercept at -24.

j

Parabola with point 405, vertex at -9.

k

l

	Expanded	Factorised	Completed	Roots	y-intercept	Vertex	Sketch
a	$y = x^2 - 6x - 16$	$y = (x+2)(x-8)$	$y = (x-3)^2 - 25$	$x = -2, x = 8$	$(0, -16)$	$(3, -25)$	☑
b	$y = x^2 - 10x + 21$	$y = (x-3)(x-7)$	$y = (x-5)^2 - 4$	$x = 3, x = 7$	$(0, 21)$	$(5, -4)$	☑
c	$y = x^2 + 12x - 13$	$y = (x+13)(x-1)$	$y = (x+6)^2 - 49$	$x = -13, x = 1$	$(0, -13)$	$(-6, -49)$	☑
d	$y = x^2 + 20x + 96$	$y = (x+12)(x+8)$	$y = (x+10)^2 - 4$	$x = -12, x = -8$	$(0, 96)$	$(-10, -4)$	☑
e	$y = x^2 - 8x + 16$	$y = (x-4)(x-4)$	$y = (x-4)^2$	$x = 4$	$(0, 16)$	$(4, 0)$	☑
f	$y = x^2 - 2x - 15$	$y = (x+3)(x-5)$	$y = (x-1)^2 - 16$	$x = -3, x = 5$	$(0, -15)$	$(1, -16)$	☑
g	$y = 3x^2 - 6x - 45$	$y = 3(x+3)(x-5)$	$y = 3(x-1)^2 - 48$	$x = -3, x = 5$	$(0, -45)$	$(1, -48)$	☑
h	$y = x^2 - 14x + 24$	$y = (x-12)(x-2)$	$y = (x-7)^2 - 25$	$x = 12, x = 2$	$(0, 24)$	$(7, -25)$	☑
i	$y = -x^2 + 14x - 24$	$y = -(x-12)(x-2)$	$y = -(x-7)^2 + 25$	$x = 12, x = 2$	$(0, -24)$	$(7, 25)$	☑
j	$y = 5x^2 + 90x + 405$	$y = 5(x+9)(x+9)$	$y = 5(x+9)^2$	$x = -9$	$(0, 405)$	$(-9, 0)$	☑
k	$y = -2x^2 + 20x + 22$	$y = -2(x+1)(x-11)$	$y = -2(x-5)^2 + 72$	$x = -1, x = 11$	$(0, 22)$	$(5, 72)$	☑
l	$y = -2x^2 + 18x + 20$	$y = -2(x+1)(x-10)$	$y = -2(x-4.5)^2 + 60.5$	$x = -1, x = 10$	$(0, 20)$	$(4.5, 60.5)$	☑

Sketches

a

Points: -2, 8, -16, (3,-25)

b

Points: 21, 3, 7, (5,-4)

c

Points: -13, 1, -13, (-6,-49)

d

Points: 96, -12, -8, (-10,-4)

e

Points: 16, 4

f

Points: -3, 5, -15, (1,-16)

g

Points: -3, 5, -45, (1,-48)

h

Points: 24, 2, 12, (7,-25)

i

Points: (7,25), 2, 12, -24

j

Points: 405, -9

k

Points: (5,72), 22, -1, 11

l

Points: (4.5,60.5), 20, -1, 10