Quadratic factorising: 10 practice questions

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Name: _____ Date: _____

Attempt all questions and show your working. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

Expand:

(a) 3(x + 4)

(b) x(x - 5)

(c) -2a(a + 3)

Question 2

Expand and simplify:

(a) (x + 3)(x + 5)

(b) (x - 4)(x + 2)

Question 3

Find two numbers that:

(a) multiply to 12 and add to 7

(b) multiply to -10 and add to 3

Question 4

Factorise:

(a) $x^2 + 5x + 6$

(b) $x^2 - 9$

Section B: Standard (Questions 5-10)

Question 5

Expand and simplify:

(a) (x - 6)(x - 3)

(b) (2x + 1)(x - 4)

(c) $(3a - 2)(2a + 5)$

Question 6

Expand using the special products:

(a) $(x + 7)^2$

(b) $(y - 5)^2$

(c) $(2m - 3)(2m + 3)$

Question 7

Factorise:

(a) $x^2 + 9x + 20$

(b) $x^2 - x - 12$

(c) $x^2 - 11x + 24$

(d) $x^2 + 4x - 21$

Question 8

Factorise using the difference of two squares:

(a) $x^2 - 49$

(b) $a^2 - 100$

(c) $9 - y^2$

Question 9

(a) Factorise $x^2 + 12x + 36$.

(b) Factorise $x^2 - 8x + 16$.

(c) Is $x^2 + 10x + 16$ a perfect square? Explain, and factorise it.

Question 10

Take out a common factor first, then factorise fully.

(a) $2x^2 + 10x + 12$

(b) $3x^2 - 27$

(c) $5x^2 - 10x - 40$

Quadratic factorising: answers

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Question 1

Answer: (a) $3x + 12$ (b) $x^2 - 5x$ (c) $-2a^2 - 6a$

Question 2

Answer: (a) $x^2 + 8x + 15$ (b) $x^2 - 2x - 8$

Question 3

Answer: (a) 3 and 4 (b) 5 and -2

Question 4

Answer: (a) $(x + 2)(x + 3)$ (b) $(x - 3)(x + 3)$ (factors may be in either order)

Question 5

Answer: (a) $x^2 - 9x + 18$ (b) $2x^2 - 7x - 4$ (c) $6a^2 + 11a - 10$

Question 6

Answer: (a) $x^2 + 14x + 49$ (b) $y^2 - 10y + 25$ (c) $4m^2 - 9$

Question 7

Answer: (a) $(x + 4)(x + 5)$ (b) $(x - 4)(x + 3)$ (c) $(x - 3)(x - 8)$ (d) $(x + 7)(x - 3)$ (factors may be in either order)

Question 8

Answer: (a) $(x - 7)(x + 7)$ (b) $(a - 10)(a + 10)$ (c) $(3 - y)(3 + y)$

Question 9

Answer: (a) $(x + 6)^2$ (b) $(x - 4)^2$ (c) No. A perfect square $(x + 5)^2$ would need $+25$, not $+16$. It factorises as $(x + 2)(x + 8)$.

Question 10

Answer: (a) $2(x + 2)(x + 3)$ (b) $3(x - 3)(x + 3)$ (c) $5(x - 4)(x + 2)$