Algebra: 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

Simplify:

(a) 5x + 3y - 2x + y

(b) 4a × 3b

(c) $2x^2 + 5x - x^2 + 3x$

Question 2

Expand:

(a) 4(x + 5)

(b) -3(2a - 7)

(c) x(x - 6)

Question 3

Factorise by taking out the highest common factor.

(a) 8x + 12

(b) $x^2 + 7x$

(c) $6a^2 - 9a$

Question 4

Expand and simplify 3(x + 4) + 2(x - 1).

Section B: Standard (Questions 5-10)

Question 5

Expand and simplify:

(a) 5(2x - 3) - 3(x - 4)

(b) x(x + 3) + 2x(x - 5)

(c) $4a(a - 2b) - a(3a + b)$

Question 6

Expand and simplify:

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

(b) $(x - 4)(x + 7)$

(c) $(x - 6)(x - 2)$

(d) $(2x + 1)(x + 4)$

Question 7

Expand these perfect squares:

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

(b) $(x - 3)^2$

(c) $(2a + 1)^2$

Question 8

Expand:

(a) $(x + 8)(x - 8)$

(b) $(3y - 2)(3y + 2)$

(c) What do you notice about the middle terms in parts (a) and (b)?

Question 9

Factorise:

(a) $x^2 + 7x + 12$

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

(c) $x^2 + 2x - 15$

(d) $x^2 - 10x + 21$

Question 10

Factorise:

(a) $x^2 - 4x - 32$

(b) $x^2 - x - 30$

(c) $a^2 + 12a + 36$

(d) $x^2 - 49$

Algebra: answers

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Question 1

Answer: (a) 3x + 4y (b) 12ab (c) $x^2 + 8x$

Question 2

Answer: (a) 4x + 20 (b) -6a + 21 (or 21 - 6a) (c) $x^2 - 6x$

Question 3

Answer: (a) 4(2x + 3) (b) x(x + 7) (c) 3a(2a - 3)

Question 4

Answer: 5x + 10 (3x + 12 + 2x - 2)

Question 5

Answer: (a) 7x - 3 (10x - 15 - 3x + 12) (b) $3x^2 - 7x$ (c) $a^2 - 9ab$ ($4a^2 - 8ab - 3a^2 - ab$)

Question 6

Answer: (a) $x^2 + 8x + 15$ (b) $x^2 + 3x - 28$ (c) $x^2 - 8x + 12$ (d) $2x^2 + 9x + 4$

Question 7

Answer: (a) $x^2 + 10x + 25$ (b) $x^2 - 6x + 9$ (c) $4a^2 + 4a + 1$

Question 8

Answer: (a) $x^2 - 64$ (b) $9y^2 - 4$ (c) the two middle terms cancel out (add to zero), leaving a difference of two squares

Question 9

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

Question 10

Answer: (a) (x - 8)(x + 4) (b) (x - 6)(x + 5) (c) $(a + 6)^2$ (or (a + 6)(a + 6)) (d) (x - 7)(x + 7)