Quadratic equations: 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

Use the null factor law to solve each equation.

(a) $(x - 3)(x + 5) = 0$

(b) $x(x - 7) = 0$

Question 2

Solve each equation.

(a) $x^2 = 49$

(b) $x^2 - 16 = 0$

Question 3

Show that $x = 2$ is a solution of $x^2 + 3x - 10 = 0$.

Question 4

Factorise $x^2 + 5x + 6$, and hence solve $x^2 + 5x + 6 = 0$.

Section B: Standard (Questions 5-10)

Question 5

Solve each equation by taking out a common factor.

(a) $x^2 - 6x = 0$

(b) $3x^2 + 12x = 0$

Question 6

Solve each equation by factorising.

(a) $x^2 - 7x + 12 = 0$

(b) $x^2 + 2x - 15 = 0$

(c) $x^2 - x - 20 = 0$

Question 7

Solve each equation.

(a) $x^2 - 81 = 0$

(b) $4x^2 - 25 = 0$

(c) $2x^2 = 72$

Question 8

Rearrange each equation so that one side is zero, then solve it.

(a) $x^2 = 5x + 14$

(b) $x(x + 3) = 28$

Question 9

Solve each equation by factorising.

(a) $2x^2 + 7x + 3 = 0$

(b) $3x^2 - 10x + 8 = 0$

Question 10

(a) Solve $(x - 4)^2 = 0$.

(b) Solve $x^2 + 10x + 25 = 0$.

(c) Explain why each of these equations has only one solution.

Quadratic equations: answers

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Question 1

Answer: (a) $x = 3$ or $x = -5$ (b) $x = 0$ or $x = 7$

Question 2

Answer: (a) $x = 7$ or $x = -7$ (also accept $x = \pm 7$) (b) $x = 4$ or $x = -4$

Question 3

Answer: $2^2 + 3(2) - 10 = 4 + 6 - 10 = 0$

Question 4

Answer: $(x + 2)(x + 3)$, so $x = -2$ or $x = -3$

Question 5

Answer: (a) $x = 0$ or $x = 6$ (b) $x = 0$ or $x = -4$ ($3x(x + 4) = 0$)

Question 6

Answer: (a) $x = 3$ or $x = 4$ (b) $x = 3$ or $x = -5$ (c) $x = 5$ or $x = -4$

Question 7

Answer: (a) $x = \pm 9$ (b) $x = \pm 5/2$ (also accept ± 2.5) (c) $x = \pm 6$

Question 8

Answer: (a) $x = 7$ or $x = -2$ ($x^2 - 5x - 14 = 0$) (b) $x = 4$ or $x = -7$ ($x^2 + 3x - 28 = 0$)

Question 9

Answer: (a) $x = -½$ or $x = -3$ ($(2x + 1)(x + 3) = 0$) (b) $x = 4/3$ or $x = 2$ ($(3x - 4)(x - 2) = 0$)

Question 10

Answer: (a) $x = 4$ (b) $x = -5$ ($(x + 5)^2 = 0$) (c) each is a perfect square, so both factors are the same and give the same solution (the parabola just touches the x-axis)