

Factoring Polynomials with Patterns and Grouping

Grade 9 – Algebra 1 math · Test · Standards: A-SSE.A.2, A-SSE.B.3a

Name: _____ Date: _____ Class: _____

This test has 9 questions worth 20 points. Allow 45 minutes and work without notes. Factor completely unless the question says otherwise, and show your work so that partial credit can be given for correct steps.

Standards: A-SSE.A.2, A-SSE.B.3a · **Level:** Grade 9 Algebra 1

Time: 45 minutes · 9 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Greatest Common Factor (2 points)

Factor $20x^3y - 35x^2y^2$.

Question 2 Two Trinomials (2 points)

Factor each trinomial.

- a. $x^2 - 13x + 36$ (1 point)
- b. $x^2 + 4x - 45$ (1 point)

Question 3 Difference of Squares (2 points)

Factor.

- a. $81x^2 - 16$ (1 point)
- b. $25 - 49y^2$ (1 point)

Question 4 Perfect Squares (2 points)

Factor.

- a. $4x^2 + 28x + 49$ (1 point)
- b. $x^2 - 18x + 81$ (1 point)

Question 5 Leading Coefficient Not 1 (3 points)

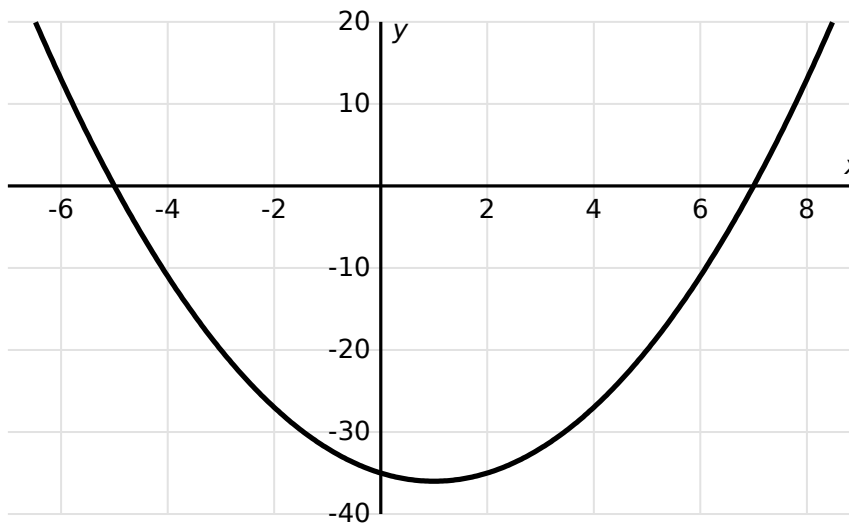
Factor $6x^2 - 11x - 10$.

Question 6 Factor by Grouping (2 points)

Factor $4x^3 + 12x^2 - 5x - 15$.

Question 7 Zeros from a Graph (3 points)

The graph of $f(x) = x^2 - 2x - 35$ is shown.



Graph of $f(x) = x^2 - 2x - 35$.

- Factor $f(x)$. (1 point)
- Find the zeros of f . (1 point)
- Explain how the zeros appear on the graph. (1 point)

Question 8 Garden Dimensions (2 points)

A rectangular garden has area $2x^2 + 13x + 15$ square feet and width $x + 5$ feet. Use factoring to find the length.

length = ?

$x + 5$

Area = $2x^2 + 13x + 15$

Garden with area $2x^2 + 13x + 15$.

Question 9 Factor Completely (2 points)

Factor $5x^2 - 45$ completely and explain why the result cannot be factored further.