

# Algebra 1 · Factoring Polynomials · Test

Common Core A-SSE.A.2, A-SSE.B.3a · mathovore.fr

Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Score: \_\_\_\_\_

This test has 9 questions worth 20 points. Show every step, because partial credit is given for correct work. Check each factorization by multiplying. Expect about 45 minutes.

## Test information

- **Grade:** Algebra 1
- **Chapter:** Factoring Polynomials
- **Common Core:** A-SSE.A.2, A-SSE.B.3a
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 2 pts; Question 6: 3 pts; Question 7: 3 pts; Question 8: 2 pts; Question 9: 2 pts)

## Question 1: Greatest common factor (2 points)

Factor out the greatest common factor.

- a.  $15x^3 - 10x^2$  (1 point)
- b.  $12a^2b + 18ab^2$  (1 point)

## Question 2: Factor trinomials (2 points)

Factor each trinomial.

- a.  $x^2 + 11x + 24$  (1 point)
- b.  $x^2 - 4x - 21$  (1 point)

|          |                         |           |
|----------|-------------------------|-----------|
|          | <b>x</b>                | <b>?</b>  |
| <b>x</b> | <b><math>x^2</math></b> | <b>?</b>  |
| <b>?</b> | <b>?</b>                | <b>24</b> |

Optional model for part (a).

### Question 3: Factor with a leading coefficient (2 points)

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Factor each trinomial.

- a.  $3x^2+10x+8$  (1 point)
- b.  $4x^2-8x-5$  (1 point)

### Question 4: Special patterns (2 points)

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Factor.

- a.  $49x^2-36$  (1 point)
- b.  $9x^2+30x+25$  (1 point)

### Question 5: Factor by grouping (2 points)

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Factor each polynomial by grouping.

- a.  $x^3+5x^2+2x+10$  (1 point)
- b.  $3x^3-6x^2-4x+8$  (1 point)

### Question 6: Factor completely (3 points)

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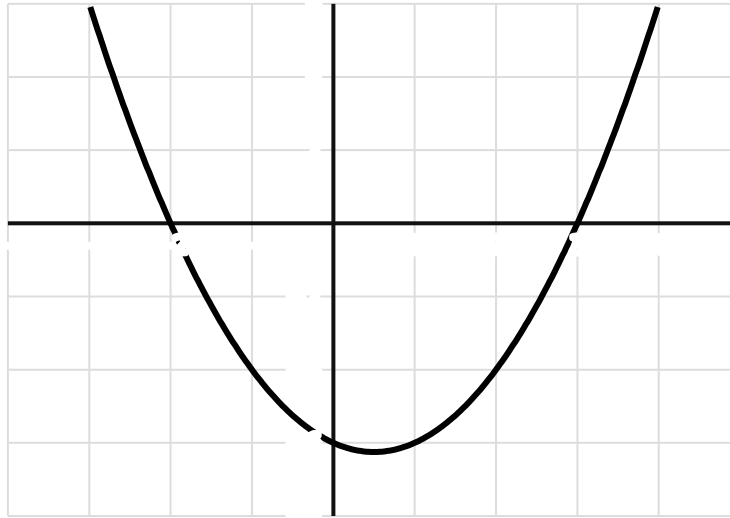
Factor completely.

- a.  $3x^2-48$  (1 point)
- b.  $2x^3+12x^2+18x$  (1 point)
- c.  $6x^2-5x-4$  (1 point)

### Question 7: Zeros and the graph (3 points)

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The graph of  $y = x^2 - x - 6$  is shown.



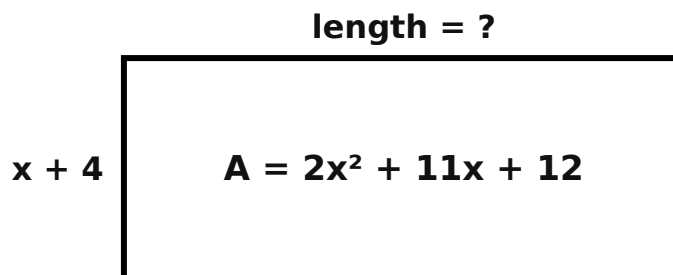
Graph of  $y = x^2 - x - 6$ .

- Factor  $x^2 - x - 6$ . (1 point)
- Solve  $x^2 - x - 6 = 0$ . (1 point)
- Label the x-intercepts on the graph by writing their coordinates. (1 point)

### Question 8: Poster dimensions (2 points)

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A rectangular poster has area  $2x^2 + 11x + 12$  square inches and width  $x + 4$  inches.



The poster.

- Write an expression for the length. (1 point)
- Find the length and width when  $x = 5$ . (1 point)

### Question 9: Is it complete? (2 points)

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Aisha factors  $4x^2 - 100$  as  $(2x - 10)(2x + 10)$ .

- Explain why the factorization is not complete. (1 point)
- Write the complete factorization. (1 point)