

Algebra 1 · Factoring Polynomials · Quiz

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

Name: _____ Date: ____/____/____ Score: _____

Answer these 10 multiple-choice questions on factoring: GCF, trinomials, the special patterns, grouping and zeros of quadratics. Each has one correct answer, and each explanation points out a typical mistake.

Algebra 1 Common Core: A-SSE.A.2 · A-SSE.B.3a

Questions

Question 1

What is the greatest common factor of $24x^3$ and $36x^2$?

- A. $6x^2$
- B. $12x^2$
- C. $12x^3$
- D. $72x^3$

Question 2

Factor $6x^2 - 9x$ completely.

- A. $3(2x^2 - 3x)$
- B. $3x(2x + 3)$
- C. $3x(2x - 3)$
- D. $x(6x - 9)$

Question 3

Factor $x^2 + 9x + 20$.

	x	?
x	x^2	?
?	?	20

Area model.

- A. $(x+4)(x+5)$
- B. $(x+2)(x+10)$
- C. $(x+4)(x-5)$
- D. $(x-4)(x-5)$

Question 4

Factor $x^2-2x-24$.

- A. $(x+6)(x-4)$
- B. $(x-6)(x+4)$
- C. $(x-8)(x+3)$
- D. $(x-6)(x-4)$

Question 5

Factor $25x^2-49$.

- A. $(5x-7)^2$
- B. $(5x+7)^2$
- C. $(25x-7)(x+7)$
- D. $(5x-7)(5x+7)$

Question 6

Factor $4x^2+12x+9$.

- A. $(4x+3)^2$
- B. $(2x+3)(2x-3)$
- C. $(2x+3)^2$
- D. $(4x+3)(x+3)$

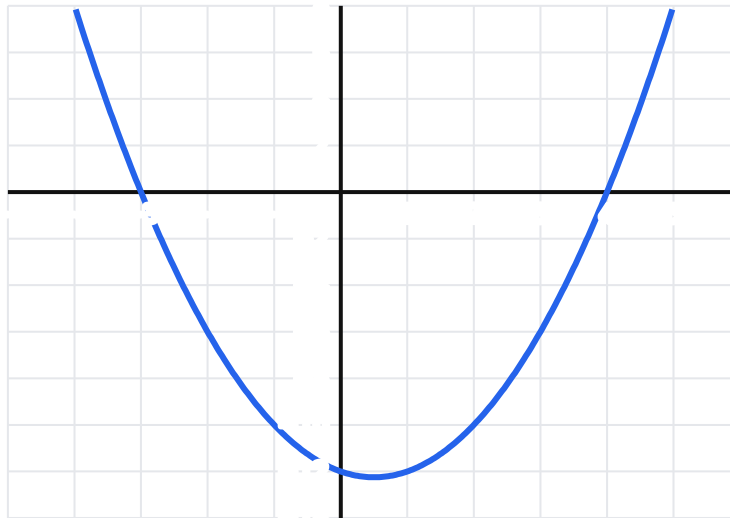
Question 7

Factor $2x^2+5x-3$.

- A. $(2x+1)(x-3)$
- B. $(2x-3)(x+1)$
- C. $(2x+3)(x-1)$
- D. $(2x-1)(x+3)$

Question 8

The graph shows $y = x^2 - x - 12$. What are the solutions of $x^2 - x - 12 = 0$?



Graph of the parabola.

- A. $x=4$ and $x=3$
- B. $x=4$ and $x=-3$
- C. $x=-4$ and $x=3$
- D. $x=12$ and $x=-1$

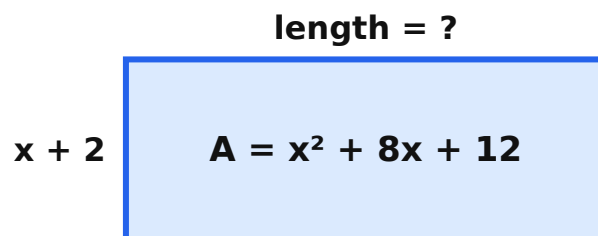
Question 9

Factor $x^3+3x^2+4x+12$ by grouping.

- A. $(x^2+4)(x+3)$
- B. $(x^2+3)(x+4)$
- C. $(x^2+4)(x-3)$
- D. $(x^2-4)(x+3)$

Question 10

A rectangle has area $x^2+8x+12$ and width $x+2$. What is its length?



Rectangle.

- A. $x+4$
- B. $x+10$
- C. $x+6$

D. $x+14$

Answer key

1. **B** – The GCF of 24 and 36 is 12, and the lowest power of x is x^2 . The product $72x^3$ is a common multiple, not a factor.
2. **C** – The GCF is $3x$. The factorization $3(2x^2-3x)$ is correct but not complete, because x is still common.
3. **A** – Look for numbers with product 20 and sum 9: 4 and 5. The pair 2 and 10 has the right product but its sum is 12.
4. **B** – The numbers have product -24 and sum -2 : -6 and 4. Swapping the signs gives the sum 2 instead.
5. **D** – This is a difference of squares, $(5x)^2-7^2$. A squared binomial would add a middle term.
6. **C** – The first term is $(2x)^2$, the last is 3^2 , and the middle is $2(2x)(3)=12x$. The pattern is a perfect square.
7. **D** – Use $ac=-6$ with numbers -1 and 6. Expanding the wrong options gives middle terms $-5x$, $-x$ and x .
8. **B** – $x^2-x-12=(x-4)(x+3)$, so the zeros are 4 and -3 . Remember that each factor gives the opposite sign.
9. **A** – Group as $x^2(x+3)+4(x+3)$. The common binomial is $x+3$, leaving x^2+4 .
10. **C** – Factor the area: $x^2+8x+12=(x+2)(x+6)$. The length is the other factor.

Remember:

- Always factor out the greatest common factor first.
- For $x^2 + bx + c$, find two numbers with product c and sum b .
- For $ax^2 + bx + c$, split the middle term using two numbers with product ac , then factor by grouping.
- Patterns: $a^2 - b^2 = (a + b)(a - b)$ and $a^2 \pm 2ab + b^2 = (a \pm b)^2$.
- The zero product property turns a factored equation into its zeros, the x -intercepts of the graph.