

Algebra 1 · Factoring Polynomials · Test Answer Key

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

Use this key to grade the factoring test out of 20 points. Each solution gives the working a full-credit answer shows plus a scoring guide. Accept factors in any order and any correct method.

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

Question 1: Greatest common factor (2 points)

- a. $5x^2(3x-2)$
- b. $6ab(2a+3b)$

Scoring: 1 point each part. Award no point if the GCF is only partly removed, such as $5(3x^3-2x^2)$.

Question 2: Factor trinomials (2 points)

- a. Product 24, sum 11: 3 and 8. $(x+3)(x+8)$
- b. Product -21 , sum -4 : -7 and 3. $(x-7)(x+3)$

	x	+8
x	x^2	$8x$
+3	$3x$	24

Part (a) model.

Scoring: 1 point each part for the correct factors with correct signs.

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

- a. $ac=24$, numbers 4 and 6: $3x^2+4x+6x+8=x(3x+4)+2(3x+4)$. $(3x+4)(x+2)$
- b. $ac=-20$, numbers 2 and -10 : $4x^2+2x-10x-5=2x(2x+1)-5(2x+1)$. $(2x-5)(2x+1)$

Scoring: 1 point each part. Accept the factors in either order.

Question 4: Special patterns (2 points)

- a. $(7x)^2 - 6^2$: $(7x-6)(7x+6)$
- b. $(3x)^2 + 2(3x)(5) + 5^2$: $(3x+5)^2$

Scoring: 1 point each part.

Question 5: Factor by grouping (2 points)

- a. $x^2(x+5) + 2(x+5)$: $(x^2+2)(x+5)$
- b. $3x^2(x-2) - 4(x-2)$: $(3x^2-4)(x-2)$

Scoring: 1 point each part. In part (b), the sign of the second group must be changed to factor out -4 .

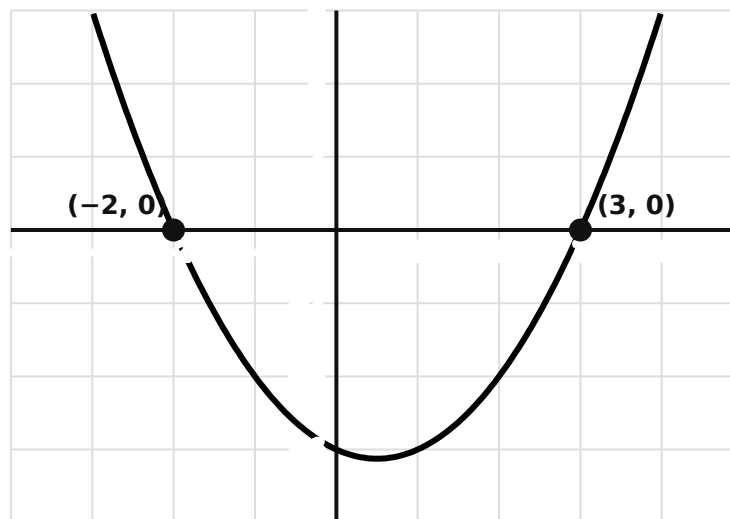
Question 6: Factor completely (3 points)

- a. $3(x^2-16)$: $3(x-4)(x+4)$
- b. $2x(x^2+6x+9)$: $2x(x+3)^2$
- c. $ac = -24$, numbers 3 and -8 : $6x^2+3x-8x-4 = 3x(2x+1)-4(2x+1)$. $(3x-4)(2x+1)$

Scoring: 1 point each part. Part (a) needs both the GCF and the difference of squares.

Question 7: Zeros and the graph (3 points)

- a. Product -6 , sum -1 : -3 and 2 . $(x-3)(x+2)$
- b. $x-3=0$ or $x+2=0$, so $x=3$ or $x=-2$.
- c. The x-intercepts are $(-2,0)$ and $(3,0)$.



The zeros are the x-intercepts.

Scoring: 1 point for each part. In part (c), both coordinates must be given as ordered pairs.

Question 8: Poster dimensions (2 points)

- a. $ac = 24$, numbers 3 and 8: $2x^2 + 3x + 8x + 12 = x(2x + 3) + 4(2x + 3) = (2x + 3)(x + 4)$. The length is $2x + 3$ inches.
- b. Length $2(5) + 3 = 13$ inches, width $5 + 4 = 9$ inches. Check: $13 \times 9 = 117$ and $50 + 55 + 12 = 117$.

Scoring: part (a) 1 point; part (b) 1 point for both values.

Question 9: Is it complete? (2 points)

- a. Each binomial has a common factor of 2: $2x - 10 = 2(x - 5)$ and $2x + 10 = 2(x + 5)$, so further factoring is possible.
- b. $4(x^2 - 25)$ gives $4(x - 5)(x + 5)$.

Scoring: 1 point for naming the remaining common factor; 1 point for the complete factorization.

Total
20 points