

Sample Test 1

- Write 67.7 in scientific notation.
(a) 6.77×10^2 (b) 6.77×10^1 (c) 6.77×10^{-2} (d) 6.77×10^{-1}
- Factor $30x^2 - 25x + 24x - 20$ by grouping.
(a) $(30x - 4)(x + 5)$ (b) $(30x + 4)(x - 5)$ (c) $(5x + 4)(6x - 5)$
(d) $(5x - 4)(6x + 5)$
- Factor $12y^2 + 17y + 6$ completely. Which of the following is a factor?
(a) $y - 2$ (b) $3y + 2$ (c) $4y - 3$ (d) $y + 3$
- Factor $25x^2 - 81$.
(a) $(5x + 9)^2$ (b) $(5x + 9)(5x - 9)$ (c) Prime (d) $(5x - 9)^2$
- What is a factor of $x^3 - 343$?
(a) $x^2 + 49$ (b) $x + 343$ (c) $x^2 + 7x + 49$ (d) $x + 7$
- Simplify the product $\frac{x^2 - 15x + 44}{x^2 - 9x + 8} \cdot \frac{x^2 - 13x + 12}{x^2 - 7x + 12}$.
(a) $\frac{(x+11)(x+12)}{(x+8)(x+3)}$ (b) $\frac{(x^2-15x+44)(x^2-13x+12)}{(x^2-9x+8)(x^2-7x+12)}$ (c) $\frac{(x-11)(x-12)}{(x-8)(x-3)}$ (d) $\frac{x-11}{x-3}$
- Simplify the quotient $\frac{z^2 - 12z + 35}{z^2 - 14z + 45} \div \frac{z^2 - 7z}{z^2 - 18z + 81}$.
(a) $\frac{z+9}{z^2+9z}$ (b) $z + 9$ (c) $\frac{z-9}{z}$ (d) $\frac{z}{z^2+14z+45}$
- Simplify the difference $\frac{x}{x^2 - 16} - \frac{4}{x^2 + 5x + 4}$.
(a) $\frac{x^2-3}{(x-4)(x+4)(x+1)}$ (b) $\frac{x^2-3x+16}{(x-4)(x+4)}$ (c) $\frac{x^2-3x+16}{(x-4)(x+4)(x+1)}$ (d) $\frac{x^2+3x+16}{(x-4)(x+4)(x+1)}$
- Simplify the radicals and collect like terms in $8\sqrt{7} + 4\sqrt{175}$.
(a) $-28\sqrt{7}$ (b) $28\sqrt{7}$ (c) $12\sqrt{7}$ (d) $-3\sqrt{7}$

10. Rationalize the denominator in $\frac{4}{9 - \sqrt{2}}$
(a) $\frac{36+4\sqrt{2}}{79}$ (b) $\frac{36-4\sqrt{2}}{79}$ (c) $\frac{4}{9} - \frac{4}{\sqrt{2}}$ (d) $\frac{36+4\sqrt{2}}{-7}$
11. Solve the equation $\frac{r+6}{5} = \frac{r+8}{7}$.
(a) -2 (b) 2 (c) 1 (d) -1
12. Solve the equation $3.7x + 4.6 - 9.3x = -3.1 - 5.6x + 7.7$
(a) No solution (b) -1.5 (c) All real numbers (d) 0
13. Solve $\frac{6x+9}{3} = 6\left(\frac{1}{3}x - \frac{1}{2}\right) + 7$
(a) All real numbers (b) No solution (c) 0 (d) $\frac{7}{4}$
14. Sheriff Matt Dillon learns that a wanted criminal has left Dodge City 10 minutes ago, racing east. He departs to pursue the criminal immediately. The criminal's horse races at the speed of 30 miles per hour, whereas Matt Dillon's horse pursues him at the speed of 35 miles per hour. How far from Dodge City will sheriff Dillon capture the criminal?
(a) 10 miles (b) 25 miles (c) 35 miles (d) 40 miles
15. Solve $|x+9| - 3 = 6$. What describes the solution set best?
(a) No solution (b) Two solutions, both nonnegative (c) One solution
(d) Two solutions, both nonpositive
16. Solve $|7x+3| + 7 = -1$. What describes the solution set best?
(a) No solution (b) Two solutions, both nonnegative (c) One solution
(d) Two solutions, both nonpositive
17. Solve $|x-2| + 5 \leq 14$.
(a) No solution (b) $[-7, 11]$ (c) $(-\infty, -7]$ (d) $(-\infty, -7] \cup [11, \infty)$

18. Solve $|3x - 8| + 9 > 12$.

- (a) $[5/3, 11/3]$ (b) $(5/3, 11/3)$ (c) $(-\infty, 5/3) \cup (11/3, \infty)$ (d) $(-\infty, 5/3] \cup [11/3, \infty)$

19. What is the number of solutions of $x^2 - 11x + 2 = 0$? (Use the discriminant!)

- (a) no solution (b) one solution (c) two solutions (d) three solutions

20. What is the number of solutions of $x^2 - x + 20 = 0$? (Use the discriminant!)

- (a) no solution (b) one solution (c) two solutions (d) three solutions

21. Solve $2x^2 - 5x + 1 = 0$

- (a) $\frac{5 \pm \sqrt{17}}{4}$ (b) $\frac{-5 \pm \sqrt{17}}{4}$ (c) $\frac{5 \pm \sqrt{17}}{2}$ (d) $\frac{5 \pm \sqrt{33}}{4}$

Solution key:

1. b
2. c
3. b
4. b
5. c
6. c
7. c
8. c
9. b
10. a
11. d
12. c
13. b
14. c
15. d
16. a
17. b
18. c
19. c
20. a
21. a