

Cumulative Review (Chapters 1–5)

Simplify. Assume that no denominator equals zero.

- $-3.3 + (-27.3 + 10.6)$
- $-\frac{3}{5}\left(-\frac{9}{17}\right) + \frac{8}{5}\left(-\frac{9}{17}\right)$
- $\frac{-168a}{24}$
- $(-4)^2 \div 2 + 2 - 8$
- $(2z - 3) + (3z - 4)$
- $(3m - 4) - (4m - 5)$
- $(2a^2b)^3(3a^2b)^3$
- $\frac{-45r^3st^2}{25rst}$
- $\frac{27x^3y^2 - 9x^2y + 8xy}{9xy}$
- $(6rs - 7t)(6rs + 7t)$
- $(7a + 4)^2$
- $-t(3t + 5)(2t - 5)$

Evaluate if $w = -\frac{1}{2}$, $x = 2$, $y = 0$, and $z = -3$.

- $\frac{(z - 2w) - x}{-y + 1}$
- $\frac{1}{w}(xy - z)$
- $(2x + z)^x$
- Find the prime factorizations of 90 and 756 and then find their GCF.

Factor completely. If the polynomial cannot be factored, write *prime*.

- $6p^3 - 2p^3r^2 + 8p^2r^3st$
- $32a^2b - 8b$
- $4a^2 + 12ab + 9b^2$
- $x^2 + 15x + 26$
- $m^2 - 9m + 18$
- $k^2 - k - 42$
- $6y^2 + 13y - 5$
- $x^2 + 4xy + 4y^2 - 16$
- $a^3 + a^2b - ab^2 - b^3$

Solve. If the equation is an identity or has no solution, say so.

- $9c - 3 = 24$
- $|a| - 5 = 3$
- $\frac{2}{3}m = 18$
- $7(x - 1) = 4x + 5$
- $\frac{1}{5}n = -2$
- $10 - x = -2$
- $3m - 2 = \frac{1}{2}(8m + 6) - (m + 5)$
- $2y^2 - 32 = 0$
- $x^2 - 6x + 15 = 6$
- $(x + 7)(x + 1) = (x + 2)^2 + 5x$
- $8b^2 - 10b = 3$
- $x^3 - 9x^2 + 20x = 0$

- Marvin has 20 nickels and dimes. He has $\frac{2}{3}$ as many dimes as he does nickels. How many nickels and how many dimes does Marvin have?
- The 42 km drive from Oakdale to Ridgemont usually takes 28 min. Because highway construction requires a reduced speed limit, the trip now takes 14 min longer. Find the reduced speed limit in km/h.
- The sum of the squares of two consecutive integers is 9 greater than 8 times the smaller integer. Find the integers.
- The length of a rectangle is 5 greater than 3 times its width. The area of the rectangle is 22 cm². Find the length and width of the rectangle.