

Prerequisite Skills

Lowest Common Multiple

1. Find the lowest common multiple of each set of numbers.
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|------------|------------|
| a) 6, 9 | b) 2, 7 |
| c) 3, 7 | d) 8, 3 |
| e) 2, 4, 5 | f) 3, 5, 9 |

Rational Numbers

2. Evaluate without using a calculator.
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|-------------------------------------|---------------------------------|
| a) $\frac{4}{7} + \frac{2}{3}$ | b) $\frac{1}{4} \div 9$ |
| c) $\frac{3}{5} \times \frac{6}{5}$ | d) $\frac{1}{2} - \frac{1}{6}$ |
| e) $\frac{9}{7} \div (-5)$ | f) $-\frac{6}{7} - \frac{3}{8}$ |

Evaluate Expressions

3. Evaluate each expression for $a = -1$, $b = 3$, and $c = -6$.
- $2a^2 + bc$
 - $4a^2 + 5b + c$
 - $4b^2 - ac$
 - $(a + b + c)(3a + 2b)$
 - $(6a + b)^2$
 - $(c + 2b)(a - 27b + 32c)$

Evaluate Radicals

4. Evaluate. Round answers to two decimal places, if necessary.
- $\sqrt{81}$
 - $\sqrt{3^2 - 4(1)(2)}$
 - $\sqrt{1500}$
 - $-\sqrt{(-5)^2 - 4(-2)(2)}$
 - $\sqrt{4^2 - 7}$
 - $-\sqrt{9^2 - 4(-5)(-3)}$

Greatest Common Factor

5. Determine the greatest common factor of each set.
- | | |
|-------------------|---------------------------------------|
| a) $2x, 8x$ | b) $24xz, 12yz, 33xyz$ |
| c) $12xz, 16xyz$ | d) $14x^4y^2, 35x^2y^2, 28x^2y^4$ |
| e) $20z^2, 30z^2$ | f) $6a^8b^4c^2, 8a^4b^8c^2, 4a^2b^4c$ |

Factor Quadratic Expressions

6. Factor.
- | | |
|------------------|----------------|
| a) $x^2 + x$ | b) $2x^2 - 6$ |
| c) $-12x^2 + 8x$ | d) $3x^2 + 18$ |
7. Factor fully.
- $x^2 + 3x + 2$
 - $x^2 + x - 42$
 - $x^2 - x - 20$
 - $x^2 - 8x + 16$
 - $x^2 - 64$
 - $2x^2 - x - 1$
 - $3x^2 + 5x - 2$
 - $6x^2 - 17x + 12$
 - $9x^2 + 30x + 25$
 - $4x^4 - 324$

Graph Quadratic Functions

8. For each quadratic function, identify the direction of opening, the coordinates of the vertex, the equation of the axis of symmetry, and the y -intercept. Sketch each parabola. For parts a) and b), also identify the x -intercepts.
- $y = (x - 2)(x - 1)$
 - $y = -(x + 4)(x - 4)$
 - $y = -\frac{1}{2}(x - 3)^2 + 1$
 - $y = 2(x + 1)^2 - 5$