

Operation orders and Variables

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1 The order of operations

1. Powers and roots
2. Multiplication and division
3. Addition and subtraction

Question 1. $6^2 - 5 \times 4 + 2\sqrt{16} =$

2 Grouping symbols

1. Parentheses (..)
2. Brackets [.] ..
3. Radical $\sqrt{\dots}$
4. Fraction line (vinculum)
5. Absolute value |..|

Question 1. $\frac{4(7+5)}{2+1} =$

Question 2. $\frac{5[3+(12-2^2)]}{|8-23|} + \frac{\sqrt{16-7}}{(-3)^2} =$

3 Checking your answers

1. Does the answer make any sense?
2. Does it work? That is, putting the answer back into the problem gives you a true statement.

Question 1. Does $x = 2$ work in $5x[x + 3(x^2 - 3)] + 1 = 0$?

4 Adding and subtracting variables

Question 1. $2a + 5a + 4a =$

Question 2. $a + 3a + x + 2x =$

Question 3. $3x + 4y - 2x - 8y + x =$

Question 4. $5az + 4as - 2a + 6 - 3b - 2b =$

5 Adding and subtracting with powers

Question 1. $x + x + x =$

Question 2. $x^2 - 2x^2 + 3x^2 + 3x^2 =$

Question 3. $x + 3x + 4x^2 + 5x^2 + 6x^3 =$

Question 4. $4x^4 - 3x^3 + 2x^2 + x - 1 =$

6 Multiplying and dividing variables

1. Commutative property
2. GCF - greatest common factor

Question 1. $2 \cdot a \cdot a \cdot b \cdot c =$

Question 2. $2 \cdot a^2 \cdot a^3 \cdot 3 \cdot b \cdot b^6 \cdot c^{10} =$

Question 3. $\frac{12x^3y^2}{4} =$

Question 4. $\frac{12x^3y^2}{4y^2} =$

Question 5. Simply $4a^2b^3(2a^3b^2) + 5ab^{-2}(2a^4b^7) + 5 =$

Question 6. Simply $3m(2mn) - 4m^3n^3n^{-2} + 5m^2n^3 - 6mn(mn) =$

Question 7. Simply $\frac{4x^2y^3}{2xy} - \frac{15xy^5}{3y^3} + \frac{13x^{-2}y^11}{x^{-5}y^8} + \frac{11x^4y^{\frac{7}{2}}}{xy^{\frac{1}{2}}} =$