Introduction to Algebra Homework

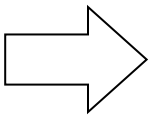
1. **MC**: Which word best describes the **2** in the expression $\mathbf{3x^2 + 4x + 7}$.
   a) Coefficient
   b) Constant
   c) Exponent
   d) Term
   e) Variable

2. **MC**: Which word best describes the **3** in the expression $\mathbf{3x^2 + 4x + 7}$.
   a) Coefficient
   b) Constant
   c) Exponent
   d) Term
   e) Variable

3. **MC**: Which word best describes the **4x** in the expression $\mathbf{3x^2 + 4x + 7}$.
   a) Coefficient
   b) Constant
   c) Exponent
   d) Term
   e) Variable

4. **MC**: Which word best describes the **x** in the expression $\mathbf{3x^2 + 4x + 7}$.
   a) Coefficient
   b) Constant
   c) Exponent
   d) Term
   e) Variable

5. **MC**: Which word best describes the **7** in the expression $\mathbf{3x^2 + 4x + 7}$.
   a) Coefficient
   b) Constant
   c) Exponent
   d) Term
   e) Variable



Complete the following questions on a separate sheet of lined paper. Write down the title of this handout and today's date. Copy down each question and complete your solution vertically.

6. State the degree of each of the following:
   a) $5x + 3 - 2x^3 + 8x^2$
   b) $4x^3y^7 - 2xy^{12} + 5x^2y^4$
   c) $2x - 7$

7. Simplify each of the following by collecting like terms.
   a) $4x + 3y + 7 + 2y - x + 3$
   b) $6m - 4n - 2 - 8 + 2n - 3m$
   c) $5a^2 + 4a + 17 - 2a + 3a^2 - 4$
   d) $-6p^2 - 20p - 4p - 10p^2 - 3 + 2p + 5$
   e) $a^2 - 2a + 7a^2 + 9a + a - 4a^2$
   f) $2n^2 + 2n + 1 - 10n^2 - n - 15n + 9 - n$
   g) $3 + 5a^2 + 6b^2 + 3a^2 + 7 - 10b^2 + 6 + 4b^2$
   h) $-11x + 2y + 5 + 3y + 7 + 1 - 6x$

more

ANSWERS

1] C **2]** A **3]** D **4]** E **5]** B **6a]** 3 **6b]** 13 **6c]** 1 **7a]** $3x + 5y + 10$ **7b]** $3m - 2n - 10$ **7c]** $8a^2 + 2a + 13$
7d] $-16p^2 - 22p + 2$ **7e]** $4a^2 + 8a$ **7f]** $-8n^2 - 15n + 10$ **7g]** $8a^2 + 16$ **7h]** $-17x + 5y + 13$

Polynomial Homework

Complete the following questions on a separate sheet of lined paper. Write down the title shown above and today's date. Copy down each expression and show your solution vertically.

1. Add the following.
   a) $(3x^2 + 2y^2 – 5) + (4x^2 + 3y^2 – 11)$
   b) $(x^2 + x + 3) + (x^2 – 6) + (x^2 – 2x – 3)$

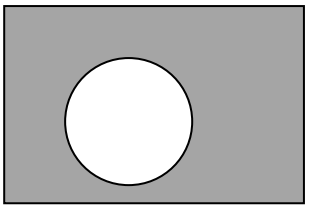
2. Subtract the following.
   a) $(2x^2 + 3y^2 – 5) – (2x^2 + 4y^2 + 6)$
   b) $(x^2 + x + 3) – (x^2 – 6) – (x^2 – 2x – 3)$

3. Expand and simplify.
   a) $2(5x – 1) – 3(x + 2)$
   b) $3(x + 2) + (7 – 2x)$
   c) $4(2w + 1) – (2w – 3) + (3w – 1)$
   d) $3(x^2 + 2x – 5) – 6(x + 1) – 4$

4. Each of the following solutions contains an error. Describe the error in words and suggest how it should be corrected.
   a) $(9x – 8) + (4x – 3)$
   $= 9x – 8 + 4x – 3$
   $= 9x + 4x – 8 – 3$
   $= 13x – 5$
   b) $(7y + 6) – (5y – 4)$
   $= 7y + 6 – 5y – 4$
   $= 7y – 5y + 6 – 4$
   $= 2y + 2$

5. The diagram on the right shows a rectangle with a circle cut out.
   - The area of the entire rectangle is $\mathbf{4x^2 + 3x – 15}$.
   - The area of the circle is $\mathbf{2x^2 – x + 1}$.
   - The area of the shaded region can be found by subtracting the area of the circle from the area of the rectangle.

   Determine the area of the shaded region.



6. Given that $\mathbf{m = 3x + 10}$ and $\mathbf{n = x – 3}$,
   a) Simplify the expression $\mathbf{2m – n + 6}$.
   b) Write another expression using **m** and **n** that has the same answer as part **a)**.

ANSWERS

1a] $7x^2 + 5y^2 – 16$ **1b]** $3x^2 – x – 6$ **2a]** $–1y^2 – 11$ **2b]** $–1x^2 + 3x + 12$ **3a]** $7x – 8$ **3b]** $1x + 13$ **3c]** $9w + 6$
3d] $3x^2 – 25$ **4a]** They incorrectly added -8 and -3 to get -5. They should combine -8 and -3 to get -11.
4b] They forgot to multiply the -4 in the second bracket by the hidden -1 in front of the bracket. They should multiply -4 by -1 to get +4.
5] A = 2x2 + 4x – 16 **6a]** 5x + 29 **6b]** Many possible answers including m + 2n + 25 and 8n – m + 63