Adding and Subtracting Polynomials (ALG.POL.03)

Add or subtract. Write each answer in standard form.

1. $(7m - 9m^2) + (5m - 2m^2)$

2. $(9x^3 + 12x^2 - 2x) + (11x^2 - 10x^3 + 12x)$

3. $(4p^2 - 2 - p^4 + 8p^3) + (5 - 3p^2 + 9p^3 + 9p^4)$

4. $(5n^4 - 6n - 9n^2 - 9n^3) + (8n^2 + 9n^3 + 10n^4 + 9n)$

5. $(5x - 8 - 2x^3) + (3 - x^4 + 6x^3) + (2x^3 - 10x^4 - x)$

6. $(5a + 3a^2) - (5 - a^2)$

7. $(9d + 12 - 2d^3) - (9d^3 - 3 - d)$

8. $(u^2 + 8 - 6u^4 + 5u) - (-8u^2 + 7u + 7u^4 + 2u^3)$

9. $(f^2 + 8f^4 - 3f + 5) - (-3f + 2f^2 + f - 8f^4)$

10. $(m^4 + 9m^3 + 11m^2 + 7m - 5) - (7 + 8m^2 - 2m^4) - (-5m^3 - 2m - 10)$

11. $(g - g^2) - (g - 2g^3) + (g + 5)$

12. $(11c - 2c^2 + 5) + (3c^2 - 2c + 3) - (6 + c^2 - 7c)$

13. $(-d + 2d^2 - 3) - (d^2 + 2 - 3d) + (5 - 2d - d^2)$

14. $(4k^2 - k + 3) + (-k^2 + 3k - 7) - (k^2 + 5) - (2k^2 - k - 8)$

15. During the summer months, Juan mows lawns on Monday through Friday to earn money. On a particular week, he mowed $(x^2 + 2x - 3)$ yards on Monday, $(x + 1)$ yards on Tuesday, and $(3x^2 - 5x + 4)$ on Wednesday.

a. Write an algebraic expression (in terms of x) that represents the number of yards Juan mowed on Monday through Wednesday.

b. If Juan mowed $(4x^2 + x + 4)$ total yards during the week, write an algebraic expression (in terms of x) that represents the number of yards he mowed on Thursday and Friday.

c. If $x = 2$, then how many yards did Juan mow during the week?

16. Joe and Sue each have money. Sue has $(5d - 3)$ dollars and Joe has $(45 - 3d)$ dollars.

a. Write an algebraic expression (in terms of d) that represents the amount of money they have together.

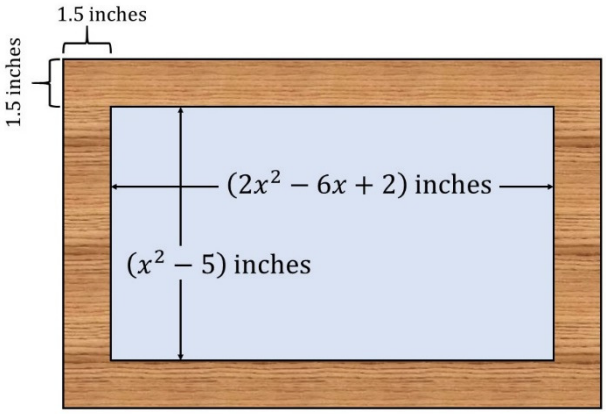
b. If $d = 8$, how much money do they have together?

c. Write an algebraic expression (in terms of d) that represents how much more money Joe has than Sue.

d. If $d = 5$, how much more money does Joe have than Sue?

e. For what value of d will Sue and Joe have the same amount of money? How much will that be?

17. Dmitri is going to build a frame for a picture. If the height of the picture is $(x^2 - 5)$ inches, the width is $(2x^2 - 6x + 2)$ inches, and the materials need to exceed the dimensions by 1.5-inches on each side (see diagram), then write an algebraic expression that gives the length of materials Dmitri needs to purchase to frame the picture.



18. Use the composite figure in the diagram to answer each part.

a. Write an algebraic expression in terms of x for the perimeter of the composite figure.

b. If $x = \frac{3}{4}$ centimeters, then use the expression you wrote in **part a** to calculate the perimeter of the figure, including units.

c. If $x = 4.5$ centimeters, then use the expression you wrote in **part a** to calculate the perimeter of the figure, including units.

d. What is the relationship between the values of x given in **parts b and c**?

e. What is the relationship between the values of the perimeters you found in **parts b and c**?