Class/Homework

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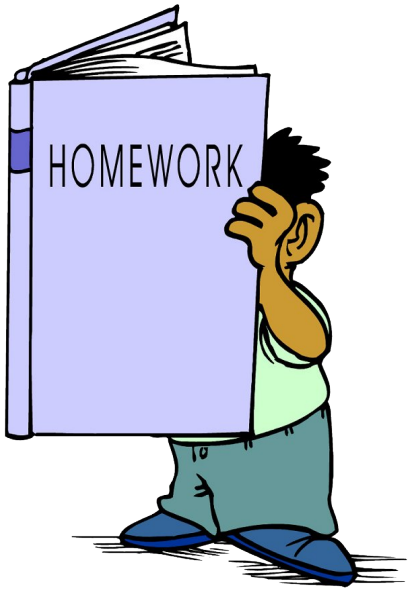
(No algebra tiles just combine like terms and subtract)

7, 8, 9(ab), 10(b), 13(ab), 15, 16(a)



7. Use algebra tiles to model each difference of trinomials. Record your answer symbolically.

a) $(3s^2 + 2s + 4) - (2s^2 + s + 1)$

$3s^2 + 2s + 4 - 2s^2 - s - 1$

$3s^2 - 2s^2 + 2s - s + 4 - 1$

$s^2 + s + 3$

b) $(3s^2 - 2s + 4) - (2s^2 - s + 1)$

$3s^2 - 2s + 4 - 2s^2 + s - 1$

$3s^2 - 2s^2 - 2s + s + 4 - 1$

$s^2 - s + 3$

c) $(3s^2 - 2s - 4) - (-2s^2 + s - 1)$

$3s^2 - 2s - 4 + 2s^2 - s + 1$

$3s^2 + 2s^2 - 2s - s - 4 + 1$

$5s^2 - 3s - 3$

d) $(-3s^2 + 2s - 4) - (2s^2 - s - 1)$

$-3s^2 + 2s - 4 - 2s^2 + s + 1$

$-3s^2 - 2s^2 + 2s + s - 4 + 1$

$-5s^2 + 3s - 3$

8. Use a personal strategy to subtract. Check your answers by adding.

a) $(3x + 7) - (-2x - 2)$

$3x + 7 + 2x + 2$

$3x + 2x + 7 + 2$

$5x + 9$

b) $(b^2 + 4b) - (-3b^2 + 7b)$

$b^2 + 4b + 3b^2 - 7b$

$b^2 + 3b^2 + 4b - 7b$

$4b^2 - 3b$

c) $(-3x + 5) - (4x + 3)$

$-3x + 5 - 4x - 3$

$-3x - 4x + 5 - 3$

$-7x + 2$

d) $(4 - 5p) - (-7p + 3)$

$4 - 5p + 7p - 3$

$-5p + 7p + 4 - 3$

$2p + 1$

e) $(6x^2 + 7x + 9) - (4x^2 + 3x + 1)$

$6x^2 + 7x + 9 \quad -4x^2 - 3x - 1$

$6x^2 - 4x^2 \quad +7x - 3x + 9 - 1$

$2x^2 \quad +4x \quad +8$

h) $(1 - 3r + r^2) - (4r + 5 - 3r^2)$

$1 - 3r + r^2 \quad -4r - 5 + 3r^2$

$r^2 + 3r^2 \quad -3r - 4r \quad +1 - 5$

$4r^2 \quad -7r \quad -4$

f) $(12m^2 - 4m + 7) - (8m^2 + 3m - 3)$

$12m^2 - 4m + 7 - 8m^2 - 3m + 3$

$12m^2 - 8m^2 - 4m - 3m + 7 + 3$

$4m^2 - 7m + 10$

9. The polynomial $4n + 2500$ represents the cost, in dollars, to produce n copies of a magazine in colour. The polynomial $2n + 2100$ represents the cost, in dollars, to produce n copies of the magazine in black-and-white.

colour copies cost more

a) Write a polynomial for the difference in the costs of the two types of magazines.

$(4n+2500) - (2n + 2100)$

$4n + 2500 - 2n - 2100$

$4n - 2n + 2500 - 2100$

$2n + 400$

b) Suppose the company wants to print $n \rightarrow$ 3000 magazines. How much more does it cost to produce the magazine in colour instead of black-and-white?

$2n + 400$

$2(3000) + 400$

$6000 + 400$

6400

10. A student subtracted $(2x^2 + 5x + 10) - (x^2 - 3)$ like this:

$(2x^2 + 5x + 10) - (x^2 - 3)$

$= 2x^2 + 5x + 10 - x^2 + 3$

$= x^2 + 8x + 10$

$(2x^2 + 5x + 10) - (x^2 - 3)$

$2x^2 + 5x + 10 - x^2 + 3$

$2x^2 - x^2 + 5x + 10 + 3$

$x^2 + 5x + 13$

12. A student subtracted like this:

$(2y^2 - 3y + 5) - (y^2 + 5y - 2)$

$= 2y^2 - 3y + 5 - y^2 + 5y - 2$

$= 2y^2 - y^2 - 3y + 5y + 5 - 2$

$= y^2 - 2y + 3$

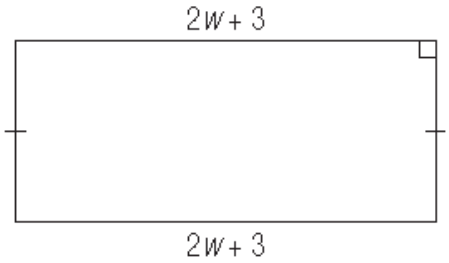
$(2y^2 - 3y + 5) + (-y^2 - 5y + 2)$

$2y^2 - y^2 - 3y - 5y + 5 + 2$

$y^2 - 8y + 7$

13. The perimeter of each polygon is given. Determine each unknown length.

a) $6w + 14$



$(6w+14)-(2w+3)-(2w+3)$

$(6w+14) \quad -2w-3 \quad -2w-3$

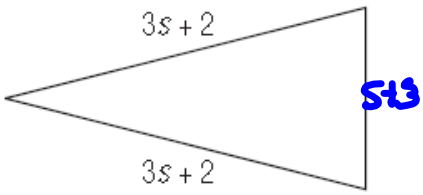
$6w-2w-2w+14-3-3$

$\frac{2w+8}{2}$

so

$(w+4)$

b) $7s + 7$



$(7s+7)-(3s+2)-(3s+2)$

$7s+7 \quad -3s-2 \quad -3s-2$

$7s-3s-3s+7-2-2$

$\boxed{s+3}$

15. Subtract.

a) $(r^2 - 3rs + 5s^2) - (-2r^2 - 3rs - 5s^2)$

$r^2 - 3rs + 5s^2 + 2r^2 + 3rs + 5s^2$

$r^2 + 2r^2 - 3rs + 3rs + 5s^2 + 5s^2$

$3r^2 + 10s^2$

c) $(5cd + 8c^2 - 7d^2) - (3d^2 + 6cd - 4c^2)$

$8c^2 + 5cd - 7d^2 + 4c^2 - 6cd - 3d^2$

$8c^2 + 4c^2 + 5cd - 6cd - 7d^2 - 3d^2$

$12c^2 - cd - 10d^2$

d) $(9e + 9f - 3e^2 + 4f^2) - (-f^2 - 2e^2 + 3f - 6e)$

$9e + 9f - 3e^2 + 4f^2 + f^2 + 2e^2 - 3f + 6e$

$= -3e^2 + 2e^2 + 4f^2 + f^2 + 9e + 6e + 9f - 3f$

$= -e^2 + 5f^2 + 15e + 6f$

15. Subtract.

a) $(r^2 - 3rs + 5s^2) - (-2r^2 - 3rs - 5s^2)$

$\cancel{r^2} - 3rs + 5s^2 + \cancel{2r^2} + 3rs + 5s^2$

$r^2 + 2r^2 \quad \cancel{-3rs + 3rs} \quad + 5s^2 + 5s^2$

$3r^2 \quad + 10s^2$

d) $(9e + 9f - 3e^2 + 4f^2) - (-f^2 - 2e^2 + 3f - 6e)$

$9e + 9f - 3e^2 + 4f^2 + f^2 + 2e^2 - 3f + 6e$

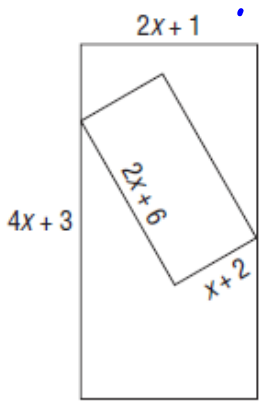
$4f^2 + f^2 \quad -3e^2 + 2e^2$

$5f^2 \quad -1e^2$

16. The difference of two polynomials is $3x^2 + 4x - 7$.
One polynomial is $-8x^2 + 5x - 4$.
a) What is the other polynomial?

$$\begin{array}{r} -8x^2+5x-4 \\ -(-11x^2+x+3) \\ \hline 3x^2+4x-7 \end{array}$$

17. The diagram shows one rectangle inside another rectangle. What is the difference in the perimeters of the rectangles?



Large

$P = (2x+1) + (4x+3) + (2x+1) + (4x+3)$

$P = 2x + 4x + 2x + 4x + 1 + 3 + 1 + 3$

$P = 12x + 8$

Small

$P = (2x+6) + (x+2) + (2x+6) + (x+2)$

$P = 2x + x + 2x + x + 6 + 2 + 6 + 2$

$P = 6x + 16$

Large - small

$(12x + 8) - (6x + 16)$

$12x + 8 - 6x - 16$

$12x - 6x + 8 - 16$

$6x - 16$

18. One polynomial is subtracted from another. The difference is $-4x^2 + 2x - 5$. Write two polynomials that have this difference. How many different pairs of polynomials can you find? Explain.

Many possible answers

$$\begin{array}{r} (5x^2 + 4x - 3) \\ -(9x^2 + 2x + 2) \\ \hline -4x^2 + 2x - 5 \end{array}$$