Section 5.2

Page 222-224

6. From the list, which terms are like $8x$?

$-3x$, $5x^2$, 4, $3x$, 9, $-11x^2$, $7x$, -3

Explain how you know they are like terms.

7. From the list, which terms are like $-2n^2$?

$3n$, $-n^2$, -2, $4n$, $2n^2$, -2, 3, $5n^2$

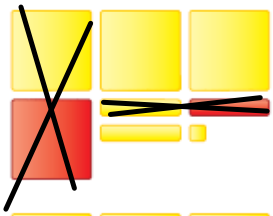
Explain how you know they are like terms.

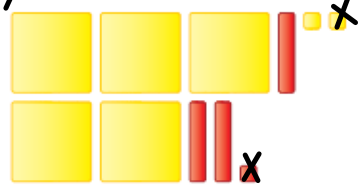
8. For each part, combine tiles that represent like terms.

Write the simplified polynomial.

a)  $x + 1$

b)  $x - 2$

c)  $2x^2 + x + 1$

d)  $5x^2 - 3x + 1$

9. Identify the equivalent polynomials in the diagrams below. Justify your answers.

a) $2x^2 + 1$

b) $-x - 3$

c) $-x^2 + 2x$

d) $-x^2 + 2x$

e) $2x^2 + 1$

f) $-x - 3$

(a, e)

(b, f)

(c, d)

11) Simplify each of the following expressions

a) $2c + 3 + 3c + 1$

$2c + 3c + 3 + 1$

$\boxed{5c + 4}$

b) $2x^2 + 3x - 5x$

$2x^2 - 2x$

c) $3f^2 + 3 - 6f^2 - 2$

$3f^2 - 6f^2 + 3 - 2$

$\boxed{-3f^2 + 1}$

d) $3b^2 - 2b + 5b + 4b^2 + 1$

$3b^2 + 4b^2 - 2b + 5b + 1$

$7b^2 + 3b + 1$

e) $5t - 4 - 2t^2 + 3 + 6t^2$

$-2t^2 + 6t^2 + 5t - 4 + 3$

$\boxed{4t^2 + 5t - 1}$

f) $4a - a^2 + 3a - 4 + 2a^2$

$-a^2 + 2a^2 + 4a + 3a - 4$

$a^2 + 7a - 4$

12. Simplify each polynomial.

a) $2m + 4 - 3m - 8$

$2m - 3m + 4 - 8$

$\boxed{-m - 4}$

b) $4 - 5x + 6x - 2$

$6x - 5x + 4 - 2$

$x + 2$

c) $3g - 6 - 2g + 9$

$3g - 2g - 6 + 9$

$\boxed{g + 3}$

d) $-5 + 1 + h - 4h$

$h - 4h - 5 + 1$

$-3h - 4$

e) $-6n - 5n - 4 - 7$

$\boxed{-11n - 11}$

f) $3s - 4s - 5 - 6$

$-s - 11$

13. Simplify each polynomial.

a) $6 - 3x + x^2 + 9 - x$

$x^2 - 3x - x + 6 + 9$

$x^2 - 4x + 15$

b) $5m - 2m^2 - m^2 + 5m$

$-2m^2 - m^2 + 5m + 5m$

$\boxed{-3m^2 + 10m}$

c) $5x - x^2 + 3x + x^2 - 7$

$-x^2 + x^2 + 5x + 3x - 7$

$8x - 7$

d) $3p^2 - 2p + 4 + p^2 + 3$

$3p^2 + p^2 - 2p + 4 + 3$

$\boxed{4p^2 - 2p + 7}$

e) $a^2 - 2a - 4 + 2a - a^2 + 4$

$a^2 - a^2 - 2a + 2a - 4 + 4$

$= 0$

f) $-6x^2 + 17x - 4 - 3x^2 + 8 - 12x$

$-6x^2 - 3x^2 + 17x - 12x - 4 + 8$

$\boxed{-9x^2 + 5x + 4}$

14. Simplify each polynomial.

a) $3x^2 + 5y - 2x^2 - 1 - y$

$3x^2 - 2x^2 + 5y - y - 1$

$x^2 + 4y - 1$

b) $pq - 1 - p^2 + 5p - 5pq - 2p$

$-p^2 + pq - 5pq + 5p - 2p - 1$

$\boxed{-p^2 - 4pq + 3p - 1}$

c) $5x^2 + 3xy - 2y - x^2 - 7x + 4xy$

$5x^2 - x^2 + 3xy + 4xy - 2y - 7x$

$4x^2 + 7xy - 2y - 7x$

d) $3r^2 - rs + 5s + r^2 - 2rs - 4s$

$3r^2 + r^2 - rs - 2rs + 5s - 4s$

$\boxed{4r^2 - 3rs + 1}$

e) $4gh + 7 - 2g^2 - 3gh - 11 + 6g$

$-2g^2 + 4gh - 3gh + 6g + 7 - 11$

$-2g + gh + 6g - 4$

f) $-5s + st - 4s^2 - 12st + 10s - 2s^2$

$-4s^2 - 2s^2 + st - 12st - 5s + 10s$

$\boxed{-6s^2 - 11st + 5s}$

15. Identify the equivalent polynomials. Justify your answers.

a) $1 + 5x$

b) $6 - 2x + x^2 - 1 - x + x^2$

$x^2 + x^2 - 2x - x + 6 - 1$

$2x^2 - 3x + 5$

c) $4x^2 - 7x + 1 - 7x^2 + 2x + 3$

$4x^2 - 7x^2 - 7x + 2x + 1 + 3$

$-3x^2 - 5x + 4$

d) $4 - 5x - 3x^2$

$-3x^2 - 5x + 4$

e) $2x^2 - 3x + 5$

f) $3x + 2x^2 + 1 - 2x^2 + 2x$

$2x^2 - 2x^2 + 2x + 3x + 1$

$5x + 1$

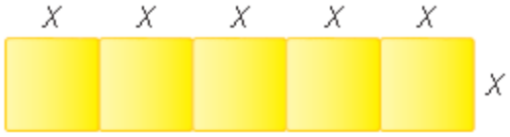
a → f

b → e

c → d

perimeter of each rectangle.

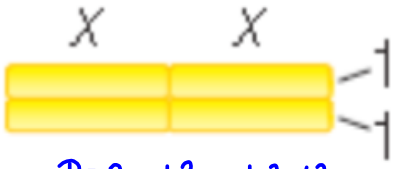
a)



P = 5x + 5x + x + x

P = 12x

b)



P = 2x + 2x + 2 + 2

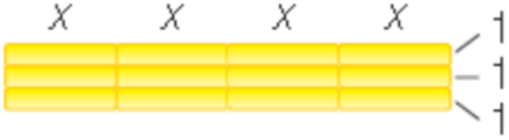
P = 4x + 4

c)

P = 3x + 3x + 2x + 2x

P = 10x

d)

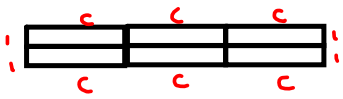


P = 4x + 4x + 3 + 3

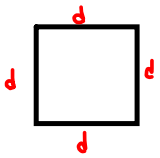
P = 8x + 6

20. Each polynomial below represents the perimeter of a rectangle. Use algebra tiles to make the rectangle. Sketch the tiles. How many different rectangles can you make each time?

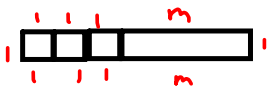
a) $6c + 4$



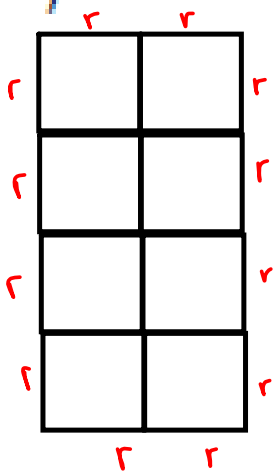
b) $4d$



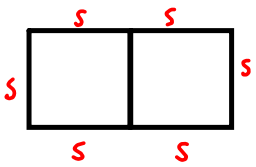
c) $8 + 2m$



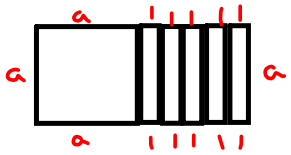
d) $12r$



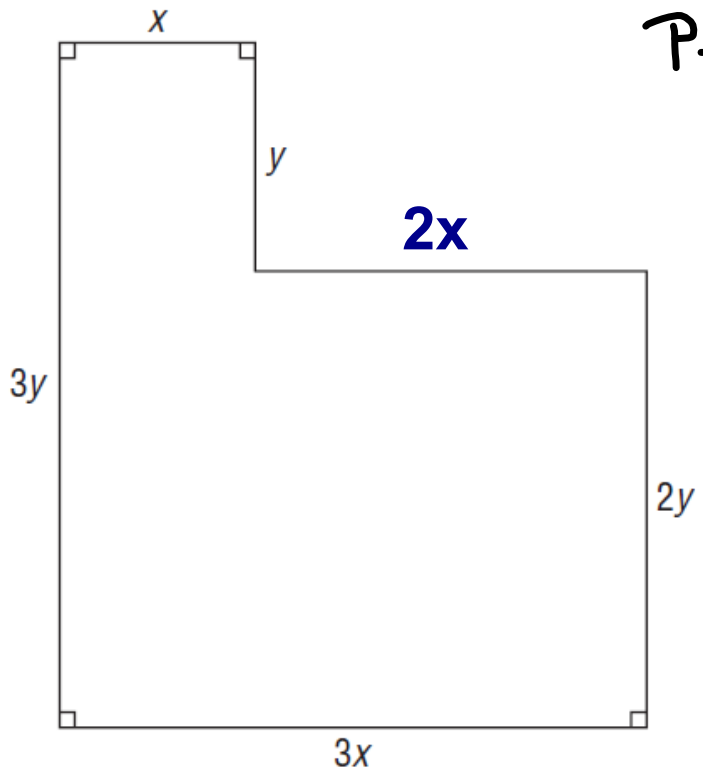
e) $6s$



f) $4a + 10$



22. Write a polynomial for the perimeter of this shape. Simplify the polynomial.



$P = 2x + x + 3x + y + 2y + 3y$

$= 6x + 6y$