3.5 – Collect Like Terms

MPM1D

1. Which polynomial contains no like terms?

A) $2x + 5 - 3x + 2xy$
B) $3x^2 + 3xy + 3$
C) $4 - 9x + 9y + 3$
D) $-4a^3 + 5b - 2a^2 + 7b$

2. Classify each pair of terms as either like or unlike.

a) $2x \ and \ -5x$

b) $3y \ and \ 3z$

c) $-x^2 \ \ and \ \ \frac{1}{2}x^2$

d) $4a^2 \ \ and \ \ 3a^3$

e) $2ab \ \ and \ \ 3a^2$

f) $5x^2y \ \ and \ \ -2xy^2$

g) $3uv \ \ and \ \ 2vu$

h) $9p^2q^3 \ \ and \ \ -4q^3p^2$

3. Simplify where possible

a) $3x + 6x$

b) $2m + 5n$

c) $5h + 8h + 2h$

d) $7u + 4u + u$

4. Simplify if possible

a) $4k - 2k$

b) $8n - n$

c) $3z - 7z$

d) $p - 6$

5. Simplify by collecting like terms.

a) $3x + 5 + 2x + 1$ b) $2k + 3m + 4m + 6k$ c) $8n + 5 - 3n - 2$

6. Simplify

a) $3x - 8 - 4 + 3$ b) $2x^2 + 7x + 4x^2 + x$ c) $7m + 6m^2 - 2m + m^2$

d) $3k - 5 + 8 - k + 1 - 4k$ e) $-3u + 2 - u^2 - 5 + 3u + 2u^2 - 3$

7. Simplify

a) $2a^2 - 3ab - 6 + 4b^2 + 7 + 5ab - 3b - 2a^2$

b) $3mn + 6m^2 - n^2 + 3 - m^2 - 3mn + 2n^2 - 4$

8. The length of a rectangular field is three times its width.

a) Write an expression for the perimeter of the field.

b) Find the perimeter if the field is 300 m wide.

c) Find the length and width of the field if the perimeter is 1600 m.

9 (extension).

a) An equilateral triangle has an unknown side length, x. Write a simplified expression for its perimeter.

b) A right isosceles triangle has two sides equal to x. Which triangle, the equilateral triangle in part a) or the right isosceles triangle, has the greater perimeter? Use algebraic reasoning.