

3.5 – Collect Like Terms

MPM1D

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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.

Answers

- 1) B
- 2) a) like b) unlike c) like d) unlike e) unlike f) unlike g) like h) like
- 3) a) $9x$ b) can't simplify c) $15h$ d) $12u$
- 4) a) $2k$ b) $7n$ c) $-4z$ d) can't simplify
- 5) a) $5x + 6$ b) $8k + 7m$ c) $5n + 3$
- 6) a) $3x - 9$ b) $6x^2 + 8x$ c) $7m^2 + 5m$ d) $-2k + 4$ e) $u^2 - 6$
- 7) a) $4b^2 + 2ab - 3b + 1$ b) $7m^2 + n^2 - 1$
- 8) a) $P = 8w$ b) 2400 m c) $l=600\text{m}$ and $w=200\text{m}$
- 9) a) $P = 3x$ b) Isosceles is greater because $3.4x > 3x$