

B: Multiplying Polynomials by Monomials Continued

III: Distributive Property

$$(ax)(bx + c)$$

$(ax)(bx + c) \rightarrow$ Distribute "ax" into the polynomial.
(mono).

Examples:

1. Expand using the distributive property.

a) $(4x)(6x - 2)$

$$= 24x^2 - 8x$$

b) $(0.5m)(14 - 24m)$

$$7m - 12m^2 \text{ \& R-arrange.}$$

$$= -12m^2 + 7m$$

c) $(4n - 14)(16.4)$

$$65.6n - 229.6$$

d) $(-2.4w)(6w - 14)$

$$= -14.4w^2 + 33.6w$$

e) $\left(\frac{6}{7}v + 14\right)(-2)$

$$(-2)\left(\frac{6}{7}\right)v - 28$$

$$-\frac{12}{7}v - 28$$

f) $(-16a - 14b - 4)(16a)$

$$-256a^2 - 224ab - 64a$$

2. Multiply

$$(3x^2y)(4x^2 - 12xy + 4y^2)$$

$$12x^4y - 36x^3y^2 + 12x^2y^3$$

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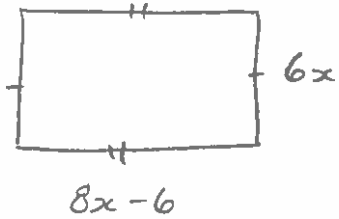


B: Multiplying Polynomials by Binomials Continued II ~~Review~~

Examples:

1. A rectangle has a width of $6x$ and a length of $8x-6$.

a) What is the expanded expression for the area of the rectangle.



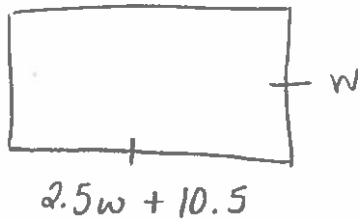
$$\begin{aligned} A &= lw \\ &= (8x-6)(6x) \\ &= \overbrace{(8x-6)} \times (6x) \\ &= 48x^2 - 36x \end{aligned}$$

b) What is a simplified expression for the perimeter?

$$\begin{aligned} P &= 2l + 2w \\ &= 2(8x-6) + 2(6x) \\ &= \overbrace{2(8x-6)} + \overbrace{2(6x)} \\ &= 16x - 12 + 12x \\ &= \boxed{28x - 12} \end{aligned}$$

2. A court is 10.5 m longer than 2.5 times the width.

a) What is an expression for the area of the court?



$$\begin{aligned} A &= lw \\ &= (2.5w + 10.5)(w) \\ &= \overbrace{(2.5w + 10.5)} \times (w) \\ &= \boxed{A = 2.5w^2 + 10.5w} \end{aligned}$$

b) If the length is 56 m, what is the area of the court?

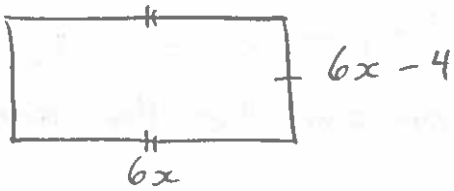
$$\begin{aligned} \text{length} &= 2.5w + 10.5 \\ 56 &= 2.5w + 10.5 \\ -10.5 & \quad -10.5 \\ \hline 45.5 &= 2.5w \\ \frac{45.5}{2.5} &= \frac{2.5w}{2.5} \end{aligned}$$

$$\begin{aligned} 18.2 &= w \\ \text{length} &= 56 \text{ m} \end{aligned}$$

$$\begin{aligned} A &= lw \\ &= (56)(18.2) \\ &= \boxed{A = 1019.2 \text{ m}^2} \end{aligned}$$

3. A park is $(6x)$ m long. Its width is 4m less than the length.

a) What is an expression for the area of the park?



$$\begin{aligned} A &= lw \\ &= (6x)(6x-4) \\ &= \underline{(6x)(6x-4)} \end{aligned}$$

$$\boxed{= 36x^2 - 24x}$$

b) If $x = 30$, what is the area of the park?

$$\begin{aligned} A &= 36x^2 - 24x \\ &= 36(30)^2 - 24(30) \end{aligned} \quad \begin{array}{c} \downarrow \\ \text{BEDMAS} \end{array}$$

$$= 36(900) - 24(30)$$

$$= 32400 - 720$$

$$\boxed{= 31680 \text{ units}^2}$$

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