Evaluate $(-j^2 + k)(-2l - k)$ if $j = -5$, $k = -7$, $l = 4$.

Solution: Plug in the given variables

$$(-(-5)^2 + (-7))(-2(4) - (-7))$$

- Simplify:

$$(-25 - 7)(-8 + 7)$$

$$(-32)(-1) =$$

$$-32 \cdot -1 = 32$$

$(-5)^2 = -5 \cdot -5 = 25$

$-(-7) = 7$

Evaluate the expression: $x = -3$, $y = 4$

$$\frac{x - y + 11}{2y} \rightarrow \frac{(-3) - (4) + 11}{2(4)}$$

$$*\text{gcf}(4,8) = 4 \quad = \frac{4}{8} = \frac{1}{2}$$

large \$2.55 Small \$1.70

Q: How many large packages were shipped?

300 packages → \$680

170 large: $170 \cdot 2.55 = \$433.50$

130 small: $130 \cdot 1.70 = \$221.00$

+ \$654.50

$680 - 654.50 = 25.50$

180 large : $180 \cdot 2.55 = \$459$

120 Small : $120 \cdot 1.70 = \$204$

$+$

} $663

$175 \cdot 2.55 = 446.25$

$125 \cdot 1.70 = 212.5$

$+$

} $658.75

$190 \cdot 2.55 = 484.5$

$110 \cdot 1.70 = 187$

} $671.50

$200 \cdot 2.55 = \$510$

$100 \cdot 1.70 = \$170$

} $680

200 large & 100 small

Evaluate: $x^3 + 2y^2 + z^2 + 2x - y$

Polynomial

$x = 1, \quad y = -4, \quad z = 3$

SOLUTION:

① Plug-in the x, y, z values:

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

② Use the order of operations to solve:

(Exponents)

$1 + 2 \cdot 16 + 9 + 2 + 4$

$1 + 32 + 9 + 2 + 4$

$= 48$

$(2 \cdot 3)$

6

$1^3 = 1 \cdot 1 \cdot 1$

$= 1$

$-4 = -4 \cdot -4$

$= 16$

$-(-4) = -1(-4) = 4$

* What if they don't give you the values of the variables?

Examples: "Solve for x, y, z" $x = \square$

"Find the value" $y = \square$

"Simplify the expression"
↳ Combining like terms

EX: $2x + y + 3x + 2$

$5x + y + 2$

What if they ask you to solve for x:

$5x + y + 2 = 0$

* Isolate the variables, inverse operations

$5x + y + 2 = 0$

$5x + y + 2 - 2 = 0 - 2$

$5x + y = -2$

$5x + y - y = -2 - y$

$\frac{5x}{5} = \frac{-2-y}{5}$

$x = \frac{-2-y}{5}$

EX $2x^3 + y^2 + 2x^2 + x$ If $x = -2$, $y = 6$

① Plug-in the values

$2(-2)^3 + (6)^2 + 2(-2)^2 + (-2)$

$2 \cdot -8 = -16$

② $-16 + 36 + 8 - 2$

$= 26$

$(-2)^3 = -2 \cdot -2 \cdot -2 = -8$

$(-2)^2 = -2 \cdot -2 = 4$

$+(-2) = +1\,(-2) = -2$

Evaluate the polynomial:

(A) $(2x-5)(1-4x) = 2x - 8x^2 - 5 + 20x$

$= 22x - 8x^2 - 5$

* Distributive Property

$2x \cdot 4x =$
$= 2 \cdot 4 \cdot x \cdot x$
$= 8 \cdot x \cdot x$
$= 8x^2$

$-5 \cdot -4x = 20x$

* Combining like terms

$2x + 20x$
$= 22x$

(B) $(x+3)(7+12x)$

$= x \cdot 7 + x \cdot 12x + 3 \cdot 7 + 3 \cdot 12x$

$+ 12 \cdot x \cdot x$

$= 7x + 12x^2 + 21 + 36x$

$= 43x + 12x^2 + 21$